

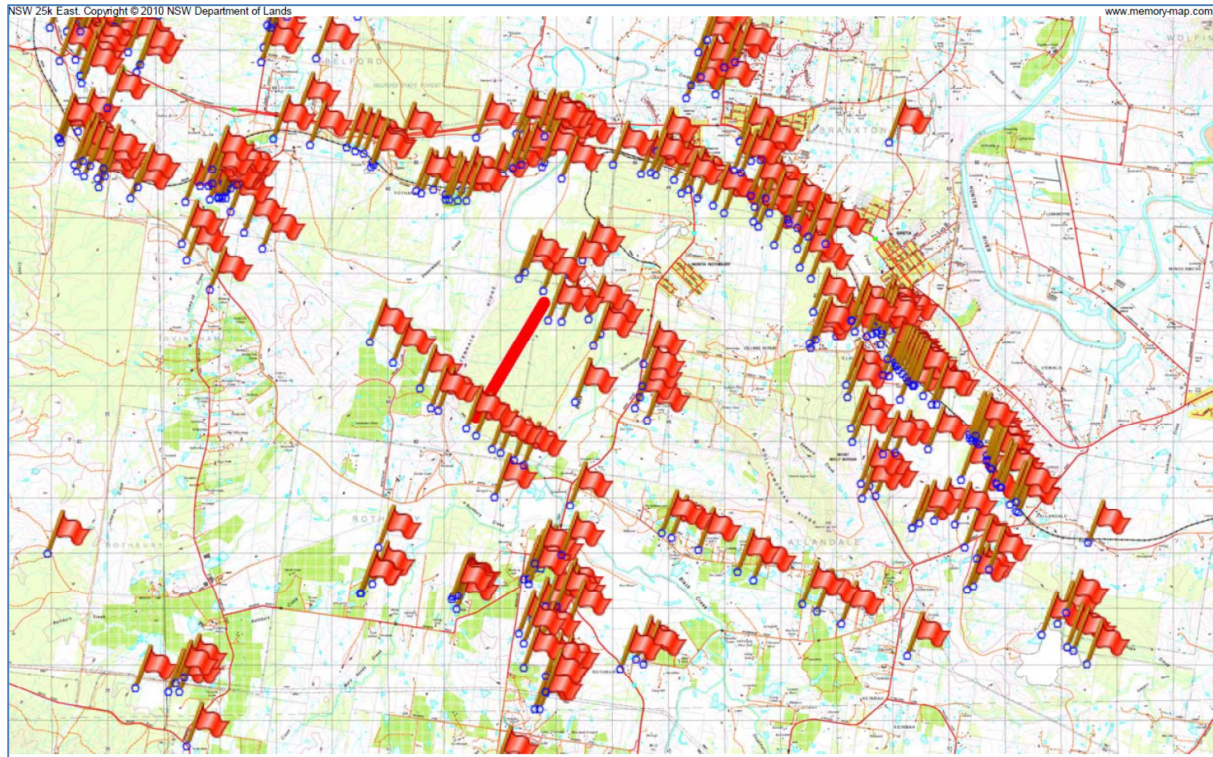


Figure 9 Aboriginal Objects plotted onto topographical map

Without segregating the individual sites into the number of artefacts contained within each site but aggregating them into artefact type the following is revealed;

There are in excess of 1500 artefacts, generally stone flakes or scrapers, 22 areas of Potential Artefact Deposits, 2 grinding grooves, 1 scarred tree and 1 art site. The PAD's may contain other object types or include previously mentioned types. They have not been analysed into likely types. An examination of the location of the landscape context of the artefacts reveals that they are generally associated with a water course.

4.3 Previous Studies

Locally, several archaeological surveys have been conducted between Cessnock and Branxton. Many of the Aboriginal Objects identified at Figure 9 were observed during those surveys and discussed below.

Brayshaw (1988) had surveyed a 225-hectare study area in 1988 some 9km SE of the study area for Rothbury Country Club Resort. The survey was undertaken on foot and by vehicle. Virtually all exposures on the ridge slopes and ridge crests were inspected (Brayshaw 1988: 4) No evidence of Aboriginal occupation was located. Brayshaw (1988:4) notes that conditions of surface visibility were extremely low and limited the potential to identify artefact scatter sites. Brayshaw (1988:5) recommended that in the absence of evidence of Aboriginal occupation there were no archaeological constraints to the proposed development proceeding.

Davies (1991) has surveyed the route of a proposed Telecom optical fibre cable between Cessnock and Scone. The route traverses land adjacent to Allandale Road, along the eastern boundary of the Brayshaw 1988 study area and through the current study area. No sites were located in this area.

North of the current study area near Branxton, Brayshaw (1994) surveyed the route of the proposed Highway connection from the F3 to the New England Highway. In the vicinity of current study area, an artefact scatter was located adjacent to Black Creek, two kilometres west of Branxton. The site comprised eleven artefacts of silcrete, chert, quartz and mudstone, and a probable sub-surface deposit. Sub-surface investigation was recommended to determine the nature and extent of the site (Brayshaw 1994:20).

Approximately 9 kilometres southwest of the current study area, Koettig (1988) surveyed the sixty-eight hectares of Portion 147, Pokolbin where a tourist facility was proposed. It is located at the base of the Broken Back Range and comprises a number of similar landform units to those within the current study area. Koettig (1988) located five artefact scatters and twenty-two isolated artefacts. Conditions of surface visibility varied, but included a number of exposures in the form of vehicle tracks, erosion and gullying, across the range of landform units present.

The sites comprised between seven and sixty-seven artefacts at densities between one and ten artefacts per square metre. Raw materials were predominantly silcrete, indurated mudstone and quartz, but chert, quartzite, volcanic and other materials were also present. The sites were located on creek banks or basal slopes within one hundred metres of a watercourse (Koettig 1988). Through application of a technological analysis methodology developed by Hiscock at Sandy Hollow, Koettig (1988) assessed the sites as being up to 1,300 years of age. At three sites, evidence of reduction activities was present.

Test excavations were undertaken by Koettig (1989) which revealed a continuous distribution of artefacts along the basal slopes of the main watercourse. A range of artefact types and raw materials were recorded, including backed blades and artefacts with retouch or use wear. A hearth consisting of a number of large sandstone cobbles, packed into a circular shape measuring 0.5 x 0.6 metres in area was located. Charcoal obtained from this hearth has been dated to 2820 years Before Present (BP) (Brayshaw 1994, p.15).

While ploughing for lucerne crops has affected the ground surface of much of the area Koettig (1989: p.4) estimated that the extent of disturbance was limited to a depth of 0.12 metres. The hearth and majority of artefacts were located below 0.12 metres in depth. Koettig (1989) identified most of the sites as having high research potential and recommended that salvage of these sites was necessary to conserve the archaeological values.

Dean-Jones (1989) investigated the proposed Pokolbin Country Club site, at the junction of Allandale Road and Lovedale Road, some 7 kilometres southeast of the current study area. The fifty-hectare property borders Black Creek. It consists of low gradient landform units, with soils mostly derived from weathered bedrock rather than alluvial sources. Despite conditions of low surface visibility, three artefact scatters and two isolated artefacts were recorded. The artefact occurrences were located within ten metres of Black Creek or its tributaries. Raw materials present included silcrete, chert, mudstone and fine-grained volcanics. The sites contained between seven and eleven artefacts each. Dean-Jones (1989) assessed the sites as being of moderate archaeological significance primarily on the criterion of representativeness and recommended that conservation measures be implemented for each of the sites.

Brayshaw (1985) surveyed the 377-hectare, Pokolbin Park Estate at Nulkaba some 9km SE of the study area adjacent to Black Creek and with similar landform units to those within the SSS study area. No archaeological sites were located. Similar results were obtained from a survey of an area proposed for residential development west of Cessnock (Brayshaw 1982).

10km to the south, Ruig (1995) surveyed a ten-hectare site for proposed extensions to the Cessnock landfill and located one isolated artefact. No sites were located within an adjacent twenty-five hectare property, Dean-Jones (1987), or within an adjacent four hundred-hectare property (McIntyre 1984). The latter result was attributed to conditions of extremely low surface visibility (McIntyre 1984).

Kuskie (1996) and (2002) surveyed the same area as Brayshaw and located at different time intervals a total of 30 sites. Kuskie in conjunction with Parkes (2002) surveyed a trunk sewer line from the development and located another 6 sites.

Kuskie in 2002 undertook extensive archaeological investigations for the Vintage Resort development. Located approximately 4 kilometres to the south of SSS study area, the Vintage area is also part of the Black Creek Flood Plain. It differs to the current study area in that it is flatter and contains a more significant drainage pattern of lagoons and creek lines. In general the sites are low-density artefact scatters with low numbers of artefacts; 12 of the sites only containing one artefact. The predominant make-up of the artefacts is silcrete, siltstone quartz and volcanic materials. Many of the silcrete artefacts show use of heat treatment. The Kuskie and Parkes study (2002) identified a possible silcrete quarry at VS6. Most of the artefacts occur on basal slopes within 50-60m of a watercourse.

White (2002) prepared a Management plan over the Vintage development and commented on the significance of the archaeological record as follows (p9):

"In general, most of the development area appears to be of low archaeological significance. Individual sites and most of their landscape settings have been heavily disturbed by previous landuse and development works. Some locations ... can be enhanced ... Site VS6 is a possible silcrete quarry ... no other sites of this type is known in the Cessnock area"

This is relevant to the SSS study area in that it is also part of the Black Creek Catchment, contains more water resources but the archaeological evidence was considered of low significance. Therefore suggesting that the evidence within the SSS area would be less and if any evidence at all would also be of low significance

Hardy (2004) and Roberts (2004)) independently surveyed parts of the study area on the western side of Wine Country Drive and Roberts (2005a) surveyed the entire study area. Hardy identified 10 Objects whilst Roberts identified a geological feature and associated PAD. They concluded that the areas of significance regarding Aboriginal heritage centre on Black Creek and its tributaries along with a rock outcrop parallel with a tributary of Black Creek.

More recently, 4 linear surveys have been conducted along infrastructure corridors passing through or alongside the study area. The benefit of a linear survey is it considers a cross section and variety of landform types rather than an areal survey which may only consider one or two landform types. These surveys were re assessment of generally previously assessed areas for upgrade works or re-alignment. The surveys found additional Objects. This is not surprising given the lapse of time and

difference in visibility conditions. They were the Rail corridor (Kuskie), the freeway corridor (Umwelt) and 2 Transmission Line easements (AMBS) and (Besant)

Part of the freeway corridor Branxton- F3 link traversed the northern section of the study area (Umwelt 2006a; 2006b). Excavations at sites along the entire corridor recovered 1545 artefacts across 9 creek catchments (Umwelt 2006b). Wallis Creek, Black Creek and Anvil Creek catchments had particularly high quantities of artefacts.

Archaeological test excavation of landforms adjacent to creeks where no surface artefacts had previously been identified was also undertaken. A significant result of this testing was that, although there were no surface artefacts in some areas, sub-surface artefacts were present in others.

Landform testing also gave an indication of the spatial distribution of artefacts within each catchment area. The testing suggested that artefacts were concentrated on the creek terrace and lower slope landforms. Umwelt suggest that this distribution pattern may have been caused by erosion and downslope movement of topsoil (Umwelt 2006b: 4.38).

Prior to the excavation, 135 surface artefacts were collected in the Anvil Creek catchment with just as many after. This suggests that the quantity of artefacts on the surface reflects of the frequency of subsurface artefacts extant in this local area.

The Swamp Creek area, located approximately 1.5 km southwest of the current study area, was also investigated by (Umwelt 2006b). A lower frequency of surface artefacts were collected in the Swamp creek catchment than at in the Anvil creek catchment (Umwelt 2006b:4.4-4.5). Although only a small area of the Swamp creek catchment was tested, the results suggest that lower frequencies of artefacts may be expected, when compared to other sites in the region, such as Anvil Creek (Umwelt 2006b).

The work by Umwelt shows that whilst artefacts are extremely likely to be found in creek catchments it will not always be the case as there are other factors which affect the density and distribution including Aboriginal land use and occupation. It is probable that the concentration is not necessarily indicative of extensive use of the area of deposit, but more indicative of the landscape, terrain and run off and depositional qualities of the catchment. This observation was supported in an assessment for a mining development at Mt Pleasant (Roberts 2007) which found that the absence of artefacts on a flat depositional area compared to other similar depositional areas was correlated with the existence of contoured bunds on the slopes, and the existence of artefacts behind the bunds. This was also similar to observations of an assessment at Bridgeman Road, Singleton, (Roberts 2005b).

Besant 2007 undertook a 14 km survey of an upland area for proposed feeder routes just south of the study area and identified 8 Aboriginal sites. Aboriginal site frequency was 0.57 per kilometre surveyed. Identified sites include four isolated finds and four artefact scatters. Artefact raw materials included indurated mudstone, silcrete, basalt, chert and porcellanite. All sites were located within 500m of drainage lines.

AMBS (2009) undertook an assessment of a 54km transmission line easement between Kurri and Redbank part of which traversed the southern portion of the study area from east west. As a result of field investigations, 65 Aboriginal sites were identified, including two previously recorded sites. 5 objects were observed within the current study area. Of significance, the artefacts were identified

near the PAD identified by Roberts in 2004 and were visible due to substantial sheet erosion that had occurred within the easement. It was believed that the artefacts were not in situ and considered of low significance. It would appear that the artefacts were washed down from near the geological feature and PAD identified by Roberts.

Kuskie 2009 undertook inspections for the rail upgrade between Maitland and Minimbah. Visual inspection confirmed that negligible potential for heritage evidence existed within the study corridor as it had been extensively impacted by earthmoving works and construction of the existing railway line and New England Highway. Stone artefact occurrences, were recorded prior to and during the assessment. Whilst isolated artefacts were identified adjacent to the study area they add little to the information base.

On a state wide basis, several studies have been undertaken which have proven to be definitive works for understanding the correlation of landscape and archaeological potential.

- **Importance of wetlands**

Archaeological investigations by Kuskie (1994), Ruig (1995) and Effenberger and Baker (1996) on margins of various wetlands indicate that artefacts could be found on all types of landscapes abutting wetlands with density in direct correlation to distance from the margin.

- **Relationship of landform type and ceremonial areas**

Work by Klaver and Heffernan (1991) which was an assessment of sites in the Greater Taree Council area, identified landscape attributes for ceremonial sites. Citing an earlier work by Fitzpatrick (1986), they stated, "Ceremonial grounds were said to comprise two rings, one on top of a low ridge and the other in a level place below. The latter was..."established in a roomy place, so that all the gins could camp there close to the ring." This aligns with this author's findings at North Arm Cove and Kings Hill, Raymond Terrace.

- **Relationship between Object type and landscape**

Brayshaw, in 1986 conducted a Study of Colonial Records of the Aborigines of the Hunter Valley and was able to present an account of the environment and way of life of the Aborigines at the time of colonial settlement. Her study also indicated areas and landforms of Aboriginal use and occupation. Dean-Jones and Mitchell (1993) conducted a similar assessment of archaeological sites in the Hunter Valley.

The above studies indicated:

- Open campsites would be near water holes
- Grinding grooves are more likely to be found in rocky outcrops exposed by erosion or in creek beds.
- Scarred trees may be present in any type of landscape, but this would depend on the age and type of tree.
- Artefacts are more likely to be found along creek and drainage lines
- Stone arrangements and ceremonial artefacts are more likely to be found in significant landscape aspects such as caves and hills.
- Artefacts can be found in any landscape in proximity to an abundant food/water source.
- Archaeological evidence is more likely to occur in undisturbed areas.

- **Relationship of Objects and Distance from Water /Song trails**

A report for the Brigalow country was undertaken by the Resource and Assessment Council titled Aboriginal cultural heritage assessment NSW western regional assessments final report September 2002 – Brigalow Belt South Stage 2. This large scale landmark study analysed the finding of separate independent studies and was able to establish an information base that highlighted Aboriginal association with forests, travelling stock routes (early roads), rural properties and towns.

The study showed that of the sites recorded, 50% were within 200 metres of water and Aboriginal occupation may have occurred for prolonged periods under the right conditions, made possible by a different array of water features (chains of ponds) that existed prior to European usage of the forests.

- **Burials**

With respect to burials, work by Donlon (1990), where she analysed skeletons uncovered on beaches on the Central Coast of NSW, ethnographic reports by Bennett 1929, along with other research cited by Mulvaney and Kamminga (1999), has tended to indicate that whilst burials could be found almost anywhere and diverse in practice, intentional or formal burials, generally in Eastern NSW, consisted of isolated burials being placed in sandy type soil, near the high water mark, and sufficient soil depth to bury the person vertically in a sitting position and with various belongings. In the Central west of NSW according to Garnsey (1942: p.23ff), the body was placed in a squatting position; with the elbows placed on the knees and the head between the hands. In this position, the body was placed at the foot of a Coolabah tree facing east. In the burial of an important individual, a strip of bark about five foot long and two foot wide was stripped from the eastern side of the tree and placed in a slanting position over the corpse. The blaze on the tree was also carved in tribal markings to show the man's status. These carved trees were apparently only associated with the graves of the spiritual leaders. For the period of mourning, the body remained out of the ground. The only recorded cemeteries are within the Murray River corridor or at Broadbeach in Queensland. Most burials are discovered by accident.

- **Relationship between Stream Order and occupation pattern**

A survey by Jo McDonald 1988 was an east west survey from Dubbo to Tamworth. The report found stream order influenced occupation pattern. Her analysis concluded that;

“The size (density and complexity) of archaeological features will vary according to the permanence of water (i.e. stream order), landscape unit and proximity to lithic resources in that density and complexity are greater in 4th order (major creeklines and rivers).”

- **Occupation Pattern**

A general pattern is emerging that more concentrated remains of Aboriginal occupation are associated with wetland or swamp resources along the principal rivers of the region and/or where resources suitable for the manufacture of tools are present.

The pattern of Aboriginal occupation was underpinned by 2 tenets:

- Aboriginal camping areas were always situated in areas of good shelter and good resources
- Base campsites would be near reliable water.

Comment:

The archaeological evidence suggests that base camps were located close to freshwater and food sources. The campsites were in favourable climactic conditions, safe, not only from intruders but also for young children. Campsites were therefore not near fast, flowing rivers, dangerous swampy areas or steep cliffs. (Many Dreamtime stories were developed to keep children away from dangerous areas). Trails from campsites and to other clans were generally along creek lines or ridgelines.

Prior to European settlement the area was inhabited by Aboriginal people who roamed freely across the river flats and through the timbered hill country. They also adopted burning off practices as the new shoots which emerged after fire attracted kangaroos which they surrounded and killed with clubs and spears) barbed with sharp stones.

Although archaeological evidence is generally associated with creeks because they are the lowest elevation and natural depositional areas, it is more likely that camping occurred on higher ground. The intensity of evidence within creek areas suggests broader occupation of a creek catchment rather than just the creek itself.

4.4 Landscape

The differing landscape creates different land use. For instance swampy or poorly drained land would not be conducive to campsites or burial grounds. Whereas, caves and rock shelters would give rise to artwork, and practical purposes such as shelter or women's birthing areas. Early roads, stock routes and river crossings during European settlement often followed Aboriginal Song Trails (walking trails) and natural features adjacent to such trails were of significance for various reasons. Over the years, the main highways and roads have been realigned and adjusted, but initially the roads between settlements which were generally established around Aboriginal camping grounds, followed the Aboriginal trails.

The landscape survey and classification followed in this report is that formulated by Speight and others in the Australian Soil and Land Survey, Field Handbook, Second Edition.

Landform is basically divided into 2 classifications, the classification covering a larger area is known as Landform Pattern, which can then subdivided into smaller areas known as Landform Elements. About 40 types of landform pattern are defined and include, for example, floodplain, dunefield and hills. Whereas, about 70 of the smaller landform elements are defined, including cliff, footslopes and valley flat. Relative elevation classes have been standardised and used throughout Australia. The landscape is divided into the following classes:

Landform	Relative Elevation
Plains	0-9 m
Rises	9-30 m
Low hills	30-90 m
Hills	90-300 m
Mountains	>300 m

Landforms as well as having morphological characteristics (surface dimensions) have been formed by processes. The formation processes can interact to produce an array of landforms. For example,

plains can be separated into depositional plains of various kinds or erosional surfaces (peneplain). The formation process contributes to the concealing/revealing and the preserving/destroying of archaeological evidence. The identification of landform is paramount in predicting areas that have the potential to contain archaeological evidence.

Comment:

Topography, hydrology and drainage are important for understanding how accessible an area was for Aboriginal occupation, as well as providing information on available water resources vital to the sustainability of any population. The topography is characterised by undulating terrain with intermittent watercourses as well as large creek flats associated with permanent water courses.

The study area landform pattern of the subject site is generally part of the floodplain, basal slopes and hills of Black Creek valley. It has smaller creeks that drain into Black Creek. The one draining to the North accepts many smaller tributaries and runs almost some 4km along the length of the property until it meets Black Creek. The other to the southeast also commences on the property and flows into Black Creek some 600m to the southeast. There are several dams or lagoons on the property and contains an elevated ridgeline known as the Terrace with a height of some 110 metres and is the highest point for several kilometres. The stage 1 area east of North Rothbury village is cleared pasture land, gently sloping from 100m AHD in the southwest to 50m AHD in the northeast. Black Creek is not on that site, but intermittent drainage eventually flows to Black Creek.

The majority of the study area was an old underground coalfield and much of the site has old mining infrastructure and remnants. It is considered highly disturbed and modified. Although the landscape may not have undergone much change on the surface, the vegetation and soil profile has been disturbed and altered. However, Information from remnant vegetation communities, archaeological evidence and historical observations indicate that there are a number of known food and other resources which would have attracted Aboriginal occupation of the area.

The following Figure 6 the NSW 25k east topographical map in 3D shows the relative landform/ landscape profile of the floodplain, slopes and surrounding hills .

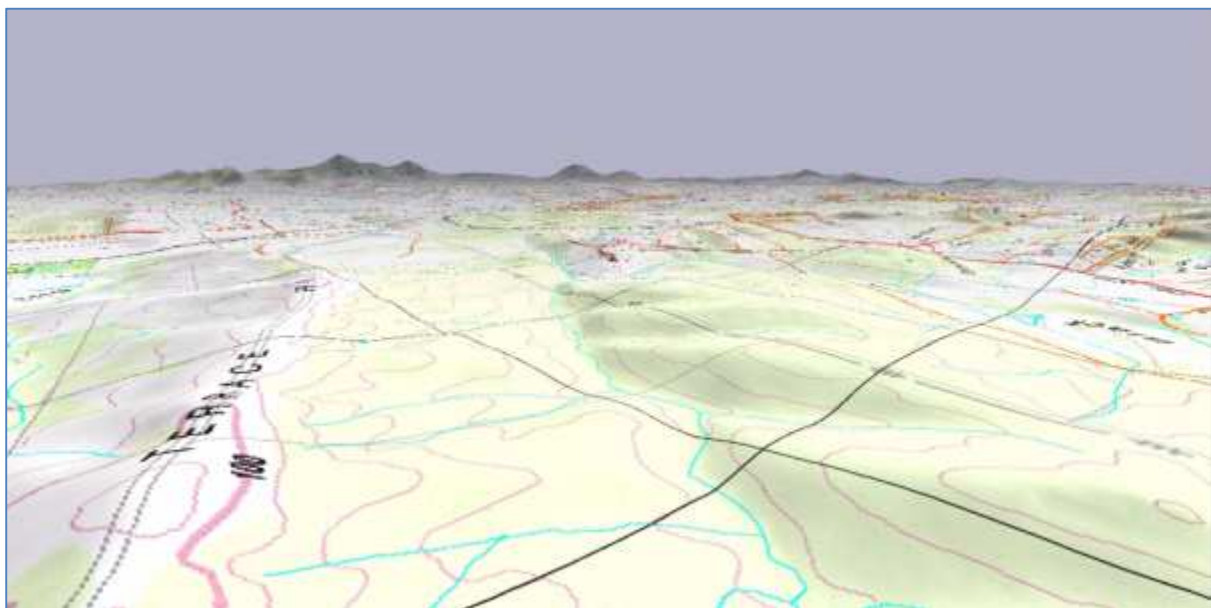


Figure 10 Landscape Context

4.5 Soils

Where an archaeological survey is only a surface investigation, any information relating to subsurface information is important, in that it indicates:

- The possibility of archaeological evidence beneath the surface.
- The possibility of archaeological evidence destroyed through erosion or other natural phenomena.
- The possibility of archaeological evidence preserved through soil/sand deposition.

The main soil features of interest are the depth of deposits, stability of the soil composition and the depositional age of the soil groups. Detailed analysis of the effects of different soils on the burial process of archaeological remains can only be carried out during an excavation.

The susceptibility of land to sheet and rill erosion is governed largely by the topsoil texture, slope of the land, length of slope and the probability of intense summer rainfalls. The topsoil or A horizon is where most nutrients, organic matter, seed and macroporosity so desirable for a seedbed exists. If this is stripped away through soil loss the fertility of the soil is lost and productivity reduced. The first few centimetres of soil also generally contain artefacts.

The following map details the soil profile. It shows the soil in the study area classified as CD2. It shows the soil in the study area classified as CD2 which contains duplex soils ranging from sand to loam commonly 20cm or more thick. They have low to moderate permeabilities and are generally sodic causing intermittent perched water in the subsurface horizon and partial saturation of the upper subsoil during the wet season. The soil analysis indicates that the soil is well drained with water runoff site freely. Erosion from water is minimal and there appears little wind erosion. The top soil is coarse sandy loam. The study area is dominated by the Branxton and Rothbury soil landscapes. The Branxton soil landscape is characterised by undulating low hills and rises with many small creek flats (Kovac and Lawrie 1991:106). Red Podzolic Soils are present on the crests, while midslopes contain Yellow Podzolic Soils; Yellow Soloths and alluvial sands occur in the drainage lines. The Rothbury soil landscape comprises undulating and rolling hills, with Red Podzolic soils on upper slopes and yellow podzolic soils on midslopes (Kovac and Lawrie 1991:338). Lower slopes contain Yellow Solodic Soils and brown Soloths. Drainage lines contain Prairie soils.



Figure 11 Soil Classification

Comment:

Generally, the study area soil is a floodplain on alluvium lithology and used for cropping/pasture. Surface condition is firm, profile is well drained and erosion hazard is moderate. The soil composition is sandy loam. The implication for the study area is that there could be potential for subsurface archaeological deposits within the first 300mm provided the soil profile has not been disturbed.

4.6 Geological Features

The geological data allows for analysis of the landscape to determine any special features that may contribute to historical Aboriginal occupation. There may be particular outcrops or features that would suggest significant Aboriginal use. The following map shows the geological composition of the study area. It shows the study area lies mainly on Permian bedrock which can feature a variety of outcrops that may be a resource for Aboriginal tool manufacture or shelter.

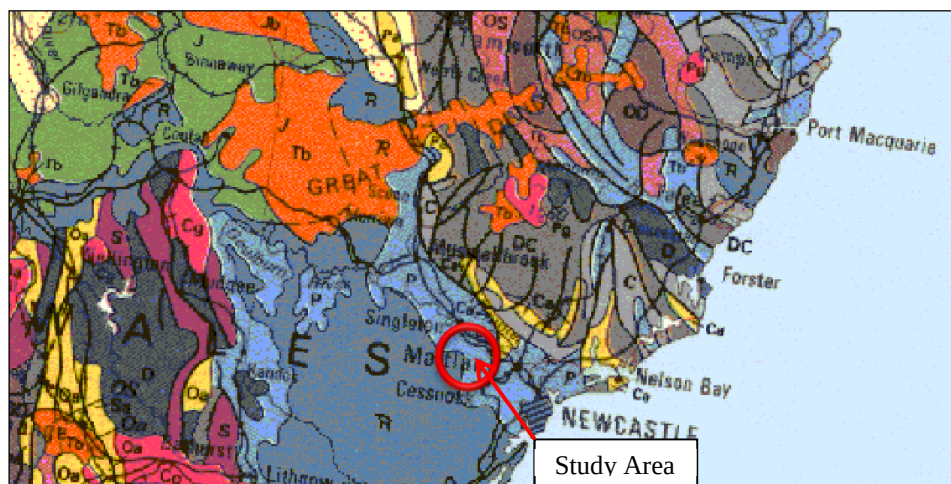


Figure 12 Geological Classification

Comment:

Although there is no indication of a geological abnormality or feature that would suggest special significance to the landscape based on the geological mapping, there is the high likelihood of rock outcrops that could be used for grinding grooves and shelter.

4.7 Past Land Use

Past Aboriginal activities are not well manifested by archaeological record because many activities did not leave material evidence or because the material evidence was not durable. Many of the implements were organic material, such as wood and bone and readily decayed when exposed to the elements. Even burials, are subject to the acidic condition of the soil.

Durable evidence, such as stone and rock implements, is affected by European land use. Easily recognisable implements such as stone axes, have found their way into many private collections, well before it became illegal to do so, with no record of the location of the find. Cultivation, with the associated stick raking and stone gathering also tended to destroy surface evidence. However cultivation and pastoral land use also helped preserve the archaeological record. In some cases cultivation would expose evidence in others, cover the evidence.

In general, the archaeological record is dependent on the exposure of sites through erosion, weathering, fire, drought and anthropogenic activities.

The vegetation within the study area is predominantly Open Forest dominated by various species. The majority of the trees appear to be of a similar age and would probably be less than 20 years of age.

The current vegetation does not give a good indication of the archaeological potential as it is basically regrowth or introduced grasses and pasture and is not necessarily indicative of what was there over 200 years ago.

The variety of vegetation that was probably on the subject site at European contact would also have lent itself to the fostering of animal food resource. Many of the current animal and bird species found on the subject site most probably existed on the site at European occupation although as to the abundance is speculative but probably more intense and greater variety.

- *European*

Early Europeans began to acquire land in greater Cessnock as early as anywhere else in the Hunter Valley. The first land grant went to Benjamin Blackburn on the 21st February 1821 for four hundred acres at what are now Kurri Kurri and Pelaw Main. The early grants occurred in the five main valleys of greater Cessnock which includes the valley of Black Creek of which the study area forms a part.

In 1825 John McDonald and his family began to acquire land on the southern side of the Molly Morgan range along Black Creek. In 1826 in the Black Creek Valley, John Campbell acquired 2560 acres which he called Cessnock and covers the study area as well as the majority of the town of Cessnock today. Much of the property was sold in an 1853 enabling the emergence of a private village.

The locality was situated at an intersection on the Great North Road. The first road to join Sydney with the Hunter Valley it was built by 3000 convicts between 1826 and 1834. The junction became a camping place for teamsters. By 1858 there were still no more than eleven adults. With the opening up of the roads from Sydney via Singleton to Newcastle, maritime transport along the Hunter River and the Great Northern Road from Wiseman's through Wollombi district into Newcastle many settlers began to take up the free grants. In the period 1821 to waiting 31 of these free grants enabled many to settle in the greater Cessnock area.

After the Robertson Land Act of 1861 the way was opened for small landholders and people began to settle on small farms along Black Creek and Anvil Creek in the area to the north and north-west of Cessnock. They were mostly wheat-growers but a German winemaker named Bouffier established a vineyard at Cessnock around 1866. The township developed as a service centre to local farmers and travellers. Wheat-growing declined after rust destroyed the crop in 1870.

The subject land was previously owned by a mining company and has been used for mining purposes. The current land use is pastoral and is used for cattle grazing. Timber on the site is generally of a similar age and indicates extensive cleared areas in the past. There is some residential type development.

- *Aboriginal*

The known archaeological evidence from AHIMS ethnographic records and archaeological reports previously discussed indicates that base camps were probably along the ridgelines following Black Creek, probably up to 12k (8 miles) apart and close to freshwater sources. It would appear that the

entire study area and more particularly the SSS was used for hunting and gathering (including tool manufacture) and possibly ceremonial purposes rather than intensive occupation as more favourable camping areas were not too far distant.

By 1836 a smallpox epidemic and other introduced diseases had decimated the Aboriginal population. Many of the Local Aboriginals moved to Newcastle for labouring work particularly as infrastructure developed.

4.8 Predictive Model

According to Orton (2000: 77), "In archaeology, predictive modelling refers to a process that considers variables that may influence the location, distribution and density of sites, features or artefacts across the landscape. As well as a review of the results of previous archaeological work and available ethnographic information (to make judgements about past Aboriginal settlement of the landscape), the variables often included in a predictive model are environmental and topographic variables such as soils, distance from landscape features, slope, landform elements, and cultural resources."

A predictive model of Aboriginal object location is constructed to identify areas of high archaeological sensitivity (i.e. locations where there is a high probability of an archaeological site occurring), so it can be used as a basis for the planning and management of Aboriginal sites. Predictive modelling involves reviewing existing literature to determine basic patterns of site distribution. These patterns are then modified according to the specific environment of the study area to form a predictive model of site location. A sampling strategy is employed to test the predictive model and the results of the survey used to confirm refute or modify aspects of the model.

The use of land systems and environmental factors in predictive modelling is based upon the assumption that they provide distinctive sets of constraints, which influenced Aboriginal land use patterns. Following from this is the expectation that land use patterns may differ between each zone, because of differing environmental constraints and that this may result in the physical manifestation of different spatial distributions and forms of archaeological remains.

The predictive model is based on information from the following sources:

- Identification of land systems and landform units
- Previous archaeological surveys conducted within the region
- Distribution of recorded sites and known site density
- Traditional Aboriginal landuse patterns
- Known importance of any part of the study area to the local Aboriginal community

The types, contents and distribution of sites within the study area can be predicted using such modelling.

The following raw materials have been identified in the region (in order of frequency) silcrete, indurated mudstone, silicified tuff, chert, quartz and other materials. Artefacts types identified in order of frequency are flakes), cores and tools.

Any archaeological surface evidence is likely to have lost its integrity through extensive landuse practices. Much of the study area is so disturbed that any archaeological evidence in those areas would have been obliterated. However depositional areas such as Black Creek would likely contain surface and subsurface evidence. The integrity of such evidence would have been affected by landuse practices that disturbed the soil profile.

An analysis of the density of distribution, site type and landscape context shows that any archaeological evidence will tend to be stone artefacts associated with a watercourse, particularly where 2 minor watercourse join and flow into a tributary of a major creek. Objects such as grinding grooves will be dependent on a sandstone outcrop associated with a water course. Scarred trees are considered unlikely due to past land use practices. Art work will only be possible if there are sheltered rock features, which does not appear likely. It is not likely that burials or ceremonial areas will be found.

Where there is a potential for sub-surface deposit with artefacts (such as flaked stone) it is identified as a PAD. Sub-surface deposits are important as they have the potential to contain intact in-situ archaeological material. In some cases, they may contain material that can be placed in chronological sequence. PADs are significant because they may contain new scientific and cultural information and have the potential to further our understanding of past Aboriginal occupation of the region.

The recorded archaeological data suggests that there is a correlation between watercourses and the presence of Aboriginal sites. There is higher potential for sites to be identified within 200m of a water course, than further away. Sites are likely to occur within flat, open depression, simple slope and crest formations.

Based on adjacent recorded average data density of artefacts will be low and generally in the order of less than 5 artefacts per hectare.

5.0 STEP 2B Information Requirements (Visual Inspection)

The integration of the information consists of checking the predictive modelling against the on ground reality. The developed predictive modelling indicated that any archaeological evidence would be found in the non- disturbed areas of creek catchments and would generally consist of artefacts and maybe grinding grooves.

Although the entire study area was included in this assessment, it must be noted that as the area west of Wine Country Drive:

- Contained an agreed Aboriginal conservation area
- Contained disturbed land according to the NPWS Act definition particularly through past mining practices
- had unquestionably been assessed fully twice before
- had 2 linear surveys recently conducted across the south and on adjacent land to the north was not intensively re surveyed.

The Stage 1 area east of Wine Country drive was intensively re surveyed and is shown at Figure 13.

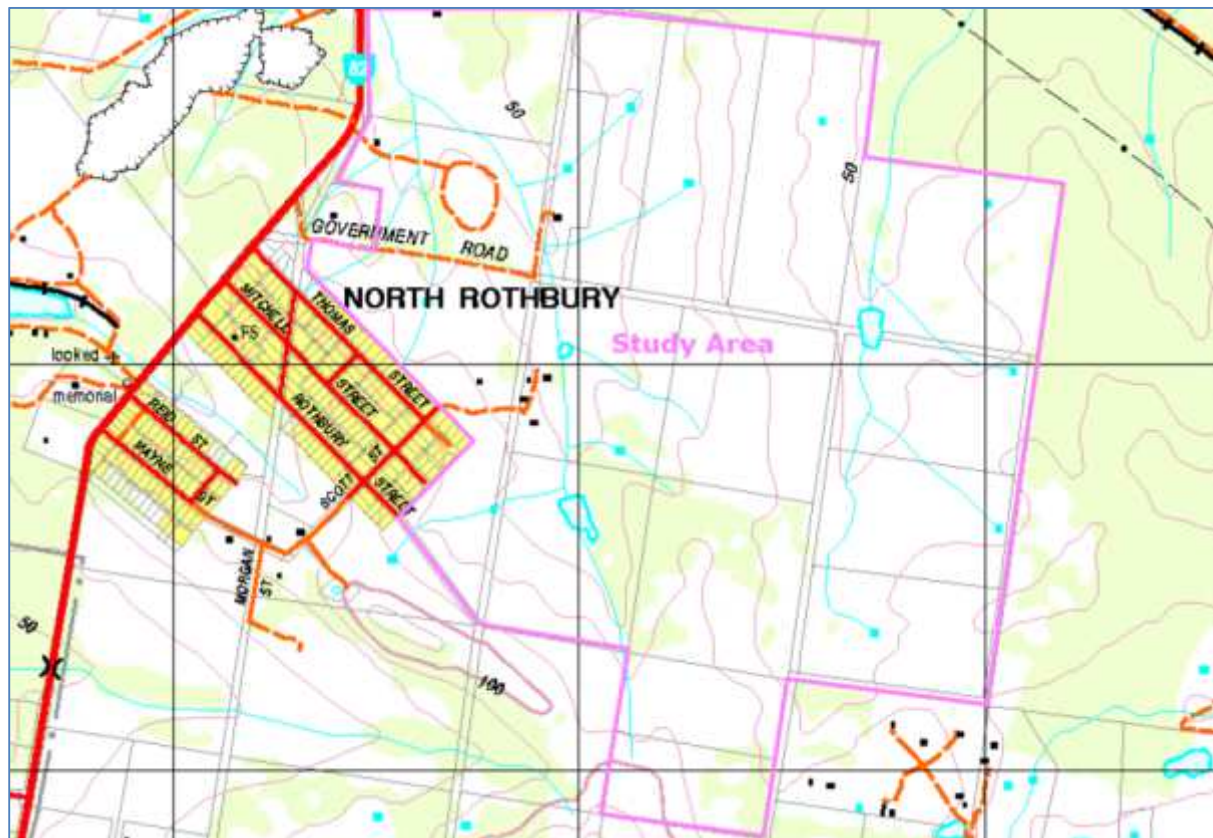


Figure 13 2012 Intensively re-surveyed field assessment study area

5.1 Strategy

The following was used to inform the visual inspection of Stage 1.

- Vehicle traverse used for reconnaissance observations of the Stage 1 area to inform and design a pedestrian survey strategy for the area east of wine country drive and any other areas of stage 1 considered not to be disturbed under the NPWS Act.

The reconnaissance survey of all of stage 1 including lot 10 did not reveal any additional areas that may potentially contain archaeological evidence

5.2 Method

- As all landforms will potentially be impacted, each individual landform to be sampled.
- Emphasis on those landforms deemed to have archaeological potential,
- Survey on foot, for the purposes of discovering Aboriginal objects and conducted in accordance with the sampling strategy above
- Accurately define and named survey units
- Include representative photographs of survey units and landforms where informative
- Record landform and general soil information for each survey unit
- Record the land surface and vegetation conditions encountered during the survey and how these impact on the visibility of objects
- Record any Aboriginal objects (including those already registered on AHIMS or otherwise known) observed during the survey
- Record survey coverage and calculate survey effectiveness

As only that part of the study area was deemed to be a candidate for intensive visual inspection, it was broken into 3 survey units and each survey unit was investigated separately.

Unit 1 western slope and drainage;

Unit 2 central slope;

Unit 3 eastern slope and drainage

The survey units were then specifically and exhaustively examined on foot, paying particular attention to the watercourses, bare ground and erosion features. The margins of the dams were particularly examined. At the conclusion of the examination of the various survey units, individual trees that were considered to be of appropriate age and size were examined.

Tracey Skene on behalf of the Wonnarua Elders and Nation, Sue Roberts from Myall Coast Archaeological Services and this archaeologist performed all fieldwork. A total of 30 man-hours were involved in the survey.

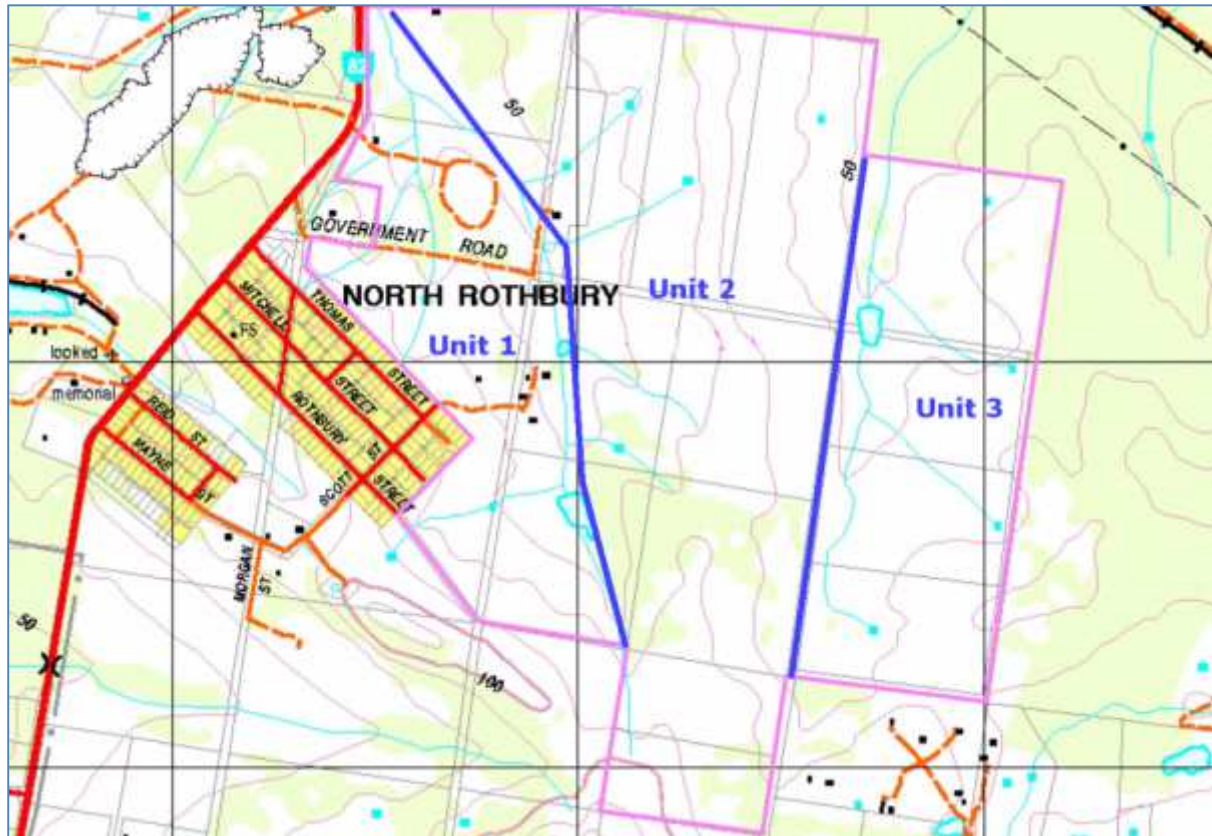


Figure 14 Survey Units

5.3 Coverage Data

The effectiveness of archaeological field survey is to a large degree related to the degree of ground surface visibility. The dominant factor affecting the ground surface visibility was the disturbed and modified nature of the ground.

Although the total amount of exposure was limited, it is believed there was sufficient landform type and exposure to indicate any potential archaeological material that may be present.

The effective survey coverage is as follows:

Unit 1 it is a well pastured north east facing slope and includes an intermittent drainage channel with man-made dams. The drainage eventually flows to Black creek. It has a slope of less than 5%. Visibility was fair, but allowed for good appraisal of potential to contain evidence. The north west section contained residential development and was extremely disturbed. It was considered unlikely to have any surface artefacts and subsurface potential was considered extremely unlikely. The drainage channel was dry except for the dams. Prolonged rain event had only recently occurred and did not seem to have any long term water holding capacity.

Unit 2 it is a well pastured north-north west facing slope and includes several smaller intermittent drainage channels that flow to the drainage channel of unit 1. It has a slope of less than 5%. Visibility was fair, but allowed for good appraisal of potential to contain evidence. It was considered unlikely

to have any surface artefacts and subsurface potential was considered extremely unlikely. Despite the recent rain, no water holding potential was evident for this unit.

Unit 3 it is a well pastured North West facing slope and includes an intermittent drainage channel with a couple of minor tributaries flowing into it. The drainage eventually flows to Black creek. It has a slope of less than 5%. Visibility was fair, but allowed for good appraisal of potential to contain evidence. It was considered unlikely to have any surface artefacts and subsurface potential was considered extremely unlikely. The drainage channel contained several small depressions that contained small amounts of water. It was evident that quantities of water had been contained within those depressions but any quantity did not remain for very long. Erosion within the channel was evident and gave extremely good exposure of the soil profile and subsurface potential. It was expected that it might have contained artefacts deposited after the recent rains or exposed through erosion, but none were observed.

<i>Survey unit</i>	<i>Topography</i>	<i>Surface slopes</i>	<i>Visibility</i>	<i>Area available for detection</i>	<i>finds</i>	<i>Archaeological Survey constraints</i>
NE Slope Unit 1	Well grassed, North east facing slope, sloping towards Black Creek. Grass cover cropped short. Dams	<5%	Fair	80%	nil	Well grassed Long term cattle usage. Dwellings and infrastructure development
NW Slope Unit 2	High grass coverage between drainage lines. Some areas well exposed but soil modified and integrity highly disturbed	<5%	Very good	100%	nil	Soil integrity
NW Slope Unit 3	Intermittent drainage channels almost flat	<5%	Fair to very good	75%	nil	pasture

Table1 Survey Effectiveness

5.4 Findings

There was no archaeological evidence or potential located during the re-survey of that part of the Stage 1 area shown at Figure 14.

The findings of the original surveys and previous reports have been confirmed and are used as data for analysis of significance of the total study area and the remainder of Stage 1 area. The findings of the original surveys are shown at tables 1 (Hardy 2004) and (Roberts 2004) following and the findings of the AMBS 2009 Survey for the electricity easement which found artefacts within the conservation zone is shown at Table 2.

The significance of the evidence was assessed at the time of the original surveys and is not discussed here. All evidence is considered significant to the Aboriginal community and the preference is to leave evidence in-situ. The evidence was accepted as significant and warranted protection by being placed in a conservation zone for the rezoning. All evidence was to be left in-situ and a management plan developed in consultation with the Aboriginal community post approval.

One artefact found by Hardy was located in a floodplain to the northwest of the study area is not part of the Huntlee proposal and therefore not impacted.

Site Type	Landform Unit	Report
Stone material	First order creek Tributary of Black Creek	Hardy
Artefact scatter	Terrace of Black Creek	Hardy
Stone artefact	Creek terrace?	Hardy
Artefact scatter	Second terrace above Black Creek	Hardy
Stone artefact	Hill slope	Hardy
Artefact scatter	High bank creek terrace	Hardy
Artefact scatter	Bank of minor creek	Hardy
Stone artefact	Bank of minor creek	Hardy
Artefact scatter	Sandy creek bank and terraces	Hardy
Artefact scatter	Sloping ground	Hardy
Artefact scatter	Around dam	Hardy
Rock outcrop	Parallel with tributary of Black Creek	Roberts
Song trail	Ridge line	Roberts

Table 2 Identified Objects within the study area from initial assessments

None of the above objects are located within the Stage 1 area

In addition the following artefacts were found by AMBS within transmission easement. They all were located within the conservation zone. They will not be affected by the Stage 1 development. They were not impacted by the transmission upgrade and were left in-situ. The AMBS assessment concluded that the artefacts would likely be naturally covered or transported to wards Black Creek in due course.

Site Name	Site Type	Easting	Northing
KR25	Artefact Scatter	342396	6379746
KR26	Artefact Scatter	342221	6379831
KR26a	Artefact Scatter	341986	6379948
KR27	Isolated Find	341840	6380017
KR28	Isolated Find	341552	6380254
KR29	Isolated Find	341378	6380390

Table 3 Identified Objects by AMBS

Seven Artefacts were also located within the Freeway corridor which is adjacent to the north of development. The freeway is not part of the proposed development; however their location assists in determining Aboriginal occupation of the study area.

Identified objects within and immediately adjacent to the study area from all known surveys are shown at figure 15. The exact location and object type is not identified for cultural reasons. The objects are located by plotting the coordinates from the AHIMS Database onto the topographical map. The Objects located outside of the study area co-ordinates cannot be guaranteed. The approximate study area boundaries are outlined in purple.

As can be seen at Figure 15 all Objects within the study area fall within the conservation zone except 1 (The one in the NE Corner) which is within a riparian corridor (conservation) and is not part of the Stage 1 development proposal.

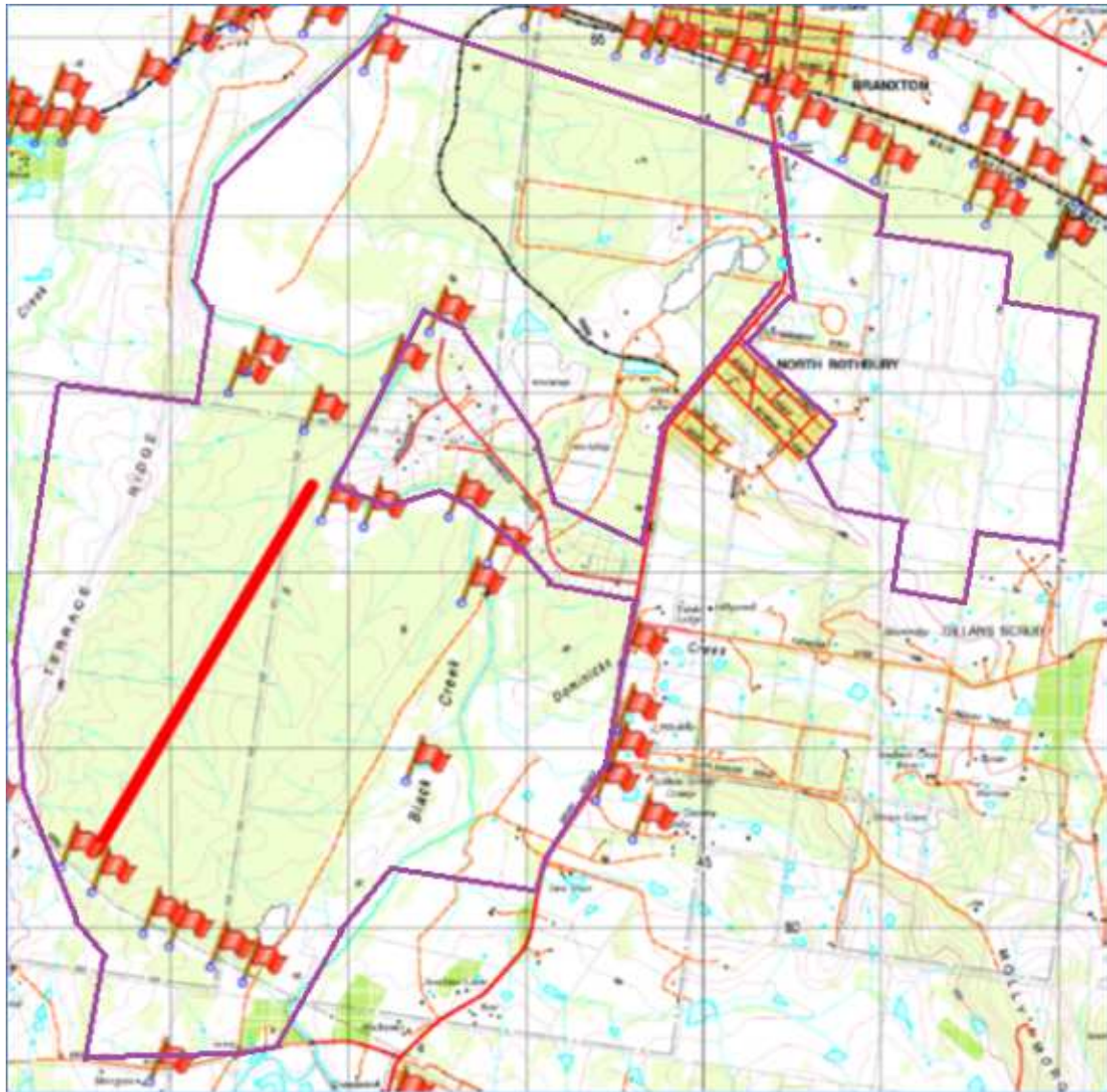


Figure 15 Aboriginal Objects

6.0 Step 3 Integration of information and identification of heritage values

The integration of the information consists of checking the predictive modelling against the on ground reality. The developed predictive modelling indicated that any archaeological evidence would be found in the non- disturbed areas of creek catchments and would generally consist of artefacts and maybe grinding grooves.

6.1 Key principles in determining Occupation Pattern

Roberts, 2009 formulated 7 key principles to determine probable Aboriginal land use of a particular area.

Using those principles it is possible to place the study area into Aboriginal occupation context and use.

1. Proximity to water

There is permanent water on site; Black Creek and intermittent tributaries.

2. Food resource

The study area does not appear to contain any unusual favourable, seasonal or special food resources.

3. Geological features

There is an unusual, unique and prominent geological attributes within the study area, namely the rock outcrop which is located outside the Stage 1 area and is contained within the conservation zone.



Plate 1 Unusual and unique Rock Formation

4. Ease of access

The study area is easily accessible on foot for all age groups

5. Connectivity

The study area does appear to link or unite other areas. Terrace ridge and Black creek offer pathways or song trails to more favourable areas.

6. Safety

The study area is not dangerous or close to dangerous or unhealthy landscapes. There does not appear to be natural protection from harsh and extreme weather. There are commanding views from various parts of the study area.

7. Archaeological evidence

Whilst there are several objects identified within the study area, except for the rock formation they are not considered particularly unusual. The relative small quantity and spatial distribution is probably more indicative of the occupation of the total area landscape rather than just the immediate area itself. The relative small quantity probably also suffers from the highly disturbed nature of much of the land. Nonetheless there is sufficient evidence to attribute Aboriginal occupation to the Black Creek catchment

Comment

Although the majority of the study area has been disturbed, it is still possible to suggest the occupation context and landuse. The information from the above 7 principles indicate:

- The study area was occupied by the Aboriginal community. Water and food resources were available and there are no access constraints. However there are no indications that any of the study area was intensively or extensively used. The lack of areas such as grinding grooves and low density of archaeological evidence suggest occasional or less intensive use. The landscape and archaeological evidence not too distant from the study area indicate more favourable areas for at least occasional camping.
- The Western side of Wine Country Drive was probably more utilised than the eastern particularly as the western side had constant and more favourable water supply. Terrace Ridge provided a better route than following black creek, particularly in the wet and was higher and gave a more commanding view of the surrounding environment. The eastern side of Wine Country Drive which was intensively re surveyed did not reveal any evidence probably partly due to its disturbed nature and probably due its overall landscape context which does not fit the known occupation pattern.
- The Rock outcrop would probably have been significant as a marker and rest area. The Aboriginal community do not have any particular stories or knowledge regarding its use. Whilst it is unreliable to rely on silence, the lack of knowledge regarding the rock outcrop does seem to indicate the lack of intensive use of the study area.

All in all the occupation of the study area appears to be cantered on the landscape attributes of Black Creek and Terrace Ridge on the western side of Wine Country Drive. It was probably used as a resource and rest area on the way to the north and south with the highway and rail corridor lands, north of the study area, the route east to west. There does not appear to be any landscape attributes to the eastern side of Wine Country Drive that would suggest more than occasional use.

6.2 Landscape Significance Assessment

It is important to stress that the significance of a cultural landscape is not dependent on archaeological evidence being significant in itself but the interrelatedness of the individual objects to the cultural landscape as a whole. Through understanding the cultural landscape in an holistic manner one may be able to appreciate the associations that may exist between Aboriginal objects and other features within the landscape.

Using the criteria outlined earlier the significance of the study area in an Aboriginal cultural heritage context can be assessed as follows:

- *Social value*

Much of the oral tradition and knowledge has been lost to the Aboriginal communities today. However as research and surveys discover and reveal greater understanding of the past, communities are rediscovering and appreciating what has gone before. At the present time, there does not appear to be spiritual, traditional, historical or contemporary associations and attachments which the place or area has for the present-day Aboriginal community. Similarly there does not appear to be associations with tragic or warmly remembered experiences, periods or events. However that is not to say that discovery of evidence or knowledge of past spiritual connection to the place will not rekindle such association.

- *Historic value*

At this time, there does not appear to be an association of the study area with a person, event, phase or activity of importance to the history of an Aboriginal community.

- *Scientific value*

There is scientific value to the study area particularly along the margins of Black Creek, the rock formation and the Terrace Ridge which may have been a song trail.

- *Aesthetic value*

The sensory, scenic, and creative milieu of various parts of the landscape such as the Terrace Ridge, Rock formation and Black Creek evokes feelings of a sense of place and its past use. There are commanding views from various parts of the study area. However the same cannot be said for the Stage 1 area.

Comment

Aboriginal Heritage is centred on the landscape of Black Creek, its tributaries and unusual features. Proximity to the Old North Road (convict heritage trail) along with Terrace Ridge suggests significance in context of a Song Trail and clan connectivity rather than any intensive occupation.

There are no areas of archaeological or cultural value within the Stage 1 boundaries.

7.0 STEP 4 Information regarding the proposed development

Figure 16 following identifies the nature and extent of the wider development within the SSS area and impacts on the Aboriginal heritage values across the development area.

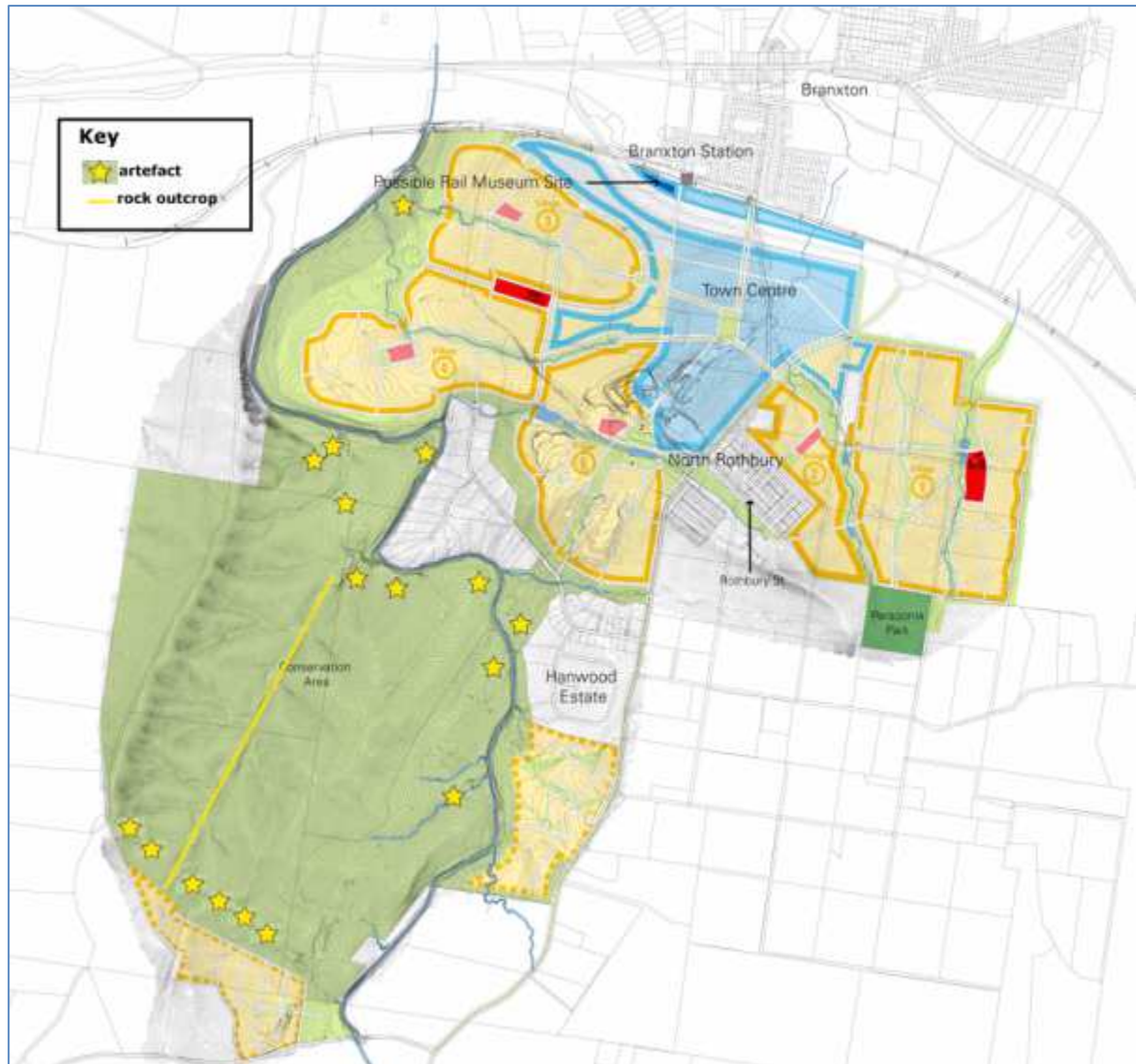


Figure 16 Development concept and known Aboriginal Objects

The Stage 1 development is a mix of residential and infrastructure work that will involve clearing of land, excavation, remediation and construction. None of activities associated with such works will impact directly or indirectly on the known Aboriginal heritage, culture or archaeological evidence as the evidence, culture and heritage are well removed from the Stage 1 development area.

The increased population and thus increased access to the area could potentially indirectly impact the Aboriginal heritage in the future through a potential increase of people into the conservation area as a nice place to recreate, or, as a place to dump rubbish. All new development has the potential in the future to alter water use, water flows and soil erosion outside the Stage 1 area.

It is not possible to predict with any certainty the level of such indirect impact, if any, however it is possible, through appropriate management strategies of the conservation area such as via an Aboriginal Heritage Management Plan to alleviate or minimise any accidental harm. It is never possible to alleviate deliberate harm and this remains a risk with or without the stage 1 development proceeding.

It is important to note that whilst all landscape is significant to the Aboriginal community, the stage 1 area is considered to be disturbed and any cultural value to or likely evidence within the stage 1 area is lacks integrity and likely to be obliterated. This is in stark contrast to the landscape of Black Creek, the rock outcrop and the Terrace Ridge area, which is contained within the conservation zone.

The conservation area is highly valued by the Aboriginal community to day and was in the past. Its outlook, landscape, features and resource attributes readily evoke a sense of use, purpose attachment and place. The conservation area is such a special place to the Aboriginal Community that it puts into perspective the probable comparative lack of use of the stage 1 area east of Wine Country Drive. It contains no special attributes.

8.0 STEP 5 Integration of assessment with proposed development

This step involves using the above information as the basis for assessing the cultural values against the impacts from any proposed development to identify specific outcomes.

- *justification for any likely impact(s), including any alternatives considered for the proposal;*

As discussed previously there are no impacts from Stage 1 development directly or indirectly on Aboriginal heritage as all known Objects and landscapes that may have archaeological potential are outside the Stage 1 area and in a conservation zone. Preliminary discussion regarding ownership/management of the conservation area has been suggested by government departments that it be under NPWS, this is neither the view of the Aboriginal Community nor the view of this archaeologist. The high cultural value of the conservation land from an aesthetic, scientific, historical and past-present connectivity **strongly dictates** that the conservation zone should be handed over to the Aboriginal Community to manage. The Mindaribba Local Aboriginal Land Council has the legislative function to manage the area as trustee for the Aboriginal community. Such management would enshrine and protect the known Aboriginal Heritage into the future and mitigate any future indirect impacts. The responsibility for this land should be with the Aboriginal people and not a government department which could never have connection with that part of country.

- *any measures which will be implemented to avoid, mitigate or offset the likely impact(s).*

Given that the Aboriginal heritage centres on Black Creek, rock outcrop and Terrace Ridge landform elements and that all known Objects within the study area are associated with those landform elements, it is possible to ensure the Stage 1 project does not directly impact or harm Aboriginal Heritage. This is achieved by encompassing landform elements within the conservation area or Persoonia Park shown in figure 16. The conservation area will be registered on the AHIMS database as a Potential Archaeological Deposit (PAD) and will encompass all identified Objects. There are no constraints to development within the zones outside of the conservation zone. Further archaeological work should not be required for Huntlee new town development, provided the agreed outcomes and Aboriginal Cultural Heritage Management Plan is developed post approval.
- *demonstration that the input by affected Aboriginal communities has been considered when determining and assessing impacts, developing options, and making final recommendations to ensure that acceptable Aboriginal cultural heritage outcomes can be met by the proposed development.*

The affected Aboriginal communities represented by HARG, (which was established as a recommendation from the initial assessment for the rezoning), has been consulted throughout this assessment and has had input into the assessment as follows:

- Invited this archaeologist to undertake this assessment and on the 6/2/2012 met with this archaeologist to discuss the assessment procedures, set key milestones for the assessment, authorise commencement and authorise and nominate Sites Officers to be involved in the visual inspection.

- With this archaeologist undertook a drive over the study area to determine what landscapes required additional investigation.
- Received the draft report
- Met on 26/7/2012 to discuss the draft report, offer suggestions and approve its finalisation. Discussed their recommendations and invited this archaeologist to compile a draft Cultural Heritage Report from their input and recommendations to be included in this assessment.
- Authorised this archaeologist along with 2 sites officers who had not visited the study area before accompanied by a Wonnarua Elder to undertake a final visual inspection of not only stage 1 but the significant landscape and features within the conservation zone to unequivocally and independently verify the significance and findings of the report.
- Met again on 7/8/ 2012

During that meeting it was discussed that several options have previously been considered for management of archaeological evidence where its distribution conflicts with development proposals. These include:

- Destroy without salvage
- Destroy with collection
- Use of zoning or development control to restrict construction etc. to parts of the land where no archaeological evidence occurs, and is not considered likely to occur.
- Use of Conservation Zones or Agreements for sensitive or significant areas.
- Sub surface testing programs to provide additional evidence of site extent.
- Small scale salvage excavation, within a defined area.
- Full detailed salvage excavation, with moderately large sample areas relative to assumed total site area.
- Use of broad area, mechanically assisted excavation or linear scrapes.
- Monitoring during construction or other development.

It was the unanimous recommendation that all the known Objects and areas that were likely to be of significance to the Aboriginal community should be set aside and not destroyed. It was further recommended that archaeological subsurface work was not warranted as it was intrusive and destroyed rather than protected Aboriginal heritage.

With the above in mind, and after due and deliberate consideration with the registered Aboriginal stakeholders, Huntlee Aboriginal Reference Group (HARG), the following recommendations are made:

With respect to Aboriginal heritage Stage 1 development's impacts are negated because the following measures will be implemented to avoid the likely impact(s):

- The area shaded green on Figure 16 and shown as a conservation zone should be handed over to the Mindaribba Local Aboriginal Land Council to manage as trustee for the Aboriginal community. This area includes all known identified objects as well as cultural sensitive landscape elements of Black creek, The Terrace Ridge and the geological rock formation.

- The area on the eastern side of Wine Country Drive shown as Persoonia Park at figure 16 contains similar landscape to the proposed developable areas of Stage 1 is used to offset potential archaeological evidence. This is despite the fact that no archaeological evidence was observed or considered likely but is in consideration of Aboriginal use of all landscapes.
- To further mitigate potential indirect impacts, the proponent should continue to consult with the HARG during all phases of development to ensure enhanced and achievable options for benefit to the Aboriginal community is accrued. These options may include work programs, cultural heritage enhancement options and business partnership opportunities.
- Concurred with the findings and recommendations of the report and jointly signed the Aboriginal Cultural report within the presence of another Wonnarua Elder

The attached correspondence from the Aboriginal community in Appendix C demonstrates that the input of the registered Aboriginal stakeholders has been considered when determining and assessing the impacts, developing options, and making final recommendations to ensure that Aboriginal cultural heritage outcomes can be met by the proposed development.

It must be noted that the Aboriginal Stakeholders have no objection from a cultural heritage perspective for stage 1 proceeding as all known areas, objects and features of value to the Aboriginal community have been contained within the conservation zone outside of the Stage 1 development.

Due to the high value and special significance of the conservation zone they wish to have the care, control and management of that land to ensure the cultural values are not impacted in the future.

8.0 STEP 6 Management strategy for Aboriginal heritage

This step involves identifying management strategies to be implemented post-approval, including:

- *identification of the nature of and location of any offsets;*

The area shaded green on Figure 16 and shown as a conservation zone is an Aboriginal Heritage offset. Whilst it is known as an offset it is not technically an offset as it is not being used to offset other areas that contain Aboriginal Objects which would be destroyed. Rather it is an Aboriginal Heritage Conservation Zone. This area includes all known identified objects as well as cultural sensitive landscape elements of Black creek, The Terrace Ridge and the geological rock formation. This area is registered as a Potential Archaeological Deposit (PAD). A copy of the site card is appended at D. This area should be handed over to the Mindaribba Local Aboriginal Land Council to manage as trustee for the Aboriginal community as it has a higher Aboriginal Heritage value than an ecological value.

The area on the eastern side of Wine Country Drive shown as Persoonia Park at figure 16 contains similar landscape to the proposed developable areas of Stage 1 is offset for potential archaeological evidence that may (albeit unlikely) exist in Stage 1. As it contains high ecological value, no recommendation is made regarding its ownership or management.

- *requirements for further work such as archaeological salvage or community collection for objects of high archaeological or community value;*

There are no requirements for further work within the Stage 1 area as well as any area outside of the conservation zone. Salvage or subsurface investigation is not warranted as all known Aboriginal objects will be protected in the conservation lands.

- *specific on-going management protocols for both physical conservation outcomes and specific Aboriginal community requirements.*

The following specific management outcomes arising from the above assessment stages for management of the Aboriginal heritage values are enumerated below.

- Proposed conservation zone as identified above. Management of the conservation land should be with the Mindaribba Local Aboriginal Land Council for the Aboriginal Community will be decided in consultation with HARG
- Ongoing consultation with HARG throughout the entire development process and not just for Stage 1
- A management plan to be prepared for the conservation zone to include consideration of preservation and protection of key Aboriginal heritage values.
- The plan is to be prepared in consultation with HARG to deal with measures to be taken in the event that new Aboriginal objects of significance or a nature not anticipated, such as burials or ceremonial items are discovered during construction. This plan is to generally to include:
 - a. The bagging, tagging and collection of any artefacts that may be unearthed during the construction process and kept with MLALC until an appropriate keeping place is determined by HARG.
 - b. Aboriginal Cultural Education Program should be developed by the proponent for the induction of personnel involved in the construction activities in the project area in consultation with HARG.

9.0 Certification

This report was prepared in accordance with the brief given by JBA Planning to assess of the impact of the proposed development on Aboriginal heritage and was undertaken to demonstrate due diligence.

To the best of our knowledge the report accurately reflects the archaeological survey, findings and results, as well as the input and recommendations of the Local Aboriginal Land Council and the registered Native Title Holders. The attached correspondence from the Aboriginal community forms part of this certification and report.

Whilst every care has been taken in compiling this report to determine the impact the proposal may have on Aboriginal Heritage and to demonstrate a due diligence process, neither MCAS nor the Local Aboriginal Land Council can warrant or guarantee that due diligence has been met. It is the responsibility of the individual or proponent to ensure that they have undertaken due diligence.

Signed

A handwritten signature in black ink, appearing to read 'L.B. Roberts', written in a cursive style.

(Archaeologist)

10/8/2012

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Maps

Central Mapping Authority

Topographical Map NSW 25k East. Copyright © 2010 NSW Department of Lands

Aboriginal Australia

Source: *Aboriginal Australia* by David R. Horton. Names and regions as used by D. Horton in his book "The Encyclopaedia of Aboriginal Australia" published in 1994 by Aboriginal Studies Press for the Australian Institute of Aboriginal and Torres Strait Islander Studies.

Australia Geology

Source: *Specially compiled in 1979-80 by G.W-Addario, W.D. Palfreyman, A.J. Stewart, J.M. Bultitude and R.A. Chan, Bureau of Mineral Resources, Geology and Geophysics, Canberra. Geological data published and unpublished information by BMR, State geological surveys, the Commonwealth Scientific and Industrial Research Organisation, universities and companies.*

Australia Soil Resources

Source: *Specially compiled 1976-77 by K.H. Northcote, Division of Soils, CSIRO, Adelaide, from 'A Soil Map of Australia' (1:5000 000) accompanying A Description of Australian Soils by K. H. Northcote and others (Commonwealth Scientific and Industrial Research Organisation, Australia, 1975)*

11.0 Glossary

Aboriginal Site

1. Occupation Sites

Evidence of human occupation, which includes food remains, stone tools, baked clay, fire-blackened and fire-cracked stones and charcoal, is found in a range of sites known collectively as occupation sites

- *Shell middens.* These sites are found on the coastline and along the edges of rivers and lakes, It is a deposit composed of the remains of edible shellfish and also usually contains fish and animal bones, stone tools and campfire charcoal.
- *Rock shelters with archaeological deposit.* In rock outcrops such as sandstone and granite, overhangs sometimes form creating useable shelters. Sediments from fires, roof fall. discarded stone tools and food remains form a deposit protected within the shelter and this deposit can be excavated by archaeologists to study patterns of Aboriginal life.
- *Open campsites.* These sites are mostly surface and associated subsurface scatters of stone artefacts, sometimes with fireplaces. They exist throughout the landscape and are the most common site type in rural areas, While found in all environmental locations larger and denser sites tend to be found on riverbanks and lower slopes racing watercourses, as well as ridgelines and other areas that offers movement routes. The study or open sites can assist in understanding patterns of Aboriginal land use.
- *Base camp* This is the name applied to the major or main area of habitation. They tended to be close to a permanent water source and food source. Generally well sheltered. These camps would be rotated for hygiene reasons. They are different to smaller open campsites, which were mainly camps on transport routes or overnight areas on hunting forays.

2. Aboriginal Reserves and Missions

These places are very important to Aboriginal people today. Although Aboriginal people were often moved to reserves by force and were restricted by harsh regulations, the reserves became home to many people, where they and their families were born, lived and died. Historic cemeteries at many reserves are still cared for by the local Aboriginal community.

3. Rock Paintings

Aboriginal paintings are found on the ceilings and walls of rockshelters, which occur wherever suitable rock surfaces and outcrops, exist. Figures include humans, kangaroos, emus, echidnas, grid patterns, animal tracks, boomerangs, axes, hand stencils and other motifs. Paintings are made with white, red, yellow and black pigments. The motifs may be drawn, painted or stencilled, and charcoal drawings are common as well.

4. Rock Engravings

These occur usually where there is a suitable exposure of fairly flat, soft rock or in rock overhangs. The outlines of motifs were made by hitting the rock surface with a sharp stone to make small holes or pits. Sometimes the pits were jointed to form a groove, by rubbing with a stone. People, animal shapes and tracks are common as well as non-figurative designs such as circles.

5. Grinding Grooves

Grooves are located on flat rock exposures close to a stream or rock hole. They vary in size but are generally long (about 30-40cm in length) and elliptical in shape. Stone axes were ground into the softer stone allowing a working edge to be created or sharpened- Deeper grooves may have been used to work spears or other thin implements.

6. Quarries

Quarry sites occur wherever there are outcrops of siliceous or igneous rock. Stone material was used in creating stone tools, which in turn were used to work wood and provide people with tools to assist in hunting and gathering activities. Siliceous rock is easily flaked and made useful cutting and scraping tools whereas igneous rock was preferred for edge-ground tools, particularly axes.

7. Ceremonial grounds

These sites were used for initiation ceremonies, marriages, tribal meetings and other important functions and are of great significance to Aboriginal people. Bora rings, which are one or more raised earth rings, were used for male initiations.

8. Stone arrangements

These range from simple stone mounds to complex circles and pathways. Arrangements are found throughout inland New South Wales as well as the coast, where fish traps were sometimes constructed.

9. Carved and scarred trees

Tree bark was used for constructing canoes, shelters, coolamons and shields. Distinctive scars are left from bark removal and can usually be differentiated from natural scars. Carved trees are more distinctive, exhibiting patterns etched into the wood of the tree. They can occur throughout the state although clearing and forestry practices have greatly reduced numbers.

A range of diagnostic criteria has been developed to assist in the identification of Aboriginal scarred trees. The following criteria are based on archaeological work conducted by Simmons (1977) and Beesley (1989). It should be noted that these criteria have never been quantitatively tested or quantified using non-relative criteria such as absolute dating or an analysis of pre-occluded scar morphologies. This is because radiocarbon dating or dendrochronology is mostly inconclusive, and the removal of regrowth exposes trees to further damage.

1. **The scar does not normally run to ground level:** (scars resulting from fire, fungal attack or lightning nearly always reach ground level). However, ground termination does not necessarily discount an Aboriginal Origin (some ethno-historic examples of canoe scars reach the ground);
1. (A). **If a scar extends to the ground, the sides of the original scar must be relatively parallel:** (natural scars tend to be triangular in shape);
2. **The scar is either approximately parallel sided or concave, and symmetrical:** (few natural scars are likely to have these properties except fire scars which may be symmetrical but are wider at the base than their apex. Surveyors marks are typically triangular and often adzed);
3. **The scar should be reasonably regular in outline and regrowth:** scars of natural origin tend to have irregular outlines and may have uneven regrowth;
4. **The ends of the scar should be shaped, either squared off, or pointed** (often as a result of regrowth): (a 'keyhole' profile with a 'tail' is suggestive of branch loss);
5. **A scar which contains adze or axe marks** on the original scar surface is likely to be the result of human scarring. Their morphology and distribution may lend support to an interpretation of an Aboriginal origin: (marks produced after the scarring event may need to be discounted);
6. **The tree must date to the time of Aboriginal bark exploitation within its region:** (an age of at least 100 years is prerequisite)
7. **The tree must be endemic to the region:** (and thus exclude historic plantings).

Field based identification of Aboriginal scars, is based on surface evidence only and will not necessarily provide a definitive classification. In many cases the possibility of a natural origin cannot be ruled out, despite the presence or several diagnostic criteria or the balance or interpretation leaning toward an Aboriginal origin. For this reason interpretations of an Aboriginal origin are qualified by the recorder's degree of certainty. The following categories are used

Definite Aboriginal scar - This is a scar that conforms to all of the criteria and/or has in addition a feature or characteristic that provides definitive identification, such as diagnostic axe or adze marks or an historical identification. All conceivable natural causes of the scar can be reliably discounted.

Aboriginal origin is most likely - This is a scar that conforms to all of the criteria and where a natural origin is considered unlikely and improbable.

Probable Aboriginal scar - this is a scar that conforms to all of the criteria and where an Aboriginal origin is considered to be the most likely. Despite this, a natural origin cannot be ruled out.

Possible Aboriginal scar - This is a scar which conforms to all or most of the criteria and where an Aboriginal origin cannot be reliably considered as more likely than alternative natural causes. The characteristics of this scar will also be consistent with a natural cause.

10. Burials

Aborigines feel equally as respectful about prehistoric burials as modern cemeteries. As Aborigines have lived in Australia for over 30 000 years burials are seen as part of a continuing culture and tradition as well as offering valuable archaeological information. The dead were sometimes cremated, sometimes placed in trees or rock ledges and sometimes buried. Burials exist throughout New South Wales and can be accidentally uncovered in construction work or become exposed through erosion. It is important that if a skeleton is found it be reported to the police, to a representative of the National Parks and Wildlife Service and to the relevant Aboriginal community group.

II. Natural sacred sites

Many features of the landscape, such as mountains, rocks, waterholes etc., are regarded as sacred sites by Aborigines. They are places associated with Dreamtime ancestors and usually can only be identified by Aboriginal people. They retain a high significance to Aborigines.

Fire- stick Farming

The process of burning to aid in hunting. Animals could be speared or clubbed as they fled to escape the flames. Other uses of fire were for long term hunting strategies. After firing, the bush would regenerate attracting animals on which the hunters would prey. (Flood, p250)

Flake fragment of stone that was used as a tool for weapons, scrapers etc.

Geographical

AHD (Australian Height Datum) Australian standard measurement from the mean high sea level.

Swamp. An almost level, closed, or almost closed depression with a seasonal or permanent water table at or above the surface, commonly aggraded by overbank stream flow (Speight1990: 33).

Legal

Activity means a project, development, activity or work (ie this term is used in its ordinary way, and does not just refer to an activity as defined by Part 5 EP&A Act)

Disturbed land or land already disturbed by previous activity Land that has been previously subjected to any activity that has resulted in clear and observable changes to the land's surface. Examples include: soil that has been ploughed; urban development that has occurred; existing rural infrastructure such as dams and fences; existing roads, trails and walking tracks; and other existing infrastructure such as pipelines, transmission lines and stormwater drainage.

Due diligence Taking reasonable and practicable steps to avoid harm and protect Aboriginal objects.

harm an object or place includes any act or omission that:

- (a) destroys, defaces or damages the object or place, or
 - (b) in relation to an object—moves the object from the land on which it had been situated, or
 - (c) is specified by the regulations, or
 - (d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c),
- but does not include any act or omission that:
- (e) desecrates the object or place, or
 - (f) is trivial or negligible, or
 - (g) is excluded from this definition by the regulations.

Sand Dune Refers to sand ridges and sand hills formed by the wind, usually found in desert regions, near a lake or in coastal areas. In areas of Western NSW, windblown dunes can occur along the eastern edges of ephemeral lakes (called lunettes dunes). They can also occur along the banks of rivers.

Waters means the whole or any part of: any river, stream, lake, lagoon, swamp, wetlands, natural watercourse, tidal waters (including the sea). Note: the boundary or tidal waters is defined as the high water mark. ²

12.0 Appendix

- (A) OEH Correspondence
- (B) Aboriginal Community Consultation
- (C) Aboriginal Cultural Heritage Report
- (D) New Site Card
- (E) AHIMS Results