

Stream banks and stream channels combined made up 16.5% of the survey effort. Most of these landforms were sampled in the underground mine survey area, but sections of Medway Rivulet, Wells Creek and Oldbury Creek were also surveyed in the surface infrastructure survey area.

Stream channels in incised locations such as at the base of scarps often had exposed bedrock stream beds and banks which continued intermittently into the adjacent scarp (eg Fire Dam Creek, the headwaters of Longacre Creek, Belanglo Creek and Knapsack Gully). These areas were often partly obscured by vegetation, moss and leaf litter. Stream channels in the more open scarp landscapes were filled with sandy-silt sediments and did not reveal exposed sandstone where sampled (eg Belanglo Creek and Planting Spade Creek). As such, survey of the sediment filled streams in the underground mine area were discontinued because no sandstone was observed.

Although large sandstone ground exposures were encountered in the less vegetated areas (refer to Plate 6.9) much of the outcropping sandstone bedrock was patchily obscured by vegetation (refer to Plate 6.12). Similarly, stream beds underlain by sandstone were also inspected, but visibility was sometimes obscured by the presence of water as the streams increased in stream order.

Rock shelters were identified by following the base and crest of scarp landforms and were generally clearly visible despite being in open woodland. These were mostly identified at the base of the scarp in areas of lower relief, but were also identified on benches on scarp slopes in areas of higher relief, such as the more deeply incised areas of Longacre Creek. The survey team inspected all visible rock shelters for pigment, stone artefacts and engravings.

The landform types with the lowest effective coverage were undulating plain (6%), hill slope (7%) and drainage depressions (10%). These were the landforms most prone to low ground surface visibility from grass coverage as these areas were less affected by erosion.

The highest ground surface visibility in the surface infrastructure survey area was found in existing vehicle access tracks, particularly those that ran through the centre of Wongonbra, an access track that crosses Medway Rivulet on the Evandale property, and the access track that runs parallel to Oldbury Creek on Mereworth property. The other main source of high ground surface visibility was associated with plough lines that existed across the surface infrastructure survey area.

Vegetation, including grasses, riparian corridors of native vegetation and leaf litter, were the main causes of lower ground surface visibility in the surface infrastructure survey area. Thick grasses were observed throughout the surface infrastructure survey area where paddock slashing and ploughing had not recently occurred.

Existing ground disturbance was primarily attributed to extensive historic vegetation clearing and ploughing across most of the project area. The effects of clearing and ploughing have clearly contributed to accelerated soil erosion, particularly on hill spur crests, hill slopes and stream channels. The surface infrastructure survey area can generally be classed as moderately disturbed from clearing and ploughing, with highly disturbed areas confined to farm and homestead buildings, heavily graded unsealed roads, soil drainage bunds and dammed sections of streams. Areas with low disturbance are generally confined to areas of riparian corridors of native vegetation.

iii Evaluation of landform coverage

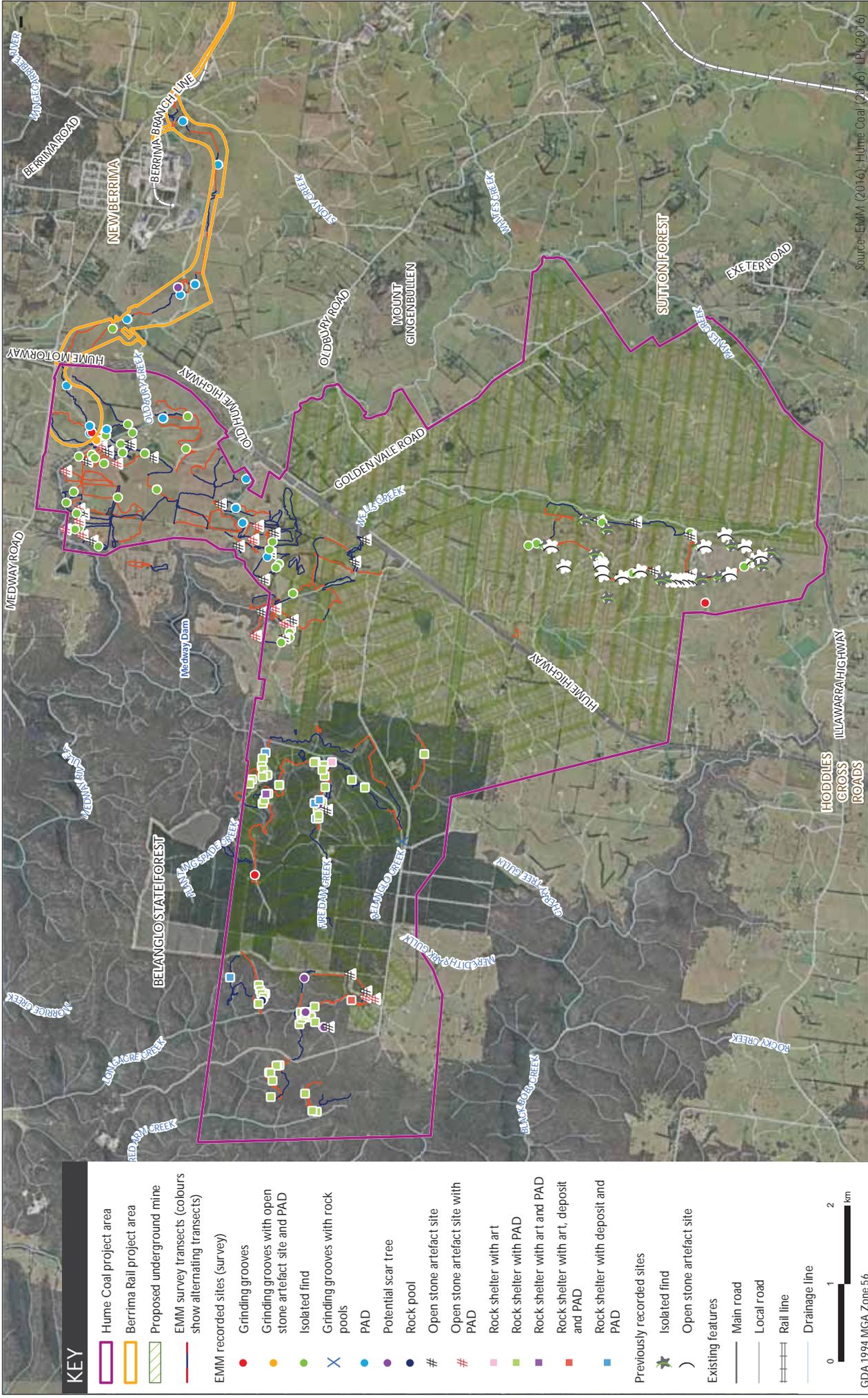
The effective coverage results (referring to ground surface visibility) indicate that the survey in the surface infrastructure area was generally effective for identifying open stone artefact sites, particularly on hill crests and stream banks. However, there were considerable areas of archaeologically sensitive landforms that remained heavily grassed and had very limited visibility. Notably, these included rises on undulating plains, foot slopes and some hill crests near perennial streams including Wells Creek, Medway Rivulet, Oldbury Creek and Stony Creek.

The coverage results were comprehensive for grinding grooves, rock pools and engravings in the surface disturbance footprint because sandstone outcrops were isolated and clearly exposed in cleared paddocks. The results were also comprehensive for mature trees as any suitable trees in the surface disturbance footprint were confined to isolated pockets and riparian corridors.

The effective coverage results (referring to ground surface visibility) for the underground mine survey area are less useful to evaluate because the survey targeted obtrusive site types such as rock shelters that are not dependent on good ground surface visibility.

The statistics for effective coverage of the underground mine survey area is less relevant because the survey targeted obtrusive site types, such as rock shelters, whose identification is not dependent on ground surface visibility. Notwithstanding, the survey above the underground mine area indicated that:

- Survey coverage was comprehensive for rock shelters, and it is likely that all rock shelters present in the underground mine area were inspected.
- There are likely to be a considerable number of unidentified rock shelters in the unsurveyed far western part of the project area (outside the areas proposed for development or mining).
- The coverage was less comprehensive for grinding grooves because, although all areas of visible sandstone were inspected, natural changes in vegetation cover over time may have obscured this site type.
- Not all mature native trees in the underground mine area were inspected because the proposed mining method would not affect modified trees.



Aboriginal heritage survey coverage and results overview
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 6.1



Plate 6.1 Example of good ground surface visibility on a broad, flat hill crest bordering native vegetation near Oldbury Creek (Transect 69, facing east)



Plate 6.2 Example of lower ground surface visibility conditions despite past evidence of ploughing (Transect 74, facing east)



Plate 6.3 Example of outcropping Hawkesbury Sandstone near Wells Creek (Transect 8, facing north)



Plate 6.4 Example of vehicle access track exposure on a hill crest on the Wongonbra property (Transect 1, facing south)



Plate 6.5 Example of a more recently ploughed paddock on the Mereworth property adjacent to a drainage depression (Transect 128, facing east)



Plate 6.6 Example of a thickly grassed paddock on a low hill crest offering very low surface visibility (Transect 79, Mereworth, facing north)



Plate 6.7 Scarp and cliff landform in very close proximity to a stream channel (foreground) enabling the survey team to cover both landforms in one transect (Transect 33, Belanglo State Forest, facing north)



Plate 6.8 Scarp bordering on stream channel demonstrating easily identifiable shelters amongst thick vegetation (Transect 33, Belanglo State Forest, facing west)



Plate 6.9 Outcropping sandstone as the scarp plateaus away from the cliff line (Transect 43, Belanglo State Forest, facing north)



Plate 6.10 More rugged terrain as local relief increases in the western portion of the project area (Transect 51, Belanglo State Forest, facing east)



Plate 6.11 A rare sandstone exposure among pine forest identified in the Soapy Flat soil Landscape (Transect 57, Belanglo State Forest, facing north)



Plate 6.12 Sandstone exposure obscured by moss and vegetation (Transect 35, Belanglo State Forest facing north)

6.3.3 Aboriginal site results

i Overview

This section describes the 181 sites recorded during the survey, made up as follows:

- 166 newly recorded sites in the project area;
- 11 newly recorded sites in the Berrima Rail Project area;
- two newly recorded sites outside both project areas; and
- two sites previously recorded on AHIMS (grinding groove site 'International House' AHIMS #52-4-0098 and rock shelter with art 'Compartment 157' AHIMS #52-4-0097) that were re-recorded.

The 37 sites recorded by Therin in 2007 are excluded and not analysed in this section of the report (refer to Section 4.4 for Therin's report summary). This is mainly to avoid duplicating records, as 27 of the 37 sites were recorded on the same hillcrest surveyed by EMM in 2013. Therefore, it is highly likely that EMM recorded many of the same artefacts as Therin. Furthermore, Therin did not use the 50 m separation rule for site recording (refer to Section 6.4.2) which would have distorted the site distribution results and analysis.

The site types and their frequencies are listed in Table 6.2, and shown in Figures 6.2 to 6.6.

Table 6.2 Aboriginal sites and their frequency

Aboriginal site type	Frequency	Percentage (rounded to one decimal point)
Grinding grooves	3	1.7%
Grinding grooves with open stone artefact site and PAD	1	0.6%
Grinding grooves with rock pools	1	0.6%
Isolated find	39	21.5%
Open stone artefact site	30	16.6%
Open stone artefact site with PAD	16	8.8%
PAD	14	7.7%
Potential scar tree	8	4.4%
Rock pool	1	0.6%
Rock shelter with art	1	0.6%
Rock shelter with art and PAD	1	0.6%
Rock shelter with art, deposit and PAD	1	0.6%
Rock shelter with deposit and PAD	10	5.5%
Rock shelter with PAD	55	30.4%
Total	181	100.0%

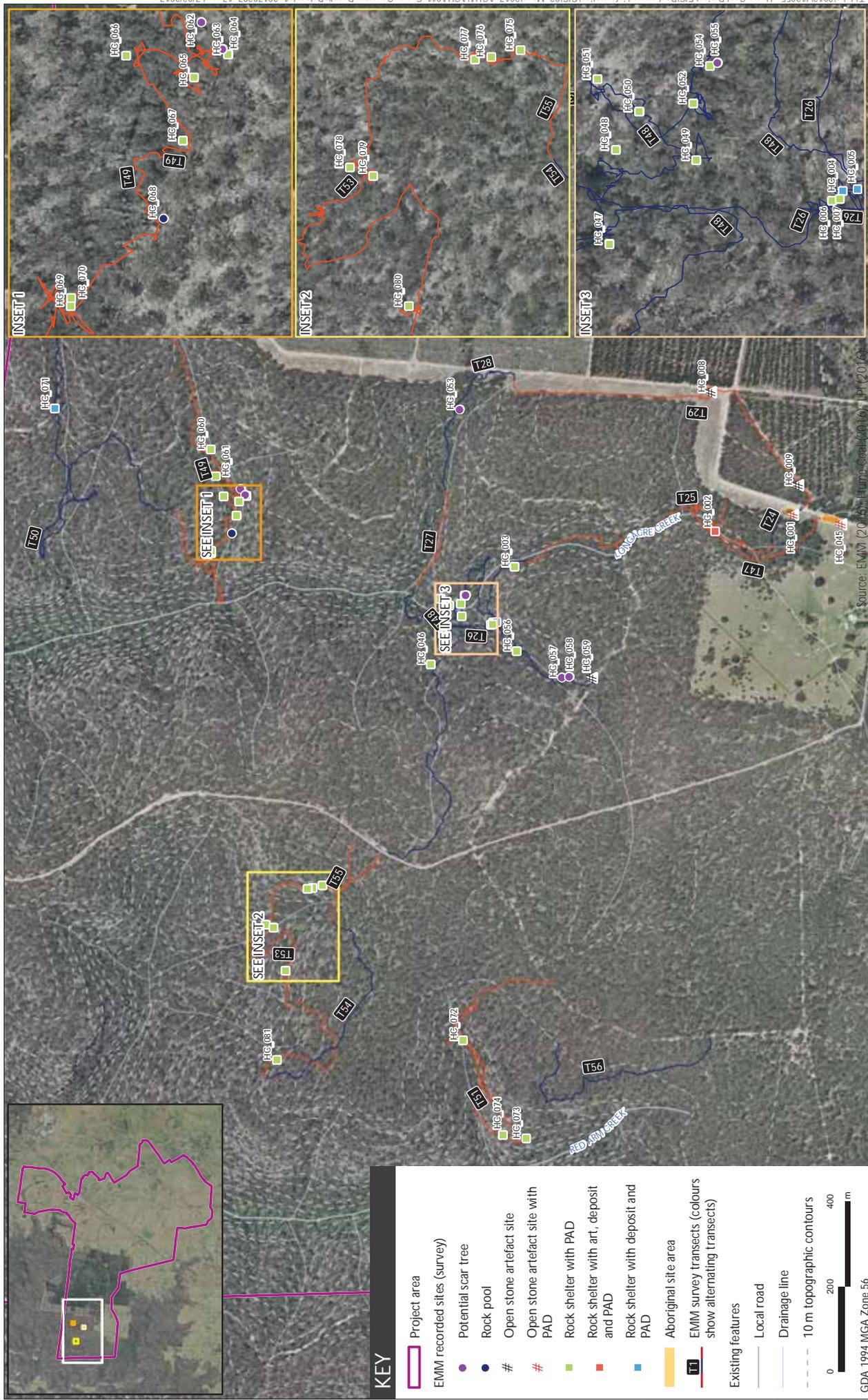
The most widely distributed Aboriginal objects are stone artefacts. These are present in the following site types: open stone artefact sites (25.4%, including those with PAD), isolated finds (21.5%), rock shelters with deposit and PAD (6%) and one grinding groove with open stone artefact site and PAD (1%). Overall, surface stone artefacts are present in 96 of the 181 sites identified during the survey (53%).

Thirty one sites were considered to have areas of PAD (not including rock shelters with PAD), 14 of which had no visible surface artefacts. These 14 PADs have been included in the following sections, but their information is not useful for analysis. This is because these areas are only predicted areas of archaeology and do not reflect physical site results.

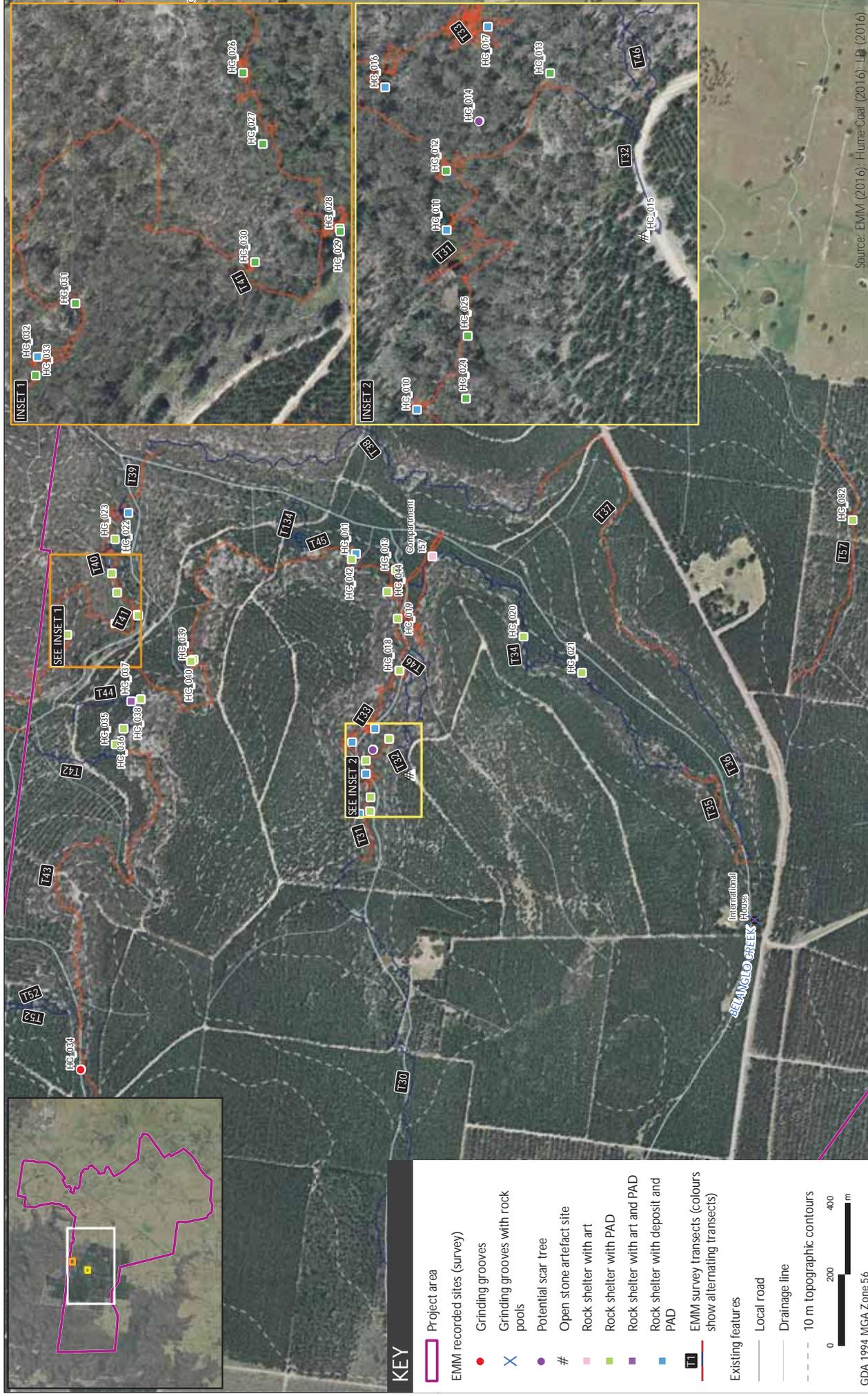
A considerable number of rock shelters were recorded. Most of them did not have any visible deposit or art (n=55), but there was evidence of soils that may retain artefactual material (known as PAD). Ten rock shelters had stone artefacts at their floors (rock shelter with deposit and PAD), one rock shelter had deposit, art and PAD (HC_002), one has art and PAD (HC_037) one rock shelter had art only. (Compartment 157).

Less common site types include grinding grooves and potential scar trees. Five grinding groove sites were recorded, two of which were in the surface infrastructure area survey area (HC_136 and HC_138) and three in the underground mine survey area (International House, HC_175 and HC_034). Eight potential scar trees were identified, seven of which are in the Belanglo State Forest part of the underground mine survey area, and one in the Berrima Rail project area.

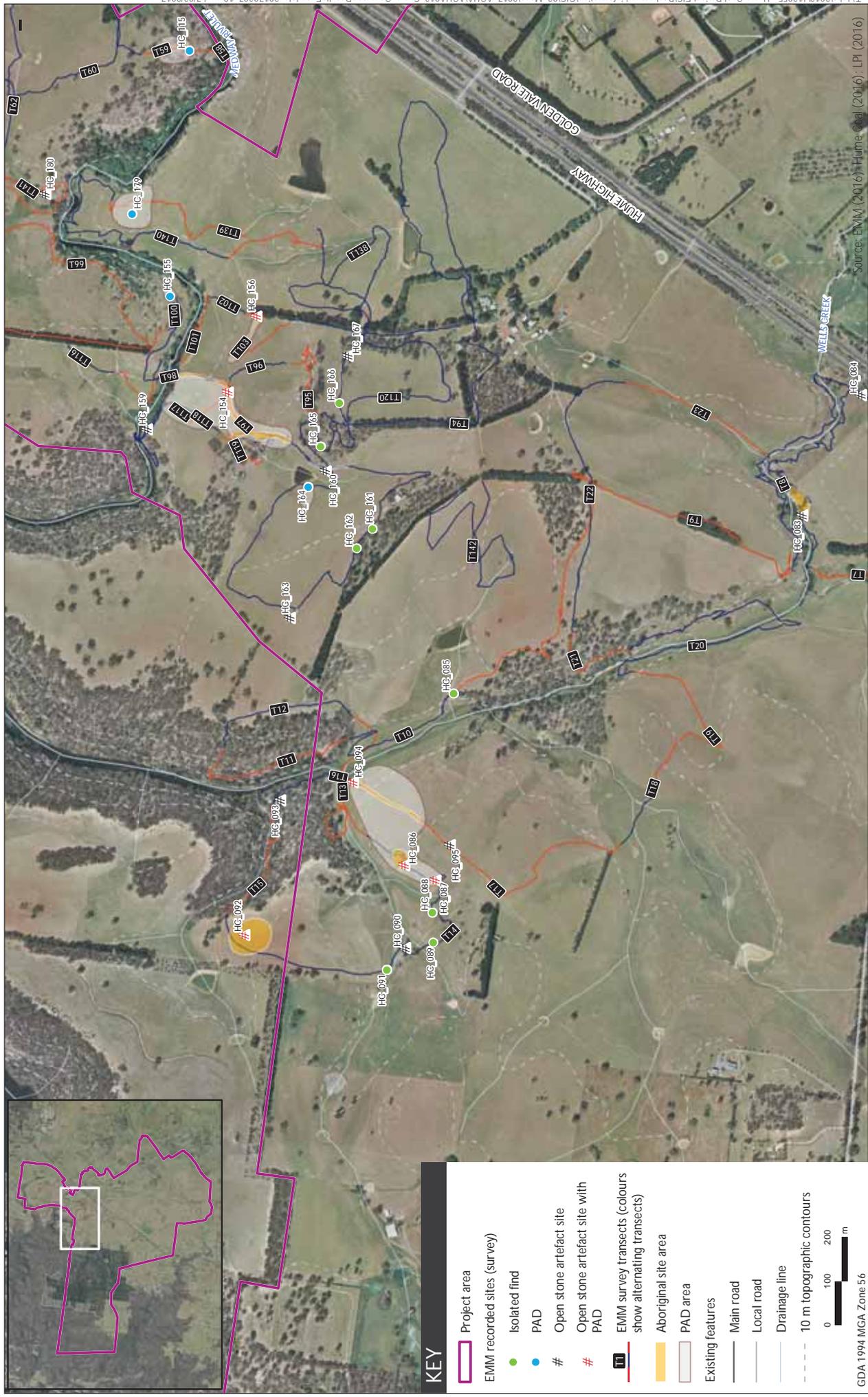
One additional site, HC_178, was identified from test excavation but is not discussed in this section. This is because HC_178 was not initially defined as a PAD during survey but was tested as a control in the test excavation program. This site is added to the count of sites presented in Chapters 7 to 11.



Aboriginal site results - Belanglo State Forest (west)
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 6.2



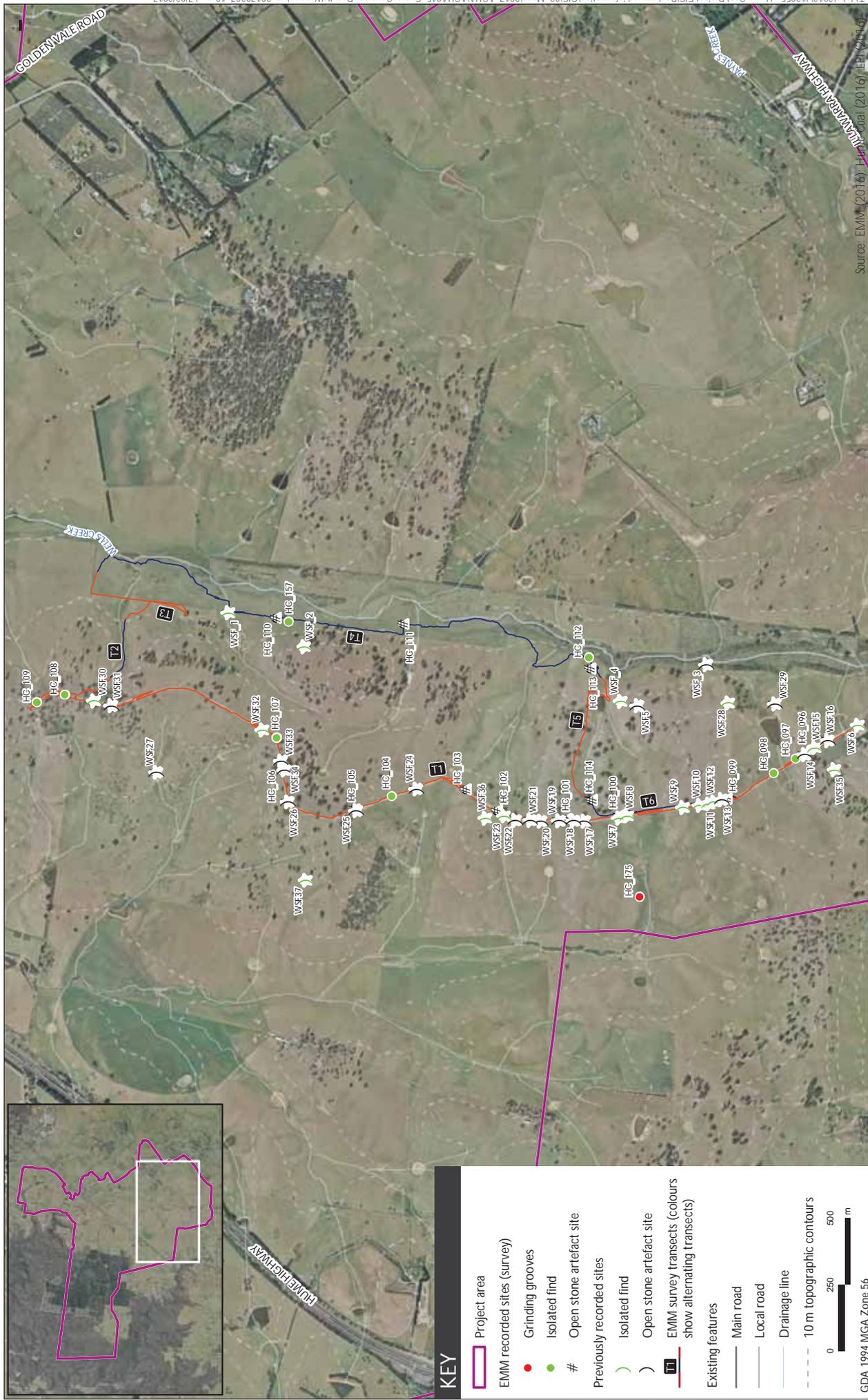
Aboriginal site results - Belanglo State Forest (east)
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 6.3



Aboriginal site results - Evandale
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 6.4



Aboriginal site results - Mereworth
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 6.5



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Source: EMM (2016), Hume Coal (2016), LPI (2016)

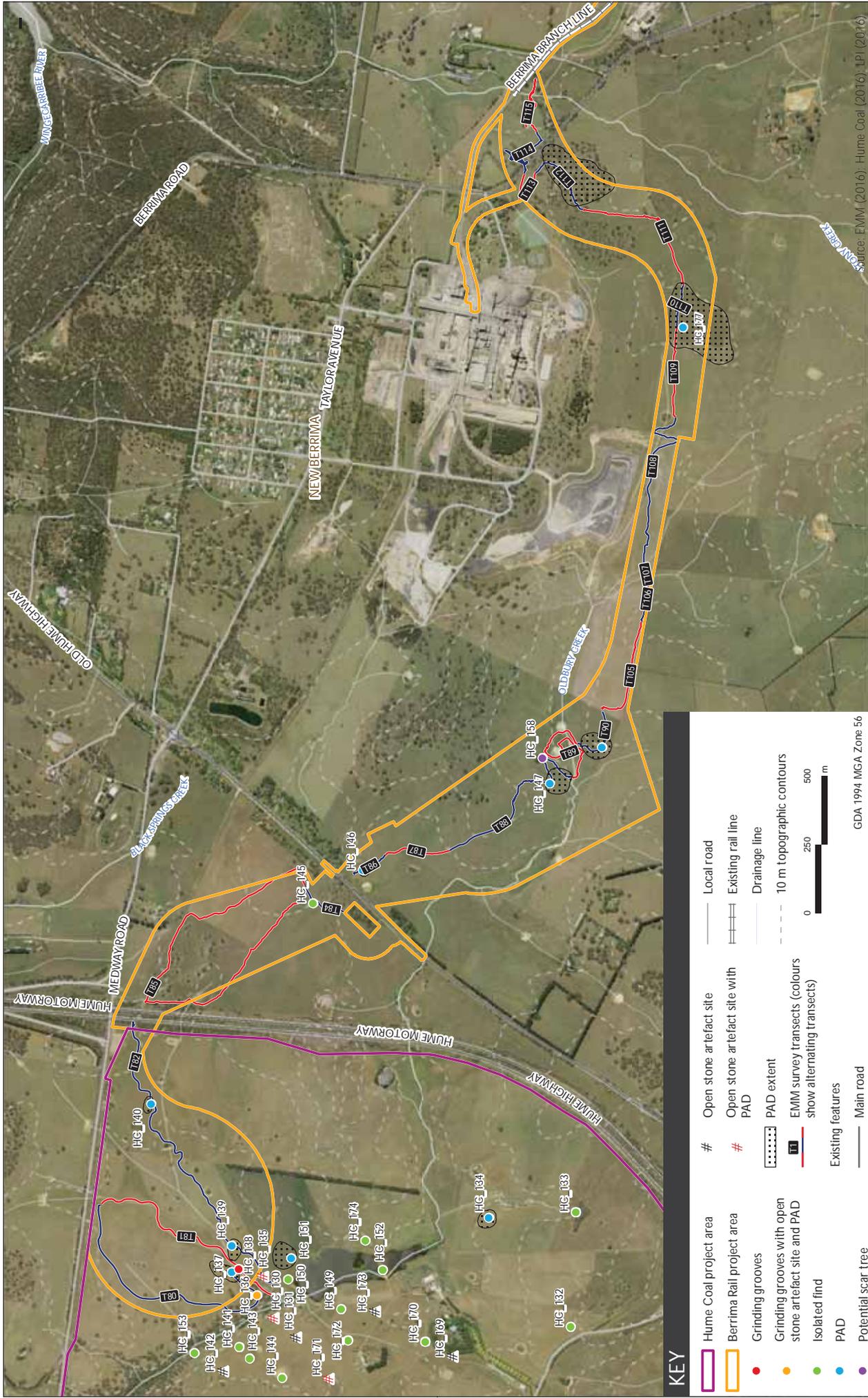
Aboriginal site results - Wongonbra
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 6.6

KEY

- Project area
- EMM recorded sites (survey)
 - Grinding grooves
 - Isolated find
 - # Open stone artefact site
- Previously recorded sites
 -) Isolated find
 -) Open stone artefact site
- EMM survey transects (colours show alternating transects)
 - T1
 - T2
 - T5
 - T6
 - T7
 - T12
- Existing features
 - Main road
 - Local road
 - Drainage line
 - 10 m topographic contours

GDA 1994 MGA Zone 56





Aboriginal site results - outside project area in Berrima Rail Project area
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 6.7

ii Landscape associations

Aboriginal sites were identified in each of the landform classes defined for the survey (refer to Table 6.3). The highest frequency of sites occurred on scarps (n=79), but these were mostly rock shelter site types (n=68). Most potential scar trees were on scarp landforms which is probably because these areas had the most native vegetation. Only two sites on scarp were identified in the surface infrastructure area: HC_136 (grinding grooves with stone artefacts and PAD) and HC_153 (an isolated artefact).

Sites were commonly identified on hill crests (n=32) and hill spur crests (n=37), and when combined, make up 38% of the sites identified during survey. All sites on these crest landforms were made up of stone artefacts. This high frequency is probably partly because the surface infrastructure area landscape is dominated by broad, flat crests bordering onto streams. Generally, sites on low rolling hill landscapes are concentrated on hill crests and spurs adjacent to Oldbury Creek, Wells Creek, Medway Rivulet and their tributaries.

All landform types, except for stream beds, yielded open stone artefact sites or isolated finds. Lower site frequencies were observed on hill slopes (n=9), foot slopes (n=11) and next to streams or drainage depressions (n=3). The more sensitive landforms, footslopes and next to streams, were less extensively surveyed as the direct disturbance footprint is mostly set back from these landforms.

Furthermore, many drainage depressions and stream banks were thickly grassed and afforded very limited ground surface visibility in the surface infrastructure area.

Four of the five grinding groove sites recorded in the project area were either in a stream channel or a drainage depression.

Table 6.3 Site types and their associated landforms

Landform type	Grinding grooves	Grinding grooves with open stone artefact site and PAD	Grinding grooves with rock pools	Isolated find	Open stone artefact site	Open stone artefact with PAD	PAD scar tree	Potential Rock pool	Rock shelter with art	Rock shelter with art and PAD	Rock shelter with deposit and PAD	Rock shelter with PAD	Total
Drainage depression	2			2	1								5
Foot slope				3	3	2	3						11
Hill crest				12	12	5	3						32
Hill crest saddle				1									1
Hill slope				7	1		1						9
Hill spur crest				9	11	9	8						37
Modified				4									4
Scarp	1		1	1			7	1	1	1	10	55	79
Stream bank					2								2
Stream bed	1												1
Total	3	1	1	39	30	16	14	8	1	1	10	55	181

iii Slope class

The distribution of sites and the corresponding slope class where they were found is summarised in Table 6.4. The slope classes are based on those presented in the *Australian Soil and Land Survey Field Book* (CSIRO 2009).

Open stone artefact sites and isolated finds were mostly recorded on level to gently inclined slopes (80 out of 86). Only six of these were on moderately inclined slopes.

Less than half of all sites (44%, n=79) were identified on moderately inclined to very steep slopes. However, most of these were rock shelter site types (n=63) and, although they are present in rugged and steep terrain, their habitable shelter floors were invariably level to gently inclined.

Table 6.4 Site type frequencies against slope class

Site type	Slope class						Total
	Level	Very gently inclined	Gently inclined	Moderately inclined	Steep	Very steep	
Grinding grooves		1	2				3
Grinding grooves with open stone artefact site and PAD		1					1
Isolated find		9	25	4			38
Isolated find (ground-stone hatchet)			1				1
Open stone artefact site	4	7	18	1			30
Open stone artefact site with PAD		5	10	1			16
PAD		6	6	2			14
Potential scar tree			1	7			8
Rock pool				1			1
Rock shelter with art and PAD				1			1
Rock shelter with art, deposit and PAD			1				1
Rock shelter with deposit and PAD			1	6	3		10
Rock shelter with PAD			3	34	13	5	55
Rock shelter with art					1		1
Grinding grooves with rock pools		1					1
Total	4	30	68	57	17	5	181

iv Proximity to streams

Proximity to streams (water sources) was found to be a primary influence on site location, especially for open stone artefact sites and grinding grooves. The reliability of the water source was also considered. Ephemeral streams would have provided only temporary water, offering only temporary resources for Aboriginal occupation. On the other hand, perennial streams would have provided reliable water offering more permanent access to resources.

a. Site distance to any water source

Table 6.5 shows the frequency of each site type and their distance range to water. This calculation is based on distance to any stream (1st order and above). The results show that over half of the sites (53%) are within 50 m of a stream and 94% of sites are within 200 m of a stream. Site frequency drops off significantly past 200 m (only 6% of sites). Note that the calculation of distance to PADs is not a meaningful result as these are only predicted site locations.

Grinding groove sites and rock pools have only been identified within 50 m of water.

All rock shelters are within 200 m of a stream and approximately 75% of these are within 50 m. However, this is because the scarp landforms that feature the rock shelters follow the course of streams and are not more than 200 m from a stream. Therefore all rock shelters would have been a suitable distance to access the resources of nearby streams (when flowing).

Table 6.5 Site types and their distance range to water

Site type	Distance range to water (m)						Total
	0–50	51–100	101–150	151–200	201–250	251+	
Grinding grooves	3						3
Grinding grooves with open stone artefact site and PAD	1						1
Isolated find	14	7	10	3	1	3	38
Isolated find (ground-stone hatchet)		1					1
Open stone artefact site	6	9	7	3	4	1	30
Open stone artefact site with PAD	6	7	2	1			16
PAD	6	4	2		1	1	14
Potential scar tree	7		1				8
Rock pool	1						1
Rock shelter with art and PAD				1			1
Rock shelter with art, deposit and PAD	1						1
Rock shelter with deposit and PAD	9	1					10
Rock shelter with PAD	40	12	2	1			55
Rock shelter with art	1						1
Grinding grooves with rock pools	1						1
Total	96	41	24	9	6	5	181
Percentage of total sites	53%	23%	13%	5%	3%	3%	100%

b. Site distance to ephemeral and perennial streams

Streams were also divided into two groups, based on stream order, in an attempt to gauge whether more 'camping' sites (those that are open stone artefact sites and isolated finds) were clustered around perennial or ephemeral streams.

The two groups comprised:

- 1st to 3rd order streams (generally considered to be ephemeral in the project area); and
- 4th order streams and above (generally considered to be perennial in the project area).

Approximately 58% of open artefact sites and isolated finds are within 100 m of ephemeral streams. Overall, 85% of these sites are within 200 m of ephemeral streams. Conversely, over half of these site types (63%) are over 200 m away from perennial streams.

Notably, this surface artefact pattern is not likely to indicate that the land near ephemeral streams has higher subsurface archaeological potential than land near perennial streams. Rather, it is more likely to reflect the following:

- There are far greater numbers of ephemeral streams in the landscape than perennial streams. Therefore it is statistically more likely for more sites to be closer to ephemeral streams.
- A relatively smaller proportion of the survey was within 200 m of perennial streams, which also generally had lower ground surface visibility. As such, fewer sites near perennial streams were likely to have been identified.

v Lithic assemblage

a. Site artefact frequency and density

A total of 558 surface artefacts were counted during the surveys. Plate 6.13 shows examples of stone artefacts in the project area.

Artefact frequencies ranged from 1 to 75 artefacts across the 97 sites that featured stone artefacts. The frequency of surface artefacts across the site types is shown in Table 6.6. Overall, 7% of artefacts were identified as isolated finds, 84% in open stone artefact sites (including those sites also with PAD), 7% of artefacts in rock shelter site types and 1% of artefacts associated with a grinding groove site.

Furthermore, 41% of sites contained between 2 and 10 artefacts, 5% of sites between 11 and 20 artefacts, and 7% contained over 20 artefacts.

Table 6.6 **Artefact frequencies across site types**

Site type	Frequency of sites with one or more artefacts	Count of artefacts	Percentage (%) of artefacts
Grinding grooves		0	0
Grinding grooves with open stone artefact site and PAD	1	7	1
Isolated find	39	39	7
Open stone artefact site	30	125	22
Open stone artefact site with PAD	16	345	62
PAD		0	0
Potential scar tree		0	0
Rock pool		0	0
Rock shelter with art and PAD		0	0
Rock shelter with art, deposit and PAD	1	8	1
Rock shelter with deposit and PAD	10	34	6
Rock shelter with PAD		0	0
Total	97	558	100

The site that contained the most artefacts (n=75) was HC_094 on the Evandale property which ran up a spur on a vehicle track exposure approximately 200 m in length. This site was a good representation of an area that closely follows the predictive model for site location: it is between the confluence of streams and on a broad, level to gently inclined spur crest.

Overall, almost half of the sites with artefacts had only a single artefact, and a median artefact frequency of one and average artefact frequency of 3.1 which was also low. In general, surface artefact densities (ie number of artefacts per m²) across the Aboriginal sites provide little information for interpretation. This is mainly because of the broad range in site sizes (eg ranging from 1 m² to 8,500 m²) and ground exposure conditions. For example, artefact density/m² decreases significantly for the larger site areas, despite these being the sites with the highest artefact frequencies. As such, meaningful comparisons cannot be made reliably without using a standardised sampling unit, such as test excavation squares.

vi **Artefact types and raw materials**

The dominant raw materials observed in the field were silcrete and quartz. Silcrete, a silica-rich, sedimentary rock occurs in various colours, including shades of grey, white, brown, and dark red in some cases due to iron content being leached out due to the weathering process. Quartz was also commonly found in varying qualities from highly isotropic, almost clear and white opaque examples with numerous flaws and fracture plains. Other less common raw materials included quartzite, chert, indurated mudstone/tuff (IMT), and basalt and unspecified volcanic materials.

Of the 97 sites that had stone artefacts, silcrete was present at 61 sites (36%) and quartz at 59 sites (35%). There is a considerable overlap of raw material types in many of the sites surveyed, with 47% containing between two and five varieties of raw material.

The artefact types observed were typical of Aboriginal open camp site assemblages and comprised of flakes, broken fragments of flakes (proximal, medial, and distal portions, and indeterminate flaked pieces), cores, and retouched flakes (or implements). Of the artefacts identified, approximately 89% were flakes or flake fragments (n=496) and 9% were cores (n=47). Retouched artefacts, commonly referred to as 'implements' for their often recognisable typological forms, accounted for approximately 2% of the total assemblage (n=13). It is not unusual to have a small sample of retouched artefacts in an assemblage since they are rarely purposefully discarded in open camp sites and are likely to be lost in isolation during travel or hunting.

vii Disturbance to stone artefact sites and isolated finds

The disturbance levels for open stone artefact sites and isolated finds (n=86, refer to Table 6.7) were recorded to assess their potential archaeological integrity. Disturbance levels varied from minor erosion which had acted to expose the sites, to high disturbance levels which included graded vehicle tracks and modified landforms. Low levels of disturbance were only observed where native vegetation remains and erosion was the only visible form of disturbance.

Evidence of clearing, pine plantations and ploughing were the most widespread form of disturbance noted throughout the project area. This was determined through field observations and a review of historic aerial imagery. Approximately 64% of open stone artefact sites and isolated finds are in paddocks that have been historically ploughed. Approximately 24% of sites are in highly disturbed contexts such as graded vehicle tracks and modified landforms.

Table 6.7 Disturbance levels across open stone artefact sites and isolated finds

Type of disturbance	Grinding grooves with open stone artefact site and PAD	Isolated find	Open stone artefact site	Open stone artefact site with PAD	Total
High: graded track		8	7	1	16
High: modified landform		4			4
Moderate: cleared and ploughed		24	17	13	54
Moderate: extensive sheet wash erosion			2	1	3
Low: erosion		3	4	1	8
Low: native vegetation	1				1
Total	1	39	30	16	86

Plate 6.13 Examples of open artefact sites in the project area



a. Site HC_154 showing various grades of silcrete flakes



b. Site HC_157: ground edge hatchet made from igneous rock



c. Site HC_173 showing artefacts of milky quartz of varying quality



d. Site HC_171 showing a flake of the more rarely occurring banded mudstone flake and a smokey quartz flaked piece



e. Site HC_132: a single hammer stone identified on a thickly grassed hill slope



f. Recording HC_159 on the bank of Medway Rivulet (facing north-west)



g. Artefacts identified at the drip line of rock shelter HC_002



h. Artefacts were identified at the drip line in most rock shelters with deposit (facing east)

viii Rock shelters

a. Overview

EMM recorded 68 rock shelter type sites in the project area made up of 67 new sites and one previously recorded rock shelter site with art (Compartment 157). Rock shelters are shown on Figure 6.2. Most of those recorded sites did not have any visible deposit or art (n=55) but had some degree of accumulated shelter floor deposit (mostly soil, rock fall and debris) that may retain artefactual material (PAD). Eleven rock shelters had stone artefacts identified on their floors (referred to as rock shelter with deposit and PAD), one of which also had art (HC_002). One rock shelter contained art and PAD (HC_037) and the one previously recorded rock shelter (Compartment 157) had art only; it was not considered to be associated with accumulated deposit.

b. Landscape association

All rock shelters were identified in the underground mine survey area in the Belanglo State Forest on scarp landforms. All rock shelters were identified on Hawkesbury Sandstone geology. Approximately 62% of rock shelters are on the Nattai Tablelands soil landscape, 37% on the Hawkesbury soil landscape and only one on the Soapy Flat soil landscape. Shelters were identified at the base, mid-slope and upper-slopes of scarp landforms. In areas of lower relief such as the headwaters of Fire Dam Creek, the scarp only afforded one level of outcrop suitable for shelters. However, in deeply incised gullies such as Longacre Creek the local relief afforded shelters at multiple heights in the scarp. In one instance, three rock shelters (HC_004, HC_005 and HC_006) were recorded on three separate benches approximately 10 m above one another within a distance of 15 m.

Nearly half of the rock shelters (47%) have a southerly aspect, while the remaining shelters had northerly, easterly and westerly aspects. Eight of the 11 rock shelters with deposit had a southerly aspect.

c. Rock shelter characteristics

Some of the PADs recorded in the rock shelters are very small but, as explained in Section 6.2.2iii, the general threshold for inclusion was a shelter area of approximately 1 m³ which is considered enough space for one adult to sit and occupy, albeit likely to be in a temporary and limited capacity in such circumstances.

The absence of visible evidence in 82% of the rock shelters with PAD may be because there was a genuine absence of Aboriginal occupation. On the other hand, the stone artefacts may simply be obscured by soil and debris. Shelter floors typically comprised grey sandy silt soil with varying levels of leaf litter and rock fall obscuring the ground surface. Even in the shelters with no leaf litter or rock fall, the upper few centimetres of soil was often made loose by animal tread which is likely to have covered any surface artefacts in a superficial layer of fine, powdery silt. Most of the stone artefacts were found at the drip line of rock shelters where water had eroded the soil deposit.

Rock shelter floor areas ranged significantly from 3 m² (HC_082) to 150 m² (HC_017). Shelter floor calculations were made for habitable shelter area (the amount of floor area where the ceiling exceeds 1 m height) and not gross floor area. Gross floor area calculations were considered to be uninformative as many shelters tapered down in height to less than 1 m towards the rear of the shelter and continued for a number of metres. The average shelter floor area was relatively small at 21 m² (median was smaller at 14 m²), but interestingly the average floor area for rock shelters with deposit was significantly larger at 48 m². It is likely that larger shelters received more frequent and intensive occupation which has raised the likelihood of identifying Aboriginal objects when inspecting such shelters. However, it is also true that more shelter floor area was available for the detection of Aboriginal objects.

The PAD recorded in rock shelters ranged from being less than, equal to, and greater than the calculated habitable floor areas. Areas of PAD smaller than the shelter floor area were most commonly recorded because portions of their floors comprised sandstone bedrock, or considerable rock fall. However, it was difficult to identify whether some of the larger rock falls were recent and merely covering an area of PAD, or rather if the rock falls were of a considerable age and had been present during Aboriginal occupation. Areas of PAD were considered to be equal to the shelter floor area if the habitable area did not extend past the entrance of the shelter; this was often the case with shelters that opened directly onto steep sandstone slopes, benches and ledges. Areas of PAD sometimes extended beyond the shelter entrance where rock shelters were identified at the base of scarp that extended out onto level to gently inclined ground. Overall, the average PAD area was 14 m² and ranged between shelters from 1 m² to 150 m².

The depth of PAD was estimated by inserting a wire stake flag into the shelter floor. Using this method PAD depth measurements generally ranging from 20–40 cm were recorded. However, the reliability of this method is limited, as subsurface gravels, prior minor rock falls and compact deposits are likely to prevent stake flags from continuing deeper into the deposit. Archaeological excavation would be the only reliable method to determine the depth of PAD.

The research potential of the rock shelter floor PADs have been assessed in relation to various criteria which is discussed in Section 9.5.

d. [Rock art/pigment](#)

Rock art was recorded in three rock shelters in the project area. Two of the shelters had hand stencils only (HC_037 and Compartment 157) and one had two sets of anthropomorphic pictograms and one hand stencil (HC_002). It is very likely that haematite (Fe₂O₃), commonly known as 'red ochre' was the base material for all of the pigments applied to the shelter walls. The colour of haematite can range from various shades of red to mulberry, and even near-black when it has aged on a rock face. All of the rock art can be considered as following the Simple Figurative Style that characterises rock art in south-eastern Australia (Mulvaney & Kamminga 1999, p.374). The Simple Figurative Style is defined by simple outlines or stick figures, with solid or linear infills, together with simple geometric designs.

Site HC_002 features two sets of anthropomorphic figures and a hand stencil. The first pictogram is of a male c.20 cm tall with two smaller figures c.10 cm (likely to be children) standing adjacent (Plate 6.14 b.) Interestingly, the figures are drawn into a small concavity of the shelter wall where laminating sandstone has broken away. On face value, this concavity somewhat resembles a shelter surrounding the figures. The second pictogram also features two anthropomorphic figures standing side by side. Approximately 4 m south along the shelter wall, the remnants of one hand stencil were also found.

Compartment 157 was re-recorded during the ACHA. Although labelled as a rock shelter, the sandstone feature actually provides no overhang and shelter floor, but is rather a naturally occurring open-roofed, domed feature set into a ledge approximately 2 m above the ground surface (Plate 6.14 c). Six hand stencils were counted on the domed wall which is likely to reflect an adult and a younger person's hands. The AHIMS site card mentioned that the site also had axe grinding grooves and bowls cut into sandstone. However, none of these features were identified upon re-inspection. These may have been mistaken for the natural features of the weathering sandstone outcrop.

Given that the sandstone feature had no shelter floor and was not suitable for occupation, it is more likely that the sandstone feature and rock art signified ceremonial or spiritual practice rather than utilitarian use.

The remaining rock shelter HC_037 featured five hand stencils on two wall panels. A charcoal stick figure was also identified, but it may have been recently drawn by a camper. This is one possibility given the nearby graffiti drawn with charcoal stating 'John' which was also drawn in charcoal.

e. Condition

The condition of the rock shelters varied amongst the identified sites. The general stability and surface condition of each shelter was noted during the survey. Approximately 84% of shelters were considered to be in a 'stable' condition (ie apart from lateral cracking associated with the laminating rock shelter ceilings). Most shelters showed some sign of continual degradation caused by water damage and black mould which has accelerated surface exfoliation. Surface erosion ranged from minor sheet exfoliation to a 'honeycomb' effect that had caused cavernous features in 22% of rock shelters (Plate 6.14 i).

Twelve of the 68 shelters were considered to be in an unstable condition. This assessment was based on noticeable vertical fractures that appeared to be on the verge of collapse or had already experienced moderate to significant collapse (eg Plate 6.14 m, n).

Plate 6.14 Examples of rock shelters and art



a. HC_002 which features stone artefacts, PAD and art (facing north)

b. Example of anthropomorphic figures in HC_002



c. Compartment 157 showing domed, beehive shape of the sandstone feature

d. Close-up of a hand stencil in Compartment 157



e. HC_004 identified on the upper-slope of scarp near the confluence with Longacre Creek (facing east)



f. HC_017 which has the largest identified shelter floor area and PAD (approximately 150 m² of PAD) (facing west)



g. HC_065: an example of a problematic shelter characterised by a shallow overhang and narrow floor area (facing east)



h. HC_082: another small and problematic shelter; the only shelter type identified on the Soapy Flat Landscape (facing east)



i. HC_063: an uncommon example of a shelter characterised by cavernous erosion (facing east)



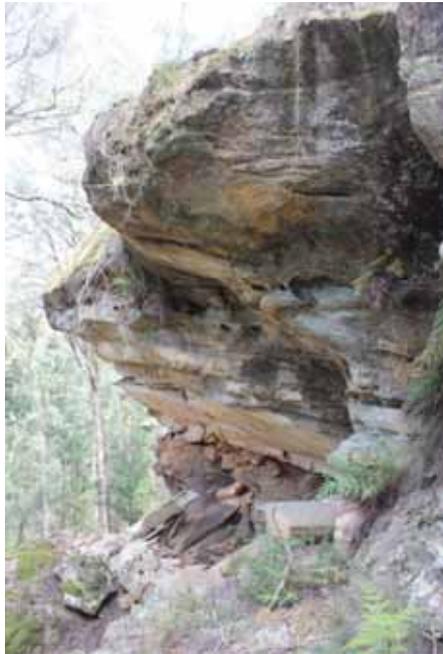
j. HC_35: rock shelter with graffiti " Greg M'Donnel 1983 GMD" (facing south)



k. HC_071: large rock shelter with deposit and PAD with ceiling height 3.5 m and approximately 80 m² of PAD (facing north)



l. Example of hand stencil in HC_037



m. HC_031: unstable shelter with recent significant rock fall covering the floor area (facing south)



n. HC_027: unstable shelter with significant vertical fractures and significant rock fall (facing north)



o. HC_042: problematic shelter with a high overhang, but very narrow floor area (facing east)



p. HC_022: rock shelter with deposit and PAD with the second largest shelter floor area of 120 m². The shelter floor had evidence of recent camp fires which are likely to have been made by modern campers (facing west)

ix Grinding grooves

Five grinding groove sites were recorded in the project area. Three of the sites were identified during survey (HC_034, HC_136 and HC_138), one site was identified by a Hume Coal subcontractor (HC_175) and later recorded by EMM and one site was previously recorded (AHIMS# 52-4-0098, 'International House'). Photographs of the grinding grooves are presented in Plate 6.15 a-j.

Two grinding grooves sites (HC_136 and HC_138) were identified in the surface infrastructure survey area (Figure 6.5). HC_136 comprises 10 grooves and was identified on the crest of a scarp landform approximately 50 m from Oldbury Creek and 30 m from one of its 3rd order tributaries. This site also has associated artefacts nearby and an area of PAD. HC_138 comprises three grooves and was identified approximately 100 m north-east of HC_136 on a small, flat boulder within the stream bed of the 3rd order tributary.

HC_175 comprises four grooves and is within 30 m of a drainage depression on the Wongonbra property (Figure 6.6). It is on one of the only four pockets of the Avoca Soil Landscape in the project area which had stony crests with boulders scattered sporadically across otherwise grassed paddocks.

HC_034 is in the Belanglo State Forest at the headwaters of Knapsack Gully (Figure 6.3). It comprises 24 grooves and was identified on a small sandstone ledge within the stream channel. Pooling water within 1 m of the grooves indicate ideal conditions for grinding activities. The edges of the sandstone exposure were obscured by soil and vegetation, but may have hosted more grooves.

'International House' comprises a series of grinding grooves spread across outcropping sandstone within an approximate 5 m x 5 m area. Sixteen grooves were recorded on one exposure and three at a smaller exposure on the stream bed of Belanglo Creek. Three rock pools were identified near the grooves and had engraved channels leading into them (Plates 6.15 h and j). These features, along with symmetrical circular shape and form of the pools suggest that they have been modified to divert and store water. It is likely that the collected water was used to aid grinding hatchet heads.

Sites HC_138 and HC_175 were identified on small, discrete flat boulder outcrops while the remaining grinding groove sites were identified on larger exposed bedrock expanses. Grooves were typically narrow, elongated and u-shaped, the result of sharpening ground-edge hatchets. Groove lengths ranged from 15–30 cm and widths ranged from 5–10 cm.

Plate 6.15 Grinding groove sites in the project area



a. HC_136: Grinding groove site (west)



b. Recording grinding groove site HC_136 (facing north)



c. Location of grinding groove HC_138 in a drainage depression (facing west)



d. Detail of grinding groove site HC_138 (facing west)



e. Location of HC_034 on a ledge in a stream channel (facing east)



f. Close-up of grinding groove site HC_034 (facing east)



g. Grinding groove site HC_175 (facing south-west)



h. Close-up of HC_175 (north at top)



i. Location of rock pool at 'International House' (facing north-east)



j. Close up of rock pool showing engraved channel (top-middle)

7 Archaeological test excavation

7.1 Overview

EMM archaeologists, accompanied by Aboriginal site officers, conducted an archaeological test excavation program in and around the project's surface infrastructure area over three weeks from 19 October to 6 November 2015. The excavation team numbered up to 10 people per day made up of five archaeologists and up to five Aboriginal site officers on each day. All RAPs were invited to provide representatives according to a roster.

7.2 Strategy

The aims of the test excavation program were to:

- characterise the subsurface archaeological deposit in a selection of known open stone artefact sites (surface sites);
- verify the presence of subsurface Aboriginal objects in landforms that indicated PAD, but where surface sites were not visible;
- test the predictive model, primarily relating to sites and their relationship to water sources; and
- determine the level of disturbance resulting from historic farming activities.

The test excavation locations and test pit transect layouts were designed to gather baseline data for the landscapes present across the surface infrastructure area. Given that the surface infrastructure area spans a geographic extent, the test excavation strategy aimed to retrieve smaller data samples across many locations rather than concentrating efforts in only a few locations. This approach was adopted to achieve as representative a sample as was practicably possible.

7.3 Test pit layout

The test excavation involved placing 16 linear pit transects across the landscape on the targeted landforms. A total of 160 individual 50 cm x 50 cm test pits were excavated. Their layout is shown in Figure 7.1 and details of each test pit transect are presented in Table 7.1. Details of each transect are shown in Figure 7.14 to Figure 7.19.

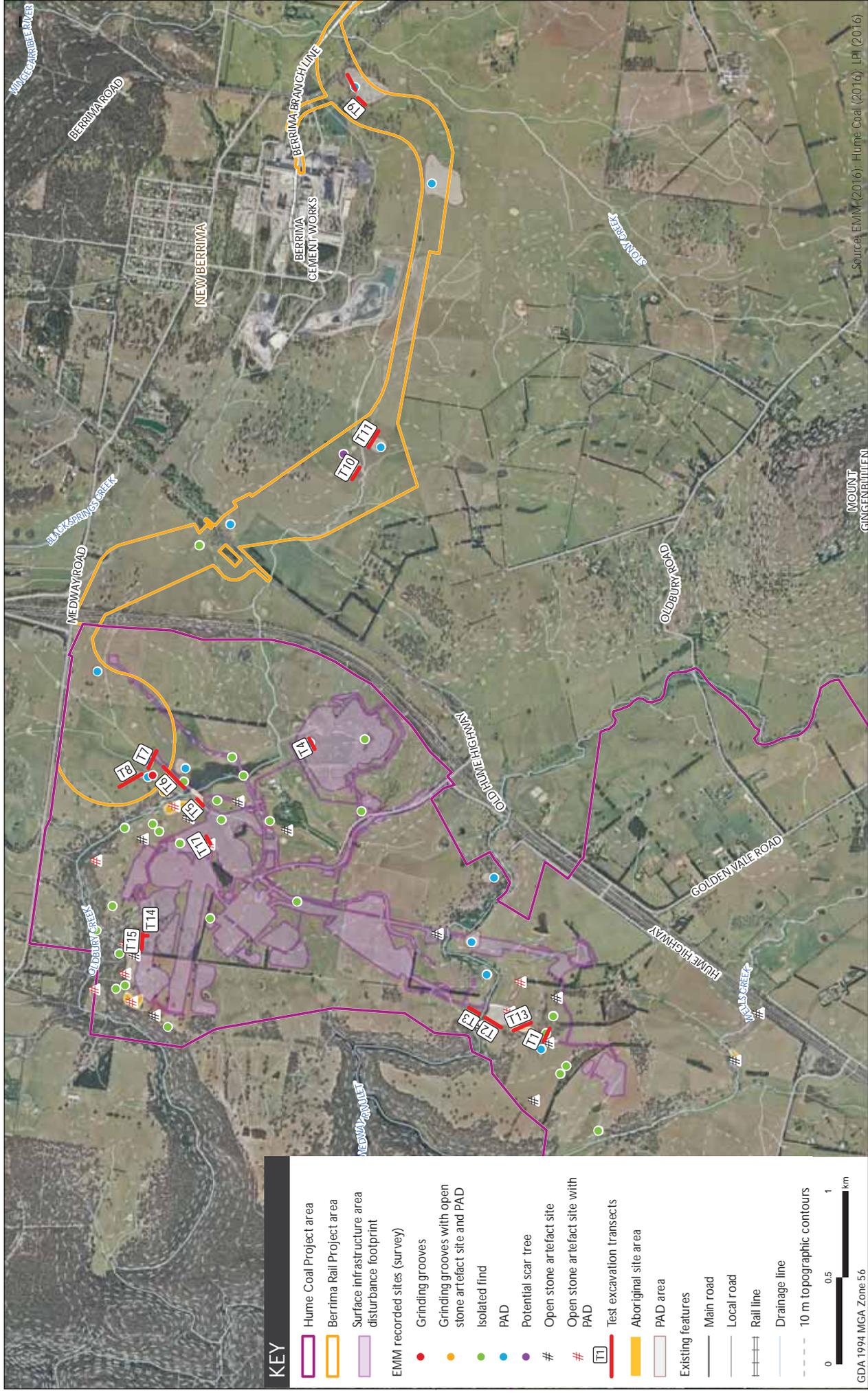
The final layout and orientation of the test pit transects differed slightly from those presented to RAPs and OEH during consultation (refer to Table 2.2 and Appendix A). Most of these were minor variations to the transect angles to better cover the tested landforms. Also, many transects were discontinued as a result of the paucity of artefact numbers recovered during the excavation.

Table 7.1 Test pit transect descriptions

Transect No.	Property location	Landform tested	Soil landscape	Underlying geology	Disturbance	Comment
1	Evandale	Flat area on hill crest	Soapy Flat	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	Adjacent to ephemeral stream and sites HC_160, HC_165 and HC_166
2	Evandale	Rise on undulating plain	Soapy Flat	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	To the west of HC_154 and perpendicular to Medway Rivulet
3	Evandale	Undulating plain	Lower Mittagong	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	Near site HC_154 and close to Medway Rivulet
4	Mereworth	Hill spur crest	Moss Vale and Kangaloon	Hawkesbury Sandstone	Cleared paddock, evidence of ploughing visible	Tests PAD HC_134
5	Mereworth	Foot slope	Nattai Tablelands	Hawkesbury Sandstone	Cleared paddock with vehicle track exposures, historic evidence of ploughing	Tests open stone scatter with PAD HC_130
6	Mereworth	Foot slope	Kangaloon and Moss Vale	Hawkesbury Sandstone	Cleared paddock with vehicle track exposures, recent and visible ploughing	Equidistant from HC 135, HC_150 and HC_151
7	Mereworth	Foot slope	Kangaloon and Moss Vale	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	Outside surface infrastructure area impact area but within Berrima Rail Project rail loop. Refer to Berrima Rail Project ACHA. Near PAD HC_139
8	Mereworth	Hill slope and hill crest	Moss Vale	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	Outside surface infrastructure area Impact Area but within Berrima Rail Project rail loop. Refer to Berrima Rail Project ACHA. Near HC_137
9	Outside project area	Hill crest	Kangaloon	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	Outside surface infrastructure area Impact Area: refer to Berrima Rail Project On PAD HC_176. Transect location changed from draft test excavation method
10	Outside project area	Hill spur crest	Moss Vale	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	Tests PAD HC_147
11	Outside project area	Hill spur crest	Moss Vale	Ashfield Shale	Cleared paddock, historic evidence of ploughing	Tests PAD HC_148
12	Outside project area	Hill crest	Kangaloon	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	Outside surface infrastructure area Impact Area: refer to Berrima Rail Project Tests PAD HC_176
13	Evandale	Hill spur crest	Nattai Tablelands	Hawkesbury Sandstone	Cleared paddock, historic evidence of ploughing	Tests subsurface of open stone artefact scatter HC_154

Table 7.1 Test pit transect descriptions

Transect No.	Property location	Landform tested	Soil landscape	Underlying geology	Disturbance	Comment
14	Mereworth	Flat area on hill crest	Soapy Flat	Hawkesbury Sandstone	Cleared paddock/ploughing visible	Adjacent to a tributary of Oldbury Creek
15	Mereworth	Flat area on hill crest	Soapy Flat	Hawkesbury Sandstone	Cleared paddock/ploughing visible	Adjacent to a tributary of Oldbury Creek
16	N/A	N/A	N/A	N/A	N/A	Excavation of Transect 16 was cancelled, because of the paucity of results from the adjacent Transect 1 on the same landform
17	Mereworth	Hill spur crest	Moss Vale/Kangaloon	Hawkesbury Sandstone	Cleared paddock/ploughing visible	Tests open stone artefact site with PAD HC_171



Test excavation locations
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 7.1

7.4 Excavation method

The test excavation included the following methods:

- Manually excavating 50 cm x 50 cm test pits spaced at 10 m intervals across landforms. Only one test pit location (957E 208N) was expanded to 1 m x 1 m during the initial stages of excavation to investigate one of the higher artefact frequencies in Transect 7.
- Excavating the soil deposits in 'spits' to identify the nature of the soils and to identify any stratigraphic sequence. The first test pit in each area was excavated in 10 cm spits and subsequent pits excavated in 20 cm spits.
- Each pit was excavated until basal clay was reached, or at least one 20 cm spit below the archaeological deposit. This involved excavating to 40 cm depth where possible for each test pit and only excavating deeper if artefacts were identified between 20–40 cm depth and so forth.
- All excavated soil was wet-sieved on site during the excavation program using a combination of 5 mm and 3 mm aperture mesh (and documented). The effectiveness of each sieve size was reviewed post-excavation by comparing average artefact size retrieved from each sieve size but no variances in artefact size could be gathered from the data.
- All test pits were backfilled after recording.

Excavation recording methods were as follows:

- photographic recording of all test pits and phases of work on site,
- drawing soil profiles for each test pit;
- pH testing; and
- recording the location, dimensions and characteristics of all test pits on standardised context sheets.

Photographs taken during the test excavation program are shown in Plate 7.1.

Plate 7.1 Test excavation photos



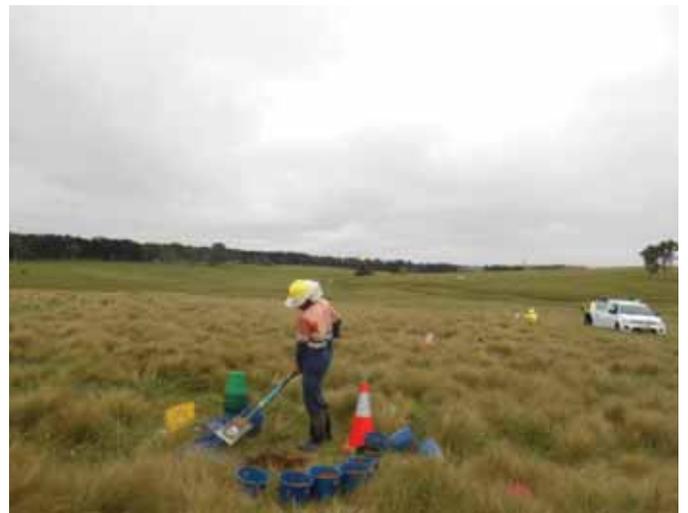
a. Wet sieve station on the Mereworth property



b. Excavating test pits along Transect 14 on a hill crest (facing north)



c. Transect 17 located in a ploughed field (facing north-east)



e. Excavating test pit on hill spur crest on Transect 11 (facing west)



f. Excavating broad flat hill crest on Transect 1 (facing west)



g. Test pit 957E 208N expanded into a 1 m x 1 m pit (Transect 7)



h. Recording Transect 8 on a hill crest (facing north-east to a tributary of Oldbury Creek)



i. Recording test pit in a ploughed field on Transect 17 (facing west)



j. Excavating Transect 2 along an undulating plain (facing north to Medway Rivulet)



k. Excavating Transect 13 along a hill spur crest (facing north with Medway Rivulet in the background)

7.5 Test excavation results

7.5.1 Soils

Soil deposits are important to archaeological excavations as they have the potential to retain archaeological material. Therefore, variables such as soil type, soil depth, level of disturbance, erosion, aggradation and inclusions all influence the likelihood of artefacts and features being retained. These variables also influence the archaeological integrity of archaeological deposits, and by extension, their scientific significance.

Soils varied both across the landforms and within the same landform types. Examples of soil profiles are shown in Figure 7.2 to Figure 7.13.

The soils next to Oldbury Creek and its tributaries (test pit transects 5, 6, 7 and 8) were characterised by alluvial deposits of silty loams with clay and gravel content increasing with depth. This typically comprised a dark brown A1 horizon overlying a light brown/yellow sandy A2 horizon that continued past 80 cm depth in one instance. Basal clay (B soil horizon) was not reached in these transects except for the most westerly pits in Transect 5 which had more eroded soils coinciding with increasing slope. The A1 and A2 horizons were invariably mixed throughout these transects, shown by diffuse layer boundaries, frequent charcoal flecks from recent burning events (likely to be from historic burning associated with vegetation clearance) and insect tunnelling (eg Figures 7.8 to 7.10). The extensive mixing of the upper 30 cm of soil is most likely attributed to repeated ploughing in the area. The pits dug closest to Oldbury Creek within the Nattai Tablelands soil landscape contained sandstone inclusions ranging from small gravels to small boulders up to 20 cm in diameter.

Transects 14 and 15 were excavated on a broad, flat hill crest in the Soapy Flat soil landscape. The soil was a grey-brown silty loam with a diffuse boundary overlying a gravelly orange-brown A2 horizon. Additionally, sandstone bedrock was found as shallow as 25 cm in one instance (eg Figure 7.5).

Test pit Transect 17 was excavated on a hill spur crest overlooking Oldbury Creek to the east on the Moss Vale soil landscape. The soil was highly compacted, mixed and eroded as a direct result of ploughing. Basal clay was reached at approximately 20 cm and clay and shale fragments were distributed throughout the soil profile (Figure 7.6). Similarly, shallow soils were observed on the hill spur crests in Transects 4, 10, and 11, which were excavated on the Moss Vale soil landscape and were also associated with tributaries to Oldbury Creek. However, these soils had less clay mixed throughout the soil profile, but their A1 and A2 soil profiles were often mixed into one homogenous layer overlying basal clay (refer to Figure 7.7 and 7.14).

Test pit Transect 2, adjacent to Medway Rivulet on the Nattai Tablelands and Soapy Flat soil landscapes, was characterised by deep silty sand deposits that continued past 60 cm depth without reaching sandstone bedrock (refer to Figure 7.9). Transects 1 and 13 were on the same soil landscapes, but were on crests and also characterised by deep silty sandy deposits with greater sandstone fragments (refer to Figure 7.11), sometimes reaching sandstone bedrock.

Transect 3, on the opposite side of Medway Rivulet on the Lower Mittagong soil landscape featured a compact, dark-brown silty loam A1 horizon overlying a grey, compact A2 horizon with small gravels (refer to Figure 7.10). Interestingly, only one artefact was identified in Transect 3 whereas 30 artefacts were identified on the opposite side of the stream in Transect 2 (discussed further in Section 8.1.2).

Transects 9 and 12 were characterised by a thin silty loam horizon overlying a thick shale and gravel layer. It was observed during excavation that the artefact bearing layer was limited to the upper 20 cm of soil which was the silty loam A1 horizon.

Overall, no stratigraphically intact subsurface deposits were identified nor were charcoal inclusions potentially associated with hearths. Therefore, the distribution of artefacts throughout the soil profiles could not be attributed to specific occupation events or dates.

Key :	
--- --	Limit of excavation
- - - -	Diffuse soil boundary
— — —	Clear soil boundary
	Grass
	Bedrock
	Gravel

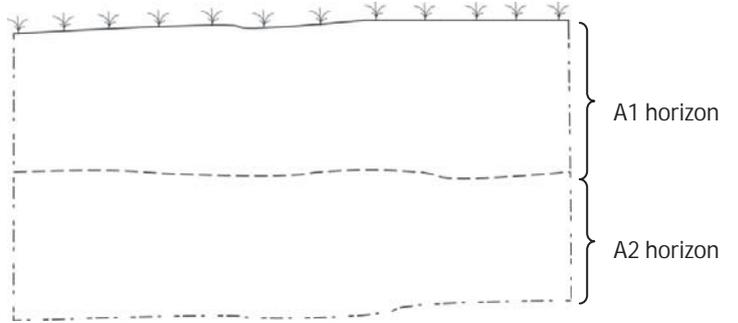


Figure 7.2 Soil profile of Transect 6, TP 071E 791N

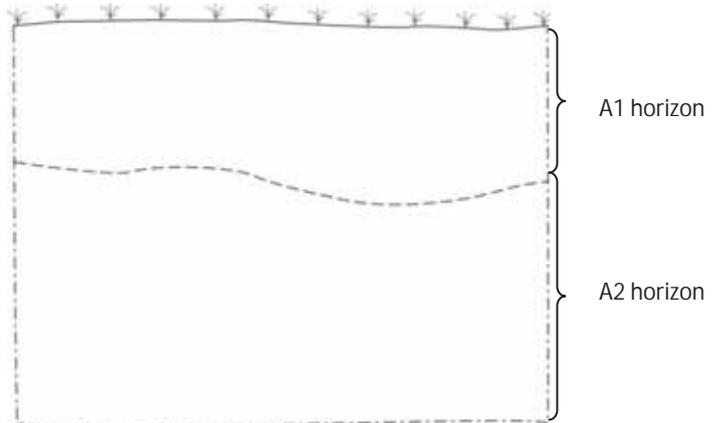


Figure 7.3 Soil profile of Transect 6, TP 071E 881N

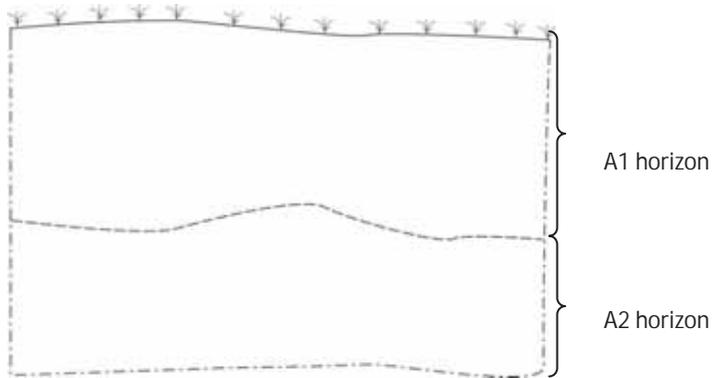


Figure 7.4 Soil profile of Transect 8, TP 121E 003N

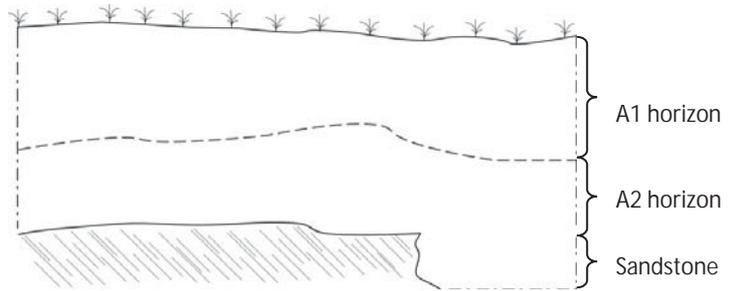


Figure 7.5 Soil profile of Transect 15, TP 216E 999N

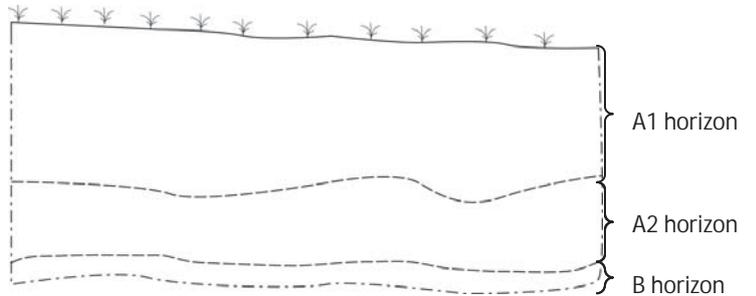


Figure 7.6 Soil profile of Transect 17, TP 790E 594N

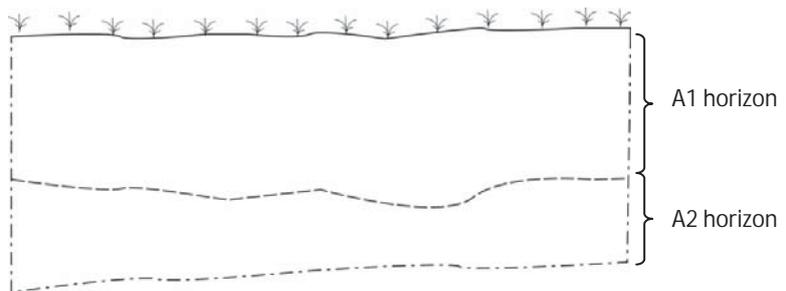


Figure 7.7 Soil profile of Transect 4, TP 358E 042N

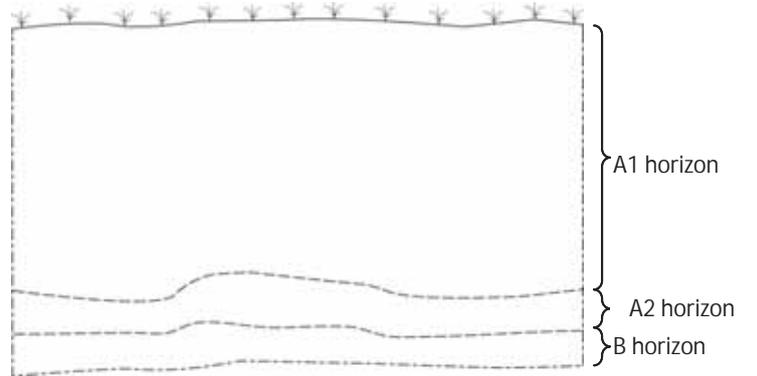


Figure 7.8 Soil profile of Transect 10, TP 814E 784N

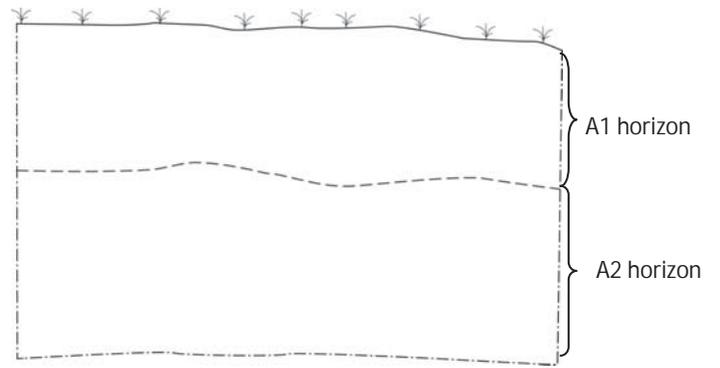


Figure 7.9 Soil profile of Transect 2, TP 745E 996N

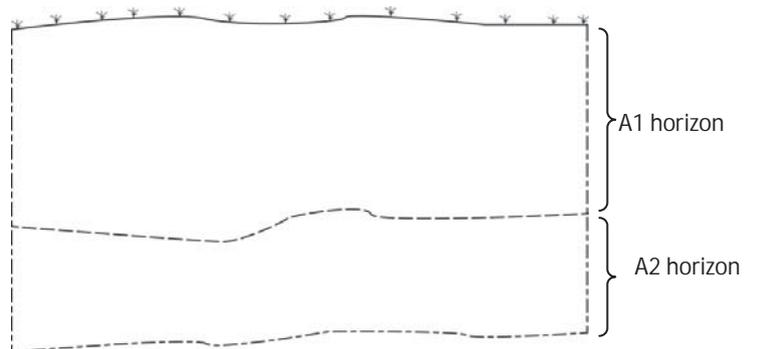


Figure 7.10 Soil profile of Transect 3, TP 769E 112N



Figure 7.11 Soil profile of Transect 13, TP 747E 868N

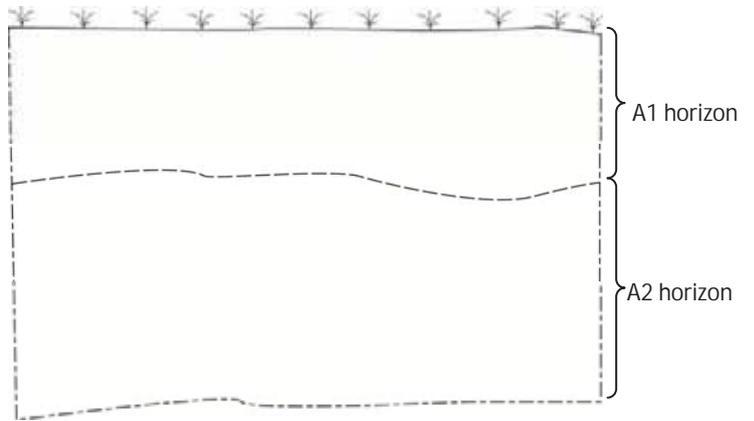


Figure 7.12 Soil profile of Transect 9, TP 027E 719N

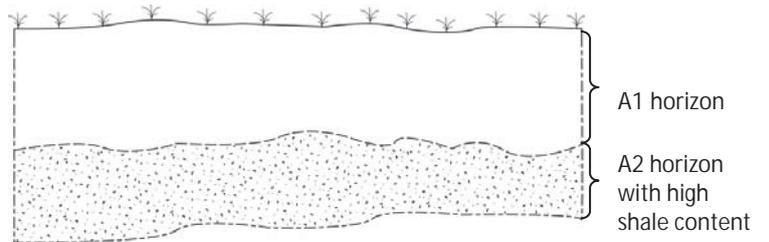
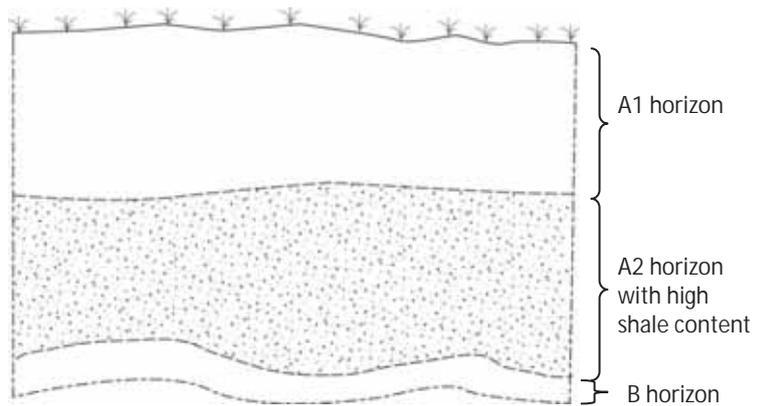


Figure 7.13 Soil profile of Transect 12, TP 200E 822N



7.6 Artefact frequency and distribution

Artefact frequencies for each test pit transect are presented in Table 7.2 and shown in Plate 7.2, and Figure 7.14 to Figure 7.19.

A total of 281 stone artefacts were recovered during the test excavation, 229 of which were recovered from the project area. Stone artefacts were recovered from 76 of the 160 test pits (47.5% of the test pits contained artefacts). Artefact frequency within the individual 50 cm x 50 cm pits ranged from zero to 15 artefacts. If all pits across the tested landscape are calculated on a per square metre basis, the average frequency is 7 artefacts/m².

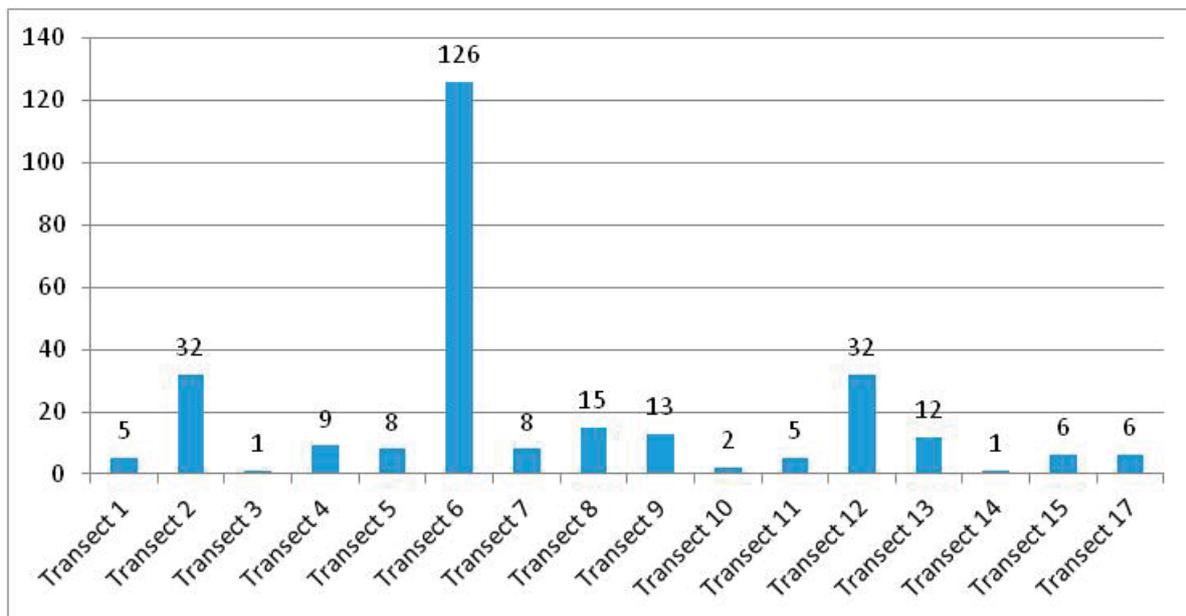


Plate 7.2 Artefact frequencies per test pit transect

Most artefacts were found in spit 1 (0–20 cm) (78% n=219), followed by 20% (n=55) from spit 2 (20–40 cm). Spit 3 (40–60 cm) contained the remaining 2% (n=7) of the total assemblage. No artefacts were recovered from the one spit excavated from 60–80 cm (Transect 8, 121E 003N). Artefact frequencies per spit level is shown in Plate 7.3.

Overall, the data indicates that the majority of artefacts are restricted to the upper 20 cm of soil across the test areas but may continue sparsely with depth if mixed into the lower soil profile. Of the 281 artefacts recovered, 10 have been identified as stone implements. These artefacts were recovered from 9 of the 160 test pits. All implements were located in the upper 20 cm of soil.

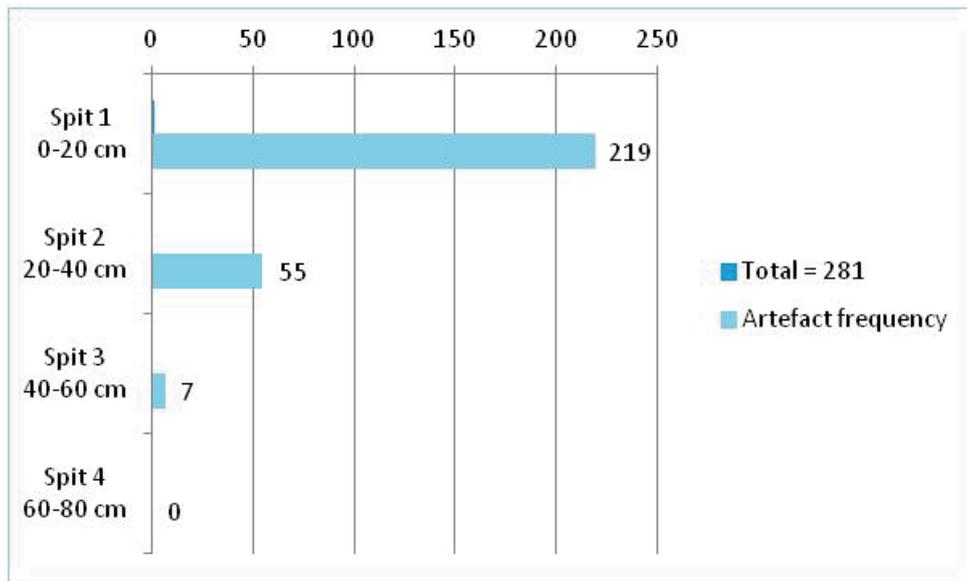


Plate 7.3 Artefact frequency per spit level



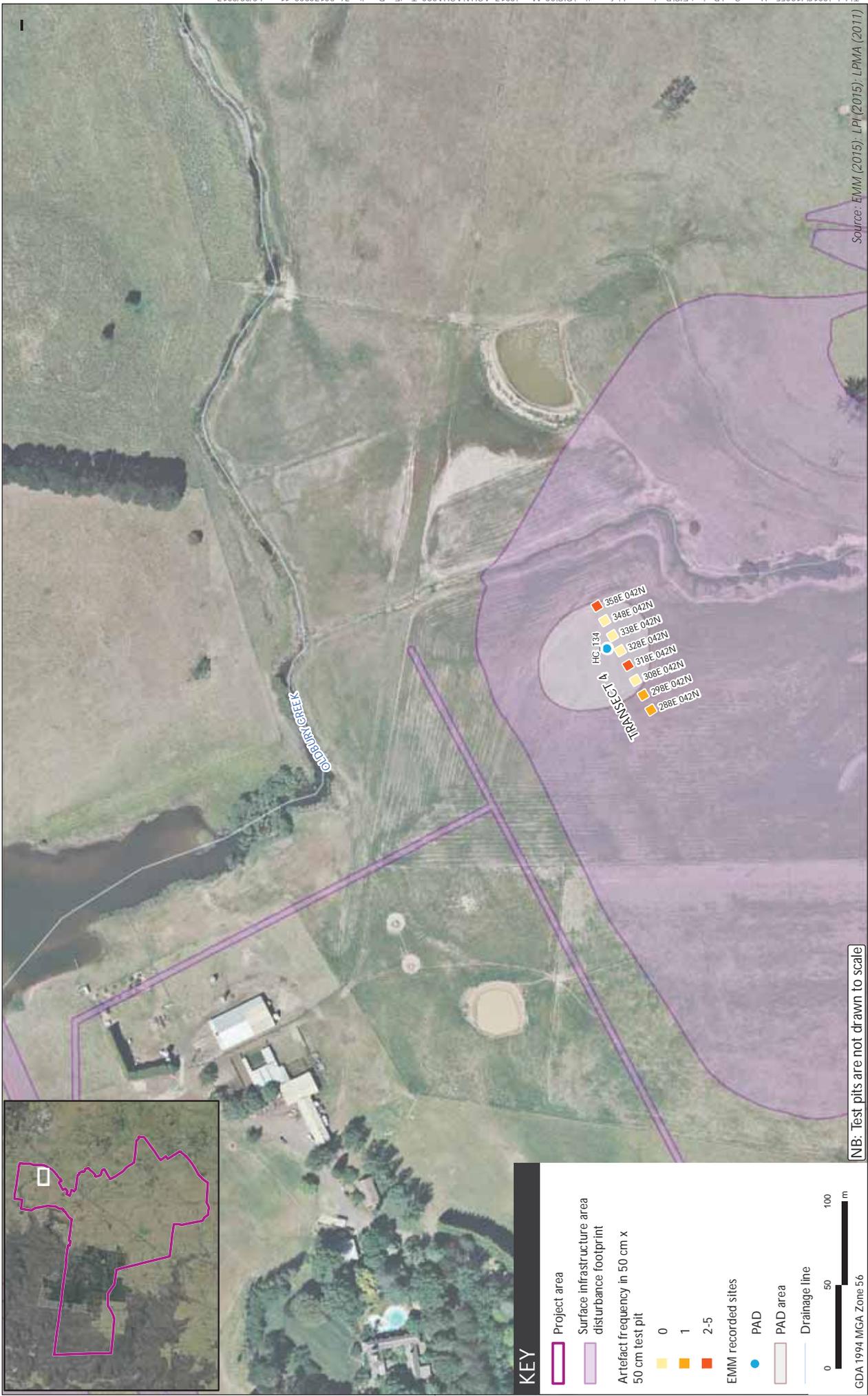
Test excavation results - Evandale (Transects 1, 2, 3 and 13)
 Hume Coal Project
 Aboriginal cultural heritage assessment
 Figure 7.14



Test excavation results - Mereworth (Transects 14 and 15)
 Hume Coal Project
 Aboriginal cultural heritage assessment
 Figure 7.15



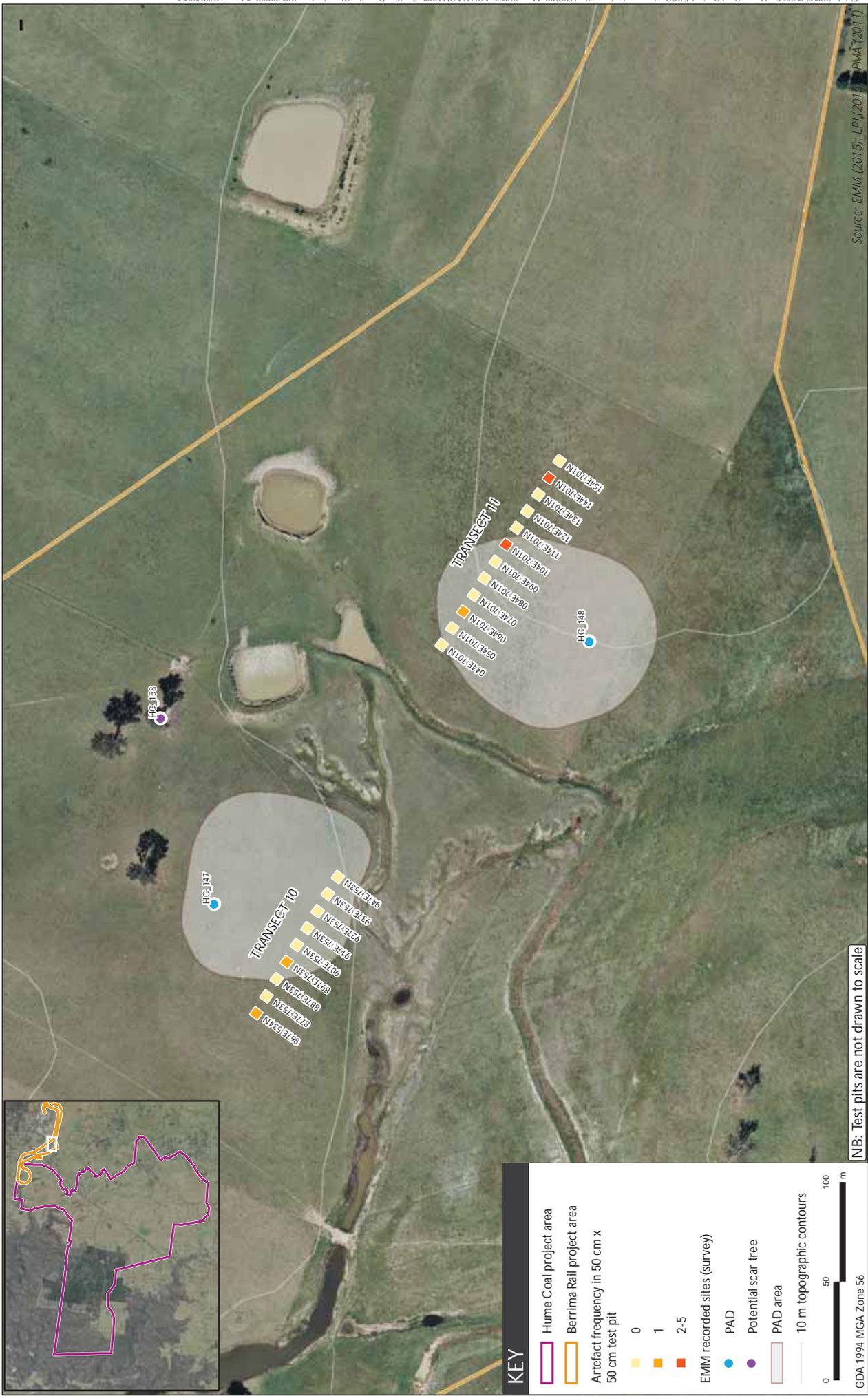
Test excavation results - Mereworth (Transects 5,6,7,8 and 17)
 Hume Coal Project
 Aboriginal cultural heritage assessment
 Figure 7.16



NB: Test pits are not drawn to scale

Source: EMM (2015), LPI (2015), LPMA (2017)

Test excavation results - Mereworth (Transect 4)
 Hume Coal Project
 Aboriginal cultural heritage assessment
 Figure 7.17



NB: Test pits are not drawn to scale

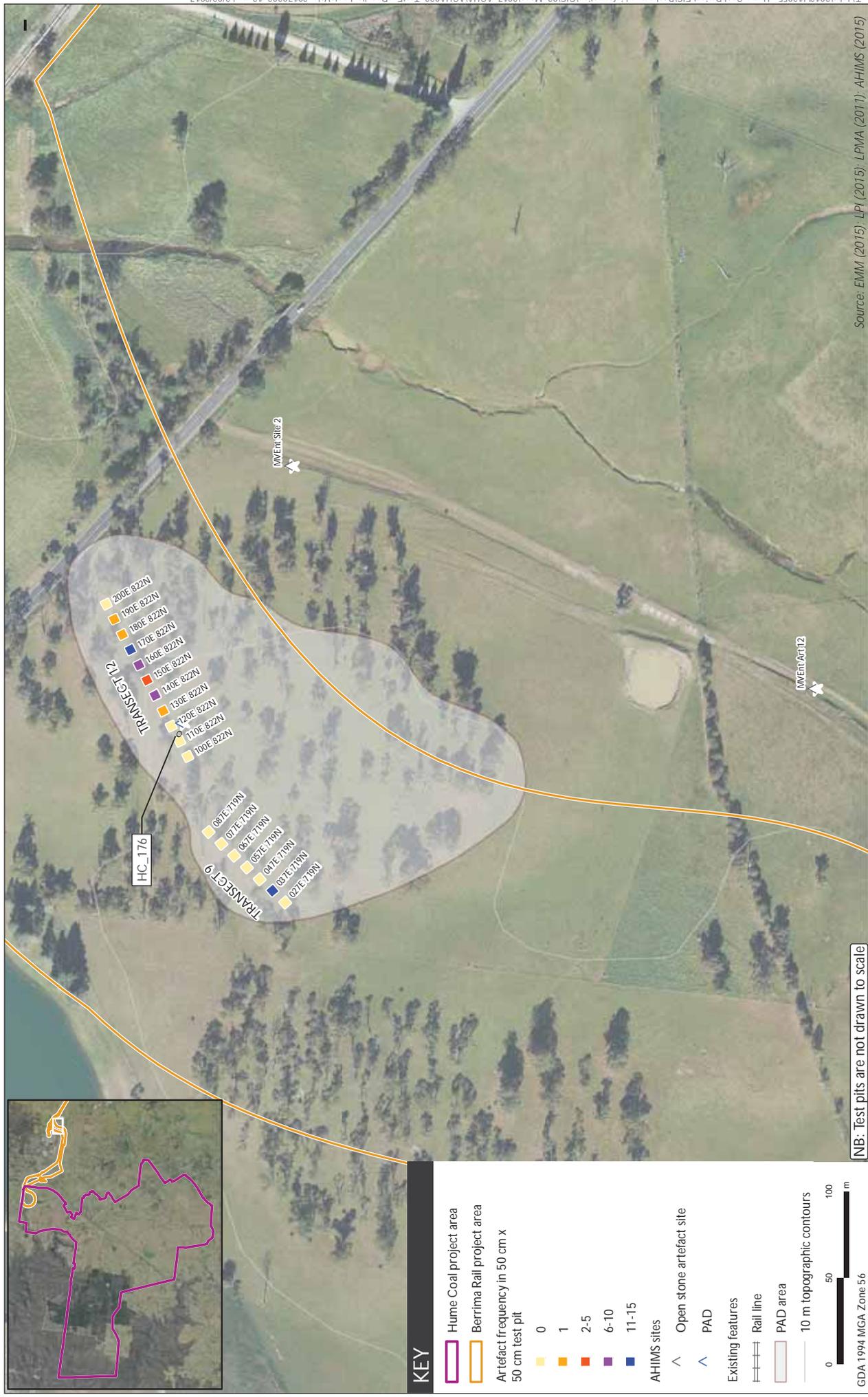
GDA 1994 MGA Zone 56

KEY

- Hume Coal project area
- Berrima Rail project area
- Artefact frequency in 50 cm x 50 cm test pit
 - 0
 - 1
 - 2-5
- EMM recorded sites (survey)
 - PAD
 - Potential scar tree
- PAD area
- 10 m topographic contours

0 50 100 m

Test excavation results outside the project area
 Hume Coal Project
 Aboriginal cultural heritage assessment
 Figure 7.18



NB: Test pits are not drawn to scale

GDA 1994 MGA Zone 56

Source: EMM (2015); LP1 (2015); LPMA (2011); AHIMS (2015)

Test excavation results outside the project area
 Hume Coal Project
 Aboriginal cultural heritage assessment
 Figure 7.19

Table 7.2 **Artefact frequency per 50 cm x 50 cm test pit**

Transect	Test pit	No. of artefacts	Total artefacts per transect	Landform			
1	615E 694N	0	5	Hill crest			
	625E 694N	0					
	635E 694N	2					
	645E 694N	3					
	655E 694N	0					
	665E 694N	0					
	675E 694N	0					
	685E 694N	0					
	695E 694N	0					
2	745E 036N	0	32	Undulating plain			
	745E 026N	4					
	745E 016N	1					
	745E 006N	7					
	745E 996N	10					
	745E 986N	2					
	745E 976N	0					
	745E 966N	2					
	745E 956N	0					
	745E 946N	4					
	745E 936N	0					
	745E 926N	2					
	3	769E 062N			0	1	Undulating plain
		769E 072N			1		
769E 082N		0					
769E 092N		0					
769E 102N		0					
769E 112N		0					
769E 122N		0					
769E 132N		0					
4	358E 042N	4	9	Hill spur crest			
	348E 042N	0					
	338E 042N	0					
	328E 042N	0					
	318E 042N	3					
	308E 042N	0					
	298E 042N	1					
	288E 042N	1					
5	004E 687N	1	8	Foot slope			
	004E 677N	0					
	004E 667N	2					
	004E 657N	1					
	004E 647N	4					
	004E 637N	0					

Table 7.2 **Artefact frequency per 50 cm x 50 cm test pit**

Transect	Test pit	No. of artefacts	Total artefacts per transect	Landform
6	071E 761N	13	126	Foot slope
	071E 771N	10		
	071E 781N	0		
	071E 791N	3		
	071E 801N	3		
	071E 811N	10		
	071E 821N	15		
	071E 831N	1		
	071E 841N	4		
	071E 851N	7		
	071E 861N	9		
	071E 871N	10		
	071E 881N	6		
	071E 891N	8		
	071E 901N	8		
	071E 911N	14		
	071E 921N	5		
071E 931N	0			
7	198E 957N	1	8	Foot slope
	208E 957N (NE)	0		
	208E 957N (NW)	3		
	208E 957N (SE)	1		
	208E 957N (SW)	2		
	218E 957N	0		
	228E 957N	0		
	238E 957N	0		
	248E 957N	0		
	258E 957N	0		
	268E 957N	0		
	278E 957N	1		

Table 7.2 **Artefact frequency per 50 cm x 50 cm test pit**

Transect	Test pit	No. of artefacts	Total artefacts per transect	Landform
8	151E 003N	0	15	Hill crest
	141E 003N	0		
	131E 003N	0		
	121E 003N	0		
	111E 003N	0		
	101E 003N	0		
	091E 003N	0		
	081E 003N	0		
	071E 003N	0		
	061E 003N	2		
	051E 003N	0		
	041E 003N	2		
	031E 003N	8		
	021E 003N	3		
	011E 003N	0		
001E 003N	0			
9	027E 719N	0	13	Hill crest
	037E 719N	13		
	047E 719N	0		
	057E 719N	0		
	067E 719N	0		
	077E 719N	0		
	087E 719N	0		
	097E 719N	0		
10	947E 753N	0	2	Hill spur crest
	937E 753N	0		
	927E 753N	0		
	917E 753N	0		
	907E 753N	0		
	854E 784N	1		
	844E 784N	0		
	834E 784N	0		
	824E 784N	1		

Table 7.2 **Artefact frequency per 50 cm x 50 cm test pit**

Transect	Test pit	No. of artefacts	Total artefacts per transect	Landform	
11	044E 701N	0	5	Hill slope	
	054E 701N	0			
	064E 701N	1			
	074E 701N	0			
	084E 701N	0			
	094E 701N	0			
	104E 701N	2			
	114E 701N	0			Hill spur crest
	124E 701N	0			
	134E 701N	0			
	144E 701N	2			
	154E 701N	0			
	12	200E 822N			
190E 822N		1			
180E 822N		1			
170E 822N		11			
160E 822N		7			
150E 822N		5			
140E 822N		6			
130E 822N		1			
120E 822N		0			
110E 822N		0			
100E 822N		0			
13		657E 868N	1	12	Hill spur crest
	667E 868N	1			
	677E 868N	0			
	687E 868N	2			
	697E 868N	1			
	707E 868N	1			
	717E 868N	3			
	727E 868N	1			
	737E 868N	0			
	747E 868N	0			
	757E 868N	1			
	797E 584N	1			
	14	216E 989N	0		
216E 979N		1			
216E 969N		0			
216E 959N		0			

Table 7.2 **Artefact frequency per 50 cm x 50 cm test pit**

Transect	Test pit	No. of artefacts	Total artefacts per transect	Landform
15	226E 999N	1	6	Hill crest
	216E 999N	1		
	206E 999N	2		
	196E 999N	1		
	186E 999N	0		
	176E 999N	1		
	166E 999N	0		
	156E 999N	0		
	146E 999N	0		
	136E 999N	0		
17	790E 634N	0	6	Hill spur crest
	790E 624N	1		
	790E 614N	0		
	790E 604N	3		
	790E 594N	1		
	790E 574N	1		
Total			281	

7.6.1 Distribution across the landscape

The highest concentrations of artefacts were found close to perennial streams. Transect 6 (Figure 7.17) which made up 45% of the total stone artefact assemblage was on a footslope landform located from 30 m to 200 m from Oldbury Creek. Transect 2 (Figure 7.14) contained 11% of the total assemblage and was sampled from 10 m to 140 m from Medway Rivulet. Notwithstanding, the second highest concentration of artefacts (16% of the assemblage) was recovered from Transects 12 and 9 (Figure 7.16), despite them being over 250 m from Stony Creek (a 5th order stream) on a broad hill crest in the Berrima Rail Project area.

Sparser concentrations of stone artefacts were recovered from transects adjacent to ephemeral streams. For instance, Transects 1, 4, 13, 14, 15, and 17 had very low artefact densities (average of 4.3 artefacts/m²) and were on hill crests within 50 m to 150 m of 1st order streams and over 200 m from perennial streams. An even lower artefact density (2.24 artefacts/ m²) was identified adjacent to the tested 3rd order streams (Transects 7, 8, 10 and 11).

Table 7.3 shows the frequency of artefacts in relation to perennial and ephemeral streams. Where the presence of artefacts was considered to be mainly influenced by nearby ephemeral streams (1st to 3rd order streams) test pits in these areas were allocated to Group 1. Where the presence of artefacts was considered to be mainly influenced by nearby perennial streams (4th order and above), test pits in these areas were allocated to Group 2.

Table 7.3 Distance of artefacts from perennial and ephemeral streams

Distance (m)	Artefact count for Group 1 (transects near ephemeral streams): T1,4,7,8,10,11,13,14,15,17	% artefact assemblage for Group 1 (rounded)	Artefact count for Group 2 (transects near perennial streams): T2,3,5,6,9,12	% of artefact assemblage for Group 2 (rounded)
0–50	23	8	37	13
50–100	27	10	52	19
100–150	18	6	35	12
150–200	N/A	0	43	15
200–320	N/A	0	46	16
Total	68	24	213	76

Using this method, the results show that 24% of the assemblage is associated with ephemeral streams (Group 1) and 76% of the assemblage is associated with perennial streams (Group 2). The disparity between groups is even greater when average density is calculated for each. A total of 98 test pits were associated with Group 1 and only 62 test pits were associated with Group 2. Therefore, the average artefact density for Group 1 is only 2.7 artefacts/m². The average artefact density for Group 2 is 14 artefacts/m². Therefore, if equal numbers of test pits were placed next to perennial streams as ephemeral streams, the number of artefacts recovered next to perennial streams would be probably be much higher.

Table 7.4 presents the density of artefacts in each sampled landform type. However, these results do not take into account distance to water which, as explained above, appears to be a more reliable indicator of artefact density when combined with landform type.

Table 7.4 Average artefact density per m² based on landform

Landform	No. of artefacts recovered	% of assemblage	No. of 50 cm x 50 cm test pits excavated	Artefact density/m ²
Hill crest	72	26	57	5
Hill spur crest	31	11	40	3.1
Hill slope	3	1	12	1
Foot slope	142	51	36	15.7
Undulating plain	33	12	20	6.6

The test excavation results indicate that distance to perennial water is the most reliable indicator for subsurface artefact frequencies unless on a prominent crest such as Transect 12 and 9. The implications of artefact density for the project area in general are discussed in Chapter 8.

7.6.2 Artefact raw materials

A sample of the various raw material types recovered from the test excavation is presented in Plate 7.4, with a range of silcrete artefacts represented in the bottom row, quartz in the second row, and less common raw materials, such as quartzite and chert shown in the upper rows.

A summary of the raw materials is given in Plate 7.5. Silcrete, a silica rich sedimentary rock, was the predominant raw material recovered from the excavation, comprising 44% of all stone artefacts collected (n=123). The silcrete materials found at the site were generally grey, light grey, or red in colour. Less frequently, they were found to be light brown and pink in colour. Transect 6 contained 43% of all silcrete artefacts and to a lesser extent silcrete was also common in Transects 2 and 12, equating to between 13–18% of all silcrete artefacts.



Plate 7.4 Sample of raw material types

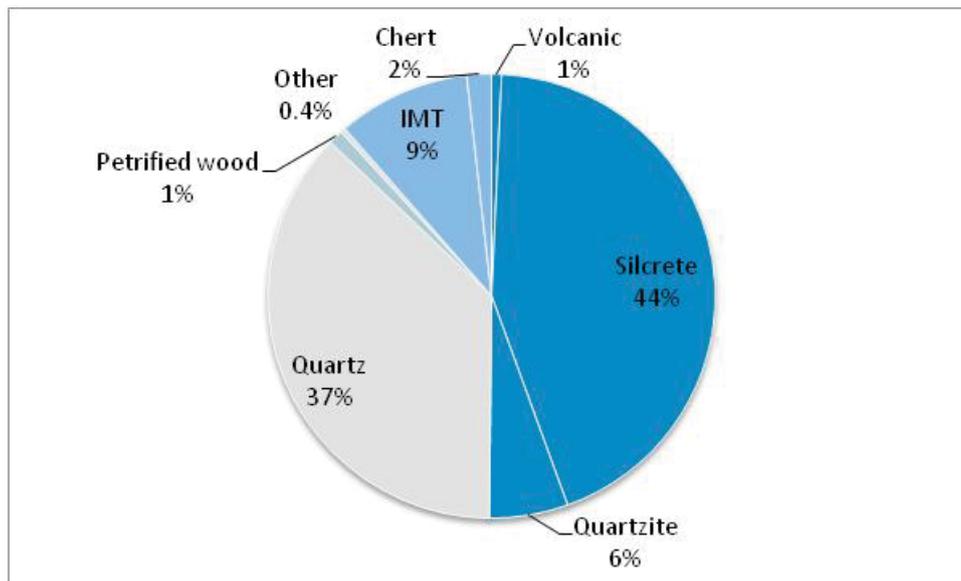


Plate 7.5 Raw material types and their percentages

Quartz was the second most common raw material type, comprising 37% of the total artefact assemblage. The collected quartz was mostly milky white in colour or transparent with a crystal-like quality. Nearly one third of all retouched flakes were made from quartz. Transect 6 contained 45% of all quartz artefacts alongside the majority of all silcrete artefacts.

The remaining 19% of the stone artefact assemblage is made up of several less common raw material types including IMT (9%), quartzite (6%), chert (2%), volcanic stone (1%), petrified wood (1%), and igneous granite (labelled as 'other') (0.4%).

The highest concentration of silcrete and quartz in the assemblage was collected from Transects 2 and 6 which is also where the highest artefact frequencies were identified. Furthermore, a selection of rarer raw material types, including volcanic stone, petrified wood, and IMT, was also recovered from Transect 6.

7.7 Artefact types

The 281 stone artefacts recovered during the test excavation are divided into nine artefact types and are displayed in Plate 7.6.

The largest percentage of artefacts are classed as complete flakes (27%). These are unbroken stone artefacts with clear conchoidal fracture characteristics (resembling the rippling, gradual curves of a mussel shell) including a ring crack, bulb of percussion, and termination (Plate 7.8). Flakes ranged in size from 6 mm to 58 mm and weighed from 0.05 g to 46.8 g. The flakes have an average length of 16.7 mm and weight of 1.9 g.

Fragments of broken flakes including proximal, medial, and distal portions, as well as flaked pieces, and longitudinally split flakes, make up a further 63% of the artefact assemblage. It is likely that a large portion of the flaked pieces in particular are debitage, which is a by-product of artefact manufacture and maintenance activities.

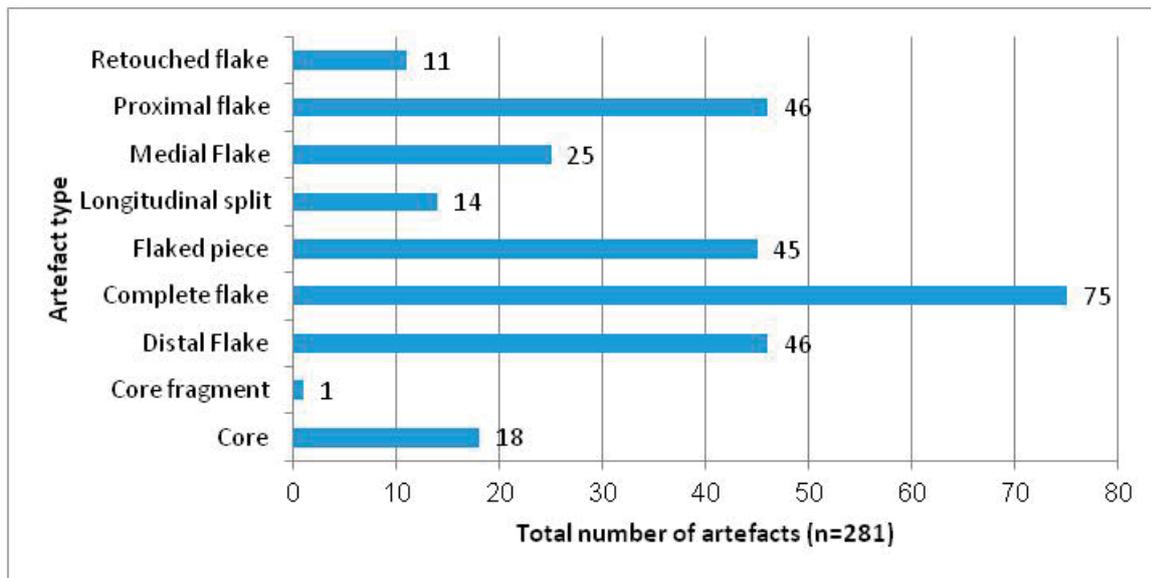


Plate 7.6 Artefact types

The excavation recovered 18 cores and 1 core fragment, accounting for 7% of the total artefact assemblage (for example of cores, see Plate 7.9). The cores range in size from 9 mm to 40 mm and in weight from 1.5 g to 24.9 g. The cores have an average length of 30.4 mm and weight of 7.5 g. The small size of the cores uncovered across the landscape indicates that raw materials, including silcrete (which accounts for 50% of cores), and quartz (which accounts for 28% of cores) had been extensively flaked. This is further supported by the fact that cortex, the outer weathered portion of stone, was only identified on a small portion of one core. The presence of multidirectional cores (11%) also suggests that strategies were adopted to promote the successful detachment of multiple flakes and indicates that cores were rotated as successive flakes were struck off.

Retouched flakes account for only 4% of the total artefact assemblage (n=11). Of the 11 retouched flakes nine retouched flakes have been further classified as 'implements' possessing a recognisable typological morphology. Of these, four were identified as scrapers and three showed signs of 'backing'. Backed artefacts are also known as 'Bondi points', but the former term is more general as it effectively describes the method of retouch along one artefact margin. One Pirri point, one bipolar flake, and one unspecified flaked tool were also recovered during excavations. Two artefacts have retouch along their lateral margins but not to the extent that signifies a specific implement type.

This breakdown of implement types is displayed in Plate 7.7 and samples are shown in Plate 7.10.

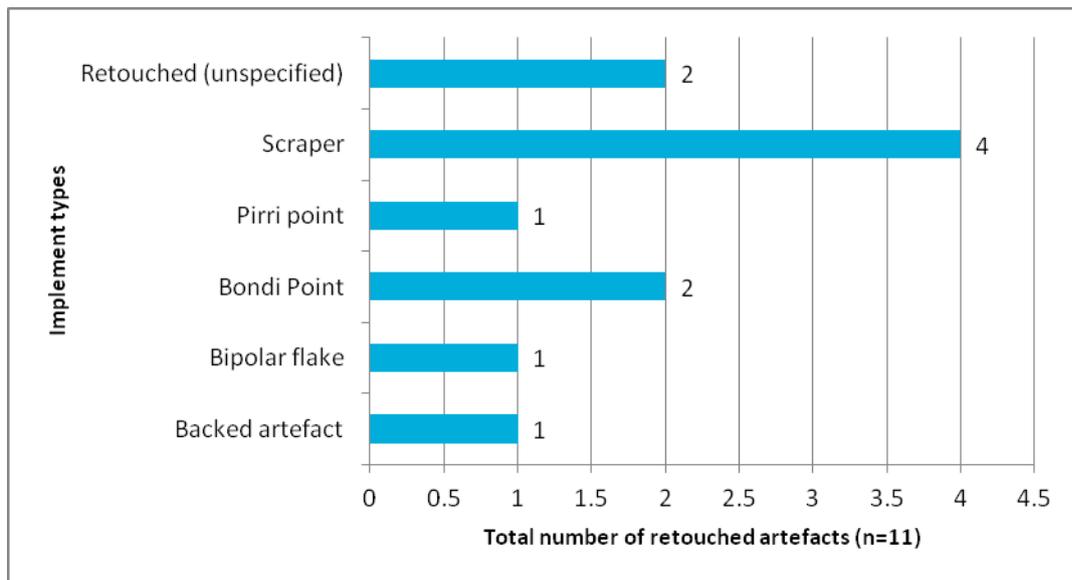


Plate 7.7 Retouched artefacts



Plate 7.8 Sample of silcrete complete flakes



Plate 7.9 Sample of cores: the bottom-right hand artefact is a multi-directional core



Plate 7.10 Sample of implements: backed artefacts in bottom row, scrapers in the centre and bipolar flake at the top

It is common for implements to only make up a small portion of an assemblage since they are less frequently produced than their by-products and are also rarely purposefully discarded at open camp sites. This means that it is unlikely that multiple implements would be found in one location, unless the site had been an important activity hub or they had been deliberately buried as a cache or trade parcel (eg Hiscock 1988).

The distribution of implements generally correspond to the areas with the highest overall artefact densities (Transects 2, 6 and 12 had nine of the 11 retouched artefacts). This is a reflection that the most frequently occupied areas are likely to contain the greatest variation in artefact types. Plate 7.11 shows an example of the variation in artefacts from Transect 6.



Plate 7.11 Sample showing artefact variation in Transect 6

7.7.1 Evidence of use wear

Six stone artefacts displayed possible signs of use wear. This generally consists of small scratches and chips to the surface of the stone and usually occurs on artefact margins. However, further and more specialised analysis is necessary to confirm that observed use wear is actually evidence of use or a result of natural causes such as weathering or damage from animal hooves.

7.8 Conclusion

7.8.1 Changes to site definitions

The following changes were made to site type definitions based on the results of the test excavation:

- The PADs HC_134, HC_137, HC_139, HC_147, HC_148 and HC_176 were confirmed to have subsurface artefacts. These sites are hereafter re-classified as 'subsurface artefact deposits' in this report.
- The open stone artefact sites HC_130, HC_135, HC_154, HC_160 and HC_171 were confirmed to have associated subsurface material. These sites are hereafter re-classified as 'open stone artefact sites with subsurface deposit'.
- One additional area, HC_178, not previously assigned PAD during survey was excavated and confirmed to have subsurface artefacts. This site is hereafter re-classified as 'subsurface artefact deposit' in this report.

7.8.2 Summary of results

The test excavation program has shown the following:

- A total of 160 50 cm x 50 cm test pits were excavated across the various landforms.
- The test excavation recovered 281 artefacts from 160 test pits.
- Artefacts were identified in each tested landform type.
- The average artefact density across the tested areas was 7 artefacts/m².
- The average artefact density across test pits associated with ephemeral streams was 2.7 artefacts/m².
- The average artefact density across test pits associated with perennial streams was 14 artefacts/m².
- The highest average artefact density was identified on foot slope and undulating plain landforms (15.7 artefacts/m² and 6.6 artefacts/m²) respectively.
- The lowest average artefact density was identified on hill slope landforms (1 artefact/m²).
- Artefacts were mostly confined to the upper 20 cm of soil (78%, n=219), 20% (n=55) were between 20–40 cm depth and 2% (n=7) were between 40–60 cm depth.
- The greatest frequencies of artefacts were recovered from Transects 2, 6 and 12 (combined total of 56%).
- A total of 11 artefacts collected were retouched, with the majority of these identified as scrapers (n=4) and backed artefacts (n=7).
- The dominant materials in the assemblage were silcrete (44%) and quartz (37%).

8 Discussion

8.1 Open artefact sites

8.1.1 Distribution

The results of the survey and test excavation need to be considered jointly when characterising the archaeological landscape of the project area. Firstly, the survey and test excavation results both confirm that the presence of stone artefacts is directly linked to distance to streams. The survey results further show that the presence and frequencies of surface artefact sites are not a reliable indicator of subsurface frequencies.

The artefact frequency of individual open stone artefact sites are likely to be more indicative of the extent of erosion in a particular area rather than a reflection of subsurface artefact densities. For example, the highest surface artefact frequencies correlated with ploughing exposures or eroded vehicle tracks, but when archaeologically excavated (eg Transect 5 within site HC_130 and Transect 13 within HC_154) the results were sparse. Conversely, the highest subsurface artefact frequencies were identified where artefacts did not occur on the surface (eg Transect 6).

The results indicate that although each surface site has its own merits archaeologically and culturally, a greater number of surface sites identified in one area is not a reliable guide to the landscape's significance. This raises inherent problems during impact assessments which often focus on quantifying the number of sites impacted against those that are avoided. It is therefore important to also consider the landscape in terms of continuous distributions of subsurface artefacts rather than as simply discrete surface sites each with their own significance and values (EMM 2012). One method used to infer subsurface distributions is by analysing artefact densities from archaeological excavation (refer to Section 8.1.2).

8.1.2 Defining subsurface artefact densities

One method to infer subsurface archaeological distribution is through the analysis of artefact densities from other archaeological investigations in the area. Artefact densities in the project area can be compared to the results of 12 test excavations in the Southern Highlands which have been gathered from the reports summarised in Section 4.3 and Dibden's regional comparison of artefact density for test excavations (Table 16 in Dibden 2005). As with any dataset, there are limitations that need to be considered. Section 8.4.3 identifies some of these limitations that inherently place some bias on their interpretation.

Half of the compared test excavations had artefact densities less than 10 artefacts/m², four with artefact densities between 10 and 20 artefacts/m² and only two with artefact densities over 20 artefacts/m². With the average artefact density for the project's test excavation program being 7 artefacts/m², it indicates that generally, the results are common and representative of the Southern Highlands.

From the available test excavation data it is reasonable to propose that an artefact density of:

- less than 1 artefacts/m² (including zero) equates to 'negligible';
- less than 5 artefacts/m² equates to 'very low';
- 5 to 10 artefacts/m² equates to 'low';

- 11 to 20 artefacts/m² equates to 'moderate';
- 21 to 50 artefacts/m² equates to 'moderate to high'; and
- 51 artefacts/m² and above equates to 'high'.

There are obvious limitations in comparing artefact densities across sites at such a general level without specific reference to landforms and/or distance to water. This is particularly true for the project area, as the test excavation locations spanned across a maximum distance of approximately 6 km with many variables influencing localised artefact densities. As presented in Section 7.6.1, it is more informative to consider artefact density as mainly influenced by distance to water (either perennial or ephemeral streams) in conjunction with being on a suitable landform with good outlook to have supported Aboriginal occupation.

The project excavation program showed that test pit artefact frequencies associated with ephemeral streams (1st to 3rd order) had either petered out to nil by 150 m or had such low frequencies that the transects were discontinued. Therefore, as presented in Section 7.6.1, the average density of 2.7 subsurface artefacts/m² or lower within 150 m of ephemeral streams, is considered to be the best guide to the subsurface potential in these areas.

Moderate artefact densities may also occur beyond 200 m of perennial streams if the landform is a prominent local feature with good outlook. The results from Transect 9 and 12 (Figure 7.19) show moderate artefact densities up to 320 m from Stony Creek on a level to gently inclined crest. Furthermore, the widely dispersed surface assemblage on the prominent crest of the Wongonbra property (Figure 6.6) supports this proposition as it is mostly over 600 m from the nearest reliable stream (Wells Creek). The hypothesis that prominent landforms were desirable to the Aboriginal people is supported by excavations by Rich in 1993 at Mt Flora which recovered artefact densities of 71 artefacts/m² from test excavation and 167 artefacts/m² from open area excavation on a saddle (MF2 Mt Flora) (Rich 1993, p.79).

8.1.3 Site characteristics

The generally low archaeological integrity of the project area, as indicated by repeatedly disturbed upper soil profiles, creates difficulties in defining any particular 'activity areas' where localised activities took place within the general 'open camp sites' across the project area.

Both survey and test excavation results demonstrate silcrete-rich stone artefact assemblages distributed throughout the landscape, closely followed by quartz artefacts. The dominance of silcrete and quartz is common for the region, as are the smaller ratios of other materials such as IMT, quartzite, chert, petrified wood, and volcanic material. Dibden found that this trend was common across 10 archaeological studies in the Southern Highlands, although no two assemblages showed the same proportions of silcrete and quartz (Dibden 2005, p.31).

The local geology indicates that quartz would have been available within the Hawkesbury Sandstone formation which is known to contain small quartz pebbles. These were identified in some of the more eroded rock shelters, but were generally less than 3 cm in diameter.

Areas of igneous flows may have silcrete outcrops in stratigraphic exposures, although such areas were not identified during survey (Section 3.3). There have been few identifications of silcrete outcrops in the previous studies in the Southern Highlands, but outcropping has been identified in the Southern Tablelands from the banks of Marulan Creek (EMM 2015) and by McIntyre who found a “quarry site” 10 km to the west where silcrete and quartz were thought to have been quarried at the site (McIntyre 1993). Apart from the raw materials that may have been available in modern stream bed loads, it is therefore likely that much of the raw material in the project area was imported from the surrounding landscape and not sourced directly from the project area.

The artefact assemblage generally represents the by-products of stone tool manufacture, with a very limited occurrence of stone implements. The typically small stone cores suggest extensive reduction of the available raw material and also that smaller tools were the desired outcome of manufacture. Such examples, and the evidence of a ‘backed’ tool, are typical of mid- to late-Holocene assemblages where small ‘backed’ tools were made for larger composite tools and weapons.

8.2 Rock shelters

8.2.1 Use of rock shelters

Rock shelters in the project area indicate a landscape that was used by Aboriginal people. The use of rock shelters is supported by the physical evidence of stone artefacts identified on 11 shelter floors and the presence of art on three shelter walls. Although most of the rock shelters with PAD did not contain physical surface evidence of Aboriginal occupation (55 out of 68), their close proximity to shelters that do retain this evidence strongly suggests that they were also occupied and artefacts are likely to remain in subsurface deposits. A good example of the proximity between sites is shown by the 16 rock shelters that are all located along an approximate 800 m distance along Fire Dam Creek (five of which contained artefacts and one with art). This equates to a rock shelter almost every 50 m.

Because many of the rock shelters occurred in clusters, there was also a greater variety to choose from within short walking distance. There is also the possibility that some of the smaller shelters with poor amenity were avoided altogether in preference to more desirable rock shelters found on the adjacent scarp. This may also be why many of the poorer examples of rock shelters did not have artefacts on their floors. Some of the smaller rock shelters may have been occupied briefly during inclement weather and were less likely to have experienced the range of activities present at larger shelters such as stone tool manufacture, camp fires and hearths and rock art. Consequently, further information about rock shelter usage and preference would only be achieved through the archaeological excavation of shelter floors.

Other site types close to the rock shelters also have implications for their occupation. The presence of grinding grooves (eg HC_034 and International House) and open stone artefact sites (eg HC_001, Figure 6.2) at headwaters leading downstream towards most shelters indicate that there was likely to be considerable movement throughout the landscape. Within a short walking distance there is evidence that the prehistoric landscape of the Belanglo State Forest supported open camping areas, provided outcrops for grinding tools and plants and clusters of rock shelters suitable for a range of activities, including camping.

At present, the occupation periods of rock shelters in the project area are unknown. However, many of the rock shelters may contain subsurface hearth features with charcoal deposits suitable for carbon dating. Carbon dates retrieved from rock shelters in the region (Penrose Quarry and Mt Flora) indicate an extensive occupation period spanning from 2977 +/- 39 BP to 14,829 +/- 68 BP (provided in the appendix of the report by Kelton and Mills 2003). Excavation would be required to firstly establish if hearths are present in some of the rock shelters in the project area for dates to be retrieved.

8.2.2 Rock art

The art present at three rock shelter sites in the project area is characteristic of the Simple Figurative style that characterises rock art in south-eastern Australia (Mulvaney & Kamminga 1999, p.374). The only rock shelter with art identified within the 34 km² AHIMS search area was Compartment 157, which is within the project area. Therefore, there is limited data to make any meaningful comparisons although information in the wider Illawarra Region to the north-east may be useful to some extent.

Comparisons can be made with rock art sites identified during an archaeological investigation for the Dendrobium Mine approximately 40 km north-east of the project area near the Avon Dams (Biosis 2007). The study identified 35 rock shelters with art, 7 rock shelters with art and deposit and 13 rock shelters with deposit, all of which were on Hawkesbury Sandstone geology overlaid by the Hawkesbury soil landscape. The landscape featured deeply incised valleys which are similar to the geology and local relief found in the western portion of the Belanglo State Forest within the project area. A total of 254 motifs were identified across 42 shelters, which is a considerable selection when compared to the project area. The study found that charcoal motifs were the most common media, followed by red ochre, yellow ochre and white clay. Most of the art comprised simple outlines and outlines with infill rather than solid motifs and stencils. Most motif types were indeterminable, but also featured hands, anthropomorphic images and animals.

At a superficial level, the results of the Biosis study contrast with the results in the project area. Solid motifs and hand stencils have been the only art type identified in the project area, while they generally make up a smaller percentage in the Illawarra study. Furthermore, Koettig's survey in 1981 aligns more with the Biosis study results as it identified two shelters with art, both of which were charcoal and one contained motifs of an eel (Koettig 1981). Although, with the limited sample of art available in the project area, it is not clear whether this is a real artistic trend or just what has survived the archaeological record. Notably, it appears that anthropomorphic figures are one of the most common art types on the Woronora Plateau (Sefton 1991). Overall, the art present in the project area does not comprise unique or rare motifs in the broader region, but the presence of art locally is rare.

8.3 Occupation model

The Southern Highlands is generally a poorly understood area in terms of archaeology, primarily because of the lack of systematic archaeological investigation in the region. When compared to more comprehensively studied areas in NSW, such as the Cumberland Plain and Hunter Valley, there is little information available to build a robust model of Aboriginal occupation and site distribution. Until a robust model for the Southern Highlands is developed, the models formed in the Cumberland Plain and Hunter Valley provide workable frameworks.

The results of this ACHA, previous studies in the region and elsewhere in NSW all conform to the model that Aboriginal sites and artefacts are primarily linked to water availability (based on stream order), geology and the availability of resources. The project area is distinctive as it covers both rugged, sandstone terrain that changes considerably within a few kilometres to open, low rolling hills. This would have provided Aboriginal people with a diverse landscape for occupation ranging from habitable shelters protected from the often cold, harsh elements in the Southern Highlands, to open landscapes near various stream networks suitable for short and long term camping during more temperate weather. Grinding groove sites are distributed across open and enclosed landscapes, which implies that resources for shaping ground edge hatchets were closely available to Aboriginal people occupying and travelling between both open camp sites and closed camp sites within rock shelters.

Stone artefact distributions indicate that the elevated landforms near ephemeral streams have experienced sporadic and short-term Aboriginal occupation which has accumulated over an unknown time span. It is likely that land near perennial streams have experienced repeated camping events and for longer durations which was supported by the more reliable resources that coincide with permanent water.

There are also indicators that prominent landforms such as lengthy crests and ridges were desirable not just for transitory movement and temporary stays, but also for longer term occupation where perennial water was accessible, but not necessarily within 200 m distance.

Information about the habitation of rock shelters in the project area is currently cursory at best. Surveys have confirmed the presence of Aboriginal people in these areas, but without archaeological excavation, interpretation can go little further than stating that Aboriginal people used at least some of the rock shelters in the project area, and carried out activities such as camping, stone tool manufacture, and creating rock art. It is currently unknown what the art site Compartment 157 represents, but it is unlikely to have been associated with utilitarian occupation as it does not feature a suitable shelter for human occupation.

8.4 Archaeological sensitivity model

8.4.1 Rationale

The results of the survey and test excavation have helped to develop a model for “archaeological sensitivity”. The model is a visual guide for defining the predicted distribution of sites and artefact densities across the landscape. It also serves as a refinement of the predictive model for site location.

Archaeological sensitivity modelling is a useful tool to evaluate the scope of the survey and test excavation effort, identify areas that may require further investigation in the future, and to assess the impacts to Aboriginal objects outside areas physically walked or excavated. The model predicts the location of rock shelters, grinding groove sites, open stone artefact sites and other archaeological deposits.

8.4.2 Scope of modelling

The areas of archaeological sensitivity, shown generally in Figure 8.1 and in more detail in Figure 8.2, represent the inferred distributions of archaeological material in the project area. Where the sensitivity modelling overlaps with areas already test-excavated and surveyed, its main use is for inferring subsurface artefact distributions, with the acknowledgement that surface sites such as open stone artefact sites, PAD and rock shelters are already accounted for from the survey.

The archaeological sensitivity modelling has been divided into areas of low, moderate and high sensitivity for the presence of stone artefacts. The areas that have not been mapped for sensitivity (blank areas) are likely to have very sparse archaeological traces that cannot be mapped in a predictable fashion.

Furthermore, the predicted areas of outcropping sandstone are also mapped. This mapping aims to identify areas of outcropping sandstone that should be considered for rock shelters or grinding grooves.

There was not enough information available for other site types, including modified trees, stone arrangements, and burials to convert the limited finds into sensitivity mapping.

8.4.3 Limitations of the model

The sensitivity model is based on the dataset gathered during the survey and test excavation only. It is acknowledged that the subsurface artefact density information is based only on 160 test pits distributed across a large area. As in any model using sampling techniques, the more sample points (in this case test pits) the more reliable the data becomes. Accordingly, the definitions and parameters used for the model may change with a larger dataset.

One consideration is that the test excavation results did not establish a quantifiable drop-off in artefact density as the distance of test pits increased away from streams. This is because test pit transects were often discontinued within 200 m of streams because the deposits were already too sparse to warrant further testing. As, such, it can only be said that the demarcated areas of sensitivity have similar subsurface artefact densities regardless of distance within that buffer. Notwithstanding, logic would follow that, for example, land situated closer to the 200 m boundary would be on the edge of the sensitivity and would have gradually declining artefact densities.

8.4.4 Areas of archaeological sensitivity for stone artefacts

i Areas of high archaeological sensitivity

- Land within 200 m of perennial streams (4th order or above) on level to gently inclined landforms (less than 10% slope).
- These areas are relatively undisturbed and are in areas of remnant native vegetation. These areas are not likely to have been disturbed by historic clearing or ploughing.
- These areas are likely to contain a moderate density subsurface deposit with an average density of up to 14 artefacts/m². The subsurface deposit is likely to have higher archaeological integrity than similar landforms that have been cleared and/or ploughed.
- These areas are highly likely to feature surface open stone artefact sites, but typically as open stone artefact sites.

ii Areas of moderate archaeological sensitivity

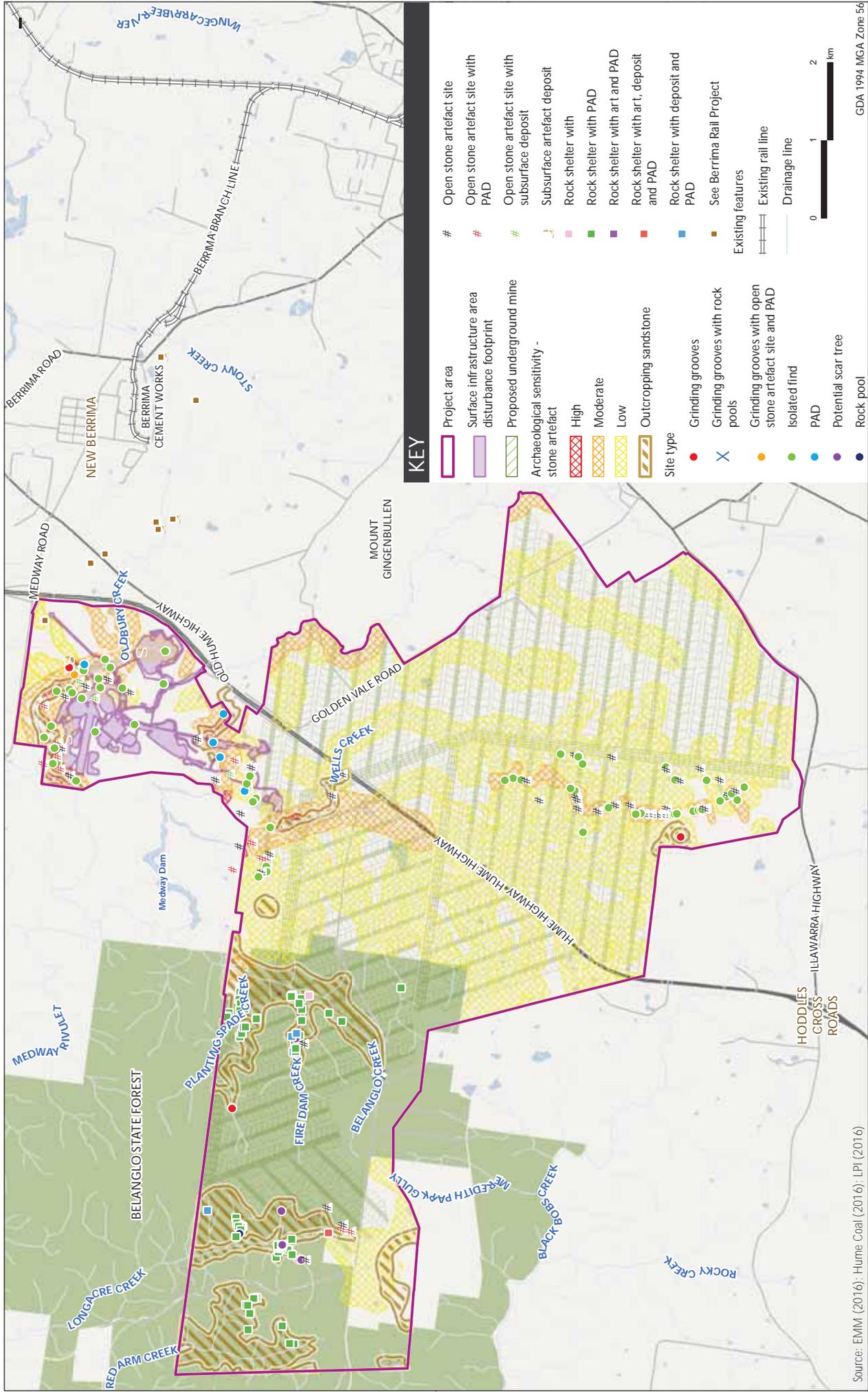
- Land within 200 m of perennial streams (4th order or above) on level to gently inclined landforms (less than 10% slope).
- Prominent hill crests or ridges that are over 200 m from perennial streams. Such areas are difficult to define unless physically surveyed, as outlook is likely to be a main influence for occupation. Therefore, sensitivity mapping for these areas is limited to those areas which have been surveyed.
- These areas are moderately disturbed from historic clearing and ploughing. However, these areas are likely to contain a moderate density subsurface deposit with an average artefact density of up to 14 artefacts/m².
- These areas are highly likely to feature surface open stone artefact sites, but typically as open stone artefact sites.

iii Areas of low archaeological sensitivity

- Land within 150 m of ephemeral streams (1st to 3rd order) on level to gently inclined landforms (less than 10% slope).
- These areas are highly likely to feature surface open stone artefact sites, but typically as isolated finds or open stone artefact sites with lower artefact frequencies.
- These areas are moderately disturbed from historic clearing and ploughing and likely contain a very low density subsurface deposit with an average artefact density of up to 2.7 artefacts/m².

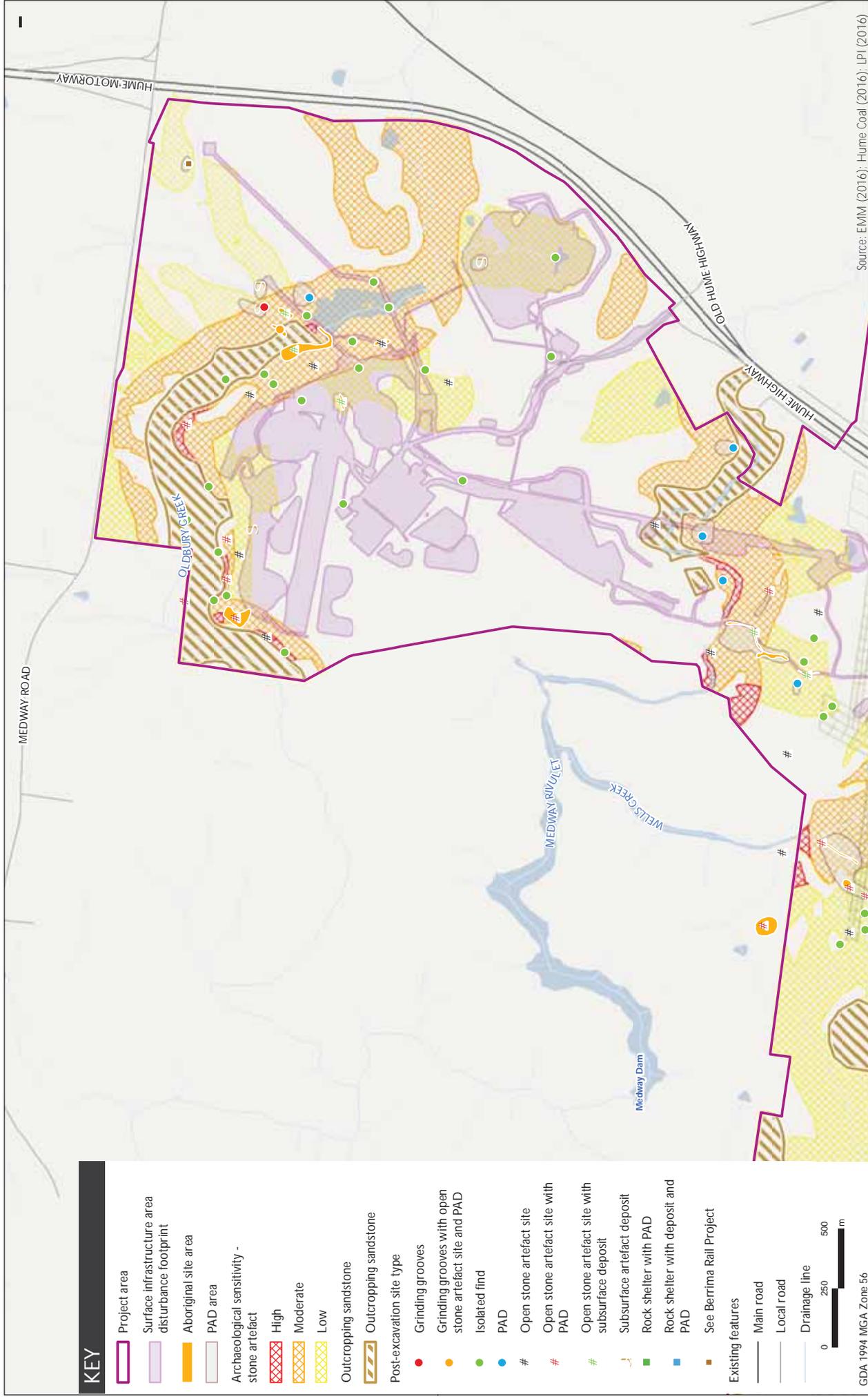
8.4.5 Areas of outcropping sandstone

- Land on the Nattai Tablelands and Hawkesbury Soil Landscapes where sandstone outcropping was observed during survey or where it is predicted to occur outside surveyed areas.
- It is very unlikely that additional rock shelters apart from those already recorded in the surveyed areas will be discovered.
- It is possible for grinding groove sites additional to those already recorded to exist in the areas already surveyed, but they are likely to be hidden by vegetation and other debris.



Overview of areas of archaeological sensitivity
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 8.1

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Areas of archaeological sensitivity - surface infrastructure area
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 8.2

9 Significance assessment

9.1 Defining heritage significance

Heritage sites, objects and places hold value for communities in many different ways. The nature of those heritage values is an important consideration when deciding on how to manage a heritage site, object or place, and balance competing land-use options.

The main heritage values assessed are summed up in an assessment of 'Cultural Significance'.

The primary guide to the management of heritage places is the *Australia ICOMOS Burra Charter 2013*. The Burra Charter defines cultural significance as follows:

Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups (ICOMOS 2013).

The purpose of this assessment is to examine various aspects of Aboriginal heritage for the purpose of assessing possible development impacts. The assessment considers Aboriginal objects and sites, but not places. No Aboriginal places were identified in the project area as explained in the following section.

9.2 Socio-cultural and historic value: significance for the Aboriginal community

9.2.1 Intangible values

'Non-archaeological Aboriginal heritage values' refers to places which have meaning in accordance with memory or tradition, but are not necessarily associated with cultural objects. These sorts of places are described as "intangible sites" and include any socio-cultural or historic values related to historically important persons, events, phases or activities in the Aboriginal community. Aboriginal cultural knowledge is defined as:

...accumulated knowledge which encompasses spiritual relationships, relationships with the natural environment, and the sustainable use of resources, and relationships between people, which are reflected in language, narratives, social organisations, values, beliefs, and cultural laws and customs... (DECCW 2010).

Research and/or consultation with the Aboriginal community was conducted to determine whether any socio-cultural heritage value relates specifically to the project area regardless of archaeological evidence.

To date, no information has been received that identifies specific heritage values unrelated to the Aboriginal sites and objects in the project area. No historical connection has been identified specifically about the project area.

There was general agreement amongst RAPs that the overarching environment or natural landscape is of importance to the Aboriginal community. This included, but was not limited to land within the project area. The key message was that protection of the natural environment is an important part of preserving the Aboriginal community's cultural connections to the land. BNAC's response in Appendix A describes generally how intangible values should be considered to protect the environment (BNAC, 31 October 2016).

The suggested Aboriginal burial site near Oldbury Farm identified by NIAC (refer to Section 2.4.1) has been identified as having high cultural and historical importance. NIAC commented that “this place is of living value with ancestors being able to tell you [sic] family trees back to the skeletons buried there” (NIAC 12 May 2014). Although NIAC requested to find the burial site during archaeological surveys, the suggested location is outside the project area and on private property which could not be accessed. The project will not impact this area but NIAC emphasised that the Aboriginal community should be made aware of this location. This information has been disseminated to RAPs during the consultation process.

9.2.2 Values associated with sites

Aboriginal heritage sites with archaeological evidence are all of value to the Aboriginal community through the tangible connection that they represent with pre-colonial Aboriginal land use. It is acknowledged that the Aboriginal community considers Aboriginal objects as culturally significant items.

No sites were identified as having specific socio-cultural or historic value and therefore each site in this report has not been attributed with a socio-cultural or historic significance rating as was done for scientific and educational values.

Glenda Chalker (Cubbitch Barta Native Title Claimants) stated that “all of the sites within this proposed development have a high cultural value, because of their connection to the land and their people. They should never be counted as single sites, but as one big complex, much like you would consider one house, to a town full of houses. The country was utilised in the same way, and all of the individually recorded sites are within that landscape, as they should be.”

This comment highlights the importance of considering Aboriginal sites cumulatively. Notwithstanding, this assessment has recorded and assessed sites individually in order to follow investigation guidelines and to better gauge the extent of physical impacts on the archaeological resource. Scientific values.

9.2.3 Overview

The following scientific values are identified as ‘low’, ‘moderate’ or ‘high’ for each identified Aboriginal site with an overall rating identified based on the results of each individual assessment. In the overall assessment of significance, research potential is generally weighted higher. This is mainly because a site’s research potential encompasses other values: such as a site’s archaeological integrity which significantly influences the type of research questions that can be addressed.

9.2.4 Research potential

Scientific value is assessed according to the research potential of a site. Rarity and representativeness are also related concepts that are taken into account. Research potential or demonstrated research importance is considered according to the contribution that a heritage site can make to present an understanding of society and the human past. Those heritage sites, objects or places of high scientific significance are those which provide an uncommon opportunity to inform us about the people in an area, or provide a rare glimpse of artistic endeavour and a rare chronological record of changing life through archaeological investigation. That is, these sites have the ability to provide information about the past that is not obtainable from any other source or supplements written and oral sources.

9.2.5 Rarity and representativeness

The comparative rarity of a site is a consideration in assessing scientific significance. A certain site or artefact type may be 'one of a kind' in one region, but common in another. Rarity also applies to sites and objects that were once common, but have become uncommon through development and change.

For example, the rock shelters with art in the project area are a comparatively rare Aboriginal site type in the local area. The AHIMS results did not identify any art sites, other than site Compartment_157, nearby in the 34 km² search area. However, rock art can be quite common in escarpment areas such as the Illawarra Region to the north-east (Biosis 2007). It should be noted however, that the absence of regionally comparable site records may simply reflect the lack of past archaeological surveys conducted in the region and this should be taken into consideration.

9.2.6 Integrity

The integrity of a site is also a consideration in determining scientific significance. While disturbance of a topsoil deposit with artefacts does not entirely diminish its research value, it may limit the type of questions that could be addressed. A heavily cultivated paddock may be unsuited to addressing research questions of small-scale site structure, but it may still be suitable for answering broader questions of regional stone tool distribution and raw material logistics.

9.2.7 Research themes

The capacity of a site to address research questions is predicated on a definition of what the key research issues are for a region. In the local region, the key research issues revolve around the chronology of Aboriginal occupation and variability in stone artefact manufacturing technology. In general, the scope of this information is limited for open artefact sites in the project area, as clearing and ploughing is likely to have disturbed a considerable portion of archaeological deposits. There is also limited information regarding Aboriginal occupation of rock shelters in the Southern Highlands. Only a few excavations in the region have provided occupation dates ranging from roughly 3000 BP to 14,800 BP (Kelton and Mills 2003). However, with only a limited dataset available, it is a regional priority to identify if such dates and archaeological deposits are representative of the region.

9.3 Educational value

Educational value relates to the capacity of a site to portray more easily recognisable archaeological features. While the educational potential of Aboriginal sites can only be effectively realised through interpretation, those sites with more obtrusive elements and suitable settings offer greater potential to illustrate the main features of past Aboriginal activity and how people used the landscape. Material sites have the capacity to supplement other forms of education about Aboriginal Australia.

An educator selecting sites to demonstrate to students the physical evidence of Aboriginal occupation in an area is more likely to choose an extensive grinding groove site or a rock shelter with art. In contrast, an educator would avoid a small scatter of artefacts which may not be readily differentiated from natural gravel. Therefore, aesthetic values are considered in the educational value of an Aboriginal site.

9.4 Significance criteria for rock shelters

The significance of rock shelter type sites was assessed with reference to the criteria listed below:

1. *Amenity*: This relates to the habitable space of a rock shelter which is directly linked to its appeal for occupation and the capacity or number of people and activities that it could have supported at any one time. Characteristics include habitable shelter floor area and also the ceiling height. Ceilings around 1 m high would have provided low amenity as only sitting would have been feasible. Conversely, shelters with high ceilings (bordering 2 m or above) would have been suitable for a range of activities and provided high amenity. Notwithstanding, narrow shelters (approximately 1 m width to wall) with high ceilings would have also had low amenity as there would have been limited protection from prevailing winds and rain.
2. *Depth of PAD*: The deeper the deposit in a rock shelter, the higher the potential for stratification of deposits. However, there are inherent difficulties in predicting PAD depth without excavation. Therefore, this criterion has been treated conservatively unless it was obvious that only a shallow soil deposit had accumulated on visible sandstone bedrock.
3. *Extent of PAD*: A larger PAD area is likely to provide more evidence of occupation and potentially specific spatially intact activity areas. The areas of PAD may extend beyond a shelter's drip line or be much smaller than the habitable floor area if a portion is comprised of sandstone bedrock.
4. *Complexity*: The confirmed presence of stone artefacts (presently identified on the floor surface only), art or grinding grooves contributes to a verifiable range of activities performed in the shelter. The presence of more evidence increases research potential.
5. *Proximity to water*: Although this criterion is important for all site types, it is less likely to have influenced the preference of rock shelters in the project area, as all rock shelters are within 200 m of streams.
6. *Potential integrity*: The integrity of rock shelter art or PAD overarches the significance of all sites. For example, where there is obvious signs of extensive disturbance (such as wombat burrows or recent human interference), there is also likely to be low research potential.

The criteria listed above are based on those used by Kuskie for projects such as the Tasman Extension Project in the Hunter Valley NSW (Kuskie 2012a, pp.133134). However, the criteria has been modified in this assessment to assess 'amenity' as a combination of the 'habitable floor area' and 'internal roof height' criteria used by Kuskie rather than treating them as separate criteria.

9.5 Sites and significance

This section presents the scientific significance for 219 Aboriginal sites. This comprises:

- the 166 newly recorded sites in the project area;
- 11 newly recorded sites in the Berrima Rail Project area;
- two newly recorded sites outside both project areas;
- two sites previously recorded on AHIMS (grinding groove site 'International House' AHIMS# 52-4-0098 and rock shelter with art 'Compartment 157' AHIMS#52-4-0097) that were re-recorded;

- thirty-seven sites recorded by Therin in 2007 (refer to Section 4.4 for report summary); and
- one additional site identified solely through test excavation (HC_178) (ie site not previously identified as a PAD or open stone artefact site).

The 37 sites previously recorded on the Wongonbra property were assessed to be of low scientific significance by Therin (2007). This was because they were open stone artefact sites and isolated finds, all of which were disturbed to some extent and either on a graded access track or in a ploughed field.

The two previously recorded sites in the Belanglo State Forest, Compartment 157 (rock shelter with art) and International House (grinding groove site), were not previously assessed for their significance, but were attributed with high significance after re-recording by EMM. The frequency of sites falling within each significance category is described in Table 9.1.

Table 9.1 Scientific significance frequency for all sites recorded

Site type	Significance level				Total
	High	Higher moderate	Moderate	Low	
Grinding grooves	1		2		3
Grinding grooves with open stone artefact site and PAD	1				1
Grinding grooves with rock pools	1				1
Isolated find			1	56	57
Open stone artefact site				48	48
Open stone artefact site with PAD			9	3	12
Open stone artefact site with subsurface deposit		1	2	2	5
PAD		2	3	3	8
Potential scar tree				8	8
Rock pool				1	1
Rock shelter with art	1				1
Rock shelter with art and PAD	1				1
Rock shelter with art, deposit and PAD	1				1
Rock shelter with deposit and PAD	4		6		10
Rock shelter with PAD			12	43	55
Subsurface artefact deposit		1		6	7
Total	10	4	35	170	219

9.6 Scientific values

The scientific values identified are summarised in Table 9.2 for each site type and detailed in Appendix F. These data summarise the basis for assigning levels of scientific and educational value.

Table 9.2 Site types according to their categories of significance

Scientific values by site type	Frequency
<i>Grinding grooves</i>	
High: rare site type; numerous grooves; on sandstone expanse	1
Moderate: rare site type; few grooves on small outcrop	2
<i>Grinding grooves with open stone artefact site and PAD</i>	
High: rare site type; large number of grooves (10); associated PAD	1
<i>Grinding grooves with rock pools</i>	
High: rare site type; numerous grooves; on sandstone expanse	1
<i>Isolated find</i>	
Low: common type; sparse assemblage; highly disturbed.	21
Low: common type; sparse assemblage; moderately disturbed.	33
Low: common type; sparse assemblage; slightly disturbed.	1
Low: common type; sparse subsurface deposit; moderately disturbed	1
Moderate: rare artefact type	1
<i>Open stone artefact site</i>	
Low: common type; sparse assemblage; highly disturbed.	23
Low: common type; sparse assemblage; moderately disturbed.	21
Low: common type; sparse assemblage; slightly disturbed.	4
<i>Open stone artefact site with PAD</i>	
Low: common type; sparse assemblage; moderately disturbed	3
Moderate: extensive site; PAD; moderately disturbed	4
Moderate: common type; moderate associated deposit; moderately disturbed	1
Moderate: common type; PAD; moderately disturbed	4
<i>Open stone artefact site with subsurface deposit</i>	
Low: common type; sparse subsurface deposit; moderately disturbed	2
Moderate: common type; moderate associated deposit; moderately disturbed	1
Moderate: extensive site; sparse associated deposit; moderately disturbed	1
Higher moderate: extensive subsurface deposit; moderately disturbed.	1
<i>Subsurface artefact deposit</i>	
Low: sparse subsurface deposit; moderately disturbed	6
Higher moderate: extensive subsurface deposit; moderately disturbed.	1
<i>PAD</i>	
Low: unlikely to be PAD	3
Higher moderate: similar landform to demonstrated deposit HC_176	1
Moderate: PAD; slightly disturbed	2
Moderate: PAD; moderately disturbed	1
Higher moderate: continuation of HC_135 (subsurface deposit); extensive PAD	1
<i>Potential scar tree</i>	
Low: probable branch tear	8

Table 9.2 Site types according to their categories of significance

Scientific values by site type	Frequency
<i>Rock pool</i>	
Low: likely to be a natural rock pool	1
<i>Rock shelter with art</i>	
High: potential spiritual or ceremonial site	1
<i>Rock shelter with art and PAD</i>	
High: rare and complex site type; moderate PAD area; minor disturbance; moderate amenity	1
<i>Rock shelter with art, deposit and PAD</i>	
High: rare and complex site type; moderate PAD area; minor disturbance; moderate amenity	1
<i>Rock shelter with deposit and PAD</i>	
Moderate: rare type; small PAD area; low amenity	2
Moderate: rare type; small PAD area; moderate amenity	1
Moderate: rare type; small PAD area; high amenity	3
High: rare type; very large PAD area; high amenity	2
High: rare type; large PAD area; high amenity	1
High: rare type; moderate PAD area; high amenity; higher integrity	1
<i>Rock shelter with PAD</i>	
Low: common type; small PAD area; low amenity	31
Low: common type; shelter floor in stream channel; problematic PAD; high amenity	1
Low: common type; small PAD area; low amenity; major rock fall	1
Low: common type; small PAD area; low amenity; moderate rock fall	1
Low: common type; small PAD area; low amenity	1
Low: common type; small PAD area; moderate amenity	5
Moderate: common type; small PAD area; high amenity	5
Moderate: common type; moderate PAD area; high amenity	4
Moderate: common type; small PAD area; moderate amenity; higher integrity	5
Moderate: common type; moderate PAD area; moderate amenity	1
Total	219

9.7 Sites of high significance

Ten sites are assessed to be of high significance and shown in Table 9.3.

All of these sites are located in the Belanglo State Forest section of the project area. Sites of high significance are primarily rock shelters featuring confirmed surface deposit and/or art and all are in the Belanglo State Forest.

Table 9.3 Sites of high significance by landform

Site type	Landform type		
	Scarp	Stream bed	Total
Grinding grooves	1	1	2
Grinding grooves with open stone artefact site and PAD	1	0	1
Rock shelter with art and PAD	1	0	1
Rock shelter with art, deposit and PAD	1	0	1
Rock shelter with deposit and PAD	4	0	4
Rock shelter with art	1	0	1
Total	9	1	10

The rock shelters of high significance with deposit and PAD all had moderate areas of PAD (30 m²) to very large areas of PAD (150 m²) which were predicted to be largely intact and indicative of a substantial subsurface deposit. All rock shelters with art were assessed to be of high significance primarily because of their rarity. Compartment 157 which contained art only was considered to have high significance, because of its uniqueness as it could be associated with spiritual or ceremonial practices, given that the sandstone feature would not have supported utilitarian uses.

Three grinding groove sites were assessed to have high significance. This included grinding groove site with open stone artefact site and PAD, HC_136, which is a relatively good example of its type and has high educational value because of its complexity and easy accessibility. Furthermore, the associated PAD is likely to have higher integrity than surrounding sites as it has been shielded from repeated ploughing since 1949 (refer to Figure 3.5). The remaining two grinding groove sites (International House and HC_034) of high significance featured numerous grooves and are good local and easily accessible examples. Additionally, 'International House' featured modified rock pools that add to the complexity and interpretive value of the site.

9.8 Sites of moderate significance

39 sites were assessed to be of moderate significance; four of which were attributed with 'higher moderate' significance because of their comparatively high subsurface artefact densities.

9.8.1 Sites of higher moderate significance

Four sites (HC_135, HC_151, HC_176 and HC_177) were assessed to have a higher level of moderate significance, all of which were associated with tested open artefact sites with PAD and areas of PAD predicted to retain a moderate density subsurface artefact deposit. Two sites are outside the project area, in the Berrima Rail Project area (HC_176 and 177). Although not rare for the region, these areas are likely to have a comparatively high frequency of artefacts on a local level. Distinguishing 'higher moderate' from 'moderate' has strictly been used to identify the comparatively higher density subsurface deposits in the project area.

The value of these sites has been reduced by widespread historic ploughing across the landscape which has reduced the research value of these sites. These sites do not have high archaeological integrity but are still valuable for more general research on stone artefact characteristics because of their comparatively high subsurface artefact frequencies. As such, these sites have been assigned higher significance than other lower density subsurface deposits, but do not have the characteristics that would warrant outright conservation that would further constrain the project.

9.8.2 Sites of moderate significance

Approximately 15% (n=35) of all sites were assessed to be of moderate significance and are shown in Table 9.4. This includes sites that are rarer site types such as two grinding groove sites (HC_175 and HC_138) and one ground-edge hatchet (HC_157). Open stone artefact sites that were tested through subsurface excavation were attributed moderate significance where they had an extensive surface assemblage, but a sparse subsurface deposit, or if they had above average frequencies in surface and subsurface contexts (HC_130 and HC_154).

Open stone artefact sites with PAD were conservatively assigned moderate significance if they had an extensive surface artefact assemblage and they were on an archaeologically sensitive landform that was comparable to the sites with demonstrated moderate subsurface significance. Most of these were identified on hill spur crests and hill crests. Three areas of PAD were conservatively assessed to be of moderate significance (HC_115, HC_155 and HC_179) as they were directly adjacent to Medway Rivulet on archaeologically sensitive landforms.

Approximately half (52%) of the moderately significant sites were rock shelters with deposit and PAD (n=6) and rock shelters with PAD only (n=12). The rock shelters with deposit and PAD all had limited surface artefacts (between 1 and 4 artefacts) and small floor and PAD areas ($\leq 20 \text{ m}^2$), but the presence of artefacts indicates greater research potential than similar shelters with no deposit. Similarly, rock shelters with PAD only shared similar characteristics with those shelters with deposit and were predicted to have reasonably intact small to moderate PAD area. It should be noted that the results of test excavation of any rock shelter with PAD would be likely to change their significance rating.

Table 9.4 Sites of moderate significance by landform

Site type	Drainage depression	Foot slope	Hill crest	Hill spur crest	Scarp	Total
Grinding grooves	2					2
Isolated find		1				1
Open stone artefact site with PAD			2	7		9
Open stone artefact site with subsurface deposit		1		1		2
PAD		1		2		3
Rock shelter with deposit and PAD					6	6
Rock shelter with PAD					12	12
Total	2	3	2	10	18	35

9.9 Sites of low significance

The 170 Aboriginal sites assessed to be of low significance are summarised in Table 9.5. These are sites that do not have the same capacity to inform about past Aboriginal life. While such sites symbolise Aboriginal presence (or predicted presence) on the landscape through their very existence, they can tell us little else. Notwithstanding, the limited information potential, each site is of cultural significance to the Aboriginal community.

Most of the sites recorded (78%) were assessed to have low scientific significance. This is primarily because over two thirds are open stone artefact sites and isolated finds (including those with PAD and deposit) comprised of common stone artefacts distributed throughout the landscape in moderately to highly disturbed contexts. These sites were typically attributed with low significance if they were of a common type, such as isolated finds or open stone artefact sites, comprised of sparse surface or subsurface deposits and were in moderately disturbed (eg ploughed) to highly disturbed (eg dam bunds or graded vehicle track) contexts.

The test excavation program revealed that eight of the sites with demonstrated subsurface deposits (either open stone artefact sites with subsurface deposits or former PADs) had very low to negligible artefact densities and were on moderately disturbed land. These sites were assessed to have low scientific significance.

Rock shelters with PAD made up one quarter of the sites of low significance. These sites typically had small habitable floor areas and PADs, and often low ceiling heights which provided low amenity. Furthermore, some rock shelters of low significance were unstable and had experienced moderate to major rock falls and many had deposits disturbed from animal burrowing. Such rock shelters may not even have been used by Aboriginal people, or if occupied, may only have been more short-duration/low intensity activities such as seeking shelter. However, without excavation, these sites cannot be discounted as having some potential to feature evidence of Aboriginal occupation.

All of the potential scar trees were assessed to be of low significance, primarily because their attributes are likely to be the result of natural causes. Therefore, they are not representative examples of Aboriginal scar trees.

Table 9.5 Sites of low significance by landform

Site type	Drainage depression	Foot slope	Hill crest	Hill crest saddle	Hill slope	Hill spur crest	Modified	Scarp	Stream bank	Total
Isolated find	2	2	27	1	8	11	4	1		56
Open stone artefact site	2	3	27		1	12	1		2	48
Open stone artefact site with PAD			3							3
Open stone artefact site with subsurface deposit			1			1				2
Subsurface artefact deposit		1	2			3				6
PAD			1			2				3
Potential scar tree					1			7		8
Rock pool								1		1
Rock shelter with PAD								43		43
Total	4	6	61	1	10	29	5	52	2	170

9.10 Summary

In summary, out of the 219 sites addressed in this section:

- 10 sites were assessed to be of high significance, all of which are in the project area and are rock shelter or grinding groove sites;
- 39 sites were assessed to be of moderate significance, four of which were attributed with a higher level of significance because of their comparatively high subsurface artefact densities. All but two of the sites (HC_176 and HC_177) of moderate significance are in the project area; and
- 170 sites were assessed to be of low significance, 162 of which are in the project area.

10 Impact assessment

10.1 Impact types

The project design and construction elements are described in Chapter 1 and detailed in Figure 1.2. Aboriginal sites and their proximity to the project footprint are shown in detail in Figures 10.1 to 10.5. The project will primarily involve the development of surface infrastructure within the surface infrastructure area and mining in the designated underground area. The impact on each individual site is summarised in Table 11.2 in Chapter 11.

The impacts of the project on Aboriginal cultural heritage values can potentially occur in two distinct ways:

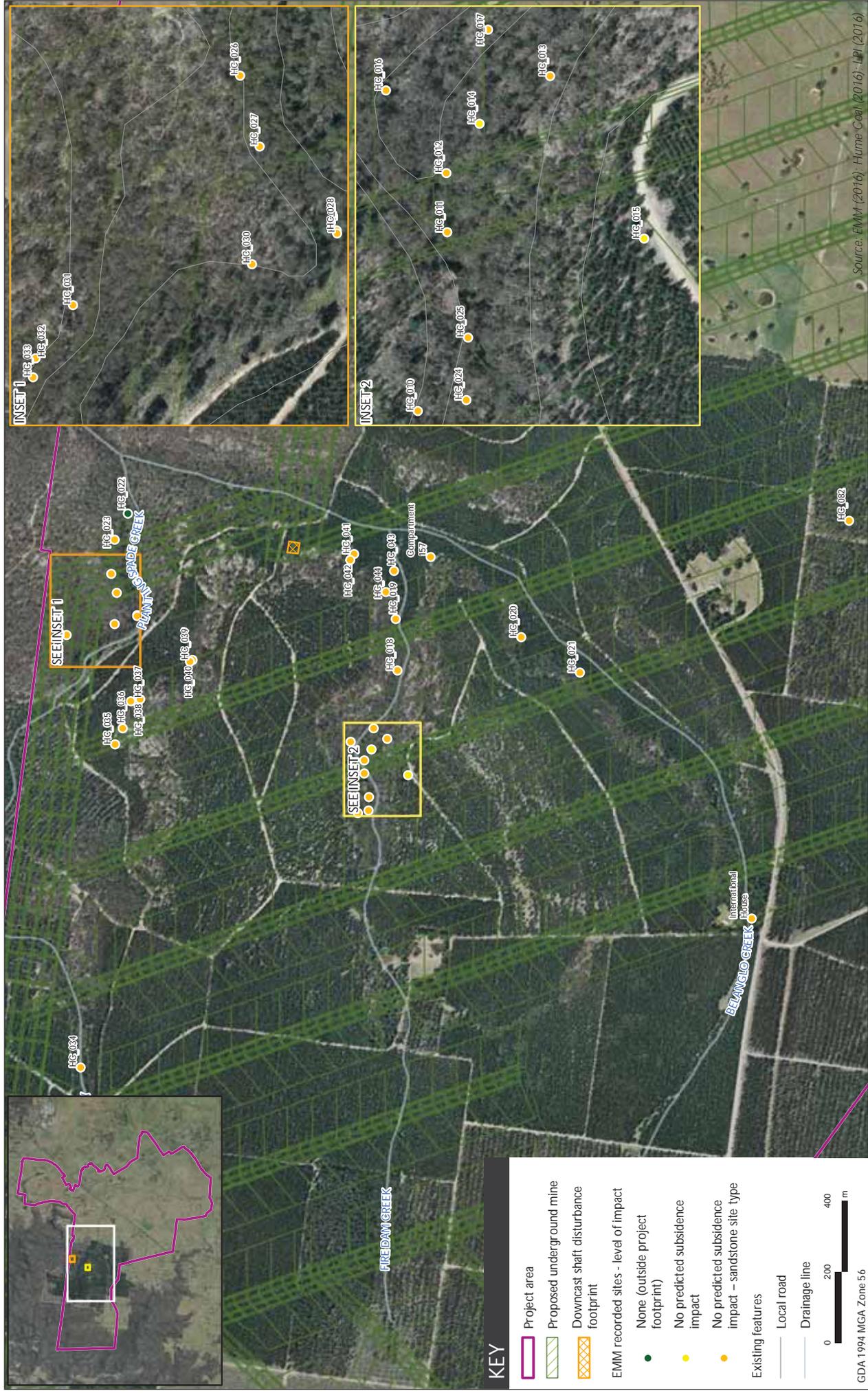
- Direct impacts from disturbance due to construction of surface infrastructure facilities as well as construction of the outlet or entry points to vents and drifts. The project elements that will directly impact sites are conveyors, stormwater earthworks, pipelines, all weather tracks and soil stockpiles.
- Indirect impacts from underground mining and associated subsidence.

10.1.1 Direct impacts

Direct impacts will occur on a scale varying from disturbance, where artefacts are moved locally from their original setting, to loss where artefacts are removed or destroyed. An example of disturbance is pipeline construction where topsoil including artefacts is moved to one side during trench excavation but replaced following construction. Artefacts are retained generally in the same locality, but with a loss of context and spatial patterning. Total loss occurs when the entirety of a site occurs as a result of development works.

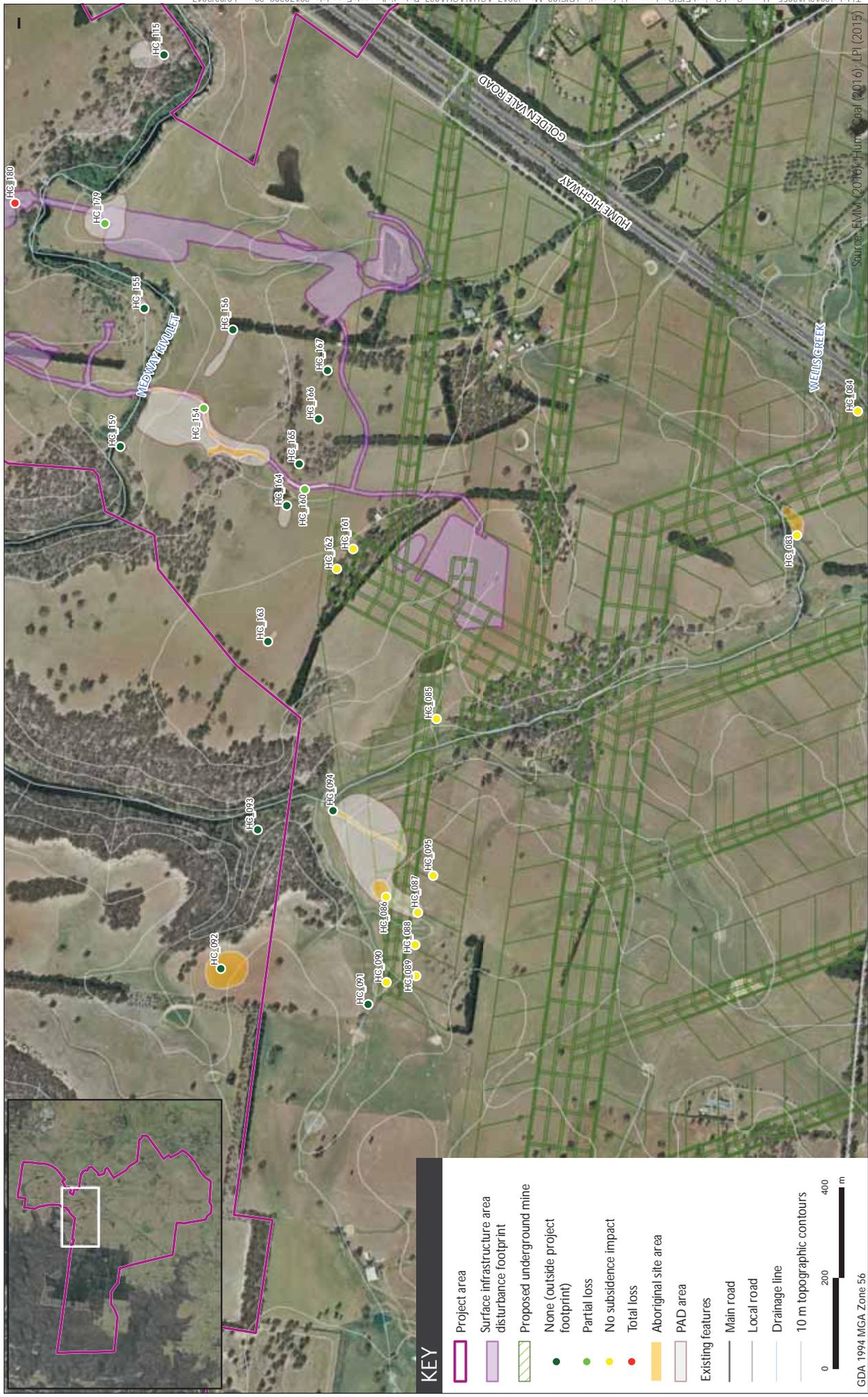


Potential impacts - Belanglo State Forest (west)
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 10.1



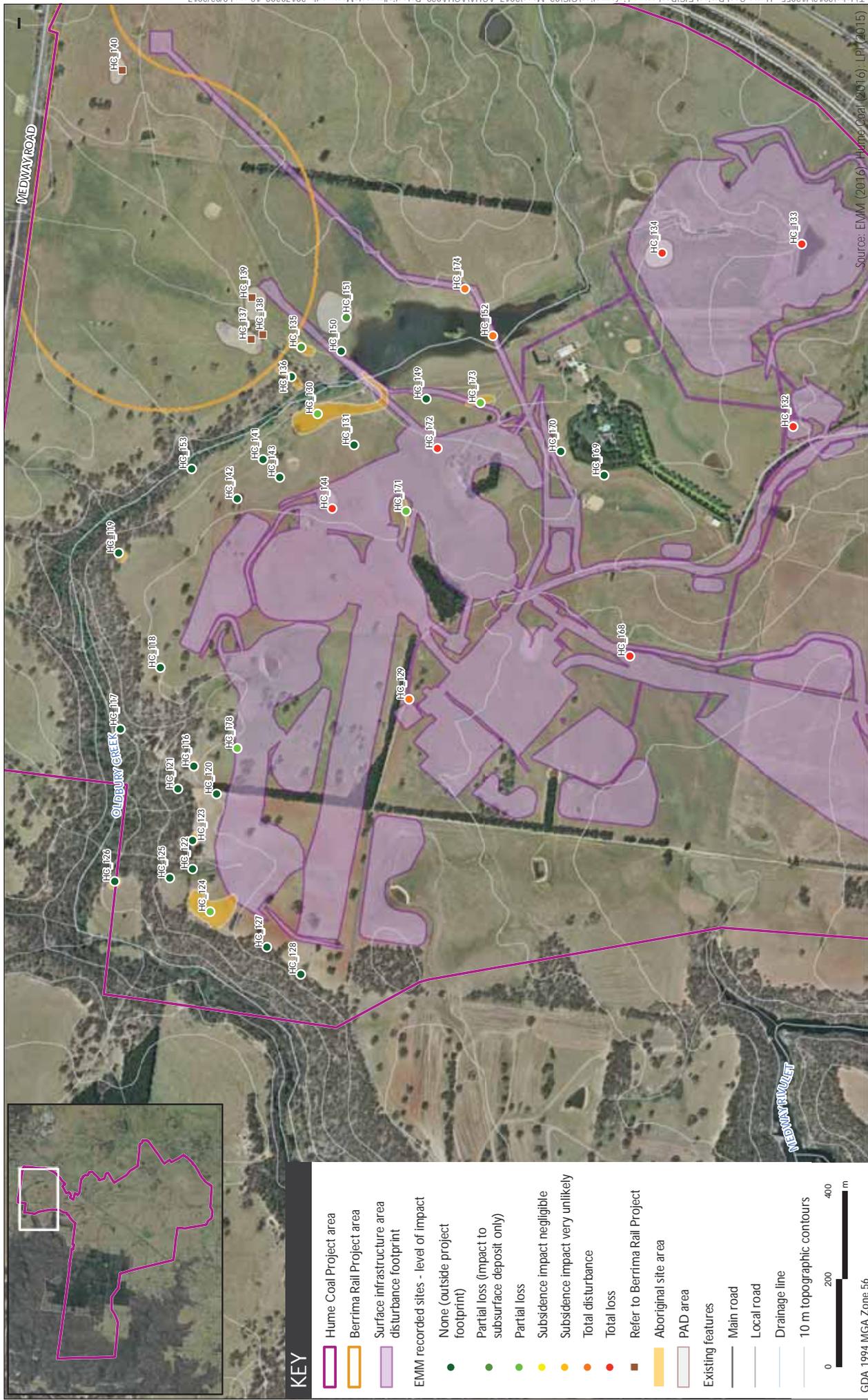
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Potential impacts - Belanglo State Forest (east)
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 10.2



GDA 1994 MGA Zone 56
 Source: EMM (2016); Hume Coal (2016); LPI (2015)
 T:\Jobs\2017\2055 - Hume Coal Project EIS\Background Information\GIS\2_Maps\2017_ACHA\ACHA027_PotentialImpactsEvandale_2017\0308_20.mxd 8/3/2017

Potential impacts - Evandale
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 10.3



Source: EMM (2016), Hume Coal (2016), LPI (2015)

Potential impacts - Mereworth
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 10.4

KEY

- Hume Coal Project area
- Berrima Rail Project area
- Surface infrastructure area disturbance footprint
- EMM recorded sites - level of impact
 - None (outside project footprint)
 - Partial loss (impact to subsurface deposit only)
 - Partial loss
 - Subsidence impact negligible
 - Subsidence impact very unlikely
 - Total disturbance
 - Total loss
- Refer to Berrima Rail Project
- Aboriginal site area
- PAD area
- Existing features
 - Main road
 - Local road
 - Drainage line
 - 10 m topographic contours

0 200 400 m

GDA 1994 MGA Zone 56



Potential impacts - Wongonbra
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 10.5

10.1.2 Identifying potential subsidence impacts

i Rationale

Subsidence predictions relate to the degree of tilt and strain on bedrock strata that occurs during and after the coal extraction process. However low the probability of subsidence it is important to account for certain Aboriginal sites within an underground mine area, particularly rock shelters and grinding groove sites by gathering baseline data and their significance. Secondly, it is important to monitor any changes that may occur during and after mining operations.

ii Previous studies involving subsidence predictions

a. Monitoring by Sefton (2000)

Long-term subsidence monitoring programs have been conducted in the Southern Coalfields approximately 40–70 km north-east of the project area by Caryll Sefton (2000). Sefton reviewed the effects of longwall mining on sandstone rock shelters over a 10 year period at Tahmoor, Appin, Tower, West Cliff, Metropolitan, Elouera and Cordeaux Collieries. The report details the monitoring of 52 rock shelter sites prior to, during and after longwall mining in the vicinity of the sites (Sefton 2000, p.15). Five sites showed evidence of impacts from longwall mining which were grouped into four categories: cracking; movement along existing joins/bedding plains; block fall and change of water seepage.

Overall, Sefton found that the components of rock shelters most likely to cause observable changes were: large overhangs (typically over 50 m³); wet overhangs; locations near the bottom of valleys; locations above mining goafs (the cavity behind a longwall extraction); and block-fall type shelters. High estimated compressive and tensile strain values were also associated with observed changes (Sefton 2000, p.31).

Despite Sefton's findings, the above shelter components are not considered at risk for the project. Firstly, longwall mining will not occur, and the estimated compressive and tensile strain values are negligible and will not cause perceptible subsidence of surface features (refer Section 10.1.3).

b. Ditton's prediction criteria

More recently in the Hunter Valley, Ditton (2012) assessed the potential subsidence impacts of the Tasman Extension Project on Aboriginal sites, which included rock shelters, grinding grooves and open stone artefact sites. The local geology was Permian Era conglomerate, sandstone, tuff, shale and coal of the Newcastle Coal Measures, with Triassic Era Narrabeen Group tuff, claystone, sandstone, conglomerate and coal along the Sugarloaf Range. Ditton (2012) also assessed the probability of the predicted levels of subsidence resulting in perceptible impacts for each Aboriginal site above the mine area. Perceptible impacts were defined in terms of 'cracking potential' (the primary indicator) and to a lesser extent 'toppling damage'. These were generic estimates based on the stratigraphic horizons on which the rock shelters existed, rather than based on the specific geometries of individual sites such as recorded by Sefton in her studies (2000). The chance of cracking potential was divided into the following categories based on predicted tensile and compressive strain values (Ditton in Kuskie 2012, p.170):

- Moderate: > 25% probability (tensile strain >2.5 mm/m, compressive strain >5 mm/m);
- Possible: 10–25% probability (tensile strain 1.5–2.5 mm/m, compressive strain 3–5 mm/m);
- Unlikely: 5–10% probability (tensile strain 0.5–1.5 mm/m, compressive strain 2–3 mm/m); and
- Very unlikely: <5% probability (tensile strain <0.5mm/m, compressive strain <2mm/m).

The probability for 'toppling potential' was divided into the following categories based on tilt increase:

- Moderate: > 25% probability (>30 mm/m tilt increase);
- Possible: 10–25% probability (10–30 mm/m tilt increase);
- Unlikely: 5–10% probability (3-10 mm/m tilt increase); and
- Very unlikely: <5% probability (<3 mm/m tilt increase).

These predictive parameters formulated by Ditton (2012) have been used as a comparative guide for the current impact assessment.

10.1.3 Subsidence predictions for the project area

Predictions of impacts from subsidence have been made using the specialist assessment report (Appendix M) and guided by the prediction rating system for underground mining areas prepared by Ditton (2012).

Mine Advice Pty Ltd, (2016) has estimated future subsidence, tilt and horizontal strain arising from the proposed underground mining. The following maximum values for tilt, curvatures and horizontal strain have been determined:

- Maximum tilt = 0.26 mm/m.
- Maximum convex curvature = 0.07 km⁻¹.
- Maximum concave curvature = 0.063 km⁻¹.
- Maximum tensile strain = 0.36 mm/m.
- Maximum compressive strain = 0.33 mm/m.

The maximum predicted value of surface subsidence above mine panels will be less than 20 mm. The report concluded that "the predicted maximum subsidence parameters are sufficiently low such that any associated impacts fall into the 'imperceptible' or 'negligible' category for all of the surface features that can be evaluated according to pre-set or established numerical criteria" (Mine Advice 2016, p. 85). However, because there are no strictly established numerical criteria for subsidence of rock shelter and grinding groove sites, it was useful to compare the predicted subsidence levels to previous investigations that used a probability rating system to predict impacts (Ditton 2012).

Using Ditton's (2012) parameters, the predictions for impacts to rock shelters or grinding groove in the project from increases in tensile strain, compressive strain and tilt all fall substantially within the category of "very unlikely" (<5% probability) (refer to Section 10.2.3). The predicted maximum values of tilt, curvature and strain are sufficiently low for the project that there was no need to individually assess each site across the underground mine area.

Subsequently, all sites above the underground mine area labelled as having 'no predicted subsidence impact'.

10.2 Impacts by project element

The section addresses the 206 sites in the project area and the two sites that are outside both the project area and the Berrima Rail Project area (a total of 208 sites). Impacts to the 11 sites within the Berrima Rail Project area are not addressed in this section.

Out of the 206 Aboriginal sites in the project area, 20 sites will be impacted to some degree by the direct disturbance footprint. Of these, three sites will be totally disturbed, 10 partially lost and seven totally lost. A breakdown of the degrees of impact by project element on each site type is presented in Table 10.1. Impacts from the project are illustrated in Figures 10.1 to 10.5.

There are 89 sites above the underground mine area that have no predicted subsidence impacts.

There are 99 sites outside both the direct disturbance footprint and the underground mine area.

Table 10.1 Degrees of impact by project element on each site type

Degrees of impact by project element	Impact type						
	None	Total disturbance	Partial loss	Partial loss (subsurface deposit only)	Total loss	No predicted subsidence impact	Total
<u>Surface infrastructure direct disturbance footprint</u>		3	8	2	7		20
<i>Isolated find</i>		3			5		8
Conveyor and water pipeline					1		1
Disturbed area for pipeline connection		1					1
Powerline and pipeline easement		2					2
Primary Water Dam					1		1
Stormwater management earthworks					2		2
Topsoil stockpile					1		1
<i>Open stone artefact site</i>			1		1		2
All-weather track			1				1
Conveyor					1		1
<i>Open stone artefact site with PAD</i>			1				1
Stormwater management earthworks			1				1
<i>Open stone artefact site with subsurface deposit</i>			4	1			5
All-weather track			2				2
Conveyor and all-weather track			2	1			3

Table 10.1 Degrees of impact by project element on each site type

Degrees of impact by project element	Impact type						
	None	Total disturbance	Partial loss	Partial loss (subsurface deposit only)	Total loss	No predicted subsidence impact	Total
<i>PAD</i>			1	1			2
Conveyor and all-weather track				1			1
Conveyor and stormwater management earthworks			1				1
<i>Subsurface artefact deposit</i>			1		1		2
Primary Water Dam					1		1
Stormwater management earthworks			1				1
<u>Sites above underground mining area</u>							89
Grinding grooves						1	1
Grinding grooves with rock pools						1	1
Isolated find						20	20
Open stone artefact site						28	28
Open stone artefact site with PAD						4	4
Potential scar tree						1	1
Rock shelter with art						1	1
Rock shelter with art and PAD						1	1
Rock shelter with art, deposit and PAD						1	1
Rock shelter with deposit and PAD						6	6
Rock shelter with PAD						25	25
<i>Outside direct disturbance footprint and underground mine area</i>	99						99
Total	99	3	8	2	7	53	208

10.3 Impacts and site significance

10.3.1 Overview

Impacts to Aboriginal sites (not including sites in the Berrima Rail Project area) are summarised according to their level of significance in Table 10.2 which addresses the 206 sites in the project area and the two sites outside the project area and the Berrima Rail Project area.

Table 10.2 Site significance and levels of impact

Significance rating	Impact type					
	None	Total disturbance	Partial loss	Total loss	No predicted subsidence impact	Total
High	4				6	10
Moderate	15		6		15	36
Low	80	3	4	7	68	162
Total	99	3	10	7	89	208

10.3.2 Direct impacts from surface infrastructure

No sites of high significance will be directly impacted by the project.

A total of six sites of moderate significance will be partially lost. Two of these are of higher moderate significance (HC_135 and HC_151) and will be partially lost as a result of conveyor and all-weather track construction. HC_135 is an open stone artefact site with confirmed subsurface deposit. The disturbance footprint will not impact the surface contents of HC_135, but will impact its subsurface deposit directly to the east within approximately 200 m of Oldbury Creek. HC_151 is an area of PAD nearby HC_135 which, as indicated from the test excavation results, is likely to be a continuation of the same moderate density deposit within 200 m of Oldbury Creek.

Four other sites of moderate significance (HC_124, HC_130, HC_154 and HC_179) will be partially lost. HC_124 will have a small portion of its surface scatter impacted. HC_130 will be partially impacted by a conveyor and all-weather track, but most of the surface artefact area will be avoided to the north. HC_179 will be partially impacted by a conveyor and stormwater management earthworks. The impacts to HC_154 will mainly be to the subsurface deposit within 200 m of Medway Rivulet where an all-weather track will be widened to 4 m width from an existing track.

A total of 14 sites of low significance will be impacted to varying degrees, comprising eight isolated finds, two open stone artefact sites, two open stone artefact sites with subsurface deposit, and two subsurface deposits.

10.3.3 Potential subsidence impacts

No subsidence impacts such as cracking or toppling is predicted for rock shelters or grinding groove sites. No subsidence impacts are predicted open stone artefact sites or isolated finds, as cracking soil and any associated acceleration of erosion is not predicted to occur. No subsidence impacts are predicted for trees (including any Aboriginal scarred or carved trees) that would cause damage.

Despite there being no predicted subsidence impacts to any sites, it is relevant to account for the sites that are above the underground mine area so that measures such as subsidence monitoring can be applied to certain sites with sandstone features. As such, the sandstone site types (rock shelters and grinding groove sites) are differentiated from other site types (such as open stone artefact sites, isolated finds and potential scarred trees) above the underground mine area (refer to. Figures 10.1 to10.5).

There are 36 sites sandstone site types above the underground mine area:

- Six of these sites are of high significance: a rock shelter with art and PAD (HC_037), a rock shelter with art, deposit and PAD (HC_002), a rock shelter with deposit and PAD (HC_017), a rock shelter with art (Compartment 157) and two grinding groove sites (International House and HC_034).
- Ten of these are of moderate significance: this comprises five rock shelters with deposit and PAD and five rock shelters with PAD.
- 20 of these sites are of low significance: all of these sites are poorer examples of rock shelters with PAD, with no art or artefacts recorded.

The remaining 53 sites above the underground mine area are made up of open stone artefact sites, isolated finds and potential scarred trees. None of these sites are of high significance, five sites of moderate significance and 48 sites of low significance.

10.4 Impacts on archaeologically sensitive areas

The project will impact areas of archaeological sensitivity to varying degrees. As defined in Section 8.4, archaeological sensitivity mapping applies to open stone artefact sites, rock shelters and grinding groove sites. Figures 8.1 and 8.2 show the project elements in relation to archaeologically sensitive areas.

10.4.1 Surface infrastructure area

The surface infrastructure area has been designed to avoid the most archaeologically sensitive areas which are broadly within 200 m of Medway Rivulet and Oldbury Creek. No areas of high archaeological sensitivity will be impacted by the surface infrastructure area. The surface infrastructure area only overlaps with the periphery of areas of moderate archaeological sensitivity or in linear sections where the project footprint has to cross Medway Rivulet and Oldbury Creek, such as the proposed overland conveyor and all weather track. Management measures to mitigate the impact on archaeologically sensitive areas are taken into account for the proposed salvage measures outlined in Section 11.3.

The conveyor and all-weather track will impact a small corridor of moderate sensitivity at the crossing of Oldbury Creek. Test excavations have shown that the north-eastern side of Oldbury Creek has the highest local transect artefact density (28 artefacts/m², refer to test pit transect 6), despite the upper portions of soil being mixed by ploughing. In contrast, the south-western side is characterised by lower artefact densities, because of the skeletal and heavily ploughed soils (refer to details of test pit transect 5). The same skeletal soils and lower artefact frequencies are likely to be found where the transmission route easement crosses Oldbury Creek.

The areas of moderate archaeological sensitivity south of Medway Rivulet will be impacted by linear infrastructure including the conveyor, stormwater manage earthworks and an all-weather track. The areas of highest archaeological potential are demarcated by the areas of PAD surrounding HC_154 and HC_179. Although the subsurface densities of HC_154 are lower than those found north of Oldbury Creek, the test excavation results still indicate moderate artefact densities for this area. HC_179 was not sampled during the test excavation because it was not in the original project layout. However, it is likely to have similar characteristics to HC_154.

The direct disturbance footprint will also impact upon some areas of low archaeological sensitivity. This is unavoidable given that the surface infrastructure area intersects with some ephemeral streams that drain into Oldbury Creek and Medway Rivulet. However, if compared to the broader project area landscape, the surface infrastructure area has comparatively fewer areas of low sensitivity. This is because it is an area of broad, low rolling hills amongst only a small network of ephemeral streams. Furthermore, considerable testing within these areas indicated very low artefact densities of up to approximately 2.7 artefacts/m². It is expected that land outside the sensitive areas have even lower artefact densities in a less predictable pattern. Overall, the areas of low archaeological sensitivity in the surface infrastructure area footprint are historically ploughed paddocks with predicted sparse archaeological deposits.

10.4.2 Underground mine area

i Underground mining

There are no predicted subsidence impacts to areas of archaeological sensitivity in the project area.

ii Downcast shafts

The locations of possibly up to two downcast shaft sites are unlikely to impact Aboriginal objects (refer to Figure 1.3 for their locations). The disturbance footprints of each shaft location were surveyed and they are not considered to be in areas of archaeological sensitivity. The footprint of the downcast shaft in the Belanglo State Forest is within a highly disturbed section of pine plantation and the downcast shaft on Carlisle Downs which connects to the northwest of the Wongonbra property is over 150 m from an ephemeral stream on an undulating plain in a cleared and ploughed paddock.

10.5 Measures to minimise harm and alternatives

How the project has evolved and the design alternatives considered are described in detail in Chapter 6 of the EIS. The most notable consideration from an Aboriginal cultural heritage perspective are the location and design of the surface infrastructure, and selection of a first workings mining method. The first seeks to avoid and minimise disturbance of sites, and the second is predicted to cause no subsidence impacts.

During the project's planning phase, desktop constraints analysis and archaeological surveys were undertaken to identify the most archaeologically sensitive areas so that the surface infrastructure area could be designed to avoid substantial impacts to Aboriginal sites.

One example of a resulting design modification is the original design of the surface infrastructure area which extended much closer to Oldbury Creek and Medway Rivulet. After areas of archaeological constraints were identified, it was set-back beyond 200 m of Oldbury Creek and Medway Rivulet where possible. Consequently, the surface infrastructure area has avoided most Aboriginal sites and areas of moderate archaeological sensitivity. Some unavoidable impacts will occur from the development of linear infrastructure, such as conveyors, which traverse Medway Rivulet and Oldbury Creek. However, any alternative options would have similar constraints as archaeological potential is at its highest within 200 m of these streams generally at any given point.

10.6 Cumulative impact assessment

10.6.1 Rationale

The aim of assessing cumulative impacts is to identify how much of the local and regional archaeological resource has been impacted already, how much of it remains, and the effects the project will have on the archaeological resource considering what is already lost from other developments. In this case it is important to recognise that the land surrounding the project area contains a substantial archaeological resource because it is largely undeveloped and borders onto extensive tracts of native forest.

10.6.2 Existing impacts to the region

The surrounding region is characterised by established open farmland, native vegetation and plantation forests. Low-level urban and industrial development is focused around towns to the north and east which make up a small portion of land use.

There are some industrial, extractive and manufacturing facilities in the locality, such as the former Berrima Colliery, Berrima Cement Works, New Berrima Clay/Shale Quarry, the proposed Sutton Forest Quarry (EIS not yet submitted) and Green Valley Sand Quarry. However, these have isolated disturbance footprints and represent a small cumulative impact on the archaeologically sensitive landscapes in the region.

The most widespread impact in the region is probably from the historic clearing and ploughing involved in establishing and maintaining the open farmland. These activities are likely to have removed modified trees and reduced the archaeological integrity of many open artefact sites, particularly on shallow soils where ploughing has disturbed the entire soil profile. Deeper archaeological deposits may exist in suitably deep soils but test excavations in the project area indicate that most of the archaeology is confined to the upper soil profile (upper 20 cm).

10.6.3 Cumulative impacts including the Berrima Rail Project

The cumulative impact assessment considered the Hume Coal Project in combination with the Berrima Rail Project. The Berrima Rail Project will directly impact eight sites and the Hume Coal Project will directly impact 20 sites, totalling 28 sites. Twenty of the 28 sites are of low scientific significance, two of which are unlikely to qualify as PADs after comparable landforms were tested and found to have very sparse deposits of low significance.

Eight sites of moderate significance will be partially lost, two of which are PADs that would need further testing to determine their actual significance (HC_177 and HC_179). Sites HC_135, HC_151, HC_176, and HC_177 are of a higher level of moderate significance that would require salvage excavation. HC_179 also may require salvage based on further testing.

Subsequently, the Berrima Rail Project and Hume Coal Project when considered collectively will not cause a substantial impact on the archaeological resource mainly because most of the impacts are limited to sites of low scientific significance and impacts to sites of moderate significance will be partially impacted, leaving some of their deposits preserved.

In summary, the project and Berrima Rail Project will have the following combined impacts:

- 20 sites will be directly impacted by the Hume Coal Project surface infrastructure area. This comprises:

- no sites of high significance;
 - six sites of moderate significance, two of which are of higher moderate significance (HC_135 and HC_151); and
 - 14 sites of low significance.
- Eight sites will be directly impacted by the Berrima Rail Project. This comprises:
 - no sites of high significance;
 - two sites of higher moderate significance (HC_176 and HC_177); and
 - six sites of low significance.
- 89 sites are above the project underground mine area, but no subsidence impacts are predicted to occur.
 - 102 sites are outside the Hume Coal Project direct disturbance footprint, underground mine area and the Berrima Rail Project disturbance footprint. These sites will be avoided.
 - Taking the very low risk of subsidence impacts into account, it is very likely that 191 of the 219 sites (87%) assessed as part of this ACHA will not be impacted from either project.

The cumulative impact on rock shelters and grinding groove sites in the locality and the wider region will remain low as subsidence impacts are not predicted.

10.6.4 Approved impacts in the project area

An Aboriginal heritage impact permit (AHIP) (#C0001763) has previously been issued to allow continued farming activities (ploughing, sowing crops and harvesting) in the project area and its surrounds and the maintenance of an existing road on the Wongonbra property (EMM 2017b). The AHIP covers these activities over 116 Aboriginal sites, 106 of which are in paddocks in the project area. Impacts are only permitted by the AHIP to sites comprising stone artefacts that are historically disturbed by vegetation clearance, ploughing or vehicle track grading. The AHIP does not permit impacts to grinding groove sites, potential scar trees or rock shelters. Overall, disturbance by continued ploughing is permitted for 78 sites and disturbance by vehicle track grading is permitted for 38 sites on the Wongonbra property.

The impact of continual ploughing is low because it is an activity that has taken place repeatedly since colonial settlement.. Test excavations across the landscape have established that the upper soil profile to be affected by continual ploughing (up to 20–30 cm) is already disturbed to some degree (refer to Section 7.5.1). As such, continued ploughing would only have a significant cumulative impact if the open paddocks in the project area had not already been extensively cleared and ploughed and intact archaeological deposits or features were present.

Aboriginal community collection is required for the 38 sites of low scientific significance on the vehicle track on Wongonbra. Overall, the loss of the 38 sites on the vehicle track does not contribute significantly to the cumulative impact in the region when their highly disturbed contexts and low scientific significance is taken into account.

Two 'no-harm' areas within an AHIP boundary have been established near Oldbury Creek in the project area under AHIP #C0001763. The purpose of establishing No-harm area 1 was to secure a portion of land within the AHIP boundary to prevent unnecessary ploughing activities even though it is likely to have occurred historically. The no-harm area was established to relate specifically to the proposed farming activities such as ploughing, sowing and cultivation. The conveyor and all-weather track will partially impact HC_130 in the AHIP No-harm area 1 but mostly on an existing dam wall bund that is heavily disturbed. It will also partially impact HC_135 through a linear disturbance corridor up to 10 m. These impacts will be mitigated through the proposed management measures outlined in Chapter 11.

The project will avoid grinding groove site HC_138 which is in the AHIP No-harm area 2.

10.7 Intergenerational equity

Aboriginal heritage management is based on the principle of *intergenerational equity* which has the intention to ensure present generations consider future generations when making management decisions. This principle is possibly the most relevant part of the notion of *ecologically sustainable development* (ESD) when considering Aboriginal heritage management.

A substantial local archaeological resource will remain in the project area, considering that 191 of the 219 Aboriginal sites addressed in this report will not be directly impacted by the project or the Berrima Rail Project. Most of the directly impacted sites are of low significance (n=14), six are of moderate significance, two of which are considered to have a higher level of moderate significance.

While it is acknowledged that the project will cause impacts to Aboriginal heritage, the proposed management measures presented in Chapter 11 are anticipated to provide detailed information about Aboriginal heritage in the project area to mitigate against the loss. This will help to achieve intergenerational equity by allowing retention of cultural materials for the enjoyment and education of future generations.

10.8 Conclusion

Taking the very low risk of subsidence impacts into account, it is very likely that 199 (91%) of the 219 sites assessed in this report will not be directly impacted by the project. The sites that will be impacted by the project (n=20) are those that are within the direct disturbance footprint.

The impact on the archaeological resource at a landscape level is relatively small considering the extensive traces of archaeological evidence throughout the project area and its surrounds. The surface infrastructure area has been specifically designed to avoid archaeologically sensitive areas and will only partially impact the more significant deposits by linear project elements. These deposits are generally disturbed to some degree from the historic land use and bioturbation but still have value to the Aboriginal community as tangible links to their culture and scientifically by providing information on stone artefact types, materials and their broader landscape associations. However, these deposits do not have the contextual integrity to warrant outright conservation that would further constrain the project. Therefore the best practice is to mitigate the impacts to Aboriginal objects through management measures suitable for the significance of the sites.

The project will avoid grinding groove sites, rock pools, rock shelters or potential scar trees. There are no predicted subsurface impacts; however subsidence monitoring can be used as a precautionary measure.

11 Management measures

11.1 Aboriginal heritage management framework

This section describes the management measures for identified Aboriginal heritage values in the project area. The management measures proposed here respond to:

- the impacts identified in the preceding chapter;
- the assessed significance of the Aboriginal sites;
- the views of the Aboriginal community as represented by RAPs;
- the need to address intergenerational equity in Aboriginal heritage;
- the need to protect and monitor sites not impacted by the project, but under the care of the proponent; and
- the need to mitigate the loss and disturbance of impacted Aboriginal sites and Aboriginal objects.

While Aboriginal sites cannot be replaced once they are lost, the salvage of Aboriginal objects that would be impacted by the project will provide a tangible link to these sites. Furthermore, with care in duration, those salvaged materials can be studied to help understand other Aboriginal sites present in the landscape to add to the growing body of information about past Australian Aboriginal life.

The management measures proposed in response to the impacts and significance levels comprise the following:

- active protection of Aboriginal sites close to the surface infrastructure area;
- passive management by avoidance of Aboriginal sites that are within the project area that will not be impacted by current plans;
- monitoring of a sample of sites for subsidence (despite subsidence impacts being very unlikely);
- salvage of Aboriginal sites in the surface infrastructure footprint; and
- procedures that specify actions to be taken in the event of discovery of human skeletal remains, discovery of Aboriginal sites, and for the ongoing care of salvaged Aboriginal objects within a keeping place.

A summary of the management measures across the project area is illustrated in Figure 11.1.

The number of sites to be addressed by each management measure is provided in Table 11.1. A summary of the site types, their significance and management measures are listed in Table 11.2.

Table 11.1 Site management summary

Management measure	Count of sites
Passive management: avoidance	161
Active management: fence and avoid	11
Partial collection/fence and avoid	4
Collection	10
Unmitigated impacts	2
Subsidence monitoring	16
Partial salvage excavation/avoid remainder of deposit	4
Refer to Berrima Rail Project for management	11
Total	219

11.2 Management measures for the project

11.2.1 Aboriginal cultural heritage management plan

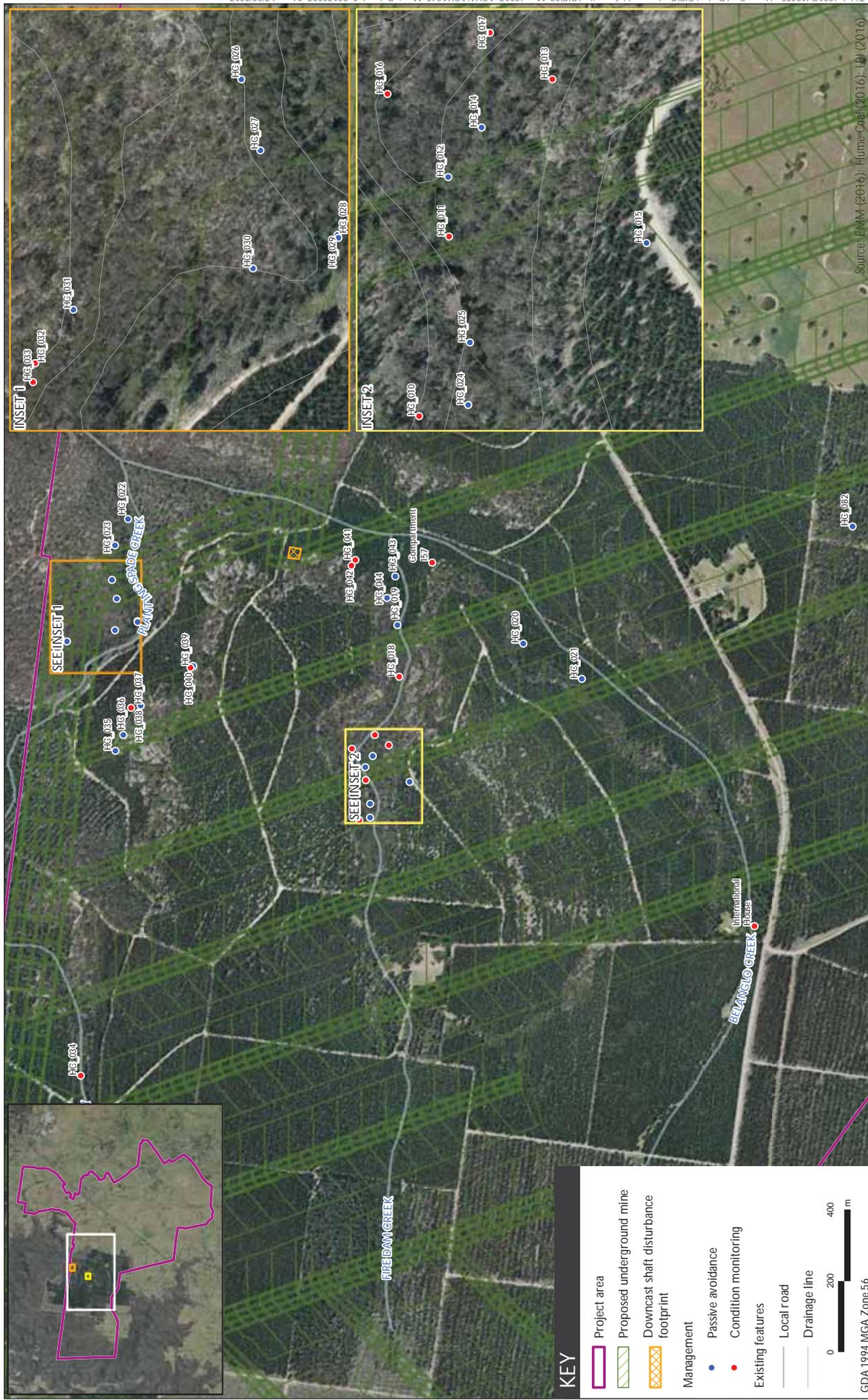
A Hume Coal Project Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed in consultation with DP&E, RAPs and any other agencies such as OEH, as stipulated by DP&E. It will provide details of:

- all Aboriginal sites identified for the project and those previously recorded in the broader project boundary;
- management measures and their progress towards completion;
- continuing consultation and involvement of registered Aboriginal parties;
- protocols for newly identified sites;
- protocols for suspected human skeletal material; and
- provisions for review and updates of the ACHMP.

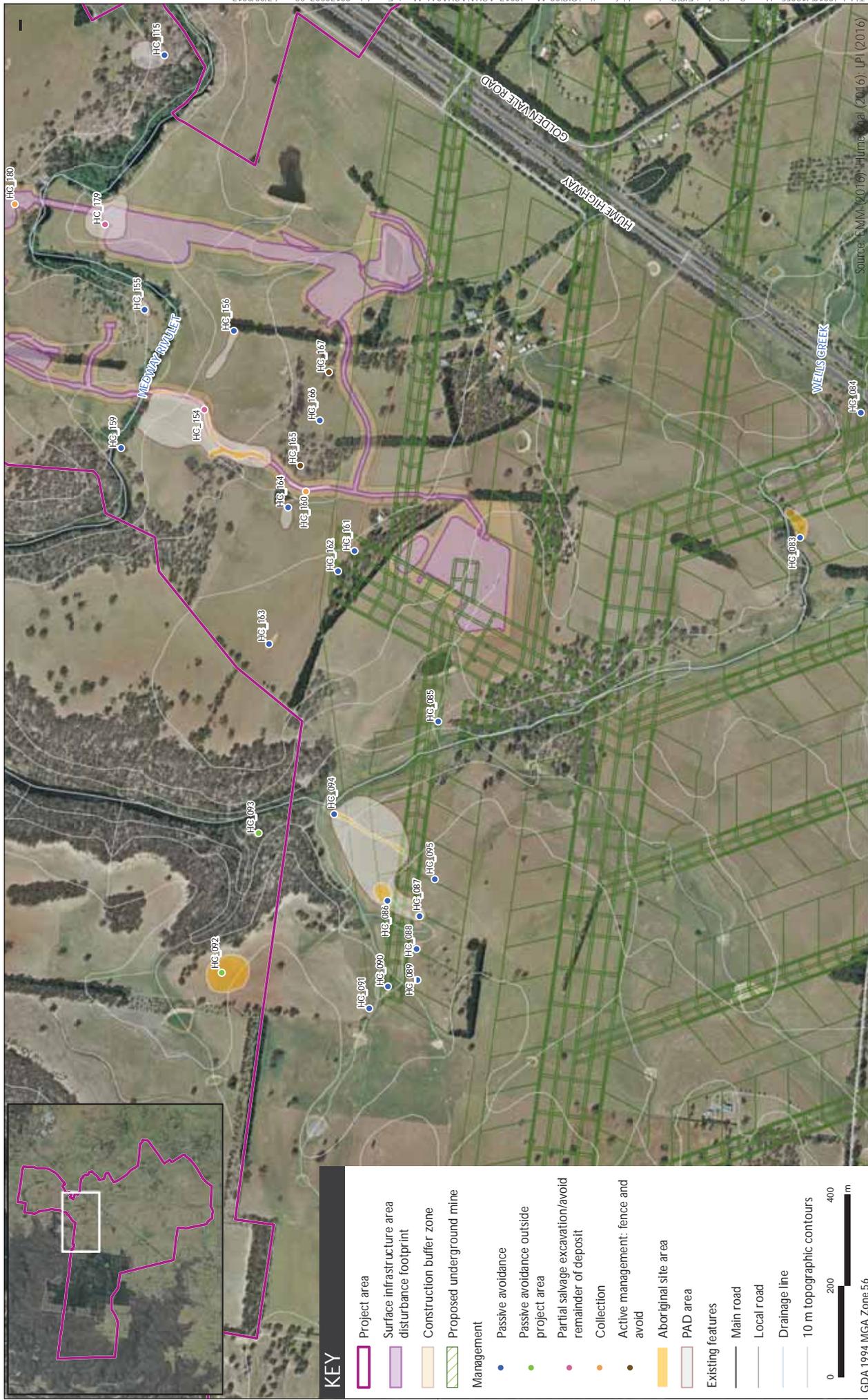
The ACHMP will be prepared after project approval and in addition to the above points, will address all relevant conditions of approval.



Management measures - Belanglo State Forest (west)
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 11.1

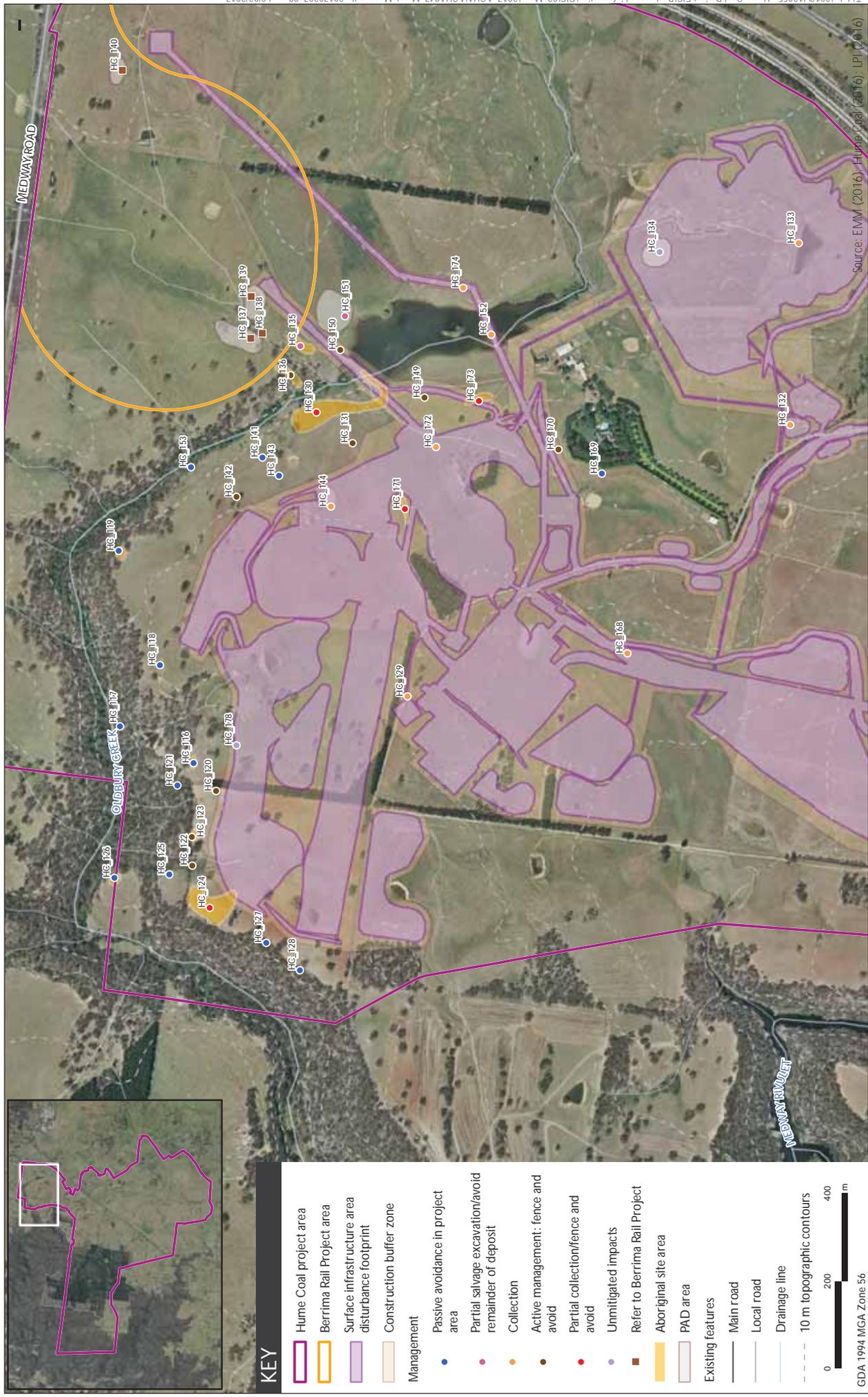


Management measures - Belanglo State Forest (east)
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 11.2



Source: EMM (2016), Hume Coal (2016), JPI (2016)
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Management measures - Evandale
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 11.3



Management measures - Mereworth
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 11.4



Source: EMM (2016), Hume Coal (2016), EMM (2016)

Management measures - Wongongbra
 Hume Coal Project
 Aboriginal Cultural Heritage Assessment
 Figure 11.5

KEY

- Project area
- Proposed underground mine

Management

- Passive avoidance
- Aboriginal site area

Existing features

- Main road
- Local road
- Drainage line
- 10 m topographic contours

0 250 500 1000
 m

11.2.2 Active management: fence and avoid

Active management will involve fencing whole sites or parts of sites for their protection. Active management will apply to sites close to the surface infrastructure area construction buffer zone (within 25 m of the construction buffer zone) for the duration of the project. For added protection it will also apply to grinding groove site HC_136 even though it is beyond 25 m from the construction buffer zone (Figure 11.4).

Eleven sites will be completely avoided and fenced and the remainder of four surface sites will be fenced after salvage collection.

After salvage excavation, the relevant sites will be assessed as to whether avoidance of the surrounding landscape (currently identified as PAD) is required. This may include fencing to prevent any inadvertent impacts to subsurface deposits that may extend beyond the disturbance footprint and into the construction buffer zone. These sites are listed for 'partial salvage excavation/avoid remainder of deposit' in Table 11.2.

11.2.3 Passive management: avoidance

No active management measures will be taken for sites more than 25 m (except HC_136 which will be fenced) from the construction buffer zone unless otherwise determined during the preparation of the ACHMP. A total of 159 sites in the project area will be passively avoided unless found at a later date to be at risk of project impacts.

11.2.4 Collection

All Aboriginal sites (surface stone artefacts) in the direct disturbance footprint will be collected from the ground surface. This will involve collecting the entire visible contents of 10 sites and partially collecting four sites.

The collection will be undertaken by qualified archaeologists and RAP representatives. The collection method will be as follows:

1. Site coordinates and area polygons for each site will be entered into a GPS device to re-locate and confirm the location.
2. The general vicinity of each site location will be inspected by the field team. Stone artefacts will be flagged on the ground and a photo taken of the flagged site. Each flagged artefact will be marked as a waypoint in the GPS.
3. All artefacts will be collected into snap lock plastic bags marked with the project name, site name, collection date and waypoint number.
4. All artefacts will be sorted and recorded post-fieldwork with respect to technological type, implement type, raw material, maximum block length and weight.
5. The collected artefacts will be incorporated into the overall salvage report detailing the results of the fieldwork, the artefacts recovered at each site and GIS figures showing the artefact locations.
6. Results of the artefact analysis will be integrated into the overall salvage report and contribute to the overall interpretation of the area.

11.2.5 Salvage excavation

Four sites of moderate significance will be archaeologically excavated. The four sites are two open artefact sites with subsurface deposit (HC_135 and HC_154) and two PADs (HC_151 and HC_179 respectively). The established subsurface sites have been confirmed to contain the highest artefact densities in the surface infrastructure area through test excavation and the PADs are anticipated to have similar contents. These sites are likely to provide a good representative sample of stone artefacts, raw materials and implements used in the local area. However, these sites do not warrant outright conservation as they lack archaeological integrity due to the widespread disturbance from historic clearing and ploughing, leaving a mixed artefact deposit and low potential for other features such as hearths.

All salvage excavation areas will be limited to the extent of the disturbance boundary in each location. This means that further refinements to the disturbance boundary (eg the demarcation of discrete footings for the overland conveyor) will influence the final scope of the salvage excavation program.

The sites will be subject to a staged program comprising an additional phase of testing help target the highest artefact densities in the direct disturbance footprint. The salvage excavation of HC_135 and HC_151 will be treated as one salvage location as both are likely to represent a continuation of the same site and roughly overlap where ground disturbed is proposed.

The additional testing will follow the method followed for the ACHA . For areas previously tested (eg HC_135 and HC_154), it may involve placing additional 50 cm x 50 cm test pits at 10 m intervals within the disturbance footprint perpendicular to the previously excavated transects or within later-defined discrete disturbance footprints. The aim of this method will be to identify the highest artefact concentrations within the limits of the disturbance footprint so that open area excavation can be employed.

Where test excavation has not previously occurred (HC_179), the same method of placing test pits at 10 m intervals across and perpendicular to the PAD will apply.

In the event that an artefact density of 10 artefacts or above is encountered in a 50 cm x 50 cm test pit (which is indicative of 40 artefacts/m² at that particular location), or if an archaeological feature such as a hearth is found, at least one of the test pits with such evidence will be expanded into an open area within the site being excavated. Once the subject test pit is expanded to 1 m x 1 m, the remaining test pits in the open area can be dug in 1 m x 1 m squares to increase the efficiency of the salvage. The final scope of salvage will be determined during the preparation of the ACHMP.

All excavated soil will be wet sieved. The aperture of the sieve used will be determined during the development of the ACHMP. Typically, 5 mm sieves are used but the identification of smaller artefacts may warrant the use of smaller sieves.

Salvaged artefacts will be subject to attribute analysis. Following analysis, artefacts will be retained in a keeping place (refer to Section 11.2.8). AHIMS records will be updated with a site impact recording form.

11.2.6 Unmitigated impacts

Unmitigated impacts will apply to two sites in the project area: HC_134 and HC_178. Unmitigated impacts to these two sites simply apply because they relate to subsurface sites of low significance which do not warrant further investigation or salvage.

11.2.7 Subsidence monitoring

Although subsidence impacts on rock shelter and grinding groove sites are not predicted, a program of archaeological subsidence monitoring will be undertaken for a selection of the most significant sites above the underground mine area.

The results of the monitoring will be consolidated into a report to contribute to a better understanding of subsidence impacts in the region. This report would be prepared (either a standalone report or as part of a broader report) and updated periodically according to the progress of mining under individual rock shelters. The approximate timing of this will be set out in the ACHMP.

Eleven of the 16 sites selected for monitoring are those that retain visible evidence of Aboriginal occupation (art, or stone artefacts present on the shelter floor), and which are of moderate and high significance. All grinding groove sites (HC_034 and 'International House'), rock shelters with art (HC_002, HC_037 and Compartment 157) and rock shelters with deposit and PAD (HC_010, HC_011, HC_016, HC_017, HC_032) above the underground mine area will be subject to monitoring. Additionally, monitoring is also recommended for the only three rock shelters of moderate significance with shelter areas over 50 m³ (HC_018, HC_033, HC_042).

Monitoring will involve further inspection and recording of the condition of these sites prior to the commencement of mining and then after mining has taken place. Comparisons will be made between the results gathered before and after mining to identify any subsidence impacts. Monitoring will add to a growing dataset on subsidence impacts and may guide future assessments in the locality and broader region. The appropriate monitoring method will be determined during the preparation of the ACHMP.

The ACHMP will include provisions for changes for updates to be made to the ACHMP and the mine plan to protect sites if the monitoring program indicates that impacts are in excess of predicted levels.

11.2.8 Special procedures

i Aboriginal ancestral remains

In the event that known or suspected human skeletal remains are encountered during the activity, the following procedure will be followed as soon as the suspected remains are discovered:

- in the immediate-term all work in the vicinity will cease and the find will be reported to the work supervisor who will advise the site supervisor or other nominated senior staff member;
- the site supervisor or other nominated senior staff member will promptly notify the police and the state coroner (as required for all human remains discoveries);
- the site supervisor or other nominated senior staff member will contact OEH for advice on identification of the skeletal material as Aboriginal and management of the material; and
- if it is determined that the skeletal material is of Aboriginal ancestral remains, the RAPs will be contacted and consultative arrangements will be made to discuss ongoing care or reinterment of the remains.

ii Aboriginal keeping place

A keeping place is a designated long term secure area for the purpose of storing and curating Aboriginal cultural materials and their associated documentation.

The recovered Aboriginal objects will be temporarily stored at a designated location during cataloguing and analysis. At the completion of cataloguing and analysis, the recovered objects will be transferred to a long-term facility.

RAPs have expressed that the objects recovered from the project area should be kept by an Aboriginal organisation. Yamanda Aboriginal Association has nominated to be the custodians of the recovered artefacts which will be confirmed during the development of the ACHMP. This would involve applying for a care agreement with OEH.

The facility for the recovered objects will be determined during the development of the ACHMP. All associated reports and records will be stored in close proximity to the artefacts, and kept in both hard copy and digital forms. The procedures to be adopted for access to the objects will be detailed in the ACHMP.

iii Discovery of new Aboriginal sites in the project area

In the event of discovery of new Aboriginal sites in the project area, all work in the potentially affected area will halt and an archaeologist and designated RAP representatives will be contacted to determine the significance of the object(s). Any new sites will also be registered in the AHIMS database. Objects will be managed in a manner consistent with the management measures outlined above and finalised in the ACHMP, including appropriate forms of salvage collection.

11.2.9 Site summaries

Table 11.2 provides a summary of Aboriginal sites, significance ratings, impact types and management recommendations.

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_001	Open stone artefact site with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_002	Rock shelter with art, deposit and PAD	High	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_003	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_004	Rock shelter with deposit and PAD	High	None	None	Passive management: avoidance
HC_005	Rock shelter with deposit and PAD	Moderate	None	None	Passive management: avoidance
HC_006	Rock shelter with PAD	Moderate	None	None	Passive management: avoidance

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_007	Rock shelter with PAD	Moderate	None	None	Passive management: avoidance
HC_008	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_009	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_010	Rock shelter with deposit and PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_011	Rock shelter with deposit and PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_012	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_013	Rock shelter with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_014	Potential scar tree	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_015	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_016	Rock shelter with deposit and PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_017	Rock shelter with deposit and PAD	High	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_018	Rock shelter with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_019	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_020	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_021	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_022	Rock shelter with deposit and PAD	High	None	None	Passive management: avoidance
HC_023	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_024	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_025	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_026	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_027	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_028	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_029	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_030	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_031	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_032	Rock shelter with deposit and PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_033	Rock shelter with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_034	Grinding grooves	High	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_035	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_036	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_037	Rock shelter with art and PAD	High	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_038	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_039	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_040	Rock shelter with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_041	Rock shelter with deposit and PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_042	Rock shelter with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
HC_043	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_044	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_045	Open stone artefact site with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_046	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_047	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_048	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_049	Rock shelter with PAD	Moderate	None	None	Passive management: avoidance
HC_050	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_051	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_052	Rock shelter with PAD	Moderate	None	None	Passive management: avoidance
HC_053	Potential scar tree	Low	None	None	Passive management: avoidance
HC_054	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_055	Potential scar tree	Low	None	None	Passive management: avoidance
HC_056	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_057	Potential scar tree	Low	None	None	Passive management: avoidance
HC_058	Potential scar tree	Low	None	None	Passive management: avoidance
HC_059	Open stone artefact site	Low	None	None	Passive management: avoidance

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_060	Rock shelter with PAD	Moderate	None	None	Passive management: avoidance
HC_061	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_062	Potential scar tree	Low	None	None	Passive management: avoidance
HC_063	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_064	Potential scar tree	Low	None	None	Passive management: avoidance
HC_065	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_066	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_067	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_068	Rock pool	Low	None	None	Passive management: avoidance
HC_069	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_070	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_071	Rock shelter with deposit and PAD	High	None	None	Passive management: avoidance
HC_072	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_073	Rock shelter with PAD	Moderate	None	None	Passive management: avoidance
HC_074	Rock shelter with PAD	Moderate	None	None	Passive management: avoidance
HC_075	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_076	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_077	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_078	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_079	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_080	Rock shelter with PAD	Low	None	None	Passive management: avoidance
HC_081	Rock shelter with PAD	Low	None	None	Passive management: avoidance

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_082	Rock shelter with PAD	Low	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Passive management: avoidance
HC_083	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_084	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_085	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_086	Open stone artefact site with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_087	Open stone artefact site with PAD	Moderate	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_088	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_089	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_090	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_091	Isolated find	Low	None	None	Passive management: avoidance
HC_092	Open stone artefact site with PAD	Low	None	None	Passive management: avoidance
HC_093	Open stone artefact site	Low	None	None	Passive management: avoidance
HC_094	Open stone artefact site with PAD	Moderate	None	None	Passive management: avoidance
HC_095	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_096	Isolated find	Low	None	None	Passive management: avoidance
HC_097	Isolated find	Low	None	None	Passive management: avoidance
HC_098	Isolated find	Low	None	None	Passive management: avoidance
HC_099	Open stone artefact site	Low	None	None	Passive management: avoidance
HC_100	Open stone artefact site	Low	None	None	Passive management: avoidance
HC_101	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_102	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_103	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_104	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_105	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_106	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_107	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_108	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_109	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_110	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_111	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_112	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_113	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_114	Open stone artefact site	Low	None	None	Passive management: avoidance
HC_115	PAD	Moderate	None	None	Passive management: avoidance
HC_116	Open stone artefact site with PAD	Low	None	None	Passive management: avoidance
HC_117	Isolated find	Low	None	None	Passive management: avoidance
HC_118	Isolated find	Low	None	None	Passive management: avoidance
HC_119	Open stone artefact site with PAD	Moderate	None	None	Passive management: avoidance
HC_120	Open stone artefact site	Low	None	None	Active management: fence and avoid
HC_121	Isolated find	Low	None	None	Passive management: avoidance
HC_122	Isolated find	Low	None	None	Active management: fence and avoid
HC_123	Open stone artefact site with PAD	Low	None	None	Active management: fence and avoid

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_124	Open stone artefact site with PAD	Moderate	Stormwater management earthworks	Partial loss	Partial collection/fence and avoid
HC_125	Isolated find	Low	None	None	Passive management: avoidance
HC_126	Open stone artefact site with PAD	Moderate	None	None	Passive management: avoidance
HC_127	Open stone artefact site	Low	None	None	Passive management: avoidance
HC_128	Isolated find	Low	None	None	Passive management: avoidance
HC_129	Isolated find	Low	Disturbed area for pipeline connection	Total disturbance	Collection
HC_130	Open stone artefact site with subsurface deposit	Moderate	Conveyor and all-weather track	Partial loss	Partial collection/fence and avoid
HC_131	Open stone artefact site	Low	None	None	Active management: fence and avoid
HC_132	Isolated find	Low	Topsoil stockpile	Total loss	Collection
HC_133	Isolated find	Low	Primary Water Dam	Total loss	Collection
HC_134	Subsurface artefact deposit	Low	Primary Water Dam	Total loss	Unmitigated impacts
HC_135	Open stone artefact site with subsurface deposit	Higher moderate	Conveyor and all-weather track	Partial loss (impact to subsurface deposit only)	Partial salvage excavation/avoid remainder of deposit
HC_136	Grinding grooves with open stone artefact site and PAD	High	None	None	Active management: fence and avoid
HC_137	Subsurface artefact deposit	Low	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_138	Grinding grooves	Moderate	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_139	Subsurface artefact deposit	Low	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_140	PAD	Low	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_141	Isolated find	Low	None	None	Passive management: avoidance
HC_142	Open stone artefact site	Low	None	None	Active management: fence and avoid

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_143	Isolated find	Low	None	None	Passive management: avoidance
HC_144	Isolated find	Low	Stormwater management earthworks	Total loss	Collection
HC_145	Isolated find	Low	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_146	PAD	Low	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_147	Subsurface artefact deposit	Low	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_148	Subsurface artefact deposit	Low	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_149	Isolated find	Low	None	None	Active management: fence and avoid
HC_150	Isolated find	Low	None	None	Active management: fence and avoid
HC_151	PAD	Higher moderate	Conveyor and all-weather track	Partial loss (impact to subsurface deposit only)	Partial salvage excavation/avoid remainder of deposit
HC_152	Isolated find	Low	Power line and pipeline easement	Total disturbance	Collection
HC_153	Isolated find	Low	None	None	Passive management: avoidance
HC_154	Open stone artefact site with subsurface deposit	Moderate	All-weather track	Partial loss	Partial salvage excavation/avoid remainder of deposit
HC_155	PAD	Moderate	None	None	Passive management: avoidance
HC_156	Open stone artefact site with PAD	Moderate	None	None	Passive management: avoidance
HC_157	Isolated find	Moderate	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_158	Potential scar tree	Low	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_159	Open stone artefact site	Low	None	None	Passive management: avoidance
HC_160	Open stone artefact site with subsurface deposit	Low	All-weather track	Partial loss	Collection

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_161	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_162	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
HC_163	Open stone artefact site	Low	None	None	Passive management: avoidance
HC_164	PAD	Low	None	None	Passive management: avoidance
HC_165	Isolated find	Low	None	None	Active management: fence and avoid
HC_166	Isolated find	Low	None	None	Passive management: avoidance
HC_167	Open stone artefact site	Low	None	None	Active management: fence and avoid
HC_168	Isolated find	Low	Conveyor and water pipeline	Total loss	Collection
HC_169	Open stone artefact site	Low	None	None	Passive management: avoidance
HC_170	Isolated find	Low	None	None	Active management: fence and avoid
HC_171	Open stone artefact site with subsurface deposit	Low	Conveyor and all-weather track	Partial loss	Partial collection/fence and avoid
HC_172	Isolated find	Low	Stormwater management earthworks	Total loss	Collection
HC_173	Open stone artefact site	Low	All-weather track	Partial loss	Partial collection/fence and avoid
HC_174	Isolated find	Low	Power line and pipeline easement	Total disturbance	Collection
HC_175	Grinding grooves	Moderate	None	None	Passive management: avoidance
HC_176	Subsurface artefact deposit	Higher moderate	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_177	PAD	Higher moderate	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project ACHA	Refer to Berrima Rail Project for management
HC_178	Subsurface artefact deposit	Low	Stormwater management earthworks	Partial loss	Unmitigated impacts
HC_179	PAD	Moderate	Conveyor and stormwater management earthworks	Partial loss	Partial salvage excavation/avoid remainder of deposit

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
HC_180	Open stone artefact site	Low	Conveyor	Total loss	Collection
WSF_1	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF_2	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF_3	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF_4	Isolated find	Low	None	None	Passive management: avoidance
WSF5	Open stone artefact site	Low	None	None	Passive management: avoidance
WSF6	Isolated find	Low	None	None	Passive management: avoidance
WSF7	Isolated find	Low	None	None	Passive management: avoidance
WSF8	Isolated find	Low	None	None	Passive management: avoidance
WSF9	Isolated find	Low	None	None	Passive management: avoidance
WSF10	Isolated find	Low	None	None	Passive management: avoidance
WSF11	Isolated find	Low	None	None	Passive management: avoidance
WSF12	Isolated find	Low	None	None	Passive management: avoidance
WSF13	Open stone artefact site	Low	None	None	Passive management: avoidance
WSF14	Open stone artefact site	Low	None	None	Passive management: avoidance
WSF15	Isolated find	Low	None	None	Passive management: avoidance
WSF16	Open stone artefact site	Low	None	None	Passive management: avoidance
WSF17	Open stone artefact site	Low	None	None	Passive management: avoidance
WSF18	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF19	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF20	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF21	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF22	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance

Table 11.2 Site significance and management measure summary

Site name	Site type (post excavation)	Significance rating	Impact type (if applicable)	Level of impact	Management measure
WSF23	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF24	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF25	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF26	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF27	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF28	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF29	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF30	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF31	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF32	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF33	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF34	Open stone artefact site	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF35	Isolated find	Low	None	None	Passive management: avoidance
WSF36	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
WSF37	Isolated find	Low	Above underground mine footprint	No predicted subsidence impact	Passive management: avoidance
Compartment 157	Rock shelter with art	High	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring
International House	Grinding grooves with rock pools	High	Above underground mine footprint	No predicted subsidence impact (sandstone site type)	Subsidence monitoring

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Abbreviations

AHD	Australian Height Datum
ACHA	Aboriginal cultural heritage assessment
AHIMS	Aboriginal Heritage Information Management System
ACHMP	Aboriginal Cultural Heritage Management Plan
AMBS	Australian Museum Business Services
BNAC	Buru Ngunawal Aboriginal Corporation
BP	Years before present
c.	circa
CHPP	Coal handling and preparation plant
cm	centimetres
DEC	Department of Environment and Conservation
DECCW	Department of Environment Climate Change and Water
DP&E	Department of Planning and Environment
EIS	Environmental Impact Statement
EMM	EMM Consulting
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
ERM	Environmental Resources Management
ESD	Ecologically sustainable development
FGS	Fine grained siliceous
g	grams
GIS	geographical information system
GPS	global positioning system
ha	hectare
HSP	Highlands Source Project
ICOMOS	International Council on Monuments and Sites
IMT	Indurated mudstone/tuff
km	kilometres
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
m	metres
m ²	square metres
mm	millimetres
n	Number
NIAC	Northern Illawarra Aboriginal Collective Inc
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential archaeological deposit
PLALC	Pejar Local Aboriginal Land Council
RAP	Registered Aboriginal Party
ROM	Run of mine
RWD01	Raw Water Dam 01

SEARs	Secretary's Environmental Assessment Requirements
surface infrastructure area	Surface infrastructure area (comprising all surface infrastructure elements)
t	Tonne
TEC	Total Earth Care
TP	Test pit
WSC	Wingecarribee Shire Council

Glossary

Many of these definitions have been taken from the *Code of Practice for archaeological investigation of Aboriginal objects in NSW* (DECCW 2010).

Aboriginal object: A physical manifestation of past Aboriginal activity. The legal term is defined in the *National Parks and Wildlife Act 1974* section 5 as: any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

Typical examples include stone artefacts, grinding grooves, Aboriginal rock shelters which by definition include physical evidence of occupation, midden shell, hearths, stone arrangements and other landscape features which derive from past Aboriginal activity.

Archaeological survey: A method of data collection for Aboriginal heritage assessment. It involved a survey team walking over the land in a systematic way, recording information. Activities are not invasive or destructive.

Aboriginal culturally modified tree: A tree of sufficient age to have been mature at the time of traditional Aboriginal hunter-gatherer life and therefore generally of more than 220 years ago with evidence of bark or cambium wood removal for the purpose of implement manufacture, footholds, bark sheet removal for shelter, or extraction of animals or other food. Care must be taken to distinguish Aboriginal scars from the much more common natural causes of branch tear, insect attack, animal impact, lightning strike and dieback. Culturally modified tree recognition guidelines exist to distinguish these features. Naturally scarred trees are often misidentified as Aboriginal culturally modified trees.

Aboriginal site: The location where a person in the present day can observe one or more Aboriginal objects. The boundaries of a site are limited to the extent of the observed evidence. In the context of this report a 'site' does not include the assumed extent of unobserved Aboriginal objects (such as archaeological deposit). Different archaeologists can have varying definitions of a 'site' and may use the term to reflect the assumed extent of past Aboriginal activity beyond visible Aboriginal objects. Such use of the term risks defining all of Australia as a single 'site'.

Aboriginal stone artefact: A stone object with morphological features derived from past Aboriginal activity such as intentional fracture, abrasion or impact. Artefacts are distinguished by morphology and context. Typically flaked stone artefacts are distinguished from naturally broken stone by recognition of clear marginal fracture initiation (typically herzian/conchoidal or wedging initiation) on highly siliceous stone types which can often be exotic to the area. Care must be taken to distinguish modern broken stone in machine impacted contexts and therefore context must be carefully considered as well as morphology.

Aggradation: a term used in geology for the increase in land elevation, typically in a river system, due to the deposition of sediment.

AHIMS: Aboriginal Heritage Information Management System — a computer software system employed by the Office of Environment and Heritage to manage many aspects of Aboriginal site recording and permitting. AHIMS includes an Aboriginal sites database which can be accessed via an internet portal.

Archaeological deposit: Aboriginal objects occurring in one or more soil strata. The most common form of archaeological deposit relates to the presence of a single conflated layer of Aboriginal stone artefacts worked into the topsoil through **bioturbation**.

Backed artefact: A thin flake or blade-flake that has been shaped by secondary flaking (**retouch**) along one lateral margin. The retouched margin is typically steep and bipolar to form a blunt 'back' in the manner of a modern scalpel blade. Distinctive symmetrical and asymmetrical forms are typically found called geometric **microliths** and Bondi points respectively. A thick symmetrical form, called an Elouera, is typically the size of a mandarin segment.

Bioturbation: is the reworking of soils and sediments by animals or plants. Its effects include changing texture of sediments (diagenetic), bioirrigation and displacement of microorganisms and non-living particles.

Bipolar flaking: Where the stone to be worked is rested on an anvil or other stone before being hit by the hammerstone. This results in the presence of negative flake scars on both ends of the core.

Bondi point: See backed artefact definition.

Brown podosols: Topsoils have loamy textures. A2 horizons are common, There is a clear boundary onto the B horizon. They have a sandy clay to heavy clay texture (typically occur on upper and mid-slopes).

Chocolate Soils: Soils that are typically formed in a basaltic parent material where slope or bedrock strata influence drainage. Surface horizons comprise loam, clay loam or silty clay loam. There is a gradual boundary to a brown or brownish black B horizon. There is no A2 horizons.

Conchoidal: A term used in relation to fracture surfaces on Aboriginal stone artefacts - bulb-like in the manner of a bulbous protrusion on a bivalve shell.

Elouera: See backed artefact definition.

Erailure scar: The small flake scar on the dorsal side of a flake next to the platform. It is the result of rebounding force during percussion flaking.

Exposure: estimates the area with a likelihood of revealing buried artefacts or deposits, not just an observation of the amount of bare ground.

Geometric microlith: See backed artefact definition.

Grinding grooves: Grinding grooves typically derive from the sharpening of stone hatchet heads on sandstone rock. Grooves appear as elliptical depressions of around 25 cm length with smooth bases. Although mostly occurring in association with water to wash the abraded stone dust away from the groove, such sites have been recorded away from water. Narrow grooves or broad abraded areas may occur less commonly and may be derived from spear sharpening or other grinding activities.

Haematite: a pigment featured in ochre used for tinting with a permanent colour.

Holocene: A period of time generally 10,000 years, which marks the end of the last ice age, to the present.

Igneous: relating to or involving volcanic or plutonic processes.

Indurated mudstone/tuff (IMT): the fine textured, very hard, yellowish, orange, reddish-brown or grey rocks from which stone artefacts are made.

Isotropic: Having a physical property that has the same value when measured in different directions. In relation to stone used for stone tools a fracture path is not hindered by layer boundaries or other favoured plane of cleavage.

Microlith: Very small fragments of flakes retouched into geometric shapes and usually present on tools like barbed spears, arrows and sickles.

Midden: A collection of shells and associated economic remains resulting from Aboriginal food gathering and processing activity. Middens comprise shellfish remains of consistent size in a rich dark earth matrix commonly associated with stone artefacts, fish bone and animal bone although shells are commonly the most obtrusive element.

Keeping place: A room or facility with the express and exclusive purpose of storing Aboriginal cultural heritage materials with accompanying documentation in a secure and accessible manner which protects their cultural heritage values.

Krasnozems: Mainly loams, clay loams and silty clay loams with a clear or gradual boundary to a dark reddish brown B horizon. Clays are typically light to medium and occasionally heavy.

Lithosols: Soils that have little or no profile development. They occur on steep slopes and are usually shallow and are left mainly as uncleared native bushland.

Open stone artefact site/stone artefact site: An unenclosed area where Aboriginal stone artefacts occur – typically exposed from a topsoil archaeological deposit by erosion. Typically the term is used to refer to two or more artefacts although this is an arbitrary distinction. A general ‘rule of thumb’ boundary definition employed by archaeologists is that artefacts or features more than 50 m apart are regarded as separate sites, however there is no theoretical imperative dictating such as rule. (The 50 m separation rule is used for the most part in EMM’s work).

Pirri point: A leaf-shaped stone implement with unifacial retouch extending from the lateral margins to a central keel running the length of the dorsal surface.

Pleistocene: A period of time 2.6 million years ago to 10,000 years ago. Reference to ‘Pleistocene sites’ generally means reference to sites older than 10,000 years.

Podosols: Soils with accumulations of organic matter, iron and aluminium. They are usually sand textured to depth. Yellow and red podosols are generally acid neutral. Yellow podosols have coarse to medium textured A horizons.

Point cluster: A group of GPS points used to identify the locations of individual artefacts in the field.

Potential Archaeological Deposit (PAD): An area where there is an inferred presence of Aboriginal objects in the soil based on the environmental context which is typically associated with discovery of Aboriginal objects in analogous areas. This is not strictly a ‘site’ type, although AHIMS records it as such for the purpose of associating Aboriginal heritage Impact Permits with geographical areas.

Red podosols: Podosols with a pronounced texture contrast and clear to abrupt boundaries between A and B horizons. A2 is often massive and gravelly.

Retouch: The modification of the edges of a flake or tool by the removal of a series of small flakes.

Siliceous Sands: Sands that are usually found on coarse-grained sandstones and in sandstone colluvium. They are often sandstone outcrops present in the landscape. The topsoil has a loamy sand to light sandy clay.

Scarp: a steep slope characterised by outcropping bedrock. In this report, scarp refers to a combination of landform elements including scarp foot slopes, scarps, and cliff lines where outcropping sandstone is present in the landscape 10% and above.

Spur: the lateral crests of land that descend from the summit of hills or ridges. Spurs typically extend, with decreasing elevation, closer to streams and valley floors than the main crest of a hill.

Taphonomic: the events and processes, such as burial in sediment, leading to the degradation, decomposition or preservation of objects.

Thumbnail scraper: A thumbnail sized thin flake with steep unidirectional retouch or use-wear around a convex working edge.

Transect: A sample unit which is walking line or corridor across the study area.

Upsidence: phenomena that occurs when mining approaches and undermines river valleys. It can result in cracking and buckling of river beds and rock bars and localised loss of water flow.

Visibility: The amount of bare ground on exposures which might reveal artefacts or other archaeological materials.

Yellow earths: predominantly sandy-textured soils with earthy porous fabric, weak profile differentiation and gradual or diffuse boundaries except for the darker A1 horizon.

Yellow podosols: Podosols which typically occur on the upper slopes of steep landscapes and on the mid to lower slopes of others. The A2 soil horizon is present in most profiles and the boundary change to the B horizon is generally clear. The B horizon is typically sandy clay to heavy clay.

Appendix A

Aboriginal consultation documentation

A.1 Consultation log and communications record

Aboriginal Consultation Log: Hume Coal Project & Berrima Rail Project Consultation log	Contact type	Date	Comment
Stage 1 - Advisory Requests Sent			
Organisation	Contact type	Date Sent	Comment
Local Newspaper Ad	Email and phone	See comment	First round of consultation: Run Date - Highlands Post Thursday 6/09/2012. Second round of consultation: Run date - Southern Highlands News 12/08/2013
OEH	letter	First round: 10/08/2012 Second round: 26/07/2013	First round: response received 21/08/2012 Second round: response received 6 August 2013
Illawarra LALC	letter	First round: 10/08/2012 Second round: 26/07/2013	First round: response received 11 December 2012 Second round: no response received
Registrar Aboriginal Owners	letter	First round: 10/08/2012 Second round: 26/07/2013	First round: response received 15 August 2012 Second round: response received 31 July 2013
Native Title Services NTSCORP	letter	First round: 10/08/2012 Second round: 26/07/2013	First round: response received 23 August 2012 Second round: response received 31 July 2013. NTSCORP noted that they could not provide details of Aboriginal groups or people. They sent the project information to groups they knew of to register directly by 16 August 2013.
Wingecarribe Local Council	letter	First round: 10/08/2012 Second round: 26/07/2013	First round: list received 29 August 2012. Second round: No response received for this round (delivery confirmation 30/07/2013): however previous list supplied August 29 2012 was used.
CMA	letter	First round: 10/08/2012 Second round: 26/07/2013	First round: response received 28 August 2012 Second round: response received 7 August 2013 stating that CMA would pass any information onto their Advisory Committee.
NNTT	letter	First round: 10/08/2012 Second round: 26/07/2013	First round: response received 17 August 2012 Second round: response received 30 July 2013
Aboriginal Group Notifications Sent Round 1			
Organisation	Contact type	Date	Comments
Tharawal Local Aboriginal Land Council	Registered post	04-Sep-12	Registered-29-07-2013
Cubbitch Barta	Registered post	04-Sep-12	Registered 18-Sep-12
Peter Falk Consultancy	Registered post	04-Sep-12	Registered 6-Sep-12
Illawarra Local Aboriginal Land Council	Registered post	04-Sep-12	Registered 11 December 2012 called 09/09/2013
Indigenous Historical Research	Registered post	04-Sep-12	Notified 29-7-2013
Gundungurra Aboriginal Heritage Association Inc.	Registered post	04-Sep-12	Registered 7-Sep-12
Moyengully Natural Resource Management Group	Registered post	04-Sep-12	Notified 29-7-2013 called 09/09/13
Coomaditchie United Aboriginal Corporation	Registered post	04-Sep-12	Notified 29-7-2013
Korewal Elouera Jerrungarugh	Registered post	04-Sep-12	Notified 29-7-2013 called 09/09/13
Bellambi Indigenous Corporation	Registered post	04-Sep-12	Notified 29-7-2013
Wodi Wodi Traditional Owners Corporation	Registered post	04-Sep-12	Notified 29-7-2013
Pejar Local Aboriginal Land Council	Registered post	04-Sep-12	Notified 29-7-2013
Yamanda Aboriginal Association	Registered post	04-Sep-12	Registered: 11/09/2013
Kula N Gadu Association	Registered post	04-Sep-12	Notified 26-7-2013
Gibbergunyah Aboriginal Association	Registered post	04-Sep-12	Notified 31-7-2013 (by email)
Aboriginal Group Registrations & Communications: Round 1			
Organisation	Contact type	Date	Comments
Cubbitch Barta	Registered post	18-Sep-12	Registered 18-Sep-12
Peter Falk Consultancy	Registered post	07-Sep-12	Registered 7-Sep-12
Illawarra Local Aboriginal Land Council	Registered post	11 December 2012 called 09/09/2013	Registered 11 December 2012 called 09/09/2013
Gundungurra Aboriginal Heritage Association Inc.	Registered post	Registered 7-Sep-12	Registered 7-Sep-12
Aboriginal Group Notifications Sent Round 2: All existing RAPs			
Organisation	Contact type	Date	Comments
Cubbitch Barta	Registered post	26-Jul-13	Delivery confirmation 01/08/2013
Peter Falk Consultancy	Registered post	26-Jul-13	Delivery confirmation 01/08/2013
Illawarra Local Aboriginal Land Council	Registered post	26-Jul-13	Called CEO on 09/09/13 and assured the continual consultation
Gundungurra Aboriginal Heritage Association Inc.	Registered post	26-Jul-13	Delivery confirmation 01/08/2013
Aboriginal Group Notifications Sent Round 2: Potential RAPs from 2012			
Organisation	Contact type	Date	Comments
Tharawal Local Aboriginal Land Council	Registered post	26-Jul-13	Delivery confirmation 29/07/2013
Indigenous Historical Research	Registered post	26-Jul-13	Delivery confirmation 12/08/2013
Moyengully Natural Resource Management Group	Registered post	26-Jul-13	Returned to sender. Called 09/09/13: No response
Coomaditchie United Aboriginal Corporation	Registered post	26-Jul-13	Delivery confirmation 30/07/2013
Korewal Elouera Jerrungarugh	Registered post	26-Jul-13	Delivery confirmation 08/08/2013
Bellambi Indigenous Corporation	Registered post	26-Jul-13	Delivery confirmation 07/08/2013
Wodi Wodi Traditional Owners Corporation	Registered post	26-Jul-13	Delivery confirmation 23-8-2013
Pejar Local Aboriginal Land Council	Registered post	26-Jul-13	Returned to sender. Called 09/09/13: Not within LALC area
Yamanda Aboriginal Association	Registered post	26-Jul-13	Returned to sender. Called 09/09/13: No response
Kula N Gadu Association	Registered post	26-Jul-13	Delivery confirmation 31/08/2013
Gibbergunyah Aboriginal Association	Email	31-Jul-13	Contacted through EMAIL as requested
Gundungurra Tribal Council Aboriginal Corporation	Registered post	26-Jul-13	Called repeatedly for follow up but no response (see communications record)
Aboriginal Group Notifications Sent Round 2: Potential RAPs from agencies 2013			
Organisation	Contact type	Date	Comments
The Wadi Wadi Coomaditchie Aboriginal Corporation (represented by NIAC)	Registered post	23-Aug-13	Delivery confirmation 26/08/2013
Northern Illawarra Aboriginal Collective Inc (NIAC)	Registered post	23-Aug-13	Delivery confirmation 27/08/2013
Gandagara Elders Group	Registered post	23-Aug-13	Delivery confirmation 29/08/2013

The Wodi Wodi Elders Corporation	Registered post	23-Aug-13	Returned to sender. 24/09/2013. Called 09/09/13: No response
Woronora Plateau Gundungara Elders Council (NIAC)	Registered post	23-Aug-13	To be contacted through NIAC
RAP List: Aboriginal Group Registrations: (Round 1 & 2 combined)			
Organisation	Contact type	Date registered	Comments
Yamanda Aboriginal Association	letter	17-Sep-13	registration of interest received (letter dated 11 July but only sent 17 September 2013)
Tharawal Local Aboriginal Land Council	Email	29-Jul-13	Group registered then de-registered as not within their LALC boundary on 20/04/2014
Peter Falk Consultancy	Letter	01-Aug-13	re-registered
Northern Illawarra Aboriginal Collective Inc (NIAC)	Fax	08-Aug-13	registered
Koomurri Ngunawal Aboriginal Corporation	letter	20-Aug-13	registration of interest received (Through advertisement)
Illawarra LALC	Letter	11-Dec-12	Called CEO on 09/09/13 and assured the continual consultatior
Gundungurra Aboriginal Heritage Association Inc.	Email	07-Sep-12	registration of interest received
Cubbitch Barta Native Title Claimants Aboriginal Corporation	letter	18-Sep-12	registration of interest received
Buru Ngunawal Aboriginal Corporation (BNAC)	letter	26-Aug-13	registration of interest received (Through advertisement)
OEH & LALC notified of Registered Stakeholders			
Organisation	Contact type	Date	Comments
OEH & LALC notified of Registered Stakeholders	Letter	04-Oct-13	
Late registrants to be included in consultation			
Organisation	Contact type	Date registered	Comments
Moyengully Natural Resource Management Group	Email	16-May-14	
Koori Kulcha Experience	Email	23-May-14	
Joanne Goulding	Email	03-Nov-14	
Notice of continued consultation			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Letter	23-Jan-14	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Letter	23-Jan-14	
Gundungurra Aboriginal Heritage Association Inc.	Letter	23-Jan-14	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Letter	23-Jan-14	
Yamanda Aboriginal Association	Email - preferred	23-Jan-14	
Buru Ngunawal Aboriginal Corporation (BNAC)	Letter	23-Jan-14	
Koomurri Ngunawal Aboriginal Corporation	Letter	23-Jan-14	
Illawarra LALC	Letter	23-Jan-14	
Stage 2 - Project Presentation & Methodology Advice Sent			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Letter	17-Apr-14	Methodology received 22/04/14
Northern Illawarra Aboriginal Collective Inc (NIAC)	Letter	17-Apr-14	Methodology received 23/04/14
Gundungurra Aboriginal Heritage Association Inc.	Letter	17-Apr-14	Methodology received 28/04/14
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Letter	17-Apr-14	Methodology received 23/04/14
Yamanda Aboriginal Association	Email - preferred	17-Apr-14	Email confirmation of receipt 01/05/2014
Buru Ngunawal Aboriginal Corporation (BNAC)	Letter	17-Apr-14	Methodology received 08/05/2014
Koomurri Ngunawal Aboriginal Corporation	Letter	17-Apr-14	Sent to glen freeman via email 09/05/14
Illawarra LALC	Letter	17-Apr-14	Sent letter on 19/05/2014 with info pack again
Aboriginal Group Comments Received			
Organisation	Contact type	Date Rec'd	Comments
NIAC	Email	12/05/2014 and 14/05/2014	Reference to a burial site near Mt Gingenbullen. Request to find the exact burial ground. Also, email provides an extract on cultural significance of the area. Accepted the methodology. Requested detailed aerial photography of the project. Also mentioned the use of infrared aerial photography. EMM response provided 12/05/2016.
Koomurri Ngunawal Aboriginal Corporation	Email	12-May-14	Reference to women's sites that may be found along watercourses. Accepted the methodology. EMM response on 13/05/2016
Stage 2 - Fieldwork Stage 1 letter (letters not attached in Appendix A)			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Letter	16-May-14	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Letter	16-May-14	
Gundungurra Aboriginal Heritage Association Inc.	Letter	16-May-14	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Letter	16-May-14	
Yamanda Aboriginal Association	Letter	16-May-14	
Buru Ngunawal Aboriginal Corporation (BNAC)	Letter	16-May-14	
Koomurri Ngunawal Aboriginal Corporation	Letter	16-May-14	
Illawarra LALC	Letter	16-May-14	
Stage 2 - Fieldwork Stage 2 letter (letters not attached in Appendix A)			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	18-Jun-14	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	18-Jun-14	
Gundungurra Aboriginal Heritage Association Inc.	Email	18-Jun-14	

Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	18-Jun-14	
Yamanda Aboriginal Association	Email	18-Jun-14	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	18-Jun-14	
Koomurri Ngunawal Aboriginal Corporation	Email	18-Jun-14	
Illawarra LALC	Email	18-Jun-14	
Rescheduled Fieldwork Stage 2 letter (letters not attached in Appendix A)			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	21-Oct-14	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	21-Oct-14	
Gundungurra Aboriginal Heritage Association Inc.	Email	21-Oct-14	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	21-Oct-14	
Yamanda Aboriginal Association	Email	21-Oct-14	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	21-Oct-14	
Koomurri Ngunawal Aboriginal Corporation	Email	21-Oct-14	
Illawarra LALC	Email	21-Oct-14	
Fieldwork Stage 3 letter (letters not attached in Appendix A)			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	04-Feb-15	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	04-Feb-15	
Gundungurra Aboriginal Heritage Association Inc.	Email	04-Feb-15	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	04-Feb-15	
Yamanda Aboriginal Association	Email	04-Feb-15	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	04-Feb-15	
Koomurri Ngunawal Aboriginal Corporation	Email	04-Feb-15	
Illawarra LALC	Email	04-Feb-15	
RAP Meeting 1: 26 August 2015. Presentation of project information and test excavation methodology			
Organisation	Representative attendee	Date	Comments
Peter Falk Consultancy	Unable to attend	26-Aug-15	Refer to meeting minutes
Northern Illawarra Aboriginal Collective Inc (NIAC)	Daniela Reverberi	26-Aug-15	Refer to meeting minutes
Gundungurra Aboriginal Heritage Association Inc.	Unable to attend	26-Aug-15	Refer to meeting minutes
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Glenda Chalker	26-Aug-15	Refer to meeting minutes
Yamanda Aboriginal Association	Unable to attend	26-Aug-15	Refer to meeting minutes
Buru Ngunawal Aboriginal Corporation (BNAC)	Wally Bell	26-Aug-15	Refer to meeting minutes
Koomurri Ngunawal Aboriginal Corporation	Glen Freeman	26-Aug-15	Refer to meeting minutes
Illawarra LALC	Unable to attend	26-Aug-15	Refer to meeting minutes
Proposed test excavation method: provision to RAPs			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	27-Aug-15	Response received 6 September 2015. EMM Reply 14/10/2015
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	27-Aug-15	
Gundungurra Aboriginal Heritage Association Inc.	Email	27-Aug-15	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	27-Aug-15	Response letter received 10 September 2015. EMM Reply 14/10/2015
Yamanda Aboriginal Association	Email	27-Aug-15	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	27-Aug-15	
Koomurri Ngunawal Aboriginal Corporation	Email	27-Aug-15	
Illawarra LALC	Email	27-Aug-15	
Provision of RAP Meeting 1 Meeting minutes and presentation slides			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	03-Sep-15	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	03-Sep-15	
Gundungurra Aboriginal Heritage Association Inc.	Email	03-Sep-15	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	03-Sep-15	
Yamanda Aboriginal Association	Email	03-Sep-15	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	03-Sep-15	
Koomurri Ngunawal Aboriginal Corporation	Email	03-Sep-15	
Illawarra LALC	Email	03-Sep-15	
Fieldwork Stage 4 letter: Stage 4 survey (letters not attached in Appendix A)			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	17-Sep-15	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	17-Sep-15	NIAC responded with email (18.09.2015) regarding other matters but a request was made that this information was only to be read by EMM, Hume Coal and OEH. OEH will be provided with this letter upon request.
Gundungurra Aboriginal Heritage Association Inc.	Email	17-Sep-15	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	17-Sep-15	
Yamanda Aboriginal Association	Email	17-Sep-15	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	17-Sep-15	

Koomurri Ngunawal Aboriginal Corporation	Email	17-Sep-15	
Illawarra LALC	Email	17-Sep-15	
Update to late registrants regarding project			
Organisation	Contact type	Date Sent	Comments
Moyengully Natural Resource Management Group	Email	22-Sep-15	Attachments comprised draft test excavation method, RAP meeting 1 slides, Hume Coal Project slides, RAP meeting 1 minutes
Koori Kulcha Experience	Email	22-Sep-15	Attachments comprised draft test excavation method, RAP meeting 1 slides, Hume Coal Project slides, RAP meeting 1 minutes
Joanne Goulding	Email	22-Sep-15	Attachments comprised draft test excavation method, RAP meeting 1 slides, Hume Coal Project slides, RAP meeting 1 minutes
Fieldwork: test excavation engagement letter			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	30-Sep-15	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	30-Sep-15	
Gundungurra Aboriginal Heritage Association Inc.	Email	30-Sep-15	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	30-Sep-15	
Yamanda Aboriginal Association	Email	30-Sep-15	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	30-Sep-15	
Koomurri Ngunawal Aboriginal Corporation	Email	30-Sep-15	
Illawarra LALC	Email	30-Sep-15	
Revised test excavation method mail out			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	15-Oct-15	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	15-Oct-15	
Gundungurra Aboriginal Heritage Association Inc.	Email	15-Oct-15	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	15-Oct-15	
Yamanda Aboriginal Association	Email	15-Oct-15	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	15-Oct-15	
Koomurri Ngunawal Aboriginal Corporation	Email	15-Oct-15	
Illawarra LALC	Email	15-Oct-15	
Moyengully Natural Resource Management Group	Email	15-Oct-15	
Koori Kulcha Experience	Email	15-Oct-15	
Joanne Goulding	Email	15-Oct-15	
<i>Note: Consultation continued with RAPs from December 2015 to June 2016 in regard to a separate Aboriginal heritage impact permit (AHIP) application within the project area</i>			
Information regarding burial at Oldbury at the request of NIAC			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	29-Aug-16	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	29-Aug-16	
Gundungurra Aboriginal Heritage Association Inc.	Email	29-Aug-16	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	29-Aug-16	
Yamanda Aboriginal Association	Email	29-Aug-16	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	29-Aug-16	
Koomurri Ngunawal Aboriginal Corporation	Email	29-Aug-16	
Illawarra LALC	Email	29-Aug-16	
Moyengully Natural Resource Management Group	Email	29-Aug-16	
Koori Kulcha Experience	Email	29-Aug-16	
Joanne Goulding	Email	29-Aug-16	
Stage 4 - Issue of draft reports to RAPs: Hume Coal ACHA and Berrima Rail ACHA			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	30-Sep-16	Confirmed receipt of report on 11/10/2016 (see comms record)
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email & Express Post	30/09/2016 and post on 14/10/2016	Requested print out on 13/10/2016. Initial response provided 13/10/2016. Subsequent response provided on 24/10/2016. Clarified response provided 10/02/2017
Gundungurra Aboriginal Heritage Association Inc.	Email & Express Post	30-Sep-16	Confirmed receipt of report on 13/10/2016
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email & Express Post	30-Sep-16	Response received 31/10/2016
Yamanda Aboriginal Association	Email	30-Sep-16	Response received 31/10/2016
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	30-Sep-16	Response received 31/10/2016
Koomurri Ngunawal Aboriginal Corporation	Email	30-Sep-16	Response received 12/10/2016
Illawarra LALC	Email	30-Sep-16	Unable to confirm receipt but called twice, including on 13/10/2016 (see comms record)
Moyengully Natural Resource Management Group	Email	30-Sep-16	Jo confirmed receipt and facilitated Yamanda's comments
Koori Kulcha Experience	Email	30-Sep-16	Unable to confirm receipt but called twice, including on 13/10/2016 (see comms record)
Joanne Goulding	Email	30-Sep-16	Confirmed receipt on 11/10/2016 (see comms record)
Stage 4 - RAP Meeting 2: Draft report review and management measures			

Organisation	Attendee	Date of meeting	Comments
Peter Falk Consultancy	Duncan Falk, Virginia Falk	25-Oct-16	Refer to meeting minutes
Northern Illawarra Aboriginal Collective Inc (NIAC)	No response, did not attend	25-Oct-16	Refer to meeting minutes
Gundungurra Aboriginal Heritage Association Inc.	No response, did not attend	25-Oct-16	Refer to meeting minutes
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Unable to attend	25-Oct-16	Refer to meeting minutes
Yamanda Aboriginal Association	Sent apologies on the day of meeting	25-Oct-16	Refer to meeting minutes
Buru Ngunawal Aboriginal Corporation (BNAC)	Wally Bell	25-Oct-16	Refer to meeting minutes
Koomurri Ngunawal Aboriginal Corporation	Glen Freeman	25-Oct-16	Refer to meeting minutes
Illawarra LALC	Confirmed intention to attend but did not attend	25-Oct-16	Refer to meeting minutes
Moyengully Natural Resource Management Group	Sent apologies on the day of meeting	25-Oct-16	Refer to meeting minutes
Koori Kulcha Experience	Confirmed intention to attend but did not attend	25-Oct-16	Refer to meeting minutes
Joanne Goulding	Unable to attend	25-Oct-16	Refer to meeting minutes
Stage 4 - Issue of email re: gathering statement of cultural significance			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	26-Oct-16	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	26-Oct-16	
Gundungurra Aboriginal Heritage Association Inc.	Email	26-Oct-16	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	26-Oct-16	
Yamanda Aboriginal Association	Email	26-Oct-16	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	26-Oct-16	
Koomurri Ngunawal Aboriginal Corporation	Email	26-Oct-16	
Illawarra LALC	Email	26-Oct-16	
Moyengully Natural Resource Management Group	Email	26-Oct-16	
Koori Kulcha Experience	Email	26-Oct-16	
Joanne Goulding			
Stage 4 - Issue of email to RAP meeting attendees who wished to provide statement of significance			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	26-Oct-16	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	26-Oct-16	
Koomurri Ngunawal Aboriginal Corporation	Email	26-Oct-16	
Stage 4 - Issue of email with meeting minutes attached			
Organisation	Contact type	Date Sent	Comments
Peter Falk Consultancy	Email	28-Oct-16	
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	28-Oct-16	
Gundungurra Aboriginal Heritage Association Inc.	Email	28-Oct-16	
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	28-Oct-16	
Yamanda Aboriginal Association	Email	28-Oct-16	
Buru Ngunawal Aboriginal Corporation (BNAC)	Email	28-Oct-16	
Koomurri Ngunawal Aboriginal Corporation	Email	28-Oct-16	
Illawarra LALC	Email	28-Oct-16	
Moyengully Natural Resource Management Group	Email	28-Oct-16	
Koori Kulcha Experience	Email	28-Oct-16	
Stage 4 - EMM response letters to relevant RAP comments and feedback			
Organisation	Contact type	Date Sent	Comments
Northern Illawarra Aboriginal Collective Inc (NIAC)	Email	15-Nov-16	Response received from NIAC on 1 December 2016. The outcome was for NIAC to provide clarification on some of their draft ACHA comments, rather than having their comments clarified by EMM in the ACHA report. Refer to the final three entries in the communications record. NIAC provided clarified responses on 10 February 2017, which are included in the main body of the Hume Coal ACHA
Cubbitch Barta Native Title Claimants Aboriginal Corporation	Email	21-Nov-16	
Yamanda Aboriginal Association	Email	15-Nov-16	

Communications Record		RAP	RAP Person	EVM person	Topic	Details
9/09/2013	Illawarra LALC		Ryan Desic	Registration	Re: request for registered parties: Called about follow up for Aboriginal consultation registration. No answer. Left details	
9/09/2013	Gundungurra Tribal Council Aboriginal Corporation		Ryan Desic	Registration	Re: request for registered parties: Called about follow up for Aboriginal consultation registration. No answer. Left details	
9/09/2013	The Wodi Wodi Elders Corporation		Ryan Desic	Registration	Re: request for registered parties: Called about follow up for Aboriginal consultation registration. No answer. Left details	
9/09/2013	Moyengully Natural Resource	Stewart	Ryan Desic	Registration	Re: request for registered parties: Stewart answered and said he was not to be contacted anymore. I found a phone number on the Moyengully website and called that number to no avail. I sent an invitation for registration to the email address provided on the website: moyenauliv@gmail.com.au. Still waiting repl.	
9/09/2013	Yamanda		Ryan Desic	Registration	Called 48 72 25 76 first. Person who answered said she didn't know about the project but sounded like they would be interested. I then called the original number associated with the email I sent which was 0412466 430, they said they had already registered but I could not find any email evidence from them. I said I would register them anyway and added it to the consultation log.	
9/09/2013	Korewal Elouera Jerrunquagh		Ryan Desic		Called about follow up for Aboriginal consultation registration. No answer. Left phone number	
1/11/2013	Joanne Goulding		Ryan Desic	Registration	Brendon Keena (Environmental Planner) sent me email to chase up Joanne Goulding about the Hume Coal Project. I called Joanne and she said she was busy in a meeting and said she would call back. Her email is jolego27@gmail.com. Phone: 0431 543 089	
16/04/2014	Joanne Goulding		Ryan Desic	Registration	Talked to Joanne Goulding via phone. Stated that we would keep her updated on the project even though she did not register within the timeframe.	
16/04/2014	Tharawal LALC	Megan Ely	Ryan Desic	Registration	Called TLALC to confirm if their registration is considered valid as the land is within Illawarra LALC area. Megan said she thought it was probably only relevant to Illawarra, but she would confirm with her Board and get back to me with her decision.	
16/04/2014	Gundungurra Tribal Council Aboriginal Corporation	N/A	Ryan Desic	Registration	Re: request for registered parties: Attempted to call number provided on their website (02) 4782 9767 (which is different to the one originally in our records that also didn't work). Phone made 'beeping' sound as if it were a disconnected line. Also sent an email in a final attempt to call for registration from their organisation which included the original invitation to register. Email was sent to 'sharonbrown@gundungurra.org.au' as specified on their website.	
30/04/2014	Yamanda		Ryan Desic	Registration	Called with no response to enquire if they have received their methodology as I was informed that they would only like to be contacted by email. Decision by Ryan was to send letter via post	
30/04/2014	Tharawal LALC	Megan Ely	Ryan Desic	Registration	Called to follow up about their registration. Megan said that they would 'leave it to Illawarra'. Therefore effectively deregistering from the project.	
1/05/2015	Tharawal LALC	Megan Ely	Ryan Desic	Registration	Email confirmation "Hi Ryan, As discussed Tharawal LALC are happy to leave this interest with Illawarra LALC".	
9/05/2014	Koomurri Ngunawal (KNAC)	Glen Freeman	Ryan Desic	Contact details	Glen notified that he changed address and did not receive mail. Email was sent through to him with the assessment methodology. Hard copy sent too.	
12/05/2014	NIAC	Daniela Reverberi	Ryan Desic	Cultural information	Information Re: cultural heritage significance of a burial ground. I replied by inquiring further about the burial ground and if it was in the project impact area.	
12/05/2014	Koomurri Ngunawal Aboriginal Corop	Glen Freeman	Ryan Desic	Cultural information	Responded to the methodology and mentioned that Women's sites may be found adjacent to watercourses.	
14/05/2014	NIAC	Daniela Reverberi	Ryan	Cultural information	Email regarding Mt Gingenbullen and Wongonbra, showing that they had previously surveyed Gingenbullen with Therin in 2007.	

Date	RAP	RAP Person	EMM person	Topic	Details
19/05/2014	NIAC	Daniela Reverberi	Ryan Desic	Previous archaeological investigations	We have received information that there has been a previous archaeological investigation on Wongonbra, associated with a proposed subdivision, in which a number of artefacts were found (refer attached). The results were never submitted to AHIMS and the sites not officially recorded; they have asked that we keep this information confidential at this stage so please do not distribute.
21/05/2014	NIAC	Daniela Reverberi	Ryan Desic	Cultural information	Email with attachment with additional information regarding Gin Gen Bullen.
26/05/2014	Yamanda Aboriginal Corporation	Auntie Annie	Pamela Kottaras	Fieldwork	Rang the mobile number and spoke to Auntie Annie. She said she was from Wingecarribee but confirmed that she was representing Yamanda Local Aboriginal Land Council. I explained that we have a ILALC rep on fieldwork and as the team was of sufficient size, we wouldn't be requesting another person to represent Yamand.
26/05/2014	NIAC	Admin	Pamela Kottaras	Fieldwork	Fax of ILALC public liability insurance: Allianc. Scanned and save in file
23/05/2014	Moyengully Natural Resource	Jo Albany	Ryan Desic	Registration	Jo Albany requested registration for address 47 Sunrise rd Yerrinbool 2575. Mobile 044882350. I replied stating on 20/08/2014 that registration commenced almost a year ago but that we would consult the group in the form of sending out any materials she requested. Jo Albany. Jo replied "Thanks for getting in touch" on 28/08/2014
31/10/2014	Yamanda Aboriginal Corporation	Auntie Annie	Ryan Desic	Fieldwork	Called Auntie Annie regarding fieldwork after discussions about insurance. Auntie Annie does not have worker's compensation for their workers and therefore I said we cannot employ people from Yamanda for insurance reasons. Auntie Annie acknowledged that she would not be participating in Stage 2 Hume field survey. I said that she should look into getting worker cover for future fieldwork, or alternatively let us know whether they are exempt from needing work cover.
2/02/2014	Yamanda Aboriginal Corporation	Auntie Annie	Ryan Desic	Fieldwork	Called Auntie Annie regarding Stage 3 fieldwork. Mentioned last staged of fieldwork and Auntie Annie said nothing had changed.
2/02/2014	Yamanda Aboriginal Corporation	Sue Purcell	Ryan Desic	Contact details	Sue called and stated that she was now the secretary for Yamanda and the previous manager had quit 5 weeks ago. Sue said that she would be the primary contact and that she would look into work cover and get back to EMM about Stage 3 survey.
4/02/2014	Yamanda Aboriginal Corporation	Sue Purcell	Ryan Desic	Fieldwork	Talked to Sue on the phone about getting a fieldworker out for the Stage 3 survey. Sue said that she had contacted Work Cover via the phone and they had said they do not need Work cover for their fieldworkers. I requested further evidence that this was correct over the phone. I followed this up with an email to Sue requesting for written evidence that they do not require workers compensation. The email explained that they would need to provide this information to be eligible to work.
17/02/2015	OEH	Jackie Taylor	Ryan Desic	Registration	Ryan emailed Jackie regarding a request for the address of Gundungurra Tribal Council Aboriginal Corporation. The letter explains the repeated attempts at contacting the group but to no avail. This group is a priority considering that it has a Native Title Claim over the area. Waiting response.
17/02/2015	Koomurri Ngunawal Aboriginal Corop	Glen Freeman	Ryan Desic	Fieldwork	Glen called about the registration of Gulgunya Ngunawal after I had requested the invoice for Stage 3 fieldwork to be from Koomurri Ngunawal Aboriginal Corporation and not Gulgunya as provided to me. Glen explained that Gulgunya was set up to allow younger people to have access to training. I explained that the invoice should still be made out as Koomurri Ngunawal Aboriginal Corporation. We would talk to Hume about further engagement with Gulgunya even though they are not technically a registered group.
17/02/2015	OEH	Jackie Taylor	Ryan Desic	OEH consultation	Jackie responded by referring the matter to Illawarra Region OEH office. South-East region is no longer part of this area.
18/02/2015	OEH	Sam Higgs	Ryan Desic	OEH consultation	EMM called OEH to identify if they had GTCAC's contact details. Sam responded to Jackie's referral and provided an alternative address for the group. I will chase this up. I responded by notifying them of other groups that are uncontactable.
6/03/2015	Gundungurra Tribal Council Aboriginal Corporation		Ryan Desic	Registration	Ryan tried new number 02 4729 3713 provided by Sam Higgs from OEH. Number was disconnected.
6/03/2015	Nicole.Maher@nntt.gov.au (Native Title Tribunal)	Nicole Maher	Ryan Desic	Registration	Ryan sent an email to Nicole requesting contact details for Gundungurra Tribal Council Aboriginal Corporation.

Date	RAP	RAP Person	EVM person	Topic	Details
9/03/2015	Nicole.Maher@nmtt.gov.au (Native Title Tribunal)	Nicole Maher	Ryan Desic	Registration	Nicole replied giving the details of Eddy Neumann Lawyers who may have the details for the Gundungurra Tribal Council Aboriginal Corporation.
19/03/2015	Eddy Neumann Lawyers re: Gundungurra Tribal Council Aboriginal Corporation	Elspeith MacTavish	Ryan Desic	Registration	Ryan wrote an email requesting the contact details of Gundungurra Tribal Council Aboriginal Corporation. Elspeith replied on 26/03/2015 giving these details: '0411 146 063 or alternatively her email address is: sharonbrown@gundungurra.org.au'. Ryan noted that the mobile number was new but the email address was previously contacted on 16/04/2014 with no response.
2/04/2015	Gundungurra Tribal Council Aboriginal Corporation	Sharon Brown	Ryan Desic	Registration	Ryan emailed 'sharonbrown@gundungurra.org.au' noting that we had made numerous attempts to contact their organisation. Sharon replied saying 'Hi Ryan can you please let me know more details'.
2/04/2015	Gundungurra Tribal Council Aboriginal Corporation	Sharon Brown	Ryan Desic	Registration	Ryan called new number 0411 146 063 to contact Sharon Brown. No response, but left phone number. Still no response.
25/08/2015	Illawarra LALC	Derek Hardman	Ryan Desic	Consultation meeting 1	Derek Advised that he would not be able to attend the first meeting on 26 August 2015.
4/09/2015	OEH	Rose O'Sullivan	Ryan Desic	OEH consultation	Letter provided to OEH summarising archaeological survey to date and proposed test excavation method
15/09/2015	OEH	Rose O'Sullivan	Ryan	OEH consultation	Rose O'Sullivan provided response email to proposed test excavation method
18/09/2015	Wingecarribe Council	Reception	Ryan Desic	Gathering cultural information	Enquired to get the contact details for a Auntie Val in regard to consultation. I was provided with email address jenny.kena@wsc.nsw.gov.au. I sent an email to this address enquiring about getting Auntie Val's contact details (Note that Auntie Val is part of Yamanda).
18/09/2015	Marie Babaric	Marie Barbaric	Ryan Desic	Gathering cultural information	Called to acquire Auntie Val's contact details. No answer, but I left a message.
21/09/2015	NIAC	Daniela Reverberl	Ryan Desic	Confidential	Email concerning the project- contents to be confidential and not passed on. May be provided to OEH but not necessarily
21/09/2015	Marie Barbaric	Marie Barbaric	Ryan Desic	Gathering cultural information	Marie called back to discuss the project. Marie informed me that Auntie Val is a member of Yamanda, however she is quite old (79) and may not be the best person to talk to about the project. She mentioned that there may be someone who will assist us in identifying cultural heritage values for the area. She also expressed her concern for the number of groups registered for the project and proposed that many of them may not constitute cultural knowledge holders for the area. I resolved to provide Marie with an update of the project and recent consultation and that we still have time to identify cultural information for the project area. Marie stated that she would pass on the information to the relevant people who she thought would benefit from the information.
21/09/2015	Melissa Wiya from Wingecarribee Council	Melissa from Aboriginal affairs	Ryan Desic	Gathering cultural information	Melissa called and I responded that we have Auntie Val's details but we would benefit from getting Council's updated list. Melissa said that she would send this information through as soon as possible.
22/09/2015	Koori Kulcha	Marie Barbaric	Ryan Desic	Consultation meeting 1 and test excavation	Send out of additional information including draft test excavation method and RAP meeting slides.
22/09/2015	Joanne Goulding	Joanne Goulding	Ryan Desic	Consultation meeting 1 and test excavation	Send out of additional information including draft test excavation method and RAP meeting slides.
22/09/2015	Moyengully Natural Resource	Jo Albany	Ryan Desic	Consultation meeting 1 and test excavation	Send out of additional information including draft test excavation method and RAP meeting slides.

Date	RAP	RAP Person	EVM person	Topic	Details
2/10/2015	Peter Falk Consultancy	Peter Falk	Ryan Desic	Test excavation method	Quoting Peter: "Ryan, With all the NEW finds for Hume are these sites included in the excavation or are they to be done separately?? Note: any road works and service installations with soil removal will require Aboriginal representation to MONITOR for Aboriginal Artefacts Salvage. Also any Aboriginal sites outside of the company footprint to be FENCED and POSTED copy of signs will be sent to you. The above will be in my report of your DRAFT report. Regards Peter My response: "Hi Peter, Yes we are changing the excavation to suit your previous comments and the new survey results." Note that my short response was given as a follow up letter was to be issued to all RAPS shortly on 15 October 2015.
13/10/2015	Yamanda Aboriginal Corporation	Auntie Annie	Ryan Desic	Fieldwork	I called in regard to Yamanda providing a site officer for the upcoming test excavation fieldwork. I reminded them that they require to have site officers with relevant insurance before they can go on site. Auntie Annie informed me that she would not be able to provide a fieldworker. She also stated that she opposed the Hume Coal Project, but it seemed that she was unsure of what the project involved. I reminded Auntie Annie about the meeting invitation, meeting minutes and project consultation that has been sent to her, but she still seemed unsure. I resolved that perhaps it was better for me to visit Yamanda personally to explain the project so that the project and EMM's role in the project was clear. Auntie Annie said that we could visit her at the cultural centre in Mittagong behind the RSL club on Mondays and Tuesdays from 9:30 to 2:30. I did not set a date because we had the excavation upcoming but said that we would be in touch soon.
14/10/2015	NIAC	Daniela Reverberi	Ryan Desic	Fieldwork	Called Daniela regarding the upcoming test excavation. She said that they would not be providing a fieldworker and also that their insurance had lapsed. She would possibly like to visit during the test excavation but she understands if safety prerequisites do not allow her to attend. However, she said that she would still like to be consulted in all areas.
14/10/2015	All RAPS	ALL RAPS	Ryan Desic	Fieldwork	Send out of SWMMs and Medical certificate letter
15/10/2015	All RAPS	ALL RAPS	Ryan Desic	Fieldwork	Letter notification sent providing fieldwork roster and new meeting point for Monday 19 October 2015
15/10/2015	OEH	Rose O'Sullivan	Ryan Desic	OEH consultation	Revised test excavation letter sent to Rose O'Sullivan
16/05/2016	Yamanda Aboriginal Corporation	Auntie Val	Pamela Kottaras	Gathering cultural information	Telephone calls to Berrima District Historical and Family History Society: directed to Wingecarribee Shire Council Aboriginal Heritage Officer Melissa Wiya who provided the number 0412 466 430. The phone is held by Auntie Annie and Auntie Val is available at the cultural centre on Mondays and Tuesdays between 9.30 and 2.30. Will call tomorrow.
17/05/2016	Yamanda Aboriginal Corporation	Auntie Val	Pamela Chauvel	Gathering cultural information	Phoned the mobile number (above). Spoke to Cinnamon and told her that EMM will be in Hume this Thursday and would we be able to meet with Auntie Val then. She is discussing it with Auntie Val and will call back - I gave her Ryan's number.

Date	RAP	RAP Person	EVM person	Topic	Details
11/05/2016	NIAC	Daniela Reverberi	Ryan Desic	Cultural information (some comments in this letter refer to the separate farming AHIP on Hume Coal owned land).	<p>Email as follows from Daniela: Hi Ryan,</p> <p>There seems to be some confusion, caused by Hume Coal. Continued farming is not as it seems. Wheat, canola (genetically modified??), etc. are not continued use but additional use. This needs to be clarified and confusion by some stakeholders helped out. Also whilst Hume Coal claim the massacre site is out of the area under consideration, IT IS NOT OUT OF THE STAKE HOLDERS AREA. It is close by to the area claimed by Hume Coal - that is an important point - it means that it is probable that other burial sites are located within the study area - THAT IS THE POINT AND IT NEEDS TO BE MADE. The massacre mound at Gin Gen Bullen is the highest in the state. This is an indication of the number of deaths. Stake holders need to be allowed to consider this and given the time needed, information must be supplied to stake holders.</p> <p>Kind regards</p> <p>Daniela Reverberi (NIAC volunteer technical officer)</p> <p>Jenny Sajkovic - Bloodline owner</p> <p>Phoebe Sajkovic - Bloodline owner</p> <p>Keith Bail - Bloodline Owner</p>
30/05/2016	NIAC	Daniela Reverberi	Ryan Desic	Gathering cultural information	<p>(from Ryan) Hi Daniela,</p> <p>I am just chasing up some information after our recent chat regarding the burial mound that NIAC believes is on the Oldbury Farm. The two articles quoted by Chris Illert do not appear to give a specific reference to Oldbury Farm as the burial mound location. The closest reference is "On a high hill, a few miles from Berrima, is situated a tumuli, forty-four years since an old man was buried there" (Atkinson 1863, p.2).</p> <p>Is there any further information that you could give EMM that places the burial mound at the location (eg cultural knowledge) that may not be in historic text?</p>
30/05/2016	NIAC	Daniela Reverberi	Ryan Desic	Gathering cultural information	<p>(from Daniela) Hi Ryan,</p> <p>You need to view things in context. I have attached (pages 1, 2 & 3) some information for your reference. It would have been nice if people's comments had been included before the final version.</p> <p>The documents are instructions to Sgt Broadfoot, which was not public at the time but rather a private letter to a soldier from Government House itself, 8th May 1816.</p> <p>Then on 11th May 1816 is a public letter.</p> <p>Then on the 8th June 1816, a formal letter to England explaining the attempts to "apprehend or destroy", Aboriginal people, and to the massacre of 14 of them taking 5 as prisoners. But that wasn't all.</p> <p>On the 20 July 1816 a copy of the Sydney Gazette with 20 Aboriginals still needing capture each for ten pounds.</p> <p>You note that as recently as 3rd August 1816 the native Dewal, captured at Appin, was shipped to Tasmania as part of an ongoing relevant response. He was living at the Tharumba tribe which extended all the way to River Murray, and had nothing to do with Sydney's problems, but nevertheless this tribe was brought to account in the matter as well. The Governor simply didn't know who belonged to which tribe and saw all "darkies" as the same.</p> <p>Then five years later the bulk of the tribe at gin.gen.bulla.n is poisoned and buried on mass (after many thousands of years of previous successful occupancy). Behind the show and newsworthiness of material is the military action that is behind it. This is what is supplied here, as opposed to half known truths in the public media. There is much that could be said about this, but this is sufficient.</p> <p>Yours sincerely,</p>

Date	RAP	RAP Person	EVM person	Topic	Details
7/07/2016	Koori Kulcha	Marie Barbaric	Pamela Kottaras	Gathering cultural information	Called to discuss potential cultural issues and to ask who else EVM may need to consult to gather cultural information about the project area. Reception put me through to Marie's number. Left voicemail asking her to call me back.
4/07/2016	Moyengully Natural Resource Group	John Steward	Pamela Kottaras	Gathering cultural information	Called John's number to speak to Jo Albany and Joanne Goulding. Spoke with his wife who said she would ask John to call me back.
4/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Called mobile number 0448 882 350 to check in with Jo Albany to inform her that the project and Aboriginal cultural heritage assessment is underway. The main aim was to verify if Jo knew of any cultural information about the project area, as none had been provided previously. The voice prompt said not to leave a message as she doesn't check them but to send her an email. Email sent 1.13 pm to retromer.nature@gmail.com
4/07/2016	Joanne Goulding	Joanne Goulding	Pamela Kottaras	Gathering cultural information	PBK called mobile 0431 543 089 to see if Joanne wanted to discuss the possibility of cultural sites. Spoke to Joanne who said she was at a NAIDOC function and asked that I call her back tomorrow at around the same time (1.14 pm).
4/07/2016	NIAC	Daniela Reverberi	Pamela Kottaras	Gathering cultural information	Called Daniela to confirm that the information I will be sending to all RAPs regarding the possible burial mound location on the Oldbury property is not confidential. I spoke to Daniela and Chris Illert who both confirmed that they wanted to share this information.
4/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Jo called back and confirmed that Moyengully Natural Resource Management Group would still like to be consulted about the project. I also asked if she knows Aunty Val and Jo said that she does and offered to speak with Aunty Val to arrange a meeting I asked if we could meet next week, either Monday or Tuesday and Jo said that she would try for those dates but that the cultural centre at Mittagong might be taking a break over the school holidays. Jo offered to get back to me about the meeting. We discussed involving Joanne Goulding as well. I will brief them on the project so far and request information on cultural sites in the area.
5/07/2016	Illawarra Local Aboriginal Land Council	Reception	Pamela Kottaras	Gathering cultural information	PBK requested Illawarra LALC's email address to send Illert's information about a burial ground at Olbury (it is the same as previously on file).
5/07/2016	Joanne Goulding	Joanne Goulding	Pamela Kottaras	Gathering cultural information	PBK spoke to Joanne who said she would like to attend the meeting that Aunty Val and Jo Albany will be at. Joanne gave me a preferred email address (refer to addresses tab).
8/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	PBK emailed Jo to ask if a meeting with Aunty Val, Jo and Joanne Goulding had been arranged.
12/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	PBK called Jo Albany to find out about arrangements to meet with her, Aunty Val and Joanne Goulding. Did not leave message as Jo requests an email or text. Email sent.
12/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Jo called Pamela PBK after 4.
12/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	PBK called Jo regarding meeting arrangements on Monday. It was agreed that we would meet at 10.30, Monday 18 July at the Aboriginal Cultural Centre in Mittagong (corner of Henderson and Rainbow Streets behind the RSL) and that I will call Joanne Goulding to let her know so she can join us.
12/07/2016	Joanne Goulding	Joanne Goulding	Pamela Kottaras	Gathering cultural information	PBK called Joanne Goulding to invite her to the meeting with Aunty Val and Jo Albany on Monday. Went to voicemail so I left a message asking her to call me back but also left the location and time in case Joanne can't get back to me.
13/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	PBK sent email to Jo Albany to confirm the meeting and to inform her that I had contacted Joanne Goulding and left a voicemail with the meeting invitation.

Date	RAP	RAP Person	EVM person	Topic	Details
18/07/2016	Meeting with elders and others	Val Mulcahy Annie Warren Kate Stevenson Ray Stevenson Pete Swain Melissa Wiyia Cinnamon Johnson Jo Albany (organiser) Larry Whipper (Mayor)	Pamela Kottaras	Gathering cultural information	Meeting at the Aboriginal Community and Cultural Centre at Mittagong. We met for 2.5 hours and discussed the importance of consultation, the Aboriginal Place at Bundanoon (Jubilee Rock) and artefacts. Nobody knew of any cultural sites in the project area but all agreed that there were mass graves in the region. Jo Albany suggested that bringing a group of invited guests to site (Mereworth where the infrastructure is going to be) may be of benefit as the identification of sites is much easier when on the land.
25/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Pamela called Jo to let her know that a small group of elders were going to be invited to site. The list is Aunty Val, Aunty Annie, Aunty Kate and Uncle Ray. Jo said that Aunty Kate and Uncle Ray probably wouldn't be able to make it but that Uncle Max Harrison has a lot of knowledge about the area and we should consider inviting him. I said I would get back to her.
27/07/2016	Joanne Goulding	Joanne Goulding	Pamela Kottaras	Gathering cultural information	Pamela returned a call from Joanne about the meeting that was held on 18 July. Joanne wanted to confirm that it had gone ahead. I said it had but that there will be another meeting after the draft report had been sent to the RAPs.
27/07/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Email to Jo Albany inviting the elders to a site meeting
3/08/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Email to Jo Albany reminding her about the meeting
8/08/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Email from Jo Albany agreeing to Wednesday
8/08/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Email to Jo Albany thanking her and letting her know we'd be in touch.
16/08/2016	Moyengully Natural Resource Group	Jo Albany	Pamela Kottaras	Gathering cultural information	Telephone call from PBK to JA confirming site meeting on Wednesday 24/08. 10 am. Pickup to be determined.
23/08/2016	Moyengully Natural Resource Group	Jo Albany	Ryan Desic	Gathering cultural information	Call to Jo Albany about upcoming site visit tomorrow. Jo informed me that Aunty Annie is unwell due to a recent medical issue and that neither Aunty Val or Aunty Annie could come along. This was confirmed via email and I replied letting Jo know that we would re-assess the situation and organise another time once the Aunties are ready.
30/08/2016	ALL RAPs	ALL RAPs	Ryan Desic	Cultural information	Issued email regarding NIAC's request to inform all RAPs about a suggested burial site at the base of Mount Gingenbullen
2/09/2016	Moyengully Natural Resource Group	Jo Albany	Ryan Desic	Gathering cultural information	Ryan Desic to Jo Albany via email " I hope things are well with you. I am just touching base to see if the aunties would like to visit site soon? If Aunty Annie is still not well, would Aunty Val still like to visit? It is just that we are finalising our report and would need to cover this aspect soon to be able to include it in the report.
					Please let me know if sometime next week would be suitable?" Regards, Ryan

Date	RAP	RAP Person	EMM person	Topic	Details
8/09/2016	Moyengully Natural Resource Group	Jo Albany	Ryan Desic	Gathering cultural information Draft ACHA	Ryan called Jo Albany to arrange site visit for the Aunties. No response to phone call.
11/10/2016	Peter Falk Consultancy	Peter Falk	Ryan Desic	Draft ACHA	Peter acknowledged receipt and said he was reading through the report in consultation with Duncan Falk
11/10/2016	Northern Illawarra Aboriginal Collective Inc (NIAC)	Daniela Reverberi	Ryan Desic	Draft ACHA	Mentioned that groups may not have the capacity to read the documents. Explained to Daniela how to download the report properly and what her roles and responsibilities are regarding the draft report. Noted that the key aim is to understand the impacts and management recommendations for Aboriginal cultural heritage for the project area. Also stated that we will be having a meeting that will attempt to show the evidence in more simplistic terms to get everyone on the same level. Daniela was concerned that the RAPs should not be the only ones to review the Hume Coal EIS. I informed her that the EIS will be put on public exhibition after it is lodged. Also there will be community sessions outside the upcoming RAP meeting to address other concerns.
11/10/2016	Gundungurra Aboriginal Heritage Association Inc.	Sharyn Halls	Ryan Desic	Draft ACHA	Called and left a message asking if Sharyn received the draft report or if she needed help. Ryan tried to call again on 13/10/2016 left message over voicemail again. Sharon called back to confirm receipt.
11/10/2016	Cubbitch Barta Native Title Claimants Aboriginal Corporation	Glenda Chalker	Ryan Desic	Draft ACHA	No response. Called again on 13/10/2016 and Glenda confirmed receipt of report.
11/10/2016	Yamanda Aboriginal Association	Jo Albany (see Moyengully Below)	Ryan Desic	Draft ACHA	See below regarding Jo Albany as she will facilitate the consultation.
11/10/2016	Buru Ngunawal Aboriginal Corporation (BNAC)	Wally Bell	Ryan Desic	Draft ACHA	Called Wally Bell but no response left a message about the draft. Called again on 13/10/2016 and Wally confirmed receipt
11/10/2016	Koomurri Ngunawal Aboriginal Corporation	Glen Freeman	Ryan Desic	Draft ACHA	Called and Glen confirmed receipt of report
11/10/2016	Illawarra LALC	Reception	Ryan Desic	Draft ACHA	Called and left a message regarding the report confirmation. Ryan tried to call again on 13/10/2016 left message over voicemail again
11/10/2016	Moyengully Natural Resource Management Group	Jo Albany	Ryan Desic	Draft ACHA	Called Jo Albany regarding draft report and asked what was a good date to have the upcoming meeting. She said she would print and disseminate the information to Yamanda members (Auntie Annie and Auntie Val) and try to get them to come along to the meeting.
11/10/2016	Koori Kulcha Experience	Marie Barbaric	Ryan Desic	Draft ACHA	Called Marie left a message regarding the report. I noted that she advised me previously that she was on the ILALC, and I asked whether it is more appropriate to send information directly to them. No confirmation was given.
11/10/2016	Joanne Goulding	Joanne Goulding	Ryan Desic	Draft ACHA	Called Joanne to check up on draft report. She said she would be going on leave for two weeks but would be back on 25 October. She said the most important thing would be to have Auntie Annie and Auntie Val present at the meeting to get their views on the situation.
13/10/2016	NIAC	Daniela Reverberi	Ryan Desic	Draft ACHA	Daniela sent an email regarding the draft ACHA. The email did not cover the actual report but addressed matters of confidentiality and getting a print out for ease of reading.
14/10/2016	NIAC	Daniela Reverberi	Ryan Desic	Draft ACHA	Ryan called Daniela to discuss the points raised in an email provided 13 October 2016. The outcomes of the conversation are summarised in an email from Ryan Desic to NIAC dated 14/10/2016
14/10/2016	NIAC	Daniela Reverberi	Ryan Desic	Draft ACHA	Ryan responded to Daniela's email dated 13 October 2016. This also includes the outcomes of the phone discussion on 14/10/2016.
26/10/2016	NIAC	Daniela Reverberi	Ryan Desic	Draft ACHA	Ryan called to discuss NIAC's response on 24/10/2016. Ryan sought further information on a number of the points provided in the email. Discussed maybe continuing the conversation the next day. Outcomes of conversation provided as part of EMM's response to NIAC's comments to the draft ACHA. It was concluded that Ryan would summarise the points of discussion over the telephone and include them in report.

Date	RAP	RAP Person	EMM person	Topic	Details
1/12/2016	NIAC	Daniela Reverbri	Ryan Desic	Draft ACHA	NIAC provided email responding to EMM's letter dated 15 November 2016 which provided clarification of NIAC's comments (see entry above) along with a response to each of their draft ACHA comments. NIAC's email stated that it did not wish to be paraphrased and that they now wanted to provide their own clarifications on the matter.
10/02/2017	NIAC	Daniela Reverbri	Ryan Desic	Draft ACHA	Ryan called Daniela to discuss NIAC providing their own clarification of the draft ACHA comments (refer previous two comments above). Daniela stated that they would revise the letter sent by EMM on 15 November 2016 in attempt to clarify some of the comments they made about the draft ACHA on 24 October 2016.

A.2 Stage 1 – Notification and registration

This section contains the following documents:

- Government agency requests and responses (first round in 2012 and second round in 2013);
- Public media notifications (first round in 2012 and second round in 2013);
- Aboriginal party invitation to register for the project (first round in 2012 and second round in 2013);
- Aboriginal party registrations of interest; and
- Notification to OEH and LALCs of registered parties.

10 August 2012

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St Leonards NSW 1590

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«Address3»

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E info@www.emmconsulting.com.au
www.emmconsulting.com.au

Re: Aboriginal consultation Hume Mine Project - identification of Aboriginal parties

Dear Sir/Madam,

EMGA Mitchell McLennan Pty Limited (EMM), on behalf of Cockatoo Coal Limited, is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the Hume Coal Project between Exeter and Belanglo State Forest, NSW which is bisected by the Hume Highway (see attached map).

The proposed development comprises an underground cut coal mine and related infrastructure within the area of Authorisation 349 shown on the attached map.

In accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* EMM requests information about relevant Aboriginal persons and Aboriginal organisations who you consider may have cultural knowledge relevant to the Authorisation 349 area and should be invited to register for consultation.

I would be appreciative of your response by 5 September 2012 to:

Hume Coal Project
c/o EMGA Mitchell McLennan
ATN: Neville Baker
PO Box 21
St Leonards NSW 1590

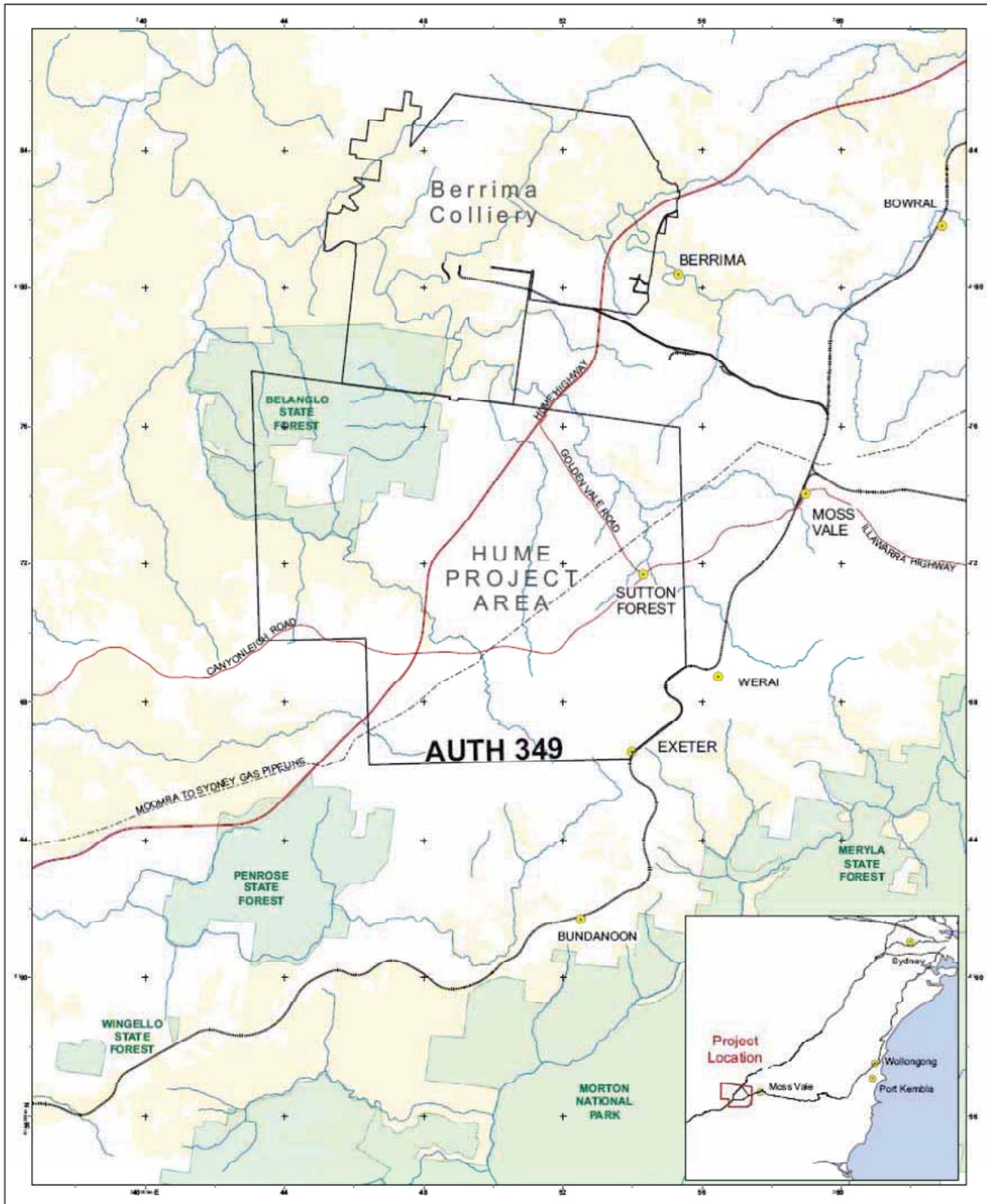
Fax: 9493 9599
email: nbaker@www.emmconsulting.com.au

Please advise at your earliest convenience if additional time is required to provide this information. Information received after 5 September 2012 might not be considered in the consultation process due to the assessment timeframe.

Yours sincerely



Neville Baker
Associate Director - Archaeologist
nbaker@www.emmconsulting.com.au



PROJECT Hume Coal Project		DECLARATION <small>Cockatoo Coal Ltd has warrant all the rights in the production of this map. However, Cockatoo Coal Ltd makes no warranty or representation to the effect that copies reproduced or printed in respect to the information contained on this map, particularly with regard to any commercial interest, shall be liable to any error. Use of this map by third parties shall be at their own risk and the map or materials derived therefrom shall be subject to the permission of Cockatoo Coal Ltd.</small>				DATA SOURCES <small>VICTORIAN DATA BASED ON GEOSCIENCE AUSTRALIA AND LP1</small> <small>PUBLICLY ACCESSIBLE DATA HAS BEEN INCORPORATED INTO THIS MAP (AS NOTED ABOVE). COCKATOOCOAL PROVIDES NO WARRANTY TO THE ACCURACY, COMPLETENESS OR CURRENCY OF THIS DATA.</small>		 HUME COAL																						
TITLE Figure 2.1 Regional context		<table border="1"> <thead> <tr> <th>REV</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Original map output</td> <td>19/03/2012</td> </tr> <tr> <td>1</td> <td>Add grid</td> <td>19/03/2012</td> </tr> </tbody> </table>	REV	DESCRIPTION	DATE	0	Original map output	19/03/2012	1	Add grid	19/03/2012	<table border="1"> <thead> <tr> <th>SCALE</th> <th>CURRENT ISSUE</th> </tr> </thead> <tbody> <tr> <td>1:100,000</td> <td>SIGNATURES</td> </tr> <tr> <td>REF: A3</td> <td>DIRVAN SLG</td> </tr> <tr> <td>DATUM: GDA 94</td> <td>CHECKED</td> </tr> <tr> <td>PROJECTION: MGA ZONE 56</td> <td>APPROVED</td> </tr> </tbody> </table>	SCALE	CURRENT ISSUE	1:100,000	SIGNATURES	REF: A3	DIRVAN SLG	DATUM: GDA 94	CHECKED	PROJECTION: MGA ZONE 56	APPROVED	<table border="1"> <tr> <td colspan="2" style="text-align: center;">CONFIDENTIAL</td> </tr> <tr> <td>PROJECT NO</td> <td>DRAWING NO</td> </tr> <tr> <td>HUME</td> <td>120319-02</td> </tr> </table>		CONFIDENTIAL		PROJECT NO	DRAWING NO	HUME	120319-02
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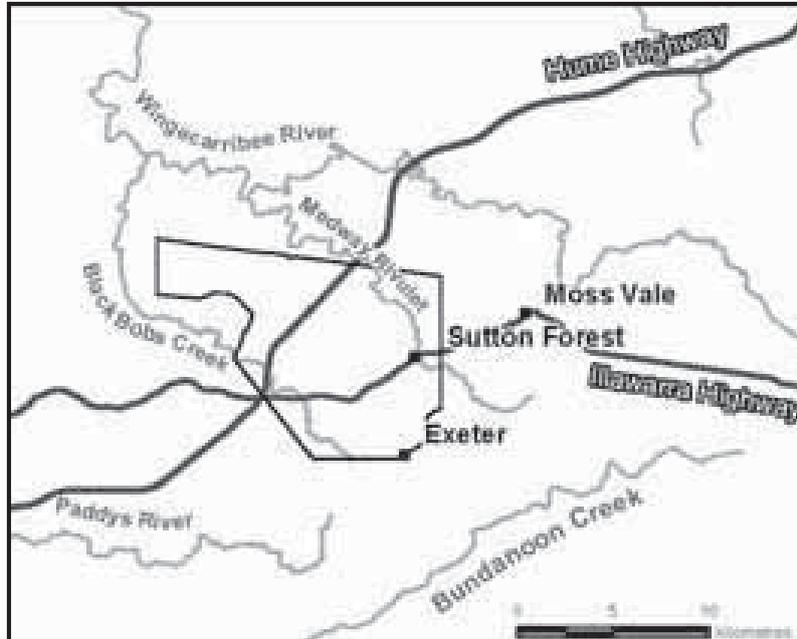
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Notice of Aboriginal Consultation

Project name: Hume Project

Proponent: Hume Coal Pty Limited with project management by Cockatoo Coal Pty Limited

Location: Authorisation A349 located approx. 4 km west of Moss Vale (Wingecaribee local government area) including Sutton Forest, Belanglo Forest in the north west and Exeter in the south east.



The proposed project includes underground mining of coal with surface coal processing facilities and associated infrastructure.

Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the proposed project are invited to register an interest in a process of community consultation with the proponent regarding the proposed activity.

The purpose of community consultation with Aboriginal people is to assist the proposed applicant in: 1) assessing the Aboriginal heritage values of the area, 2) preparing an Environmental Impact Statement under Part 4, Division 4.1 of the Environmental Planning and Assessment Act 1979, preparing any application for an AHIP (should one be required) and 3) to assist regulators in the assessment of Aboriginal heritage reports prepared for this project.

Registrations of interest must be submitted in writing on or before 20 September 2012. Registrations should include the name of a contact person, address and other relevant contact details, preferably including an email address. The names of registered Aboriginal parties will be passed on to the relevant Local Aboriginal Land Council and the Office of Environment and Heritage unless a request to the contrary is made.

Send registrations of interest to:

Hume Project

C/o EMGA Mitchell McLennan Pty Ltd

PO Box 21, St Leonards, NSW, 1590

Fax: (02) 9394 9599

Registration of interest does not guarantee paid involvement

Neville Baker

From: Southern Highland News Classifieds [classifieds.highlandnews@ruralpress.com]
Sent: Thursday, 30 August 2012 11:22 AM
To: Neville Baker
Subject: Re: Public Notice for 6 September edition
Attachments: Aborig Consultation_300812.pdf

Hi Neville,

Attached is a proof for the ad as provided to appear in the Public Notices of Highlands Post on Thursday 6/9/12.

Cost for ad based on size of content using base font size (18cmx 3columns) is \$\$718-74.

Payment and approval for ad are required by Monday 11am.

Kind Regards

HEATHER McLAUGHLIN

28 Wingecarribee Street

P.O. Box 109

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**SOUTHERN HIGHLAND NEWS
HIGHLANDS POST
SNAPSHOT MAGAZINE**

----- Original Message -----

From: [Mail - Highlands Post](#)

To: classifieds.highlandnews@ruralpress.com

Sent: Wednesday, August 29, 2012 5:22 PM

Subject: FW: Public Notice for 6 September edition

Classified Heather.

NATALIE MACPHERSON

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P.O. Box 109

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**SOUTHERN HIGHLAND NEWS
HIGHLANDS POST
SNAPSHOT MAGAZINE**

From: Neville Baker [mailto:nbaker@emgamm.com]

Sent: Wednesday, 29 August 2012 5:14 PM

To: mail.highlandspost@ruralpress.com

Subject: Public Notice for 6 September edition

Dear editor,

I wish to place the text and image in the attached document in the Public Notices section of the Highland Post 6 September 2012 Edition. The Notice should be an ordinary small font single column notice as per standard notice size.

Would you please advise the cost or if there is an alternate means of lodging this. The online method did not seem appropriate to this task as it did not allow for a line drawing, nor limited to single edition. I will arrange for credit card payment when advised.

Please reply by email or telephone 0488 939 505.

Best regards,

Neville Baker
Associate Director - Archaeologist

Now in Sydney, Newcastle and Brisbane.



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4 September 2012

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www.emmconsulting.com.au

Re: Aboriginal Consultation for the Hume Project - identification of Aboriginal parties

Dear

EMGA Mitchell McLennan Pty Ltd (EMM), on behalf of Cockatoo Coal Limited is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of Authorisation A349 located approximately 4 km west of Moss Vale (Wingecaribee Local Government Area) including Sutton Forest, Belanglo Forest in the north-west and Exeter in the south-east.

Your organisation has been identified by the Office of Environment and Heritage as having potential interest in registering for consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

Cockatoo Coal Limited proposes to construct an underground cut coal mine and related infrastructure within the area of Authorisation 349. The project involves development activities under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979*.

If you wish to register your interest as an Aboriginal party your registration must be in writing (letter, fax or email), and include:

- your name/organisation; and
- current contact details (postal address, email, phone number/s).

This information must be received by Neville Baker (see contact details below) by close of business on Thursday 20 September 2012.

Hume Coal Project
Neville Baker
EMGA Mitchell McLennan
PO Box 21
St Leonards NSW 1590
Fax: 02 9493 9599

As required by OEH guidelines, details of people registering as Aboriginal Parties will be forwarded to OEH and the relevant Local Aboriginal Land Council unless you specify otherwise.

Registration of interest does not guarantee employment on fieldwork.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Neville Baker', is placed on a light blue rectangular background.

Neville Baker
Associate Director - Archaeologist
nbaker@www.emmconsulting.com.au

Notice of Aboriginal Consultation

Project name: Hume Project

Proponent: Hume Coal Pty Limited with project management by Hume Coal Pty Limited.

Location: Authorisation A349 located approx. 4km west of Moss Vale (Wingecarribee local government area) including Sutton Forest, Belanglo Forest in the north west and Exeter in the south east.



The proposed project includes underground mining of coal with surface coal processing facilities and associated infrastructure.

Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the proposed project are invited to register an interest in a process of community consultation with the proponent regarding the proposed activity.

The purpose of community consultation with Aboriginal people is to assist the proposed applicant in: 1) assessing the Aboriginal heritage values of the area, 2) preparing an Environmental Impact Statement under Part 4, Division 4.1 of the Environmental Planning and Assessment Act 1979, preparing any application for an AHIP (should one be required) and 3) to assist regulators in the assessment of Aboriginal heritage reports prepared for this project.

Registrations of interest must be submitted in writing on or before Monday 26th August, 2013. Registrations should include the name of a contact person, address and other relevant contact details, preferably including an email address. The names of registered Aboriginal parties will be passed on to the relevant Local Aboriginal Land Council and the Office of Environment and Heritage unless a request to the contrary is made.

Send registrations of interest to:

Hume Project

C/o Ryan Desic

EMGA Mitchell McLennan Pty Ltd

PO Box 21, St Leonards, NSW, 1590

Ph: 02 9493 9500

Fax: 02 9493 9599

Registration of interest does not guarantee paid involvement.

Neville Baker

From: Nicole Williams [Nicole.Williams@wsc.nsw.gov.au]
Sent: Wednesday, 29 August 2012 4:27 PM
To: Neville Baker
Cc: Mark Pepping
Subject: Aboriginal Consultation Hume Mine Project List of interested Aboriginal Organisations/community Members
Attachments: List of Aboriginal Stakeholders Contact Groups.xls

Dear Neville,

Thank you for your recent request for the contact details of local Aboriginal organisations and community members who have an interest and/or knowledge of local Aboriginal heritage and sites of significance.

Please find attached a copy of the contact details of these persons/organisations.

Please note that during an update of this list, I have been unable to reach the contacts highlighted in blue to update their details so can only assume that they are still operating/residing at the same address.

If you have any further enquiries, please feel free to contact myself or Mark Pepping, Manager of Strategic and Community Development on 024868 085.

Kind regards,

Nicole

NICOLE WILLIAMS | Community Development Coordinator | Wingecarribee Shire Council
P: 4868 0866 | F: 4869 1203 | E: nicole.williams@wsc.nsw.gov.au | www.wsc.nsw.gov.au
Civic Centre Elizabeth Street Moss Vale NSW 2577 | PO Box 141 Moss Vale NSW 2577 | DX 4961 Bowral NSW 2576

EMAIL DISCLAIMER: This message is intended for the addressee named and may contain confidential information. If you are not the intended recipient, please notify the sender and delete the message. Views expressed in this message are those of the individual sender and are not necessarily the views of Wingecarribee Shire Council. This email may be made available to third parties in accordance with the Government Information (Public Access) Act 2009.

Wingecarribee Council List of Aboriginal Stakeholders

Name	Contact Person	Contact Details
Cubbitch Barta	Chairperson: Glenda Chalker Cubbitch Barta Native Title Claimants Aboriginal Corporation.	
ILALC (Illawarra Local Aboriginal Land Council)	CEO: Sharalyn Robinson	
TLALC Tharawal Local Aboriginal Land Council)	Chairperson: Ross Evans	
Indigenous Historical Research	Adrian Shafer	
Gundungurra Aboriginal Heritage Association Inc.	Chairperson: Merle Williams	
Moyengully Natural Resource Management Group	John Steward	
Peter Falk Consultancy	Peter Falk	
Coomaditchie United Aboriginal Corporation	Po Box 160 Warrawong NSW 2502	
Korewal Elouera Jerrungarugh	Uncle Ruben Aunty Gwen Brown	
Kim Moran	Bellambi Indigenous Corporation 48 Rothery Road Bellambi NSW 2518 Ph: 42856836	
Wodi Wodi Traditional Owners Corporation	Aunty Elaine STURGEON	
Pejar Local Aboriginal Land Council (Goulburn to Moss Vale)	Coordinator Delise FREEMAN Chairperson: Alfie Walker	
Yamanda Aboriginal Association		
Kula N Gadu Association		
Gibbergunyah Aboriginal Association	Aunty Sandra Brooks	

List of Aboriginal Stakeholders

Name	Contact Person	Contact Details
Cubbitch Barta	Chairperson: Glenda Chalker Cubbitch Barta Native Title Claimants Aboriginal Corporation.	
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Peter Falk Consultancy	Peter Falk	
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Yamanda Aboriginal Association		
Kula N Gadu Association		
Gibbergunyah Aboriginal Association	Aunty Sandra Brooks	

Neville Baker

From: John Lennis [John.Lennis@cma.nsw.gov.au]
Sent: Tuesday, 28 August 2012 8:58 AM
To: Neville Baker
Subject: info

Nick

Under the act that we work under I am not allowed to pass on the information that you requested in your email of today 10th August 2012.

The Hawkesbury Nepean CMA has no interest in this project and will pass your email on to the member of our Advisory Committee for their information if they comment on this it is a individual person and not a representative of the Hawkesbury Nepean Catchment Management Authority

John Richard Lennis
Catchment Officer Aboriginal Communities
Hawkesbury-Nepean Catchment Management Authority
Level 4 | 2-6 Station St | Penrith NSW 2750 | PO Box 4515 Penrith Westfields NSW 2750
T: 02 4725 3046 | F: 02 4725 3088 | E: john.lennis@cma.nsw.gov.au
www.hn.cma.nsw.gov.au

This message is intended for the addressee named and may contain confidential/privileged information. If you are not the intended recipient, please delete it and notify the sender.

Views expressed in this message are those of the individual sender, and are not necessarily the views of the Department.

You should scan any attached files for viruses.

Neville Baker

From: S Robinson [srobinson@exemail.com.au]
Sent: Tuesday, 11 December 2012 12:45 PM
To: Neville Baker
Subject: Expression of interest

Hi Neville

Thankyou for your letter dated 4 September 2012 regarding Cockatoo Coal Limited.

The Illawarra Local Aboriginal Land Council is a key stakeholder in the protection and preservation of Aboriginal Heritage and culture. The ILALC has a number of Aboriginal Site Officers that hold the knowledge required to participate in all Aboriginal studies and assessments.

If you require any further information regarding this matter, please don't hesitate to contact me on the number listed below.

Yours in UNITY

Sharralyn Robinson
Illawarra Local Aboriginal Land Council
CEO



I acknowledge the traditional owners and custodians of the land I work on as the first people of this country.

Neville Baker

From: Di Blasio, Jessica [Jessica.DiBlasio@nntt.gov.au]
Sent: Friday, 17 August 2012 4:11 PM
To: Neville Baker
Subject: National Native Title Search Results [SEC=UNCLASSIFIED]
Attachments: Search Results.pdf; NC97_7.pdf

UNCLASSIFIED

Dear Neville,

Thank you for your native title search request over AUTH 349.

Please find attached:

- search results
- NNTT fact sheet to help you understand the search result
- Map attachment

If you require any additional information, please feel free to contact me on the numbers below.

Regards,

Jessica Di Blasio | EXECUTIVE ASSISTANT/CLIENT SERVICES OFFICER

National Native Title Tribunal | Sydney office, Operations East

Level 16, Law Courts Building, Queens Square, Sydney, New South Wales 2000

Telephone (02) 9227 4000 | Facsimile (02) 9227 4030 | Email jessica.diblasio@nntt.gov.au

Freecall 1800 640 501 | www.nntt.gov.au

Facilitating timely and effective outcomes.



17 August 2012

Neville Baker
Associate Director- Archaeologist
EMGA Mitchell McLennan
PO Box 21
St Leonards NSW 1590

Sydney Office, Operations East

Level 16, Law Courts Building,
Queens Square
Sydney NSW 2000
GPO Box 9973
Sydney NSW 2000
Telephone (02) 9227 4000
Facsimile (02) 9227 4030

Our Reference: 5072/12jd

Dear Mr Baker

Native Title Search Results of AUTH 349

Thank you for your search request of 10 August 2012 in relation to the above area.

Search Results

The results provided are based on the information you supplied and are derived from a search of the following Tribunal databases:

Register Type	NNTT Reference Numbers
Schedule of Applications (unregistered claimant applications)	Nil.
Register of Native Title Claims	NC97/7
National Native Title Register	Nil.
Register of Indigenous Land Use Agreements	Nil.
Notified Indigenous Land Use Agreements	Nil.

I have included a register extract, map attachment and a NNTT Registers fact sheet to help you understand the search result.

Please note that there may be a delay between a native title determination application being lodged in the Federal Court and its transfer to the Tribunal. As a result, some native title determination applications recently filed in the Federal Court may not appear on the Tribunal's databases.

The search results are based on analysis against external boundaries of applications only. Native title applications commonly contain exclusions clauses which remove areas from within the

external boundary. To determine whether the areas described are in fact subject to claim, you need to refer to “Area covered by claim” section of the relevant Register Extract or Application Summary and any maps attached.

Search results and the existence of native title

Please note that the enclosed information from the Register of Native Title Claims and/or the Schedule of Applications is **not** confirmation of the existence of native title in this area. This cannot be confirmed until the Federal Court makes a determination that native title does or does not exist in relation to the area. Such determinations are registered on the National Native Title Register.

Tribunal accepts no liability for reliance placed on enclosed information

The enclosed information has been provided in good faith. Use of this information is at your sole risk. The National Native Title Tribunal makes no representative, either express or implied, as to the accuracy or suitability of the information enclosed for any particular purpose and accepts no liability for use of the information or reliance placed on it.

If you have any further queries, please contact me on 1800 640 501.

Yours sincerely



Jessica Di Blasio | EXECUTIVE ASSISTANT/CLIENT SERVICES OFFICER

National Native Title Tribunal | Sydney office, Operations East

Level 16, Law Courts Building, Queens Square, Sydney, New South Wales 2000

Telephone (02) 9227 4000 | Facsimile (02) 9227 4030 | Email jessica.diblasio@nntt.gov.au

Freecall 1800 640 501 | www.nntt.gov.au

Facilitating timely and effective outcomes.



NATIONAL NATIVE TITLE TRIBUNAL

Application Information and Extract from the Register of Native Title Claims

Application Information

Application numbers: Federal Court number: NSD6060/98
NNTT number: NC97/7

Application name: Gundungurra Tribal Council Aboriginal Corporation #6

Registration history: Registered from 29/04/1997.

Register Extract (pursuant to s.186 of the *Native Title Act 1993*)

Application lodged with: National Native Title Tribunal

Date application lodged: 29/04/1997

Date claim entered on Register: 29/04/1997

Applicants: Ms Elsie Stockwell, Ms Pamela Stockwell

Address for service: Eddy Neumann
Eddy Neumann Lawyers

Additional Information:

Not Applicable

Area covered by the claim:

(a) Commencing at 150.52997 east longitude and 34.591636 south latitude, approximately 15.5 kilometres east south east of Moss Vale, the application traverses clockwise starting in a south-westerly direction, passing through points 2 to 36,765 of the following geographic coordinates. They are in decimal degrees and referenced to Australian Geodetic Datum 1984 (AGD84). These coordinates are based on the position of spatial reference data sourced by Land Information Centre, Department of Information Management and Technology, New South Wales as of 18 May 1999.

(b) Subject to clauses (d) and (e) the area covered by the application excludes any land or waters covered by:

- (i) a scheduled interest;
- (ii) freehold estate;
- (iii) a commercial lease that is neither an agricultural lease nor a pastoral lease;
- (iv) an exclusive agricultural lease or an exclusive pastoral lease;
- (v) a residential lease;
- (vi) a community purposes lease;
- (vii) a lease dissected from a mining lease as referred to in s23B(2)(vii);
- (viii) any lease (other than a mining lease) that confers a right of exclusive use over particular land or waters;

which was validly vested or granted on or before 23 December 1996.

(c) Subject to clauses (d) and (e) the area covered by the application excludes any area covered by the valid construction or establishment of any public work, where the construction or establishment of the public work commenced on or before 23 December 1996.

(d) Where the act specified in (b) and (c) falls within the provisions of

- (i) s23B(9) - Exclusion of acts benefiting Aboriginal peoples or Torres Strait Islanders;
- (ii) s23B (9A) - Establishment of a national or state park;
- (iii) s23B (9B) - Acts where legislation provides for non-extinguishment;
- (iv) s23B (9C) - Exclusion of Crown to Crown grants; and
- (v) s23B (10) - Exclusion by regulation,

the area covered by the act is not excluded from this application.

(e) Where an act referred to in clauses (b) and (c) covers land or waters referred to in:

- s47 - Pastoral leases held by native title claimants;
- s47A - Reserves etc covered by claimant applications; and
- s47B - Vacant crown land covered by claimant applications,

the area covered by the act is not excluded from the application.

(f) Where an area is covered by a previous non-exclusive possession act (s 23F) the native title claim group does not claim possession, occupation, use and enjoyment to the exclusion of all others.

(g) The area covered by the application excludes land where native title has been extinguished at common law.

(h) The area covered by the application excludes areas covered by prior Gundungurra claims filed with the National Native Title Tribunal being NC96/7, NC96/27, NC96/30, NC96/36 and NC97/4.

Persons claiming to hold native title:

The native title claim group comprises all members of the Gundungurra Tribal Council Aboriginal Corporation

Registered native title rights and interests:

The following Native Title Rights & Interests were entered on the Register on 23/06/2000:

1. Subject to (2) - (5) below, the full and free enjoyment of the following native title rights and interests area are claimed in relation to the land and waters the subject of the application:

- a. A right to possess, occupy, use and enjoy the claim area;
- b. A right to make decisions about the use and enjoyment of the claim area;
- c. A right of access to the claimed area;
- d. A right to control the access of others to the claimed area;
- e. The right to control the use and enjoyment of others of resources of the claimed area.
- f. (Right not registered)
- g. (Right not registered)
- h. (Right not registered)

2. With respect of those parts of the area the subject of the application which are, or have been, the subject of a previous non-exclusive possession act within the meaning of s 23F of the Native Title Act 1993, the native title rights and interests area set out in (1) are claimed subject to the rights and interests created in the 'non-exclusive possession act' which are not inconsistent with the rights and interests claimed and, in the case of rights granted which are inconsistent with the rights and interests claimed, subject to any suspension of the native title rights and interests which those inconsistent rights and interests cause.

3. With respect to those parts of the area the subject of the application which are, or have been, the subject of:

- a. a category B intermediate period act within the meaning of s232C of the Native Title Act 1993;
- b. a category C intermediate period act within the meaning of s232D of the Native Title Act 1993;
- c. a category D intermediate period act within the meaning of s232E of the Native Title Act 1993;

the native title rights and interests claimed are those set out in (1) above subject to the rights and interests created in the non-exclusive possession act which are not inconsistent with the rights and interests claimed and, in the case of any rights granted which are inconsistent with the rights and interests claimed, subject to any suspension of the native title rights and interests which those inconsistent rights and interests cause.

4. With respect to those parts of the area of the application which are, or have been, the subject of:

- a. a category B past act within the meaning of s230 of the Native Title Act 1993;
- b. a category C past act within the meaning of s231 of the Native Title Act 1993;
- c. a category D past act within the meaning of s232 of the Native Title Act 1993;

the native title rights and interests claimed area those set out in (1) above subject to the rights and interests created in the non-exclusive possession act which are not inconsistent with the rights and interests claimed and, in the case of any rights granted which are inconsistent with the rights and interests claimed, subject to any extinguishment or suspension of the native title rights and interests which those inconsistent rights and interests cause.

5. The native title rights and interests identified above do not extend to ownership of any minerals, petroleum or gas which are wholly owned by the Crown.

6. The native title rights and interests identified above do not include a claim for exclusive occupation and use of offshore areas as defined by s253 of the Native Title Act 1993.

Register attachments:

1. Plan of Application Area, Attachment C of the Application, 1 page - A4, 29/04/1997.

▪ *Note: The Register may, in accordance with s.188 of the Native Title Act 1993, contain confidential information that will not appear on the Extract.*



Searching the NNTT Registers in New South Wales

Search service

On request the National Native Title Tribunal will search its public registers for you. A search may assist you in finding out whether any native title applications (claims), determinations or agreements exist over a particular area of land or water.

In New South Wales native title cannot exist on privately owned land including family homes or farms.

What information can a search provide?

A search can confirm whether any applications, agreements or determinations are registered in a local government area. Relevant information, including register extracts and application summaries, will be provided.

In NSW because we cannot search the registers in relation to individual parcels of land we search by local government area.

Most native title applications do not identify each parcel of land claimed. They have an external boundary and then identify the areas not claimed within the boundary by reference to types of land tenure e.g., freehold, agricultural leasehold, public works.

What if the search shows no current applications?

If there is no application covering the local government area this only indicates that at the time of the search either the Federal Court had not received any claims in relation to the local government area or the Tribunal had not yet been notified of any new native title claims.

It does not mean that native title does not exist in the area.

Native title may exist over an area of land or waters whether or not a claim for native title has been made.

Where the information is found

The information you are seeking is held in three registers and on an applications database.

National Native Title Register

The National Native Title Register contains determinations of native title by the High Court, Federal Court and other courts.

Register of Native Title Claims

The Register of Native Title Claims contains applications for native title that have passed a registration test.

Registered claims attract rights, including the right to negotiate about some types of proposed developments.

Register of Indigenous Land Use Agreements

The Register of Indigenous Land Use Agreements contains agreements made with people who hold or assert native title in an area.

The register identifies development activities that have been agreed by the parties.

Application summaries

An application summary contains a description of the location, content and status of a native title claim.

This information may be different to the information on the Register of Native Title Claims, e.g., because an amendment has not yet been tested.

How do you request a search?

A search request form is available on the Tribunal's web site at:
<http://www.nntt.gov.au/registers/search.html>
Mail, fax or email your request to the Tribunal's Sydney registry, identifying the local government area/s you want searched.

Email: NSWEnquiries@nntt.gov.au

Fax: (02) 9227 4030

Address: GPO Box 9973, Sydney NSW 2001

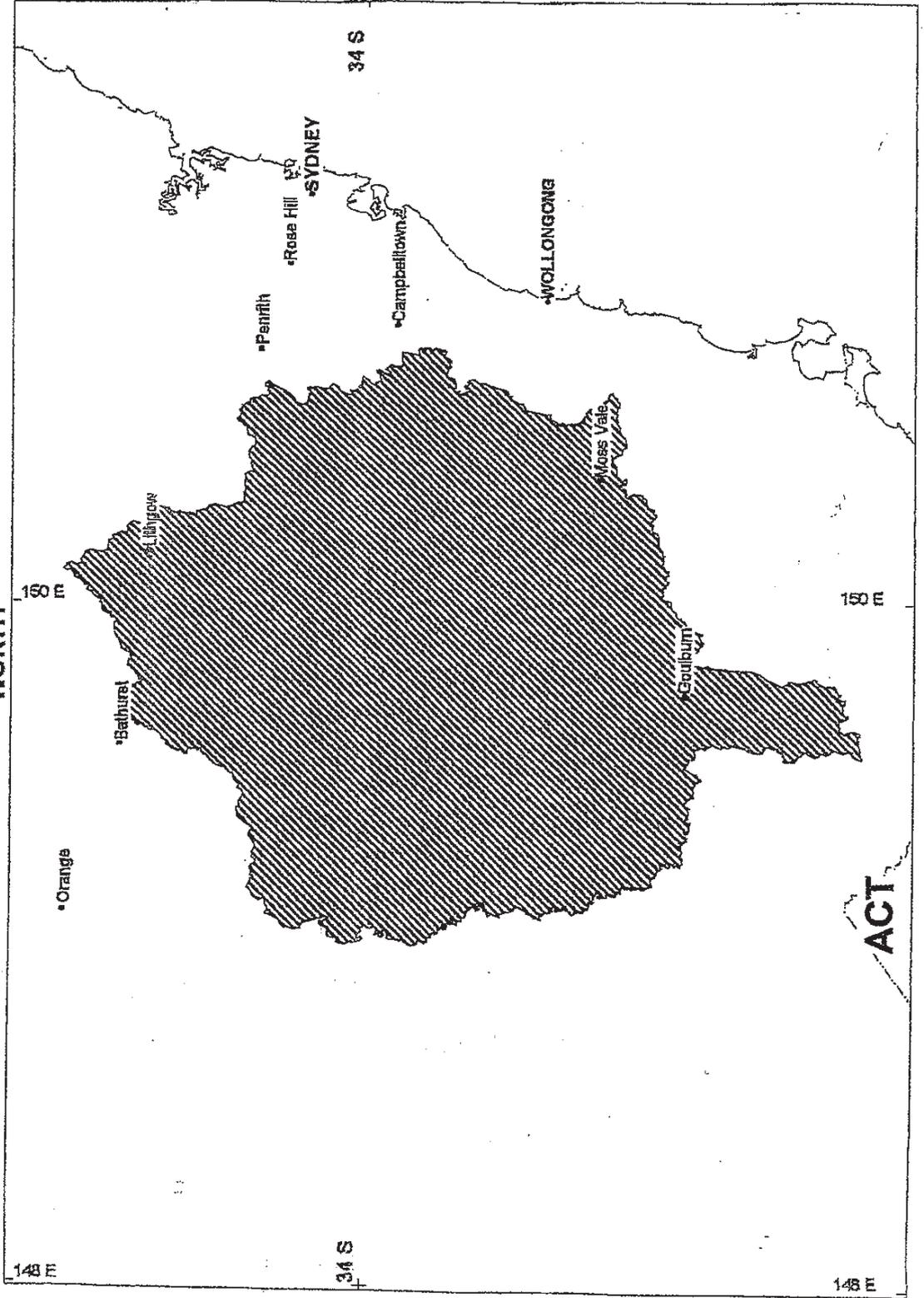
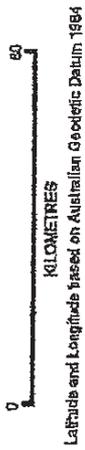
Phone: (02) 9227 4000

NATIVE TITLE APPLICATION

as at 18/05/1999

Map created from data sourced from Land Information Centre, DIM&T, NSW
by Geospatial Information Unit, National Native Title Tribunal

NSD6060/98 (NC97/7)
Plan of Application Area
Attachment C of the Application
Page 1 of 1, A4, 29/04/1997



Location of NC97/007
Within New South Wales & ACT



23 August 2012 ref: OE&H : 23 – 8 -12/4

EMGA / Mitchell McLennan
PO Box 21
St Leonards NSW 1590

Dear Sir or Madam

Aboriginal Cultural Heritage Assessment

Proposed development comprising an underground cut coal mine and relate infrastructure in the vicinity of Exeter/Belanglo State Forest

I refer to your letter of 10 August 2012 regarding the above matter.

We acknowledge that section 4.1.2 of the Office of Environment & Heritage's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* require you to contact us in order to compile a list of Aboriginal people who may have an interest in the proposed project area and hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or places. However, we advise that NTSCORP's privacy guidelines restrict us from providing proponents with contact details of traditional owners who may have such an interest or hold such knowledge.

In response to your notification, NTSCORP will forward your correspondence to any individuals, groups and organisations whom NTSCORP is aware assert traditional interests within or hold cultural knowledge about the relevant area. Recipients of our correspondence will be invited to **register their interest in the project directly with you by 5 September 2012.**

Please be aware that NTSCORP cannot make a guarantee or undertaking that the recipients of our correspondence represent the entirety of traditional owners for the relevant area.

Yours faithfully,

A handwritten signature in black ink, appearing to read "Peter Schultz".

Peter Schultz
Senior Land & Notifications Officer
NTSCORP Limited



Office of
Environment
& Heritage

Our reference: DOC12/34167

Hume Coal Project
c/o MitchellMcLennon
Attn: Neville Baker
PO Box 21
St Leonards NSW 1590

Dear Mr Baker,

Thank you for your letter dated 20/08/2012 to the Office of Environment and Heritage (OEH) regarding obtaining a list of the Aboriginal stakeholders that may have an interest in projects for the area of Hume Coal Project Area, Wingecarribee LGA.

Before making an application for the issue of an Aboriginal Heritage Impact Permit, the applicant must carry out an Aboriginal community consultation process in accordance with the National Parks and Wildlife Regulation 2009 and completed to the stage described in subclause 80C.

Please find attached the list of Aboriginal stakeholders known to OEH that may have an interest in the project. OEH's list of regional stakeholders is a list of groups, organisations or individuals who may hold cultural knowledge relevant to a proposal in a region. Consultation with Aboriginal people should not be confused with employment. Inclusion on the OEH's list is not an automatic right to employment. It is the decision of a proponent on who they choose to engage to deliver services based on a range of considerations including skills, relevant experience, and OHS considerations. To be clear, the proponent is under no obligation to employ Aboriginal people registered for consultation.

Further, receipt of this information does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties. Consultation with Aboriginal stakeholders must be in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* which can be found on the Office of Environment and Heritage (OEH) public website by accessing the following link:

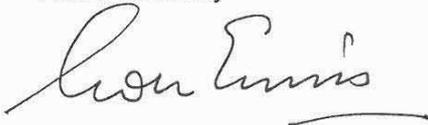
<http://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf>

Please note that these requirements replace the *Interim Community Consultation Requirements for Applicants, December 2004*.

Further, please note that as a result of the 2010 amendments to the National Parks and Wildlife Act, Section 87 permits no longer exist.

If you wish to discuss any of the above matters further please contact Margrit Koettig, Archaeologist, on (02) 9995 6866.

Yours sincerely

 21/8/12

LOU EWINS
Manager Planning & Aboriginal Heritage
Office of Environment and Heritage
Department of Premier and Cabinet

Wingecarribee LGA

Tharawal Local Aboriginal Land Council	Greg Bondar
Cubbitch Barta	Glenda Chalker
Peter Falk consultancy	Peter Falk



11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
P. 02 9562 6327 F. 02 9562 6350

Neville Baker
c/o EMGA Mitchell McLennan
Po Box 21
St Leonards NSW 1590

15 August 2012

Dear Neville

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 10 August 2012 regarding Aboriginal stakeholders within the Exter and Belanglo State Forest area in NSW.

I have searched the Register of Aboriginal Owners and the project area described does not have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act 1983 (NSW)*.

I suggest you contact the Illawarra Local Aboriginal Land Council. They may also be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely

Tabatha Dantoine

Administrative Officer

Office of the Registrar, *Aboriginal Land Rights Act (1983)*

Cubbitch Barta Native Title Claimants
Aboriginal Corporation

18th September, 2012.

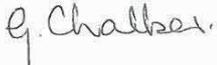
EMM
P.O. Box 21,
ST. LEONARDS. N.S.W. 1590

Dear Neville,

RE; HUME PROJECT

Thank you for the letter regarding the above project. I am not quite sure exactly where the location is, but will take this opportunity of registering an interest. I would need to have a bit more detail, as to ascertain our interest in the project. It may be outside of our interest, not sure.

Yours faithfully,



Glenda Chalker
Hon. Chairperson
Phone/Fax

Rebecca Moore

From: Neville Baker
Sent: Wednesday, 12 September 2012 9:32 AM
To: Sharyn Halls
Cc: Rebecca Moore
Subject: RE: Aboriginal Consultation Hume Project

Hi Sharyn,

Thank you for your registration of interest. We will list your name as the contact person for GAHAI and will be in touch regarding project information and an assessment methodology in due course.

regards,

Neville Baker
Associate Director - Archaeologist

Now in Sydney, Newcastle and Brisbane.



Ground Floor, Suite 01
20 Chandos Street
St Leonards NSW 2065

PO Box 21
St Leonards NSW 1590

T 02 9493 9500 | D 02 9493 9516 | M 0488 939 505 | F 02 9493 9599

www.emgamm.com

From: Sharyn Halls [<mailto:ghal6522@bigpond.net.au>]
Sent: Friday, 7 September 2012 12:53 PM
To: Neville Baker
Subject: Aboriginal Consultation Hume Project

Dear Neville

thank you for your letter dated 4th September 2012.

Gundungurra Aboriginal Heritage Association Inc (GAHAI) would like to register our interest in the Hume Project as we have a Aboriginal Cultural values in the area.

Thank you
Sharyn Halls
Secretary



Peter Falk Consultancy

EMGA Mitchell McLennan

PO Box 21

St Leonards NSW 1590

September 6th, 2012

Subject: Hume Coal project

Attn: Neville Baker,

I wish to be registered in the above project as I have lived in the Southern Highlands for many years and have been doing surveys and salvage in all locations. I have knowledge of sites in the area.

Contact Details:

Peter Falk Consultancy

Yours faithfully,

Peter Falk



Regional Publishers Pty Ltd, Bowral

ACN 000 014 700, ABN 20 000 014 700

28 Wingecarribee St, Bowral NSW, P.O. Box 109, Bowral 2576

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ABN: 20-000-014-700

TAX INVOICE / STATEMENT

Customer details:

**EMM- EMGA MITCHELL MCLENNAN
PO BOX 21**

ST LEONARDS NSW 1590

Account No: 12159370
Invoice No: 2355939
Phone: 0294939500
Dates: 12/08/2013 to 12/08/2013
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Southern Highland News	12/08/2013

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(inc GST): **\$590.54**

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Payment received with thanks

26 July 2013

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T +61 2 9493 9500
F +61 2 9493 9599
E info@emgamm.com
www.emgamm.com

Re: Aboriginal consultation Hume Mine Project – re-identification of Aboriginal parties

Dear Sir/Madam,

EMGA Mitchell McLennan Pty Limited (EMM), on behalf of Hume Coal Pty Limited, is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the Hume Coal Project (the Project) between Exeter and Belanglo State Forest, NSW which is bisected by the Hume Highway (see attached map).

The proposed development comprises an underground cut coal mine and related infrastructure within and in the vicinity of Authorisation 349 shown on the attached map.

EMM previously initiated the Aboriginal consultation process for the Project in August 2012. A total of three Aboriginal parties registered for the Project. However, as a result of changes to the Project timeframe, Aboriginal consultation with registered Aboriginal parties (RAPs) has lapsed beyond six months. Due to the amount of elapsed time, EMM are seeking to readvertise for Aboriginal consultation in accordance with best practice guidelines (*RMS procedure for Aboriginal cultural heritage consultation and investigations 2011 p.31*).

In accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* EMM requests information about relevant Aboriginal persons and Aboriginal organisations who you consider may have cultural knowledge relevant to the Authorisation 349 area and should be invited to register for consultation.

Through the previous agency request process, the following Aboriginal parties were identified as potential interest stakeholders for the Project:

- Tharawal Local Aboriginal Land Council;
- Cubbitch Barta;
- Peter Falk Consultancy;
- Illawarra Local Aboriginal Land Council;
- Indigenous Historical Research;
- Gundungurra Aboriginal Heritage Association Inc.;
- Moyengully Natural Resource Management Group;
- Coomaditchie United Aboriginal Corporation;

- Korewal Elouera Jerrungarugh;
- Bellambi Indigenous Corporation;
- Wodi Wodi Traditional Owners Corporation;
- Pejar Local Aboriginal Land Council;
- Yamanda Aboriginal Association;
- Gundungurra Tribal Council Aboriginal Corporation;
- Kula N Gadu Association; and
- Gibbergunyah Aboriginal Association.

EMM requests information of any Aboriginal persons or organisations not listed above, or any contact information regarding the names listed above that your agency has in their possession. This will ensure EMM is kept up to date on all the potential RAPs for the Project.

I would be appreciative of your response by 16 August 2013 to:

Hume Coal Project
c/o EMGA Mitchell McLennan
ATN: Ryan Desic
PO Box 21
St Leonards NSW 1590

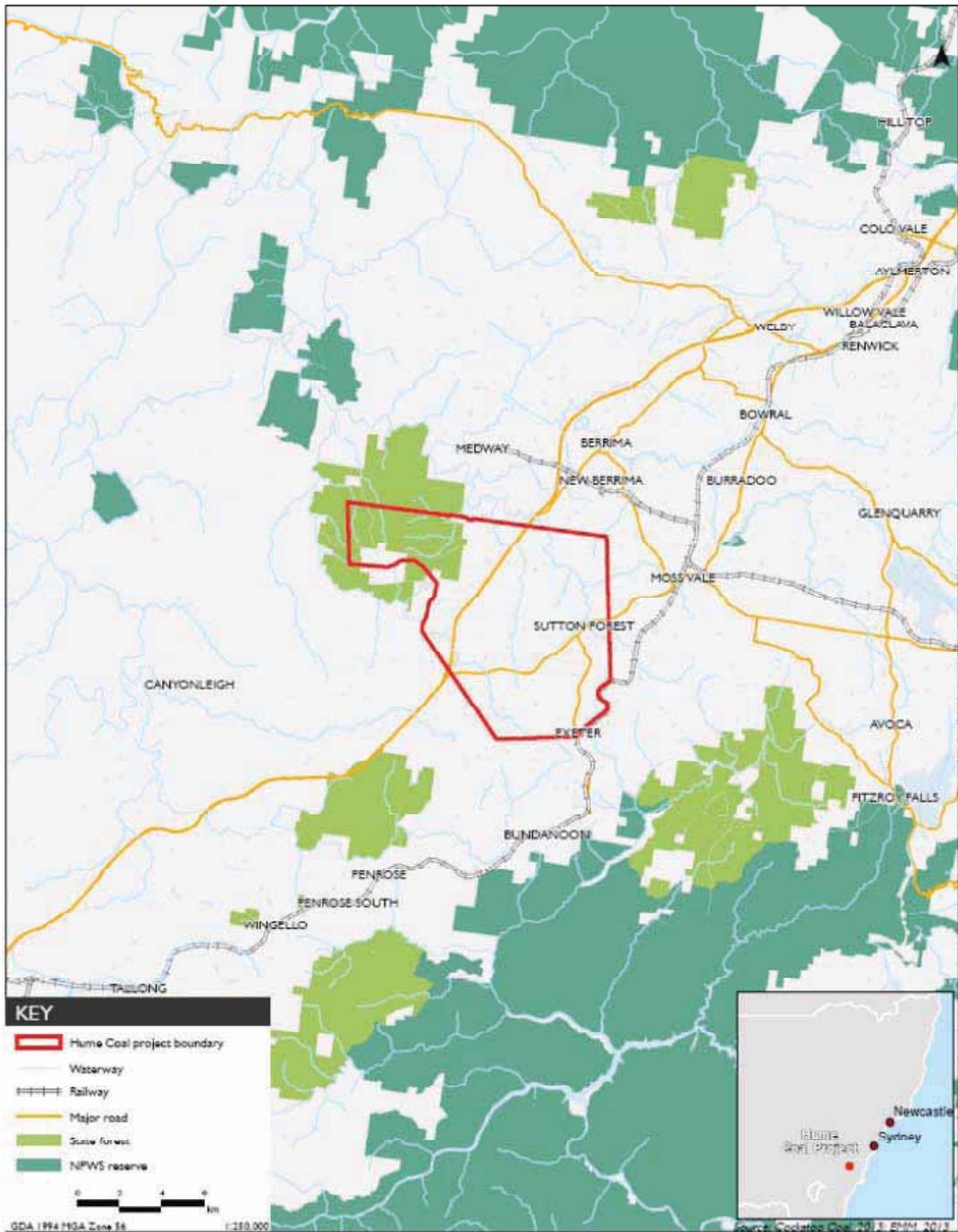
Ph: 9493 9519
email: rdesic@emgamm.com

Please advise us at your earliest convenience if additional time is required to provide this information. Information received after 16 August 2013 might not be considered in the consultation process due to the assessment timeframe.

Yours sincerely,



Ryan Desic
Archaeologist
rdesic@emgamm.com



Location plan
Hume Coal Project
Figure 1.1





Office of
Environment
& Heritage

Your reference: EMM Letter of Request
26 July 2013
Our reference: DOC13/37741
Contact: Jackie Taylor
(02) 6229 7089

Mr Ryan Desic
Archaeologist,
EMGA Mitchell McLennan
PO Box 21
St Leonards NSW 1590

Dear Mr Desic,

**WRITTEN NOTIFICATION OF PROPOSAL AS REQUIRED UNDER OEH ABORIGINAL CULTURAL
HERITAGE CONSULTATION REQUIREMENTS FOR PROPONENTS 2010
RE: Aboriginal Cultural Heritage Assessment – Hume Coal Project, Exeter - Belanglo, NSW**

I refer to your letter of 26 July 2013 to the Office of Environment and Heritage (OEH) regarding the above matter.

Attached is a list of known Aboriginal parties for the Wingecarribee local government area that OEH feels is likely to have an interest in the development. Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties and receipt of this list does not remove the requirement of a proponent/ consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (April 2010). Details held by OEH for known Aboriginal Parties in the Illawarra and Upper Lachlan LGA's that are on EMM's list are also included for your records.

Please note: the contact details in the list provided by OEH may be out of date as it relies on Aboriginal parties advising OEH when their details need changing. If individuals/ companies undertaking consultation are aware that any groups contact details are out of date, or letters are returned unopened, please contact either the relevant stakeholder group (if you know their more current details) and/ or OEH. AHIP applicants should make a note of any group they are unable to contact as part of their consultation record.

If you wish to discuss any of the above matters further please feel free to contact me (02) 6229 7089.

Yours sincerely



06/08/2013

JACKIE TAYLOR
A/ Team Leader Aboriginal Heritage – South East
Regional Operations Group
Office of Environment and Heritage

Enclosure: Attachment 1



**Office of
Environment
& Heritage**

ATTACHMENT 1

Wingecarribee LGA

Organisation/Individual Name	Address	Contact Details
Tharawal Local Aboriginal Land Council. Contact: Greg Bondar		
Cubbitch Barta. Contact: Glenda Chalker		
Peter Falk Consultancy		

Current OEH Details for Upper Lachlan and Illawarra LGA Registered Aboriginal Parties that are on EMM's List

Upper Lachlan

Organisation/Individual Name	Address	Contact Details
Peter Falk Consultancy		
Pejar Local Aboriginal Land Council Primary Contact: Delise Freeman		
Gundungurra Aboriginal Heritage Association Inc. Secretary Sharyn Halls		

Illawarra Area			
Organisation/ Name	Contact person	Phone number	Address
Illawarra Local Aboriginal Land Council	Sharralyn Robinson		
Korewal Elouera Jerrungurah Tribal Elders Council	Uncle Rueben Brown		
The Wadi Wadi Coomaditchie Aboriginal Corporation (represented by NIAC)			
The Wodi Wodi Elders Corporation	Kim Davis/Lisa Davis		
Woronora Plateau Gundungara Elders Council (NIAC) – name reserved with Fair Trading	Paul Cummins		
Coomaditchie United Aboriginal Corporation	Lorraine Brown		
Gandangara Elders Group	Ms Kim Moran		
NIAC			

Ryan Desic

From: O'Malley, Melissa [Melissa.O'Malley@nntt.gov.au]
Sent: Tuesday, 30 July 2013 4:39 PM
To: Ryan Desic
Subject: National Native Title Search Results [SEC=UNCLASSIFIED]
Attachments: Search results.pdf; NC97_7.pdf

UNCLASSIFIED

Dear Ryan,

Thank you for your native title search request of Exeter and Belanglo State Forest

Please find attached:

- search results
- map attachment
- NNTT fact sheet

For any future searches, I would like to direct you to our website where you can download a Tribunal search request form. It is important that we are provided with the required information so as to action your search request as timely and accurately as possible.

<http://www.nntt.gov.au/Applications-And-Determinations/Registers/Pages/Search-The-Tribunal-Registers.aspx>

If you require any additional information, please feel free to contact me on the numbers below.

Regards,

Melissa O'Malley | RECEPTIONIST/CLIENT SERVICES OFFICER

National Native Title Tribunal | Sydney Office

Level 16, Federal Law Courts Building, Queens Square, Sydney, New South Wales 2000

Telephone (02) 9227 4000 | Facsimile (02) 9227 4030 | Email melissa.o'malley@nntt.gov.au

Freecall 1800 640 501 | www.nntt.gov.au

Facilitating timely and effective outcomes.



30 July 2013

Ryan Desic
EMGA Mitchell McLennan
PO Box 21
St Leonards NSW 1590

Operations East, Sydney Office

Level 16, Law Courts Building,
Queens Square
Sydney NSW 2000
GPO Box 9973
Sydney NSW 2000
Telephone (02) 9227 4000
Facsimile (02) 9227 4030

Our Reference: 5620/13MO
Your Reference: Hume Coal Project

Dear Mr Desic

**Native Title Search Results for Exeter and Belanglo State Forest within the Wingecarribee
Local Government Area**

Thank you for your search request of 29 July 2013 in relation to the above area.

Search Results

The results provided are based on the information you supplied and are derived from a search of the following Tribunal databases:

Register Type	NNTT Reference Numbers
Schedule of Applications (unregistered claimant applications)	Nil.
Register of Native Title Claims	NC1997/007
National Native Title Register	Nil.
Register of Indigenous Land Use Agreements	Nil.
Notified Indigenous Land Use Agreements	Nil.

I have included a register extract, a map attachment and a NNTT Registers fact sheet to help guide your understanding of the search result.

Please note that there may be a delay between a native title determination application being lodged in the Federal Court and its transfer to the Tribunal. As a result, some native title determination applications recently filed in the Federal Court may not appear on the Tribunal's databases.

The search results are based on analysis against external boundaries of applications only. Native title applications commonly contain exclusions clauses which remove areas from within the

external boundary. To determine whether the areas described are in fact subject to claim, you need to refer to “Area covered by claim” section of the relevant Register Extract or Application Summary and any maps attached.

Search results and the existence of native title

Please note that the enclosed information from the Register of Native Title Claims and/or the Schedule of Applications is **not** confirmation of the existence of native title in this area. This cannot be confirmed until the Federal Court makes a determination that native title does or does not exist in relation to the area. Such determinations are registered on the National Native Title Register.

Tribunal accepts no liability for reliance placed on enclosed information

The enclosed information has been provided in good faith. Use of this information is at your sole risk. The National Native Title Tribunal makes no representative, either express or implied, as to the accuracy or suitability of the information enclosed for any particular purpose and accepts no liability for use of the information or reliance placed on it.

If you have any further queries, please contact me on 1800 640 501.

Yours sincerely



Melissa O'Malley | RECEPTIONIST/CLIENT SERVICES OFFICER

National Native Title Tribunal | Sydney Office

Level 16, Federal Law Courts Building, Queens Square, Sydney, New South Wales 2000

Telephone (02) 9227 4000 | Facsimile (02) 9227 4030 | Email melissa.o'malley@nntt.gov.au

Freecall 1800 640 501 | www.nntt.gov.au

Facilitating timely and effective outcomes.



Extract from the Register of Native Title Claims

Application Information

Application Reference: Federal Court number: NSD6060/1998
NNTT number: NC1997/007

Application name: Gundungurra Tribal Council Aboriginal Corporation #6

Registration History: Registered from 29/04/1997

Register Extract (pursuant to s. 186 of the *Native Title Act 1993*)

Application filed with: National Native Title Tribunal

Date application filed: 29/04/1997

Date claim entered on Register: 29/04/1997

Applicants: Ms Elsie Stockwell, Ms Pamela Stockwell

Address for service: Eddy Neumann Lawyers
Level 1
255 Castlereagh Street
SYDNEY NSW 2000
Phone: (02) 9264 9933
Fax: (02) 9264 9966

Additional Information:

Not Applicable

DESCRIPTION OF THE AREA COVERED BY THE CLAIM:

(a) Commencing at 150.52997 east longitude and 34.591636 south latitude, approximately 15.5 kilometres east south east of Moss Vale, the application traverses clockwise starting in a south-westerly direction, passing through points 2 to 36,765 of the following geographic coordinates. They are in decimal degrees and referenced to Australian Geodetic Datum 1984 (AGD84). These coordinates are based on the position of spatial reference data sourced by Land Information Centre, Department of Information Management and Technology, New South Wales as of 18 May 1999.

(b) Subject to clauses (d) and (e) the area covered by the application excludes any land or waters covered by:

- (i) a scheduled interest;
- (ii) freehold estate;
- (iii) a commercial lease that is neither an agricultural lease nor a pastoral lease;
- (iv) an exclusive agricultural lease or an exclusive pastoral lease;

- (v) a residential lease;
- (vi) a community purposes lease;
- (vii) a lease dissected from a mining lease as referred to in s23B(2)(vii);
- (viii) any lease (other than a mining lease) that confers a right of exclusive use over particular land or waters;

which was validly vested or granted on or before 23 December 1996.

(c) Subject to clauses (d) and (e) the area covered by the application excludes any area covered by the valid construction or establishment of any public work, where the construction or establishment of the public work commenced on or before 23 December 1996.

(d) Where the act specified in (b) and (c) falls within the provisions of

- (i) s23B(9) - Exclusion of acts benefiting Aboriginal peoples or Torres Strait Islanders;
- (ii) s23B (9A) - Establishment of a national or state park;
- (iii) s23B (9B) - Acts where legislation provides for non-extinguishment;
- (iv) s23B (9C) - Exclusion of Crown to Crown grants; and
- (v) s23B (10) - Exclusion by regulation,

the area covered by the act is not excluded from this application.

(e) Where an act referred to in clauses (b) and (c) covers land or waters referred to in:

- s47 - Pastoral leases held by native title claimants;
- s47A - Reserves etc covered by claimant applications; and
- s47B - Vacant crown land covered by claimant applications,

the area covered by the act is not excluded from the application.

(f) Where an area is covered by a previous non-exclusive possession act (s 23F) the native title claim group does not claim possession, occupation, use and enjoyment to the exclusion of all others.

(g) The area covered by the application excludes land where native title has been extinguished at common law.

(h) The area covered by the application excludes areas covered by prior Gundungurra claims filed with the National Native Title Tribunal being NC96/7, NC96/27, NC96/30, NC96/36 and NC97/4.

PERSONS CLAIMING TO HOLD NATIVE TITLE:

The native title claim group comprises all members of the Gundungurra Tribal Council Aboriginal Corporation

REGISTERED NATIVE TITLE RIGHTS AND INTERESTS:

The following Native Title Rights & Interests were entered on the Register on 23/06/2000

1. Subject to (2) - (5) below, the full and free enjoyment of the following native title rights and interests area are claimed in relation to the land and waters the subject of the application:

- a. A right to possess, occupy, use and enjoy the claim area;
- b. A right to make decisions about the use and enjoyment of the claim area;
- c. A right of access to the claimed area;
- d. A right to control the access of others to the claimed area;
- e. The right to control the use and enjoyment of others of resources of the claimed area.
- f. (Right not registered)

- g. (Right not registered)
- h. (Right not registered)

2. With respect to those parts of the area the subject of the application which are, or have been, the subject of a previous non-exclusive possession act within the meaning of s 23F of the Native Title Act 1993, the native title rights and interests area set out in (1) are claimed subject to the rights and interests created in the 'non-exclusive possession act' which are not inconsistent with the rights and interests claimed and, in the case of rights granted which are inconsistent with the rights and interests claimed, subject to any suspension of the native title rights and interests which those inconsistent rights and interests cause.

3. With respect to those parts of the area the subject of the application which are, or have been, the subject of:

- a. a category B intermediate period act within the meaning of s232C of the Native Title Act 1993;
- b. a category C intermediate period act within the meaning of s232D of the Native Title Act 1993;
- c. a category D intermediate period act within the meaning of s232E of the Native Title Act 1993;

the native title rights and interests claimed are those set out in (1) above subject to the rights and interests created in the non-exclusive possession act which are not inconsistent with the rights and interests claimed and, in the case of any rights granted which are inconsistent with the rights and interests claimed, subject to any suspension of the native title rights and interests which those inconsistent rights and interests cause.

4. With respect to those parts of the area of the application which are, or have been, the subject of:

- a. a category B past act within the meaning of s230 of the Native Title Act 1993;
- b. a category C past act within the meaning of s231 of the Native Title Act 1993;
- c. a category D past act within the meaning of s232 of the Native Title Act 1993;

the native title rights and interests claimed area those set out in (1) above subject to the rights and interests created in the non-exclusive possession act which are not inconsistent with the rights and interests claimed and, in the case of any rights granted which are inconsistent with the rights and interests claimed, subject to any extinguishment or suspension of the native title rights and interests which those inconsistent rights and interests cause.

5. The native title rights and interests identified above do not extend to ownership of any minerals, petroleum or gas which are wholly owned by the Crown.

6. The native title rights and interests identified above do not include a claim for exclusive occupation and use of offshore areas as defined by s253 of the Native Title Act 1993.

REGISTER ATTACHMENTS:

- 1. 1. Plan of Application Area, Attachment C of the Application, 1 page - A4, 29/04/1997

Note: The Register of Native Title Claims may, in accordance with s. 188 of the Native Title Act 1993, contain confidential information that will not appear on the Extract.



Searching the NNTT Registers in New South Wales

Search service

On request the National Native Title Tribunal may search its public registers for you. A search may assist you in finding out whether any native title applications (claims), determinations or agreements exist over a particular area of land or water.

In New South Wales native title cannot exist on privately owned land including family homes or farms.

What information can a search provide?

A search can confirm whether any applications, agreements or determinations are registered in a local government area. Relevant information, including register extracts and application summaries, will be provided.

In NSW because we cannot search the registers in relation to individual parcels of land we search by local government area.

Most native title applications do not identify each parcel of land claimed. They have an external boundary and then identify the areas not claimed within the boundary by reference to types of land tenure e.g., freehold, agricultural leasehold, public works.

What if the search shows no current applications?

If there is no application covering the local government area this only indicates that at the time of the search either the Federal Court had not received any claims in relation to the local government area or the Tribunal had not yet been notified of any new native title claims.

It does not mean that native title does not exist in the area.

Native title may exist over an area of land or waters whether or not a claim for native title has been made.

Where the information is found

The information you are seeking is held in three registers and on an applications database.

National Native Title Register

The National Native Title Register contains determinations of native title by the High Court, Federal Court and other courts.

Register of Native Title Claims

The Register of Native Title Claims contains applications for native title that have passed a registration test.

Registered claims attract rights, including the right to negotiate about some types of proposed developments.

Register of Indigenous Land Use Agreements

The Register of Indigenous Land Use Agreements contains agreements made with people who hold or assert native title in an area.

The register identifies development activities that have been agreed by the parties.

Schedule of Native Title Claims

The Schedule of Native Title Claims contains a description of the location, content and status of a native title claim.

This information may be different to the information on the Register of Native Title Claims, e.g., because an amendment has not yet been tested.

How do I request a native title search?

Download the Search Request Form from the Tribunal's website at - <http://www.nntt.gov.au/Applications-And-Determinations/Registers/Pages/Search-The-Tribunal-Registers.aspx>

Email to: NSWEnquiries@nntt.gov.au

Post to: GPO Box 9973 Sydney NSW 2001

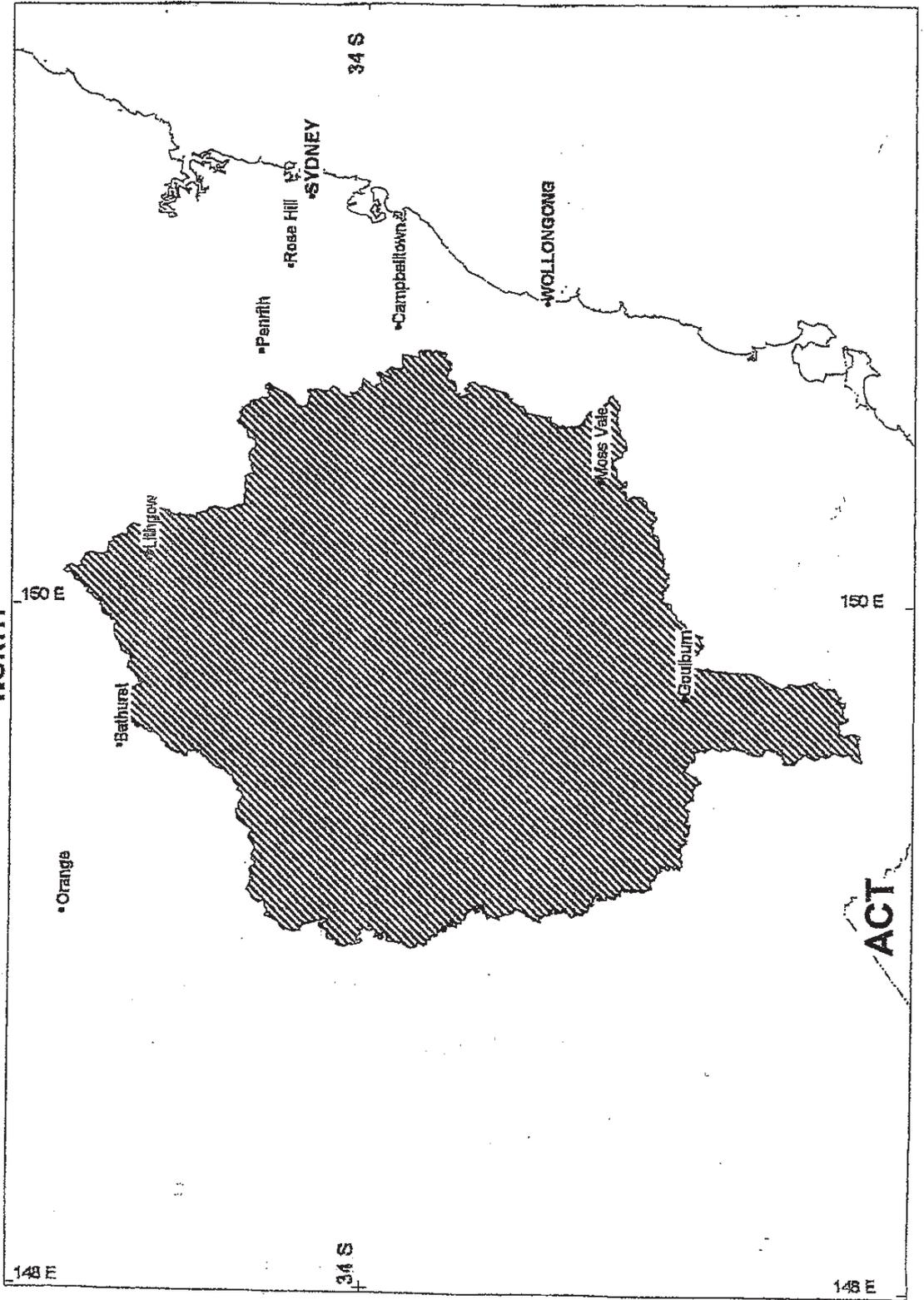
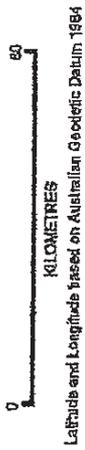
For additional enquiries: 02 9227 4000

NATIVE TITLE APPLICATION

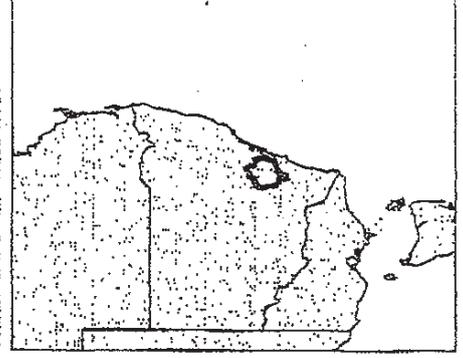
as at 18/05/1999

Map created from data sourced from Land Information Centre, DIM&T, NSW
by Geospatial Information Unit, National Native Title Tribunal

NSD6060/98 (NC97/7)
Plan of Application Area
Attachment C of the Application
Page 1 of 1, A4, 29/04/1997



Location of NC97/007
Within New South Wales & ACT





OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
T. 02 9562 6327 F. 02 9562 6350

Ryan Desic
EMGA Mitchell McLennan
PO Box 21
ST LEONARDS NSW 1590

Dear Ryan

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 26 July 2013 regarding Aboriginal stakeholders within the Exeter and Belanglo State Forest area in NSW.

I have searched the Register of Aboriginal Owners and the project area described *does not appear* to have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act 1983 (NSW)*.

I suggest you contact the Illawarra Local Aboriginal Land Council. They may also be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely

Tabatha Dantoine
Administration Officer
Office of the Registrar, *Aboriginal Land Rights Act (1983)*

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20 Chandos Street
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PO Box 21
St Leonards NSW 1590
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www.emgamm.com



Please consider the environment before printing my email

From: Margaret Bottrell [<mailto:Margaret.Bottrell@cma.nsw.gov.au>]
Sent: Wednesday, 7 August 2013 9:32 AM
To: Admin Info
Subject: Aboriginal Consultation Hume Coal Project - re-identification of Aboriginal Parties

To Mitchell McLennan

Under the act that we work under I am not allowed to pass on the information that you requested in your letter dated 26 July 2013 **Re: Aboriginal Consultation Hume Coal Project - re-identification of Aboriginal Parties**

The Hawkesbury Nepean CMA has no interest in this project, and will pass your letters on to the members of our Advisory Committee for their information. If they comment on this, it is an individual person and not a representative of the Hawkesbury Nepean Catchment Management Authority.

Regards

Margaret Bottrell Senior Strategic Land Services Officer (Aboriginal Communities)
Hawkesbury-Nepean Catchment Management Authority
NSW Government Office Block Level 4, 2-6 Station Street Penrith
PO Box 4515 Penrith Westfields NSW 2750
T: 02 472 53049 **F:** 02 4725 3088
E: margaret.bottrell@cma.nsw.gov.au
W: www.hn.cma.nsw.gov.au

This message is intended for the addressee named and may contain confidential/privileged information. If you are not the intended recipient, please delete it and notify the sender.

Views expressed in this message are those of the individual sender, and are not necessarily the views of the Department.

You should scan any attached files for viruses.



31st July 2013 ref: OE&H 31- 7 -13/1

Hume Coal Project
Atten:Ryan Desic
PO BOX 21
St Leonards NSW 1590.

Dear Sir / Madam

Aboriginal Consultation Hume Coal Project- re-identification of Aboriginal parties.

I refer to your letter of 26th July 2013 regarding the above matter.

We acknowledge that section 4.1.2 of the Office of Environment & Heritage's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* require you to contact us in order to compile a list of Aboriginal people who may have an interest in the proposed project area and hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or places. **However, we advise that NTSCORP's privacy guidelines restrict us from providing proponents with contact details of traditional owners who may have such an interest or hold such knowledge.**

In response to your notification , NTSCORP will forward your correspondence to any individuals, groups and organisations whom NTSCORP is aware assert traditional interests within or hold cultural knowledge about the relevant area. **Recipients of our correspondence will be invited to register their interest in the project directly with you by 16th August 20`3.**

Please be aware that NTSCORP cannot make a guarantee or undertaking that the recipients of our correspondence represent the entirety of traditional owners for the relevant area.

NTSCORP will require a minimum of 14 days from the date of receipt of completed notice in order to undertake the above process.

Yours faithfully,

A handwritten signature in black ink, appearing to read "George Tonna", written over a large, stylized, light-colored scribble or watermark.

George Tonna
Land & Notifications Officer
NTSCORP Limited

26 July 2013



Ground Floor, Suite 01, 20 Chandos Street
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PO Box 21
St Leonards, NSW, 1590

T +61 2 9493 9500

F +61 2 9493 9599

E info@emgamm.com

www.emgamm.com

«First_Name» «Last_Name»

«Organisation»

«Address_1»

«Address_2»

«Address_3»

Re: Aboriginal Consultation for the Hume Project –re-registration of Aboriginal parties

Dear «First_Name»

EMGA Mitchell McLennan Pty Ltd (EMM), on behalf of Hume Coal Pty Limited is currently seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the Hume Coal Project (the Project) located approximately 4 km west of Moss Vale (Wingecaribee Local Government Area) including Sutton Forest, Belanglo Forest in the north-west and Exeter in the south-east.

EMM previously initiated the Aboriginal consultation process for the Project in August 2012. Your organisation has previously registered for the Project in September 2012. However, as a result of changes to the Project timeframe, Aboriginal consultation with all registered Aboriginal parties (RAPs) has lapsed beyond six months. In accordance with best practice consultation procedures (*RMS procedure for Aboriginal cultural heritage consultation and investigations* 2011 p.31), EMM are seeking to readvertise for Aboriginal consultation.

As your organisation has previously registered for the Project, EMM will continue to recognise your registration unless advised otherwise.

To provide the background of the Project once again: Hume Coal Pty Limited proposes to construct an underground cut coal mine and related infrastructure within and in the vicinity of Authorisation 349 shown on the attached map. The Project involves development activities under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act* 1979. Consultation will also encompass any future Aboriginal Heritage Impact Permit (AHIP) applications for the Project issued under s.90 of the NPW Act.

EMM currently has the following contact details for your organisation:

«Organisation»

«First_Name» «Last_Name»

«Address_1»

«Address_2»

«Address_3»

«Phone»

«Email»

If your contact details have changed please provide them in writing (email, letter, or fax) to the address provided below.

EMM is seeking to engage all future correspondence with RAPs via email. This method is considered the most reliable, cost-effective, and timely manner of consultation. As such, EMM requests your agreement to undertake the consultation via email as the official method of contact. A simple response in writing stating 'I agree to be contacted by email as the main source of consultation' is requested.

EMM requests that your organisation responds to this letter recognising your continued registration in the Project. This, along with any additional contact information must be received by Ryan Desic (see contact details below) by close of business on 16 August 2013.

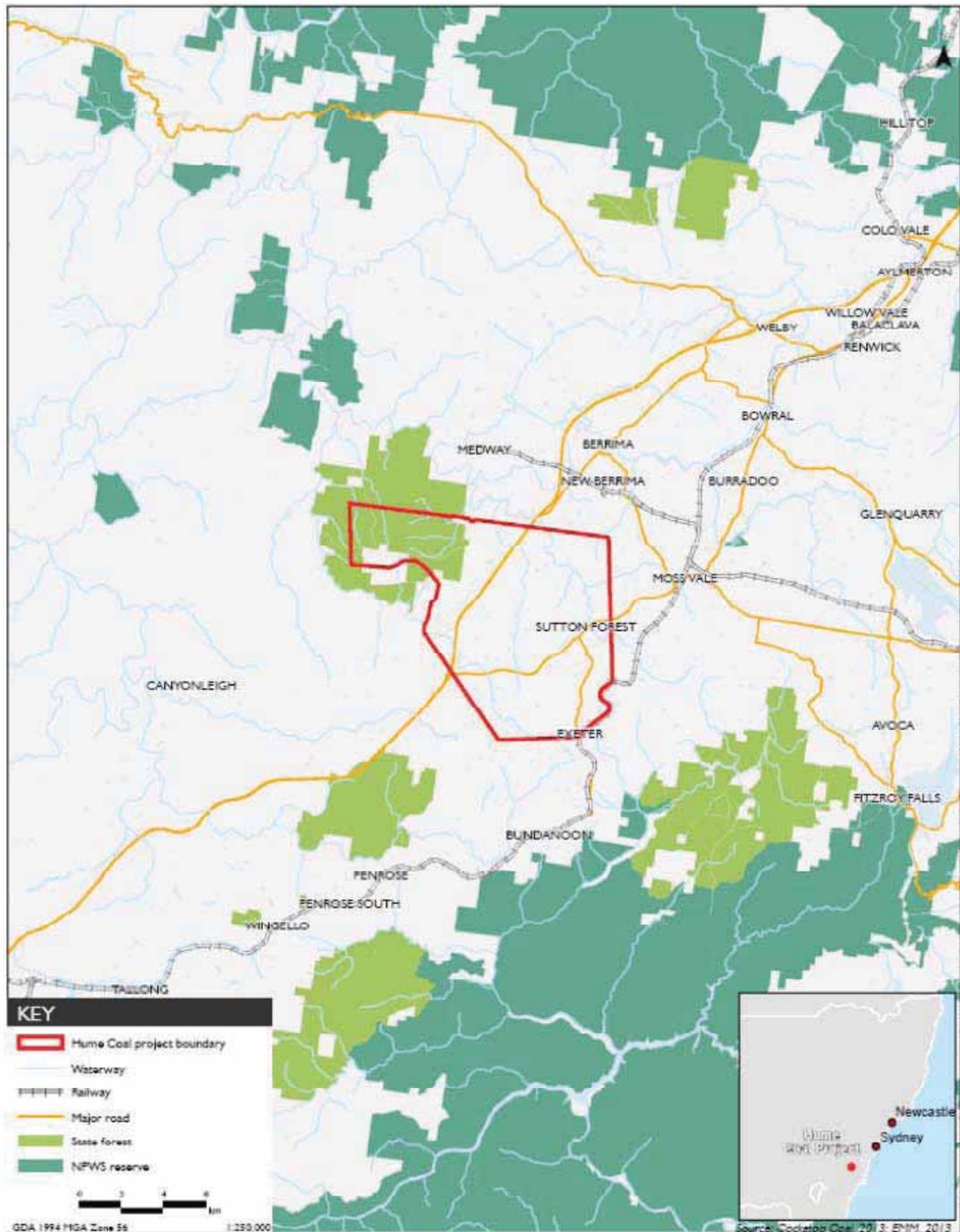
Hume Coal Project
Ryan Desic
EMGA Mitchell McLennan
PO Box 21
St Leonards NSW 1590
Fax: 02 9493 9519

Please note, your Registration of interest does not guarantee employment on fieldwork.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ryan Desic', written in a cursive style.

Ryan Desic
Archaeologist
rdesic@emgamm.com



Location plan
Hume Coal Project
Figure 1.1



26 July 2013

Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065
PO Box 21
St Leonards, NSW, 1590

«First_Name»
«Last_Name»
«Organisation»
«Address_1»
«Address_2»
«Address_3»

T +61 2 9493 9500
F +61 2 9493 9599
E info@emgamm.com
www.emgamm.com

Re: Aboriginal Consultation for the Hume Project - identification of Aboriginal parties

Dear «First_Name»

EMGA Mitchell McLennan Pty Ltd (EMM), on behalf of Hume Coal Pty Limited is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the Hume Coal Project (the Project) located approximately 4 km west of Moss Vale (Wingecaribee Local Government Area) including Sutton Forest, Belanglo Forest in the north-west and Exeter in the south-east.

Your organisation has been identified as having potential interest in registering for consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*. EMM previously initiated the Aboriginal consultation process for the Project in August 2012. However, as a result of changes to the Project timeframe, Aboriginal consultation with all registered Aboriginal parties (RAPs) has lapsed beyond six months. In accordance with best practice consultation procedures (*RMS procedure for Aboriginal cultural heritage consultation and investigations 2011 p.31*), EMM are seeking to readvertise for Aboriginal consultation.

Hume Coal Pty Limited proposes to construct an underground cut coal mine and related infrastructure within and in the vicinity of Authorisation 349 shown on the attached map. The Project involves development activities under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979*. Consultation will also encompass any future Aboriginal Heritage Impact Permit (AHIP) applications for the Project issued under s.90 of the NPW Act.

If you wish to register your interest as an Aboriginal party your registration must be in writing (letter, fax or email), and include:

- your name/organisation; and
- current contact details (postal address, email, phone number/s).

EMM is seeking to engage all future correspondence with registered Aboriginal Parties (RAPs) via email. This method is considered the most reliable, cost-effective, and timely manner of consultation. As such, EMM requests your agreement to undertake the consultation via email as the official method of contact. A simple response in writing stating 'I agree to be contacted by email as the main source of consultation' is requested.

This information must be received by Ryan Desic (see contact details below) by close of business on August 16 2013.

As required by OEH guidelines, details of people registering as Aboriginal Parties will be forwarded to OEH and the relevant Local Aboriginal Land Council unless you specify otherwise.

Registration of interest does not guarantee employment on fieldwork.

Hume Coal Project
Ryan Desic
EMGA Mitchell McLennan
PO Box 21
St Leonards NSW 1590
Fax: 02 9493 9519

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ryan Desic', with a stylized flourish at the end.

Ryan Desic
Archaeologist
rdesic@emgamm.com



23 August 2013

Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065
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St Leonards, NSW, 1590

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E info@emgamm.com

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Re: Aboriginal Consultation for the Hume Project - identification of Aboriginal parties

Dear

EMGA Mitchell McLennan Pty Ltd (EMM), on behalf of Hume Coal Pty Limited is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the Hume Coal Project (the Project) located approximately 4 km west of Moss Vale (Wingecaribee Local Government Area) including Sutton Forest, Belanglo Forest in the north-west and Exeter in the south-east.

Your organisation has been identified as having potential interest in registering for consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*. EMM previously initiated the Aboriginal consultation process for the Project in August 2012. However, as a result of changes to the Project timeframe, Aboriginal consultation with all registered Aboriginal parties (RAPs) has lapsed beyond six months. In accordance with best practice consultation procedures (*RMS procedure for Aboriginal cultural heritage consultation and investigations 2011 p.31*), EMM are seeking to readvertise for Aboriginal consultation.

Hume Coal Pty Limited proposes to construct an underground cut coal mine and related infrastructure within and in the vicinity of Authorisation 349 shown on the attached map. The Project involves development activities under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979*. Consultation will also encompass any future Aboriginal Heritage Impact Permit (AHIP) applications for the Project issued under s.90 of the NPW Act.

If you wish to register your interest as an Aboriginal party your registration must be in writing (letter, fax or email), and include:

- your name/organisation; and
- current contact details (postal address, email, phone number/s).

EMM is seeking to engage all future correspondence with registered Aboriginal Parties (RAPs) via email. This method is considered the most reliable, cost-effective, and timely manner of consultation. As such, EMM requests your agreement to undertake the consultation via email as the official method of contact. A simple response in writing stating 'I agree to be contacted by email as the main source of consultation' is requested.

This information must be received by Ryan Desic (see contact details below) by close of business on 23 September 2013.

As required by OEH guidelines, details of people registering as Aboriginal Parties will be forwarded to OEH and the relevant Local Aboriginal Land Council unless you specify otherwise.

Registration of interest does not guarantee employment on fieldwork.

Hume Coal Project
Ryan Desic
EMGA Mitchell McLennan
PO Box 21
St Leonards NSW 1590
Fax: 02 9493 9519

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ryan Desic', written in a cursive style.

Ryan Desic
Archaeologist
rdesic@emgamm.com

11 July 2013

EM M Mitchell Mc Lennan

Ground floor ,Suit 01 ,20,Chandos Street

St Leonards ,N.S.W 2065

Re: Aboriginal Consultation for the Hume Project

Dear Ryan Desic

Yamanda would like to identify as a Aboriginal organisation who hold knowledge relevant to determining the cultural significance of Aboriginal objects and places in the area of Hume coal Project.

Please register Yamanda

Yamanda Aboriginal Association

You're sincerely

Tamara Strong

Koomurri Ngunawal



Aboriginal Corporation

Glen Freeman

20th August 2013

Hume Project
C/O Ryan Desic
EMGA Mitchell McLennan Pty Ltd
PO Box 21
St Leonards NSW 1590

Culture Language Knowledge Spirituality Identity Family

Aboriginal spiritual and cultural heritage through family, language, ceremony and education, as well as the ongoing custodianship of the ecology of the land, mother earth, is an essential and vital part of Aboriginal peoples spiritual and cultural identity, connection and sense of belonging to country. The ongoing effective protection and conservation of this cultural and spiritual heritage is of utmost importance in maintaining the identity, health, spiritual and cultural well being of Aboriginal people.

Hume Project – Proponent Hume Coal PTY LTD

I am contacting you to register Koomurri Ngunawal Aboriginal Corporation (KNAC) for the above project.

As required please find all relevant contact details contained within this letter.

We at KNAC look forward to hearing from you in the near future.

Kind Regards

A handwritten signature in black ink, appearing to read 'Glen Freeman', written over a horizontal line.

Glen Freeman
Director /Contact person



From: [Donna Hipwell](#)
To: [Ryan Desic](#);
Subject: Tharawal site work
Date: Monday, 29 July 2013 1:58:28 PM

Att: Ryan Desic

Registering Tharawal Local Aboriginal land Councils interest for the Hume Project.
Please contact CEO at Tharawal

When you have details of dates and how many workers you require please let me know

Thankyou

Donna Hipwell

Acting CEO TLALC

From: [Peter Falk](#)
To: [Ryan Desic](#);
Subject: Hume Project
Date: Thursday, 1 August 2013 5:29:18 PM

Ryan,

The only addition to my contact details is my email address, which is:

As I have worked in the Southern Highlands on Aboriginal Cultural Heritage surveys for the past 8 years, I have knowledge of the Aboriginal Heritage in this project Area.

I still wish to be registered for this project.

Regards

Peter

Peter Falk Consultancy

N.I.A.C.

Northern Illawarra Aboriginal Collective Inc.
representing Wulungulu, Gundungara, and Wadi-Wadi traditional owner groups

Attention Ryan Desic
EMGA Mitchell McLennon Pty Ltd
PO Box 21
St Leonards NSW 1590
Via Fax 02 9493 9500

18 August 2013

Subject: Hume Project Sutton Forest,

Dear Mr Desic,

We would like to register an expression on interest in the project, Hume Project, at Sutton Forest, on behalf of our Gundungara and Wadi Wadi groups. They are accompanied by a volunteer technical assistant. We are aware of massacre sites and have done previous surveys in the vicinity.

Yours sincerely

Daniela Reverberi
Daniela Reverberi – NIAC technical officer



BURU NGUNAWAL ABORIGINAL CORPORATION



EMGA Mitchell McLennan Pty Ltd
PO Box 21
St Leonards, NSW, 1590

Attention: Ryan Desic

We wish to lodge an expression of interest for:

CULTURAL HERITAGE ASSESSMENT – HUME PROJECT

We offer the following information in support of our expression of interest in relation to Aboriginal Cultural Heritage:

Organisation: Buru Ngunawal Aboriginal Corporation (BNAC)
Name: Mr Walter R Bell

BNAC's members, the NGUNAWAL people, are the Traditional Carers for this area and all are of direct Ngunawal descent. BNAC is an incorporated organisation whose constitution and rules of governance state that we as an organisation will endeavour to protect our Aboriginal culture and heritage to the best of our collective abilities. Being part of the consultative/planning process will ensure that the proper protection and preservation of our culture and heritage continues. As the Traditional Carers we possess knowledge of local Ngunawal Aboriginal cultural heritage sites and customs. The qualifications and previous experience that we have in Aboriginal cultural heritage assessment work has come from over 35 years experience working on projects that take place within the Ngunawal Tribal boundary, which is arbitrary, in both urban and rural situations. As Traditional Custodians we have a cultural connection with the proposed project area and wish to participate in the program, we also hold cultural knowledge relevant to determining the cultural significance of objects and places in the project area.

The Ngunawal people, have had in place a Native Title claim that has been registered with the National Native Title Tribunal which requires stringent guidelines to be met in order to be registered as Native Title claimants. The most important of which is to prove connection to country as the Traditional Carers.

We are able to provide supporting/additional documentation if required.

Mr Wally Bell (Ngunawal Traditional Carer)
Director/Chair

On behalf of BNAC members
26 August 2013

Cubbitch Barta Native Title Claimants
Aboriginal Corporation

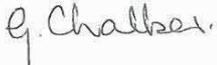
EMM
P.O. Box 21,
ST. LEONARDS. N.S.W. 1590

Dear Neville,

RE; HUME PROJECT

Thank you for the letter regarding the above project. I am not quite sure exactly where the location is, but will take this opportunity of registering an interest. I would need to have a bit more detail, as to ascertain our interest in the project. It may be outside of our interest, not sure.

Yours faithfully,



Glenda Chalker
Hon. Chairperson

Rebecca Moore

From: Neville Baker
Sent: Wednesday, 12 September 2012 9:32 AM
To: Sharyn Halls
Cc: Rebecca Moore
Subject: RE: Aboriginal Consultation Hume Project

Hi Sharyn,

Thank you for your registration of interest. We will list your name as the contact person for GAHAI and will be in touch regarding project information and an assessment methodology in due course.

regards,

Neville Baker
Associate Director - Archaeologist

Now in Sydney, Newcastle and Brisbane.



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20 Chandos Street
St Leonards NSW 2065

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From: Sharyn Halls [<mailto:ghal6522@bigpond.net.au>]
Sent: Friday, 7 September 2012 12:53 PM
To: Neville Baker
Subject: Aboriginal Consultation Hume Project

Dear Neville

thank you for your letter dated 4th September 2012.

Gundungurra Aboriginal Heritage Association Inc (GAHAI) would like to register our interest in the Hume Project as we have a Aboriginal Cultural values in the area.

Thank you
Sharyn Halls
Secretary



4 October 2013

Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065
PO Box 21
St Leonards, NSW, 1590

Office of Environment and Heritage
Planning and Aboriginal Heritage
Section
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Parramatta NSW 2124

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Re: Registered Aboriginal Parties for the Hume Coal Project

Dear Sir/Madam

In accordance section 4.1.6 of the *Aboriginal cultural heritage consultation requirements for proponents* (the guidelines)(DECCW 2010) the Office of Environment and Heritage (OEH) is hereby notified that a total of nine parties responded to either an advertisement or an invitation sent in accordance with the guidelines for the Hume Coal Project (client Hume Coal Pty Limited). The forms of notification are attached.

The nine Aboriginal registered parties (RAPs) are listed below.

Table 1 List of RAPs for the Hume Coal Project

Organisation

Tharawal Local Aboriginal Land Council
Cubbitch Barta
Peter Falk Consultancy
Illawarra Local Aboriginal Land Council
Gundungurra Aboriginal Heritage Association Inc.
Yamanda Aboriginal Association
Northern Illawarra Aboriginal Collective Inc (NIAC)
Koomurri Ngunawal Aboriginal Corporation
Buru Ngunawal Aboriginal Corporation (BNAC)

Consultation in accordance with the requirements is currently underway relating to the proposed Hume Coal Project. The Aboriginal cultural heritage assessment for this project is being conducted in accordance with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC 2005) in lieu of Director Generals Requirements.

Yours sincerely

Ryan Desic

Archaeologist
rdesic@emgamm.com

enclosed:

- Advertising proof of public notice published in the Highlands Post on 12/08/2013
- Letter of invitation/notice of recommencing consultation to previously registered RAPs from 2012
- Letter of invitation to register interest issued to potential Aboriginal parties as advised by agencies

A.3 Stages 2 and 3 presentation of information and gathering cultural information

This section contains the following documents:

- notice of continued consultation (January 2014);
- project information and draft assessment method letter (April 2014);
- RAP feedback and EMM responses to the draft assessment method;
- first consultation meeting documentation (August 2015);
- archaeological test excavation method (August 2015);
- RAP feedback and EMM responses to the test excavation method (August–September 2015); and
- Additional meeting with Yamanda on 18 July 2016 to present the project and assessment methods.



23 January 2014

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Re: Hume Coal Project — Notice of continuous consultation

Dear CEO,

EMGA Mitchell McLennan Pty Limited (EMM) on behalf of Hume Coal Pty Limited (Hume Coal) would like to notify your party of our commitment to provide ongoing consultation with registered Aboriginal parties (RAPs) of the Hume Coal Project (the project). Preparation of the Environmental Impact Statement for the project has commenced and the Aboriginal cultural heritage assessment (ACHA) component is anticipated to further progress in the coming months.

The next step in the consultation process involves the presentation of a draft ACHA methodology in conjunction with further information regarding the project. RAPs will be given a letter with this information once the preliminary mine plan is finalised. Deferring distribution of the ACHA methodology until this time will ensure that each RAP has adequate information about the project to guide any comments or feedback they may wish to provide.

In the meantime, any queries about the project and proposed ACHA are welcome. For information specifically about the project, please call Matt Sewell on 02 4869 2800 or visit the project office at Unit 7-8 Clarence House, 9 Clarence Street, Moss Vale. Alternatively, if you would like to discuss matters concerning the ACHA, please call or email me, using my details given below.

We appreciate your patience and understanding in regard to the project and its timeframe, and look forward to progressing consultation in the near future.

Yours sincerely

Ryan Desic
Archaeologist
rdesic@emgamm.com



17 April 2014

Ground Floor, Suite 01, 20 Chandos Street
St Leonards, NSW, 2065
PO Box 21
St Leonards, NSW, 1590

«First_Name» «Last_Name»
«Organisation»
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«Address_2»
«Address_3»

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Re: Hume Coal Project: Aboriginal cultural heritage assessment, presentation of information, draft assessment methodology and request for cultural information.

Dear «First_Name»

1 Introduction

Thank you for registering your interest in being consulted on Aboriginal cultural heritage matters for the Hume Coal Project (the project). EMGA Mitchell McLennan Pty Limited (EMM), on behalf of Hume Coal Pty Limited (Hume), is preparing an Aboriginal cultural heritage assessment (ACHA) for the project.

This letter presents information on the project and describes a draft ACHA methodology for your review and comment. We welcome your written feedback at your earliest opportunity, and no later than **19 May 2014. Letters attached to email is the preferred mode of written communication as it will reduce postal waiting periods.** This document is provided in accordance with sections 4.2 and 4.3.1 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, which is the Aboriginal consultation framework for the project.

1.1 Overview of the project

Hume holds a coal exploration licence, Authorisation 349 (A349), near Sutton Forest and New Berrima in the Southern Highlands of New South Wales (NSW) (Figure 1). Hume proposes to construct and operate a coal mine in this area, including underground mining within parts of A349, as well as surface infrastructure facilities. EMM has been commissioned by Hume to prepare the environmental impact statement (EIS), which will accompany the development application for the project. EMM's heritage team is undertaking an ACHA as part of the EIS.

The project is still in its preliminary design phase and various options are currently being evaluated, including various mining methods and mine and surface infrastructure layouts. Once the preliminary mine and surface infrastructure plans are finalised they will be distributed to all Registered Aboriginal Parties (RAPs). Generally however, the project will involve underground mining and construction and operation of surface infrastructure typical of an underground coal mine.

The mining method is yet to be finalised. The selected mining method may result in levels of subsidence impacts ranging from low to negligible. The location and layout of the underground mining area within A349 and the specific impact areas will be confirmed at a later date. The location and layout of the surface infrastructure areas will also be confirmed at a later date.

At present, the approach to the fieldwork is to understand the landforms within A349 and prepare recommendations to manage potential impacts to Aboriginal sites and areas of archaeological potential. Due to the size of the project area and property access considerations, survey will be undertaken in stages. This notification is for the first stage of field survey.

Once the preliminary mine and surface infrastructure plans are finalised, this draft methodology will be reviewed. If any aspects affect the nature of ACHA, this draft methodology will be updated accordingly and all RAPs be consulted for comment.

1.2 The study area

The study area is within the Wingecarribee local government area. Figure 1 shows the general location of the study area. The settlements of Berrima and New Berrima lie to the north, Sutton Forest and Moss Vale to the east, Exeter to the south and Taralga to the west.

The study area includes A349 which is approximately 89 km² (Figure 1). Although A349 comprises the area in which underground mining will occur, not all of A349 will be affected. The study area also includes areas adjacent to A349. The final study area boundary will be provided to the RAPs once preliminary mine and surface infrastructure plans are finalised.

2 Archaeological background

2.1 AHIMS search

An extensive search of the Aboriginal Heritage Management System (AHIMS) database was conducted on 18 June 2013 for the study area and its surrounds (within MGA coordinates 242000–256000E and 6164000–6183000N, approximately 270 km²). An additional search covering the broader area to the east was conducted on 25 March 2014 for an area of 10 km by 13 km. A total of 84 Aboriginal sites were identified in the search area and 12 of these are in A349. A summary of the individual site types are provided in Table 1 and their locations are shown in Figure 1.

Table 1 AHIMS registered sites in the search area

Site type	Number of sites
Open artefact site (including isolated finds and open site with potential archaeological deposit)	63
Rock shelter with art and grinding grooves	1
Rock shelter with deposit	4
Open camp site with axe grinding groove	2
Axe grinding groove	9
Scarred tree	4
Burial with carved tree	1
Total	84

2.2 Archaeological reports in the local area

Since the 1980s the study area and its surrounds have been subject to few archaeological investigations. Nearby investigations have been conducted for Berrima Colliery and upgrades to the Hume Highway. The majority of investigations have involved archaeological surveys, with test and salvage excavation undertaken more recently (Navin Officer 2012). A number of Aboriginal site types have been identified

within the local landscape, including grinding grooves, modified trees (one including a burial), open camp sites and rock shelters, some containing archaeological deposits and art.

The AHIMS data and previous archaeological survey and assessment results highlight the following trends in Aboriginal site type and location:

- artefact scatters and isolated finds have most commonly been identified close to watercourses including:
 - creek and river banks and alluvial floodplains and terraces;
 - low elevated areas near the confluence of watercourses;
 - low ridge crests, saddles and spurs and to a lesser extent slopes;
 - clusters of campsites along both minor and major tributaries; and
 - selectively spaced campsites along major rivers;
- artefact scatters and isolated finds have been identified on geological formations including:
 - Hawkesbury Sandstone;
 - Wianamatta Group Shales (Ashfield and Bringelly); and
 - Volcanic basalt flows;
- rock shelters and grinding grooves have been recorded in areas of sandstone geology adjacent to watercourses;
- most identified sites contain low densities of artefacts, commonly less than 10 artefacts;
- quartz and silcrete were the most common raw materials used for artefact manufacture. Chert, quartzite and indurated mudstone have been commonly found but made up smaller proportions of assemblages;
- bipolar reduction was commonly used to reduce quartz and to a lesser extent silcrete and chert;
- backed blades were found in low densities;
- modified trees commonly occur adjacent to watercourses, however, there may be a bias in this sample because areas adjoining watercourses are often less likely to have been previously cleared of mature trees; and
- burial sites are rare but may occur in association with carved trees.

3 Draft assessment method

3.1 Archaeological assessment method

It is anticipated that Director General's Requirements (DGRs) for the project will stipulate the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (the guidelines — DEC 2005) as the ACHA framework. As stipulated in the 2005 guidelines, the *Aboriginal Cultural Heritage Standards and Guidelines Kit* (guidelines kit) (DEC 1997) provides the framework for the archaeological assessment component of the ACHA. The more recent *Code of Practice for Archaeological Investigation of*

Aboriginal Objects in New South Wales (DECCW 2010a) will also be used as a model because it encapsulates and expands on many features of the guidelines kit.

A draft method for the ACHA is suggested here for your review and comment. We welcome your feedback at your earliest opportunity.

Aboriginal heritage values will be identified by the following methods:

- consultation with the Aboriginal community to identify social values of the study area and places of special significance that should be considered;
- a search of the AHIMS database for records of previously registered Aboriginal sites (completed);
- a review of past Aboriginal heritage reports and ethno-historic sources covering the study area and its surrounds (partially completed);
- a review of environmental characteristics to develop a landscape map of possible archaeological site location; and
- an archaeological survey with Aboriginal stakeholders focusing on proposed surface infrastructure impact areas and areas above the proposed underground mining area.

3.2 Aboriginal consultation

It is anticipated that the DGRs will stipulate the DEC 2005 guidelines as the project consultation requirements.

The guidelines make reference to the *National Parks and Wildlife Act 1974: Part 6 Approvals Interim Community Consultation Requirements for Applicants* (ICCRs — DEC 2004) as providing ‘guidance’ on the process. The ICCRs and their successor, the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010b) were established for applications for approvals under Part 6 of the *National Parks and Wildlife Act 1974*. Part 6 approvals are not required for the Hume Coal Project as it is a State Significant Development.

The procedures in the 2010 consultation guidelines will however also be used in this assessment. Therefore, whilst the 2005 guidelines are the statutory requirement for Aboriginal consultation for the project, the 2010 guidelines are referred to as a model as they capture all the required steps.

In accordance with the 2010 guidelines, each private Aboriginal organisation or individual who responded with a written request to be registered for consultation is referred to as a RAP. Government agencies who registered interest will also be consulted in parallel with RAPs.

3.3 Field survey

3.3.1 Objectives

An Aboriginal heritage field survey strategy has been prepared to target all landforms with high to moderate potential for Aboriginal sites and capture a representative sample of other landform units. The aim of the archaeological survey is to identify Aboriginal sites and areas of potential archaeological deposit. Only those areas with Aboriginal objects will be recorded and reported as Aboriginal sites and areas of potential archaeological deposits (PAD) will be recorded as containing ‘archaeological sensitivity’. Other places or features of interest will be noted in the draft ACHA.

3.3.2 General fieldwork strategy

A pedestrian field survey is proposed, led by EMM's archaeologists and involving RAP representatives. The surveys will take place over approximately four weeks, though not consecutively; surveys will be staggered as land access becomes available. A series of survey tracks (transects) will be walked and form a sample of the key landform classes and important geological units divided broadly into sandstone, shale and volcanic areas.

Survey coverage will be directed towards areas of potential impact, but areas not intended for impacts will also be sampled to characterise the archaeological record. A large portion of A349 will remain undisturbed by the project and therefore only certain areas of A349 will be surveyed.

The survey will inspect all areas of ground within survey transects which will be covered by survey participants spread out across a c.50 m path where possible. All mature trees will be inspected for scars of Aboriginal origin, sandstone areas inspected for grooves and rock shelters and all rock shelters inspected for the presence of Aboriginal objects or potential deposits. It is expected that visibility in paddocks and heavily vegetated areas will be constrained. Transects will aim to target areas of exposures within these areas, but will be generally limited to exposures from vehicle or cattle tracks. All Aboriginal sites will be marked through flagging and then GPS waypoint recording by an archaeologist.

Survey transects will be undertaken with reference to a survey plan that will be created prior to fieldwork. The survey effort will generally follow predetermined transects comprised of discrete landform units that have been identified using topographic maps. However, there will be provision for changes to the survey plan once on site, to account for inaccessible areas or where landform units unfruitful for the survey effort are identified.

Reconnaissance and additional recording of some previously recorded Aboriginal sites within the study area will be incorporated into the survey, where there may be potential impacts to these sites.

For areas not covered by survey, a predictive assessment, or predictive model of site location, will be made based on the results for the surveyed areas. Reliability of the predictive model will be dependent on the outcomes of the fieldwork.

The initial stages of fieldwork are planned for late May 2014. As previously mentioned, fieldwork will be in stages as access becomes available. Accordingly, further fieldwork at other properties will be undertaken later in 2014. A letter will be distributed in the coming weeks setting out upcoming fieldwork dates, arrangements for representative involvement, essential safety requirements and payment details. Equivalent letters will be distributed for all future fieldwork.

It is noted that fieldwork will be strenuous, involving walking over rough country that includes steep hills, cliffs and ridges. Each fieldwork participant must be able to undertake the entire day's work on each day. Each participant will be expected to bring their lunch and enough personal drinking water to last the day.

3.3.3 Impact-specific survey strategy

i Overview

The survey will cover land that could be subject to surface disturbance from construction of surface facilities. It will also include land that will be under-mined, and depending on the mining method selected, could be subject to low to negligible levels of surface subsidence. The survey strategy has been prepared to best suit each type of potential impact.

ii Underground mining survey

Surveys above proposed underground mining areas will target landscapes where sandstone outcrops are present. Should subsidence occur, these landform units would be the most likely to be impacted. Therefore, survey will focus on areas of Hawkesbury sandstone geology in the north-west of the study area, which are considered to be archaeologically sensitive.

Survey transects will focus on obtrusive site types most likely to be susceptible to subsidence impacts (should subsidence occur) such as rock shelters with deposit and art, and grinding grooves. The following sandstone formations will be targeted as an example:

- isolated floaters/boulders;
- minor exposures of bedrock and sandstone strata;
- sandstone cliffs and overhangs; and
- exposed sandstone bedrock along survey area watercourses.

Other site types such as artefact scatters and scarred trees, will be targeted to a lesser degree. It is expected that impacts on these sites from any subsidence would be negligible.

iii Surface infrastructure survey

Survey of proposed surface infrastructure areas will cover archaeologically sensitive and non-sensitive landforms within, but not limited to, surface impact areas. Survey transects will aim to gather a representative sample of the impact areas. Areas of higher archaeological sensitivity will be targeted.

Areas that have been identified for linear infrastructure (eg railway lines), will be surveyed along the path of the proposed construction where feasible. Discrete landforms within each linear construction path will be recorded as individual survey transects.

3.3.4 Landform division for sampling

The survey will cover extensive areas as a continuous series of transects covering a representative sample of landform elements across the study area. The broad spread of landforms anticipated comprises:

- watercourses — generally second order (Strahler System) and above, including their near banks;
- open depressions — such as ephemeral drainage lines dissecting slopes or open depressions eroded by sheet wash;
- slopes — comprising simple, upper, mid and lower slopes;
- flat — such as alluvial floodplains, terraces and valley floors;
- spur crests;
- ridge tops — comprising ridge crests and saddles; and
- cliff/scarp — comprising the head and foot of the cliff/scarp and its slope if accessible.

Survey units will reference the landform units listed above in conjunction with the underlying geology of the area, comprising:

- Hawkesbury Sandstone;

- Wianamatta Group Shales (Ashfield and Bringelly);
- Robertson Basalt volcanic basalt flows; or
- Quaternary silts and clays.

It is expected that landform elements, when paired with the underlying geology, will provide greater understanding of Aboriginal site location and assist in predictive modelling.

The survey transects will aim to sample each of the landforms listed above in the study area. However, fieldwork access constraints may hinder effective fieldwork coverage.

3.4 Post-fieldwork

After fieldwork, a draft report will be prepared by EMM. Each RAP will be invited to submit relevant information on Aboriginal heritage values which will be addressed in the report. Each Aboriginal stakeholder group will be issued with a draft report for review and comment. EMM and Hume intend to hold a meeting with RAPs when all stages of the survey have been completed to review the results and consider the most appropriate mitigation measures from a cultural and archaeological perspective. All comments will be addressed in the final report.

3.5 Identifying non-archaeological Aboriginal heritage values

3.5.1 Background

Non-archaeological Aboriginal heritage values refer to places which have meaning in accordance with memory or tradition but not associated with cultural objects. Natural features of the landscape may figure in traditional stories. Places may be associated with historical resource use; areas may have been used as historical fringe camps; and an area may have figured within a known traditional pathway. All such values can only be identified through archival research or interview with Aboriginal people with Aboriginal cultural knowledge.

3.5.2 Request for cultural information

In accordance with Section 4.3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, EMM is seeking cultural information about the study area from RAPs.

Aboriginal heritage incorporates a wide range of values such as stories, traditions and cultural practices. EMM welcomes any advice from the Aboriginal community about any form of Aboriginal heritage values (which might include archaeological sites or other types of values) relevant to the study area.

EMM is relying on the Aboriginal community for advice on non-archaeological Aboriginal values for the study area. We are happy to meet to discuss any information which you may be willing to share, and will respect confidentiality where requested. Email is our preferred method of communication (see contact details at the end of this letter) but we will also accept letters and faxes, and information given in person during one of the project meetings planned over the coming months.

Knowledge of areas of cultural significance may include, but are not limited to:

- sites or places associated with ceremonies, spiritual/mythological beliefs and traditional knowledge, which date from pre-contact period and have persisted until the present time;
- sites or places associated with historical associations, which date from the post-contact period and are remembered today (eg plant and animal resource use areas and known camp sites); and

- sites or places of contemporary significance (apart from those areas for which Aboriginal remain), for which the significance has been acquired in recent times.

4 Potential impacts on Aboriginal sites and objects

4.1.1 Types of development impacts

The project may disturb or remove Aboriginal sites and objects through ground disturbance activities resulting from the construction of surface infrastructure and, depending on the mining system adopted, potentially low levels of subsidence from underground mining.

4.1.2 Underground mining and subsidence impacts

Generally, surface impacts from underground mining can range from negligible to major subsidence; the method of mining employed has a considerable influence on that range. For the Hume Coal Project, the mining method is yet to be finalised but options being considered would result in low to negligible subsidence impacts.

Should subsidence occur, the landforms most at risk of damage are also those that support the less frequently recorded sites, which include cliffs and cliff faces, rock overhangs and caves; these landforms may also contain rock shelters with evidence of habitation including archaeological deposit and rock art.

One of the outcomes of this assessment will be how to best advise Hume on managing Aboriginal sites, with the primary aim of conservation. Where conservation is unlikely, the aim would be to manage and mitigate potential impacts.

There are currently two registered Aboriginal sites (52-4-0097 and 52-4-0098) in the Belanglo State Forest. One is a rock shelter with art and the other is an axe grinding groove site. These sites will be addressed in the ACHA.

4.1.3 Surface facilities and infrastructure impacts

Surface facilities will be constructed and have the potential to impact Aboriginal objects. The assessment will aim to avoid or mitigate impacts. At present the location and layout of surface facilities has not been confirmed. As this information comes to hand, it will be used to plan survey areas and will be provided to RAPs in future letters detailing fieldwork.

5 Indicative timing

The following indicative timeframe is anticipated for the assessment:

Table 1 Indicative timeframe

Stage	Estimated dates ¹
RAP response to method (this letter)	Prior to 19 May 2014
Field survey	Commencing late May and continuing in stages into late 2014
Preparation of draft report and client review	Late 2014
Draft report for RAP review	Late 2014
Submission of draft report to consent authority	Early 2015

1. Dates are indicative and may change.

6 What's next?

We look forward to receiving any response your organisation wishes to make about the proposed methodology by **19 May 2014**. Your response will be documented and considered for the assessment. Any cultural information is also welcome within this timeframe but it can also be submitted up until the completion of the draft ACHA.

EMM will be contacting RAPs shortly with an additional letter to organise fieldwork participation from RAP representatives. As mentioned previously, fieldwork will be conducted in stages as land access is negotiated with relevant landholders. The areas highlighted in Figure 1 indicate the properties where the first stages of the survey will be undertaken.

RAP meetings with EMM and Hume are anticipated once the project details are further refined. At this stage it is anticipated that the aim for the first meeting will be to present project information and discuss the implications for Aboriginal cultural heritage values in the study area. Subsequent meetings are anticipated after fieldwork results have been compiled and then soon after a draft ACHA has been distributed to RAPs for comment.

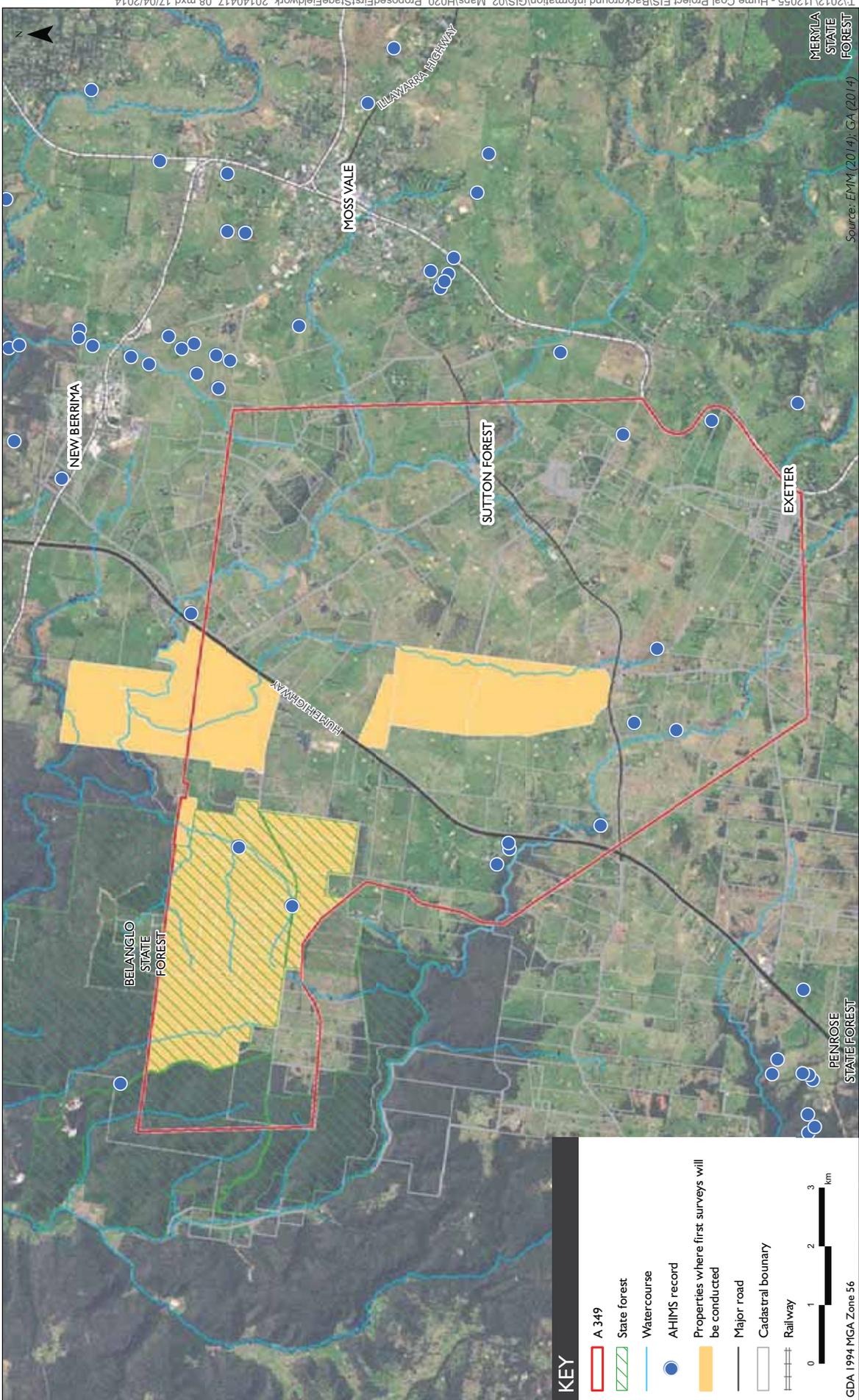
7 Any questions?

Please feel free to contact me with any questions or queries about the project via email (provided below) or telephone on 02 9493 9541.

Yours sincerely



Ryan Desic
Archaeologist
rdesic@emgamm.com



Study area and proposed area for first stage of field work
Hume Coal Project
Figure 1



T:\2012\12055 - Hume Coal Project EIS\Background Information\GIS\02_Maps\H020_ProposedFirstStageFieldwork_20140417_08.mxd 17/04/2014

Ryan Desic

From: Koomurri Ngunawal Aboriginal Corporation
Sent: Monday, 12 May 2014 8:44 PM
To: Ryan Desic
Subject: RE: Hume Consultation

Dear Ryan,

After reading the methodology for this project KNAC feels that due to the fact of there being several watercourses as per 3.3.4 of generally second order [Strahler System] it has always been apart of KNAC's process to explore possibilities of there being Womens Sites within these areas e.g. Birthing, Healing, Recreation and Ceremonial. This being so Womens involvement should be considered.

As such we formerly accept the methodology for this project.

Looking forward to consulting with you on this project.

Kind Regards

Glen Freeman
Contact/ Director
Koomurri Ngunawal Aboriginal Corporation ICN 7812

From: rdesic@emgamm.com
To:
Date: Fri, 9 May 2014 11:05:04 +1000
Subject: Hume Consultation

Hi Glen,

Please find a copy of the methodology attached.

Regards,
Ryan Desic
Archaeologist

Sydney, Newcastle and Brisbane.



Ground Floor, Suite 01
20 Chandos Street
St Leonards NSW 2065

PO Box 21

Ryan Desic

From: Ryan Desic
Sent: Tuesday, 13 May 2014 8:46 AM
To: 'Koomurri Ngunawal Aboriginal Corporation'
Subject: RE: Hume Consultation

Hi Glen,

Thank you for your response to the assessment methodology. We really do appreciate your knowledge about the area. We look forward to learning more about the criteria that makes such areas Womens Sites, and I hope you can direct us to any sources of information, be it oral or textual, that can assist us with recording this information.

Regards,
Ryan Desic
Archaeologist

Sydney, Newcastle and Brisbane.



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Please consider the environment before printing my email

From: NIAC
Sent: Monday, 12 May 2014 10:39 AM
To: Ryan Desic
Subject: Hume Coal ACHA draft methodology

From
Northern Illawarra Aboriginal Collective (NIAC)

Attention Ryan Desic

Dear Ryan,

We would like to point out that there is a burial ground in the survey area. This is of high Cultural and Historical importance. We need to find this exact burial ground. Thus the places surveyed need to be adaptable and flexible. Please find three relevant pages of a book by Chris Illert attached. In addition to "*Three Sisters Dreaming*", there is "*The Natural Art of Louisa Atkinson*", by Elizabeth Lawson, State Library of NSW Press, 1995, pages 44 to 47.

This place is of living value with ancestors being able to tell you family trees back to the skeletons buried there. Our Elders, some of whom know the area, are variously able to tell us things about the area, however they are old. We do not want them to walk over everything. They have able bodied people able to do the walk over. We can supply two people plus their volunteer assistant.

You may include the contents and attachment of this letter in your report.

Yours sincerely
Heather Ball - Wadi Wadi Elder
Keith Ball - Wadi Wadi Elder
Jenny Sajkovic - Wadi Wadi & Wulungulu Elder
Paul Cummins - Gundungara & Wulungulu Elder

Daniela Reverberi - NIAC volunteer technical Officer

SHOALHAVEN CHRONOGRAPH
(Quarterly Newsletter of the Shoalhaven Historical Society Inc.)
volume 23(9), February 2003

special supplement

Three Sisters Dreaming

- or did Katoomba get its legend
from Kangaroo Valley?

by **Chris ILLERT**,
School of Languages & Linguistics,
University of Western Sydney.

ISBN 0 949357 26 X



These artefacts were drawn by **Louisa Atkinson**, in about 1853, for an article that was never published. [Mitchell Library, Sydney]

- 1) "woman's [string net] bag" = "*gur:b:maru::i:d:*" deriving from *gur(a)-b(ulo):muru: (gon):i-d(ola:n-gara)* = *net-thing (= bag) [for] gently-dropping (= putting) [items] into*.
- 2) "bark vessel" = "*ba:ngal:ee*" deriving from *bu(lu):gul(u):i* = *curled/folded hailer*. It is a container made from a single piece of bark, folded in a U-shape, bound at both ends and sealed with "yellow gum" (= resin from the grass-tree *Xanthorrhoea*), in order to carry liquids such as water or honey. **David Collins** [1798] spelled it "*be:ngal:e*", whilst **Samuel Bennett** [1867] said that Botany Bay Aboriginal people referred to Captain **James Cook**'s cocked hat as a "*be:ngala:*". **Sir Joseph Banks** [1770] recorded "bag" as "*char:ngala:*" = *gur(a):gul(u):i* = *folded container (into [thing])*.
- 3) "*boo:mera:ng*" = *bu(lu)-mura:i:n(ara)* = *high spiraller* (1.3:36-37). Also **Joseph Mason** [1838] recorded the *darug* version of this word as "*bu:mr:i:ng*" ("wooden sword").
- 4) "head-band... whitened for mourning"
- 5) "club" = "*foo:n:da:i*" deriving from *bu(lu)-n:du(la)-i* = *hitting/falling thing* (1.3:9).
- 6) "[a device] used in throwing spears" = "*wa:mmerrah*" deriving from *wu(rula):mura* = *lots of arm(ature) (= leverage)*.
- 7) "shield" = "*mela:::tho:n*" deriving from *malo-(i-dara:guru)-du(la):n* = *shielding; hopping/parrying-thing*.



Aboriginal grave-mound with carved funerary trees, *Illustrated Sydney News*, 26th November 1853.

But perhaps the greatest challenge to traditional Aboriginal stewardship of the valley came in the form of the Robertson Land Acts of 1861 - producing an influx of free selectors and increasing the non-Aboriginal population from 200 to 1400 over the following two decades. These new arrivals brought with them hard attitudes, not unlike those of earlier settlers such as James Atkinson who had settled at Oldbury Estate at Sutton Forest, in the lee of Mount Gingenbullen, and died young from sheer obesity - but not before poisoning and disposing of an entire tribe of Aborigines. The mound of their mass-grave, on a natural rise just above his Oldbury Estate, reached 50 feet in height in the early 1820's. Atkinson also had a hut along Bugong Creek. To get there he passed through the valley, coming from Sutton Forest down Meryla Pass.

His daughter Louisa Atkinson published a sketch of this mass-grave (*Illustrated Sydney News*, 26th November 1853), noting that the interments dated back to the time of her father's arrival and that "... *the formerly large tribe in the district of Berrima is nearly, or quite, extinct: and so too it is throughout the settled districts ... said one sensible man to the writer ... 'lots of blackfellows die every year' ... strong sugar mixed with water; the washings of a sugar bag is sufficient*". She continued on to note a 10 foot slump in the mound, down to a height of only 40 feet over the decades to 1863, but failed to make obvious connections, apparently in a state of denial, opining that: "... *this has given rise to the supposition that the flat has been the scene of a battle, the dead being carried up the hill, and the mount erected by ... survivors ... But beyond supposition, nothing can be ascertained. The blacks themselves either cannot, or will not, give any information*" (*Sydney Mail*, 19th Sept. 1863).

From: [Ryan Desic](#)
To: "NIAC";
Subject: RE: Hume Coal ACHA draft methodology
Date: Monday, 12 May 2014 3:48:00 PM
Attachments: [image001.png](#)

To NIAC,

Thank you for your invaluable information. We appreciate you taking the time to provide some cultural information about the area. In response to your request for the survey to be adaptable and flexible – we agree. Survey has been limited to the predicted impact areas of the project, and if the burial ground falls within these areas, then by all means we would wish to find its location with you. I am aware that there is a burial site listed on AHIMS in the southern portion of the study area – do you know if this is the site you are referring to? Is the burial site you refer to listed on AHIMS?

Please note that the figure provided in the document shows the survey areas intended for stage one of the survey – is the burial site in the highlighted areas? If it is outside these areas to the south, it is unlikely that it would be impacted by the project. Nevertheless, we could of course look into the matter more if you believe that the burial site is generally in need of recording or additional management in general.

Please feel free to call me on my contact details provided below.

Regards,
Ryan Desic
Archaeologist

Sydney, Newcastle and Brisbane.



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Ryan Desic

From: NIAC
Sent: Wednesday, 14 May 2014 5:52 PM
To: Ryan Desic
Subject: RE: Hume Coal ACHA draft methodology
Attachments: Wongonbra & Gingenbullen.jpg; Wongonbra pages.pdf

Dear Ryan,

Thank you for your reply. The survey area (outlined in red) contains Gin Gen Bullen and the surrounding area.

Our studies of Wongonbra have revealed many artefacts (see attachment) and there is no doubt that round Gin Gen Bullen is the place we need to look at.

But before we can start we need detailed areal photographs of the survey area, including Mt Gin Gen Bullen. Satellite images of the survey area may also be useful provided the scale is close enough above the ground to provide useful information. Infrared may be useful but it needs to be already processed in false colour as we do not have the software to do this.

Kind regards

Daniela Reverberi - NIAC volunteer technical officer

From: Ryan Desic [<mailto:rdesic@emgamm.com>]
Sent: Monday, 12 May 2014 3:48 PM
To: NIAC
Subject: RE: Hume Coal ACHA draft methodology

To NIAC,

Thank you for your invaluable information. We appreciate you taking the time to provide some cultural information about the area. In response to your request for the survey to be adaptable and flexible – we agree. Survey has been limited to the predicted impact areas of the project, and if the burial ground falls within these areas, then by all means we would wish to find its location with you. I am aware that there is a burial site listed on AHIMS in the southern portion of the study area – do you know if this is the site you are referring to? Is the burial site you refer to listed on AHIMS?

Ryan Desic

From: NIAC
Sent: Wednesday, 21 May 2014 12:30 PM
To: Ryan Desic
Subject: From NIAC additional refernces
Attachments: Additional info re Gin Gen Bullen (reduced).PDF

From NIAC
Hi Ryan,

Please find attached 3 basic references which should be printed as an appendix in you report. One is a repeat but the 3 references are in the order that they should be looked at. Notice, regarding the location of the burial ground of 200 bodies, originally 50 ft high (reference 2,page 23), we should locate it as soon as possible and put it on a map.

Kind Regards
Daniela
NIAC volunteer technical officer