

## SUB-SURFACE TESTS

### 3.1 SUB-SURFACE PROBES

A preliminary research permit was granted by NPWS for the conducting of a sub-surface probe program (*Appendix B*). The sub-surface probe program was designed to test the areas considered to have archaeological potential and which would be subject to destruction by the proposed development. The areas tested were found to have insufficient visible surface to allow an adequate assessment of the archaeology which they may have contained. The sub-surface probes were located to test two landform units, ridge and slope, areas of which would be destroyed by the proposed development (*see Figure 3.1*).

It was not considered necessary to test the narrow creek terrace which drains the study area to the north - western as the proposed development shall not impact this landform.

Three areas were selected for testing. The first was the location of the potential midden material and artefact scatter (site J2). This site was highly disturbed and as it occurred within an excavated area for a house, it was uncertain if the shell was in-situ or if it may have been brought in by occupants of the house or as part of a load of sand (*see Figure 3.1*).

The second was PAD 1 (J6) identified during the survey. This area was first tested by a series of auger holes to determine the extent of fill, again associated with a house site. This area was located on a saddle 500 metres north-east of the first area tested. The saddle had been cut or eroded on the southern slope and fill used to level the site for building on the central part of the saddle. The remainder of the saddle landform to the north of the test area was not probed as it will not be impacted by the proposal and the surface has been very disturbed by a road and earthworks probably related to the procurement of fill.

A third area was tested on slopes on the western portion of the study area in which it is proposed to construct new site facilities. This area had limited visibility due to the dense vegetation. Here a sample area was selected which had the greatest break of slope and which would have offered the least steep ground for campsites or other activities. An area of four metres by 25 metres with a slope of approximately 5 degrees.



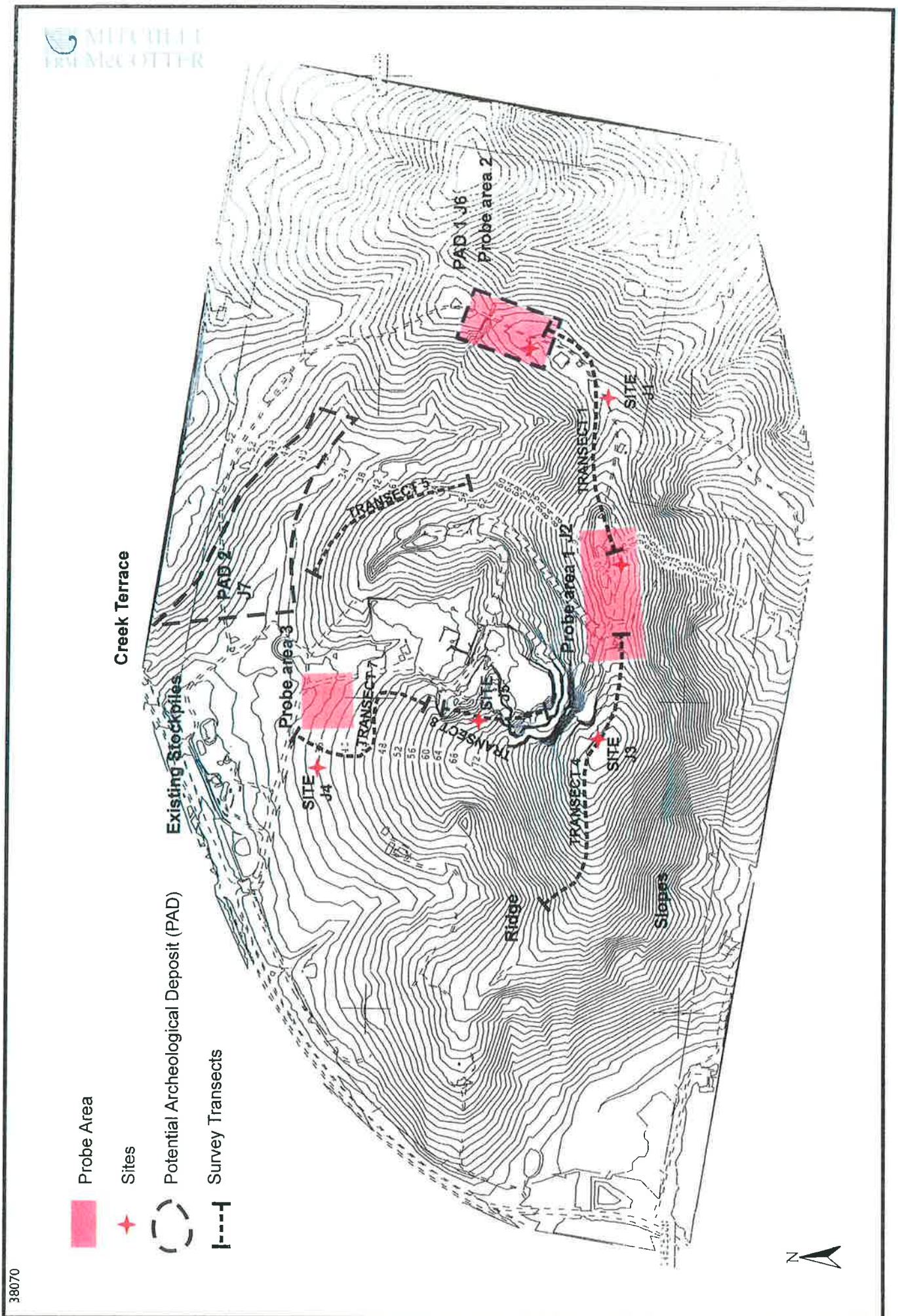


Figure 3.1 AREA SURVEYED AND IDENTIFIED SITES



## 3.2 METHODOLOGY

The excavation was carried out by hand auger in Test Areas 1 and 2. Shovel probes were resorted to in Test Area 3 due to the dense root zone in the A1 soil horizon, which made auguring slow. Excavated material was placed in buckets which were marked with the individual probe identification number and letter.

The material was sieved through a 3.13 mm sieve. Test Area 2 required wet sieving as the clayey soil was wet from recent rains. The wet sieving was carried out at the facilities building in the area of the existing quarry pit.

Each probe was backfilled with spoil from the excavation with the exception of area two, where material was sieved away from the excavation site. Fill for these holes was taken from the disturbed area of earthworks on the northern end of the saddle.

The available area to probe at site J2 (Test Area 1) was extremely limited due to road cuttings on the north and south of the site, the house excavation which extended from the west across to the east of the saddle and an excavated area above the house between the 100 metre and 114 metre contour. A small area of relatively undisturbed ground (approx. 15 metres x 3 metres) was found on the western side of the saddle immediately above the location of the shells. This area was probed on a two metre grid.

Test Areas 2 and 3 were tested by auger holes, 30 centimetres in diameter. The probes were sunk to the B soil horizon. Probes were laid out systematically over a five metre grid.

## 3.3 RESULTS

### 3.3.1 Test Area 1, Site J2

Test Area 1 was probed on a two metre grid in a small relatively undisturbed area (*Figure 3.2 & Photographs 1 & 2*). Immediately east of the probe area was the top of the cut to provide a level area for the rear of the house. Immediately west of the probe site was disturbed by a chicken shed above which further excavation has created another level area deeply incised to the B horizon.

No artefacts or further shell material was found. The soil profile revealed by the probes was original however the area suitable for testing between the disturbed areas was small (4 metres x 4 metres) and therefore the opportunity to test for the presence of insitu material was extremely limited given the area of the saddle (approx. only 16 square metres of a total area of 100 metres x 40 metres). The pH of

# JL. OVERVIEW AND CROSS SECTION

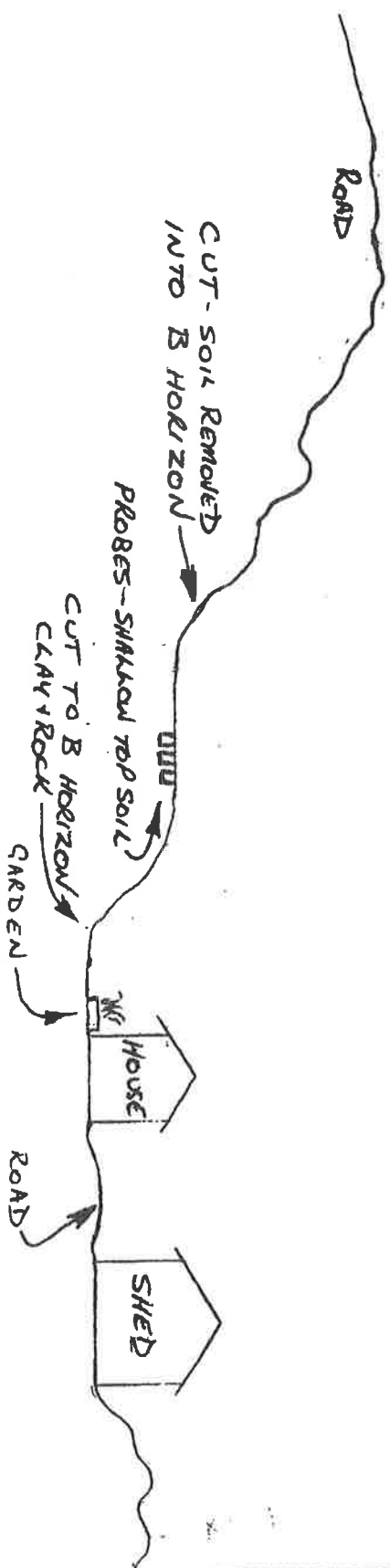
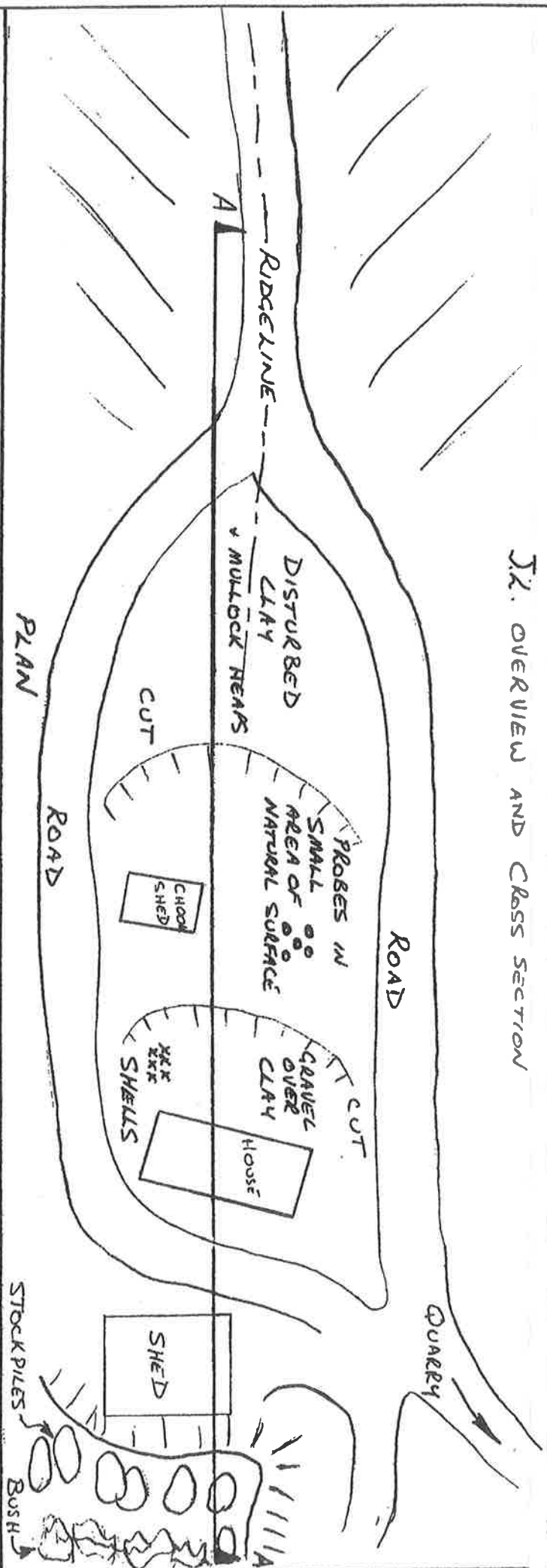


Figure 3.2 Field sketch of J2





Photograph 1. Shell found at J2.



Photograph 2 Context of J2.





the soil in the test probes was 6 which is slightly acid and not ideal for the preservation of midden material. The pH may have been altered in recent times by runoff and leaching from the bird droppings and organic matter in the shed.

### 3.3.2 Test Area 2, PAD 1

#### i. Soil profile tests

Prior to the probe program Test Area 2 was investigated to determine the extent and nature of fill which was apparent over the majority of the area (see Figure 3.3). The investigation identified that an orange clay had been imported as fill and laid over the natural surface. To the east and west of the area the fill layer was greater than two hundred and fifty millimetres thick. The soil profile in the filled areas revealed a profile of humic loam over orange clay over the majority of the southern side of the site. (see Figures 3.4 & 3.5). The original surface appears to have been scraped and the A horizon soil probably stockpiled to backfill over the imported fill. The impact of this process upon the archaeological resource is considerable as archaeological material is generally located in the A horizon. The areas of fill are unlikely to have preserved any undisturbed sites. Generally the impact of house construction and roads has been significant over the majority of the landform.

#### ii. Site Probes

The soil profile tests revealed the areas of intact soil profiles and here probes for cultural material were placed. The northern fifty metres of the area of PAD was found to have A1 and A2 horizon soil over white - cream clay. The profiles appeared relatively undisturbed with a distinct humic layer and underlying brown soil to a depth of 160 cm overlying the clay. Area two was probed at five metre intervals along three parallel 35 metre transects (Figure 3.3 & Photographs 3 & 4). Each probe was taken down to a depth of 13 to 16 centimetres until the pale white - cream B horizon clay was reached. An auger was used to extract the soil and due to wet conditions the material was wet sieved at the facilities area at the quarry in 3.13 mm sieves. The results of the probes are documented in Table 3.1.

Artefacts were found at the eastern end of the grid. The grid could not be extended further to the east because of disturbance by the road, Telstra service lines and then fill which has been used to extend the level area to the east.

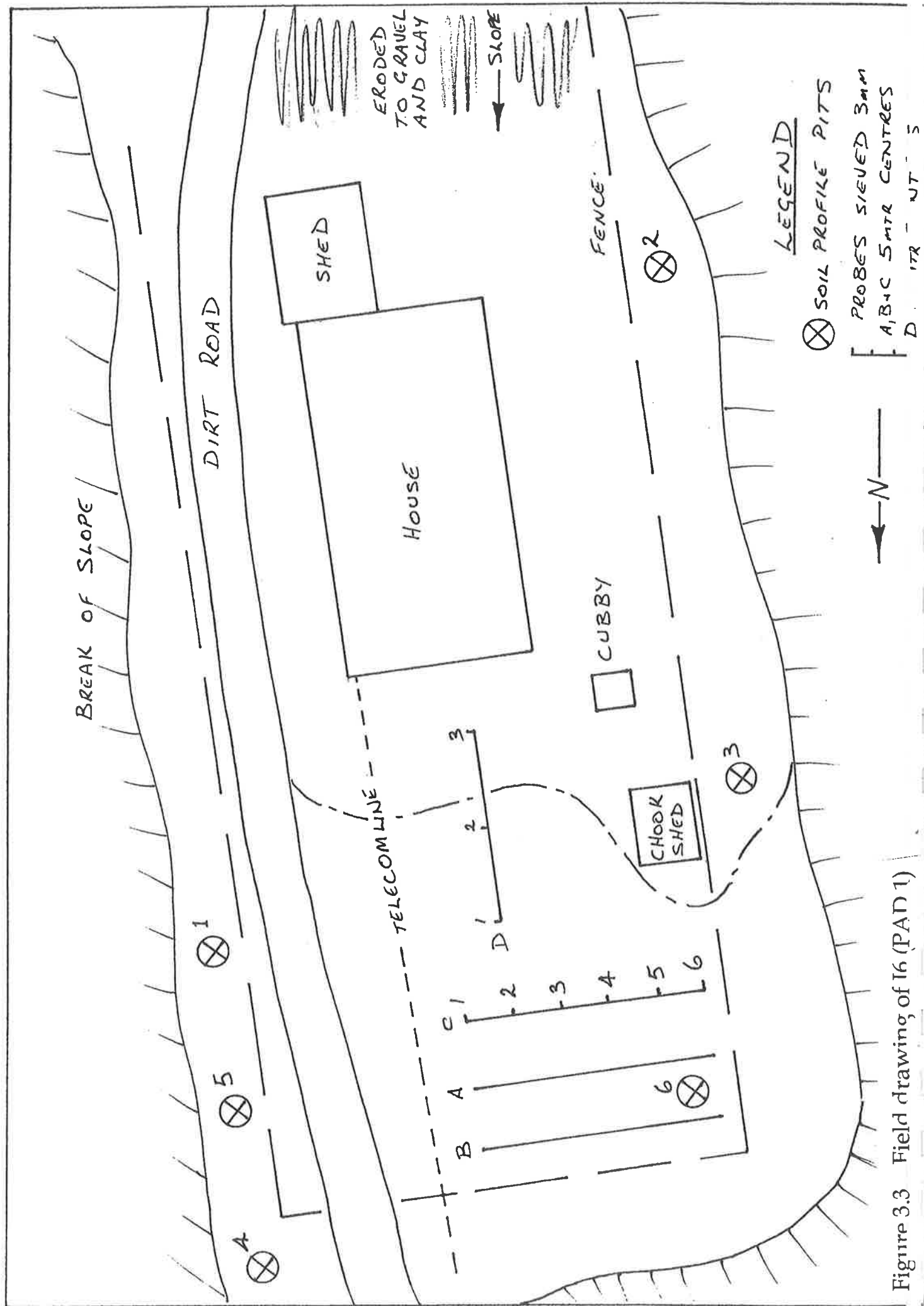
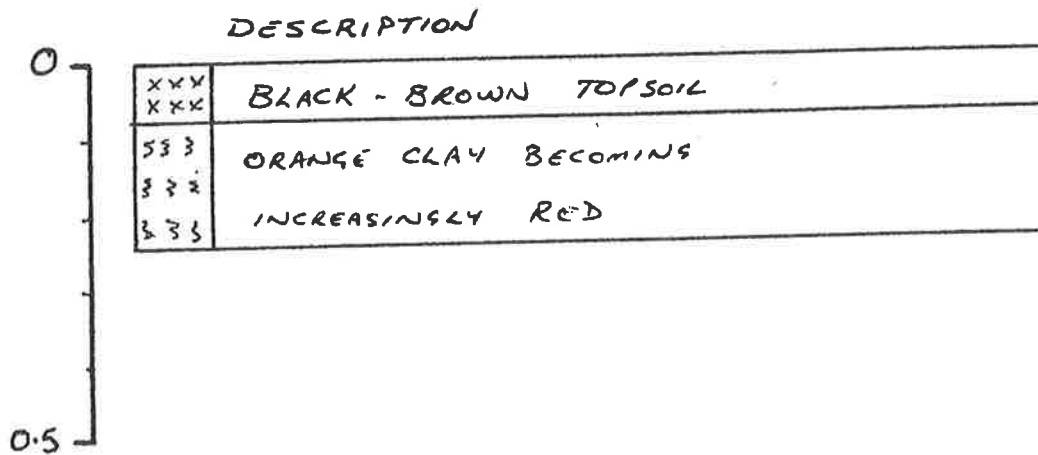


Figure 3.3 Field drawing of 16 (PAD 1)

## SOIL PROFILE TEST

HOLE 1

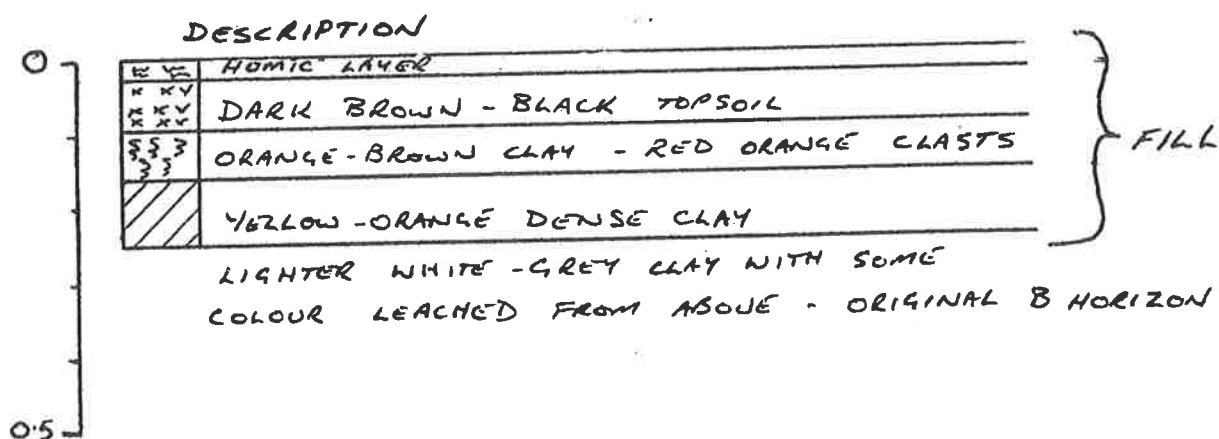
SURFACE CONDITION: GRASS



## SOIL PROFILE TEST

HOLE 2

SURFACE CONDITION: GRASS



## SOIL PROFILE TEST

HOLE 4

SURFACE CONDITION: GRASS

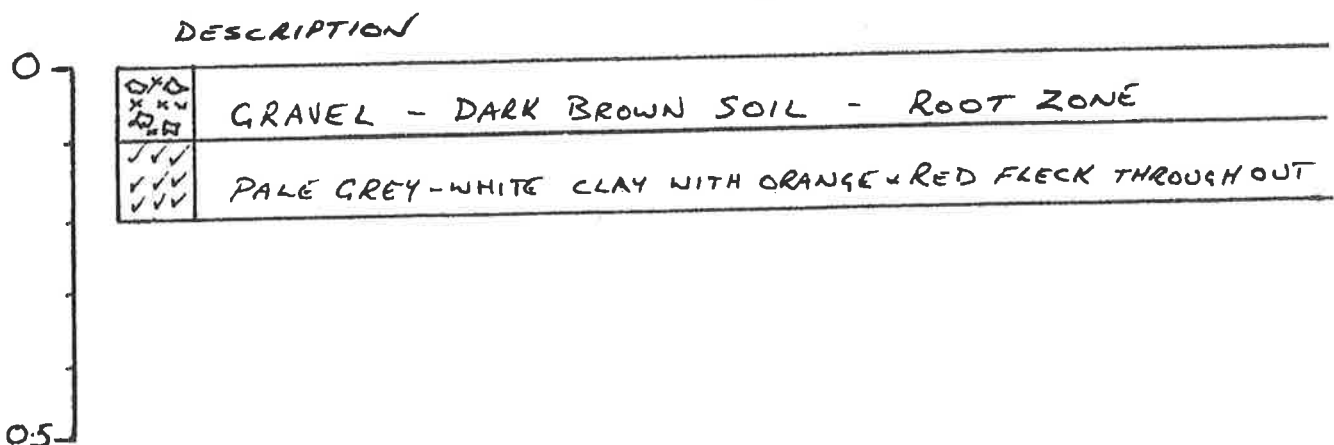
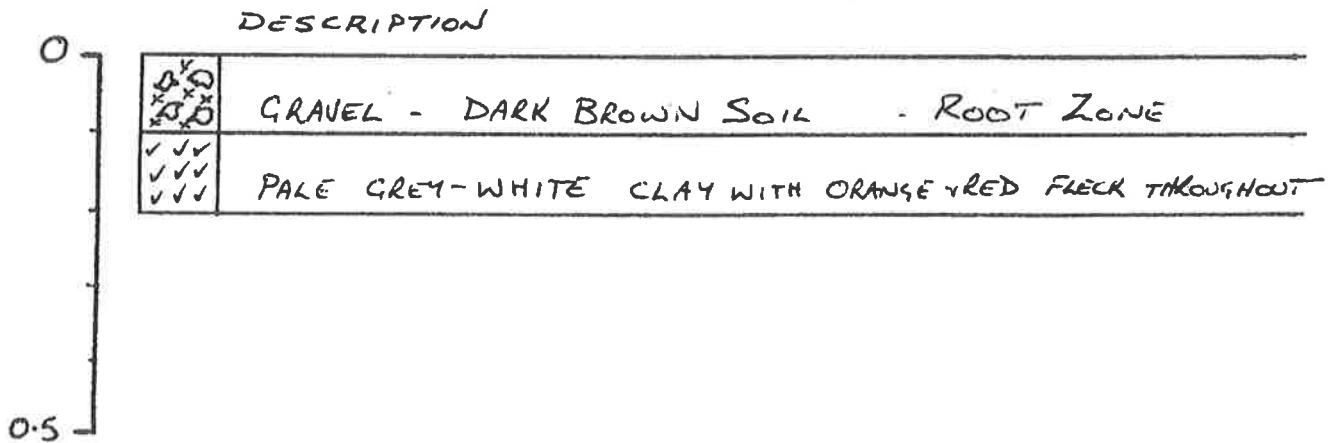


Figure 3.4 Soil profiles J6

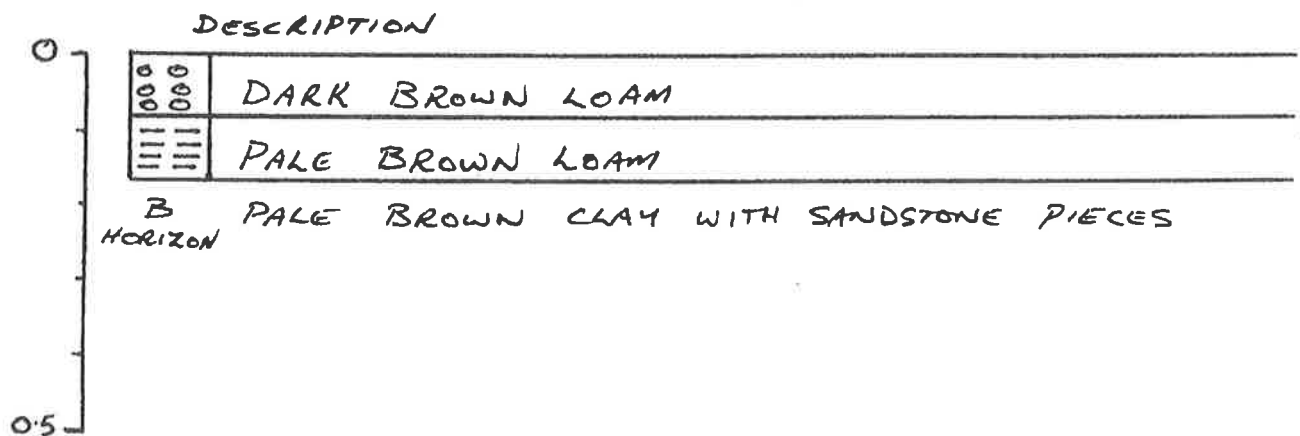
# SOIL PROFILE TEST HOLE 6

SURFACE CONDITION: GRASS



## SOIL PROFILE PAD 1 PROBE 1 - TRANSECT A

SURFACE CONDITION: GRASS



## SOIL PROFILE PAD 1 PROBE 3 TRANSECT D

SURFACE CONDITION: GRASS

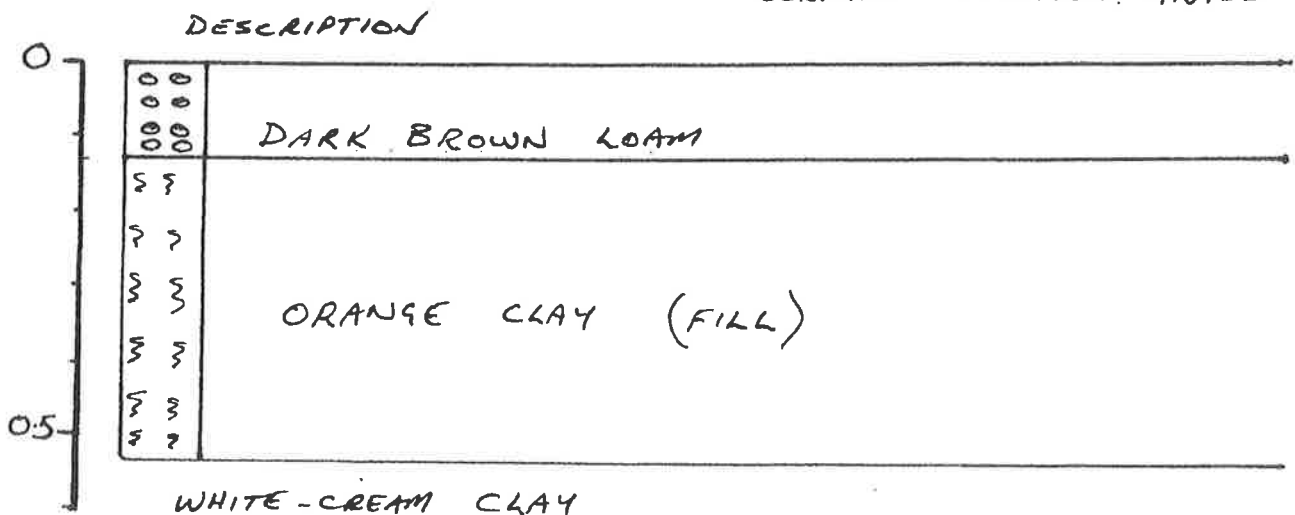


Figure 3.5 Soil profiles J 6 (cont.)





Photograph 3. Context of J6 (PAD 1) view to the south



Photograph 4. J6 view to the north along transect D. Note the fill at the northern end of the transect.



Table 3.1 PROBE RESULTS AREA TWO - PAD 1

Transect and Probe	Depth to clay in millimetres	Artefacts in mm	Characteristics
A1	160	flake greywacke 7 x 10 x 3 flake greywacke 6x 7x 2	no evidence of usewear
A2	165	nil	5 fragments of burnt bone. Unable to conclude Aboriginal origin without doubt due to proximity to house. Fragments too small for species identification.
A3	170	flake piece 12 x 13 x 3	no sign of usewear
A4	140	nil	
A5	140	nil	
A6	100	nil	
B1	140	flake greywacke 13 x 12 x 4	no sign of usewear
B2	140	flake greywacke 10 x 15 x 4	no sign of usewear
B3	160	nil	
B4	130	nil	
B5	150	nil	
B6	170	nil	
C1	130	nil	
C2	140	nil	
C3	150	nil	
C4	160	nil	
C5	155	nil	
C6	150	nil	

Table 3.1 PROBE RESULTS AREA TWO - PAD 1

Transect and Probe	Depth to clay in millimetres	Artefacts in mm	Characteristics
D1	160	nil	Probes placed at ten metre intervals at right angles to A B & C. Continued to the south until intersected with fill.
D2	130	nil	
D3	530	nil	evidence of 400 mm of orange clay fill placed over white - cream B horizon clay



It was found that the results from probes at ten metre intervals would have produced the same result as the probes at five metre intervals.

A second transect (D) was placed at right angles to the second probe in the first transect. This transect was taken to the south toward the house site until it reached fill, 30 metres to the south. The fill was evident as a orange coloured clay which lay directly over the paler original B horizon clay. The probes demonstrated that where fill had been placed the original surface had been scraped to remove the A horizon. The topsoil may have been used to top dress the fill. This process would have destroyed any archaeological evidence over the majority (approx. 60 per cent) of the saddle.

### 3.3.3 Test Area 3

Test Area 3 was located within the proposed new facilities area. The area is sloped with an average slope greater than 5 degrees. The area selected for probes was located between mid slope and base slope where a slight break of slope created a small more level area with a slope of approx. 5 degrees.

Two transects, placed parallel five metres apart, were probed at five metre intervals for a distance 30 metres (*Figure 3.1, Photographs 5 & 6*). No artefacts were located.

## 3.4 DISCUSSION

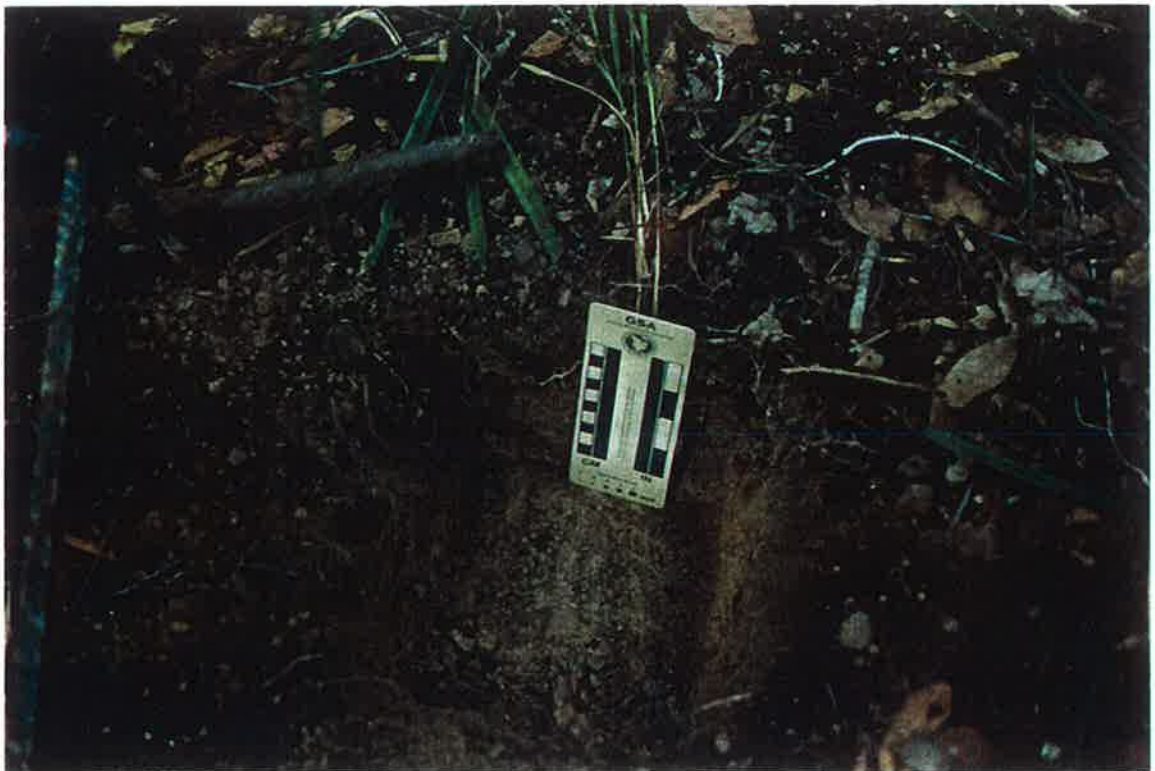
A total of 38 probes were excavated in three different areas. Two distinct landforms were tested, ridge line (saddle) and slope. The slope landform revealed no archaeological material. A total of five artefacts were retrieved from the saddle environment. The high degree of disturbance is considered to be the main contributing factor to the failure to locate more archaeological evidence.

In Test Area 1 (site J2), which was focused around the residential buildings of "Jandra", the undisturbed ground available for testing was limited by roads, earthworks and structures, and the break of slope which formed the east and west side of the saddle. The ridgeline generally is narrow, at times only a matter of a few metres across. The ridgeline has been heavily utilised by the previous residents for travel routes, storage sheds and buildings.

The origins of the shell are important to ascertain to establish the significance of the site. The shell does exhibit characteristics of midden shell (ie. edible species known to be utilised by Aboriginal People) as they are all large shells and the variety of



Photograph 5. Context of Area 3 - proposed facility area.



Photograph 6 Area 3 test probe. All areas had very similar soil profiles reflecting the consistent underlying geology.

shell is consistent with middens. There are signs of predator attack with borer holes in the cockle shell (*Anadara trapezia*) and the whelk (*Pyrazus ebeninus*) (see Photograph 1). The location of the shells may have been altered by the excavations of the house as the shell is separated from the artefacts on the north side of the site. The shell could have been brought to the site by the residents of the house.

Test Area 2 (site PAD 1), revealed a total of five artefacts predominantly at the eastern end of the transects. The slope of the saddle is orientated toward the west however for the length of the transects it was not greater than three degrees. The undisturbed area of the saddle feature is relatively small and it is probable that any archaeological material retrieved is not representative of all the material originally on the site. The site may reveal more artefacts if it were excavated over a broad area however it is not likely that such an excavation would retrieve a statistically viable sample of artefacts for analysis.

The artefacts were all small and manufactured from greywacke a material abundant in the local area (Stockton 1983). There was no variation in material found unlike the field survey which located two small chert flakes. Chert has been noted previously in the general area at Possum Brush Quarry (Appleton 1998) and at Failford (Navin and Klaver 1993). It is quite possible that a local source of chert outcrops in the form of pebbles within conglomerate and it is not considered necessarily indicative of people travelling long distances to the site.

The evidence of Aboriginal use of the ridgeline is present however because of the recent heavy use of the ridgeline for roads and building this evidence no longer remains in-situ in sufficient quantities to warrant further investigation.

PAD 2 (J7) has remained untested as it is not going to be disturbed by the proposed extensions to quarry activities. This area is worthy of testing should it come under threat in the future. The topography of the study area indicates that this creekline leads to a saddle of lower elevation directly north of J6-PAD 1. The lower saddle could potentially have made an ideal point to cross the range.

# MANAGEMENT RECOMMENDATIONS

## 4.1 SIGNIFICANCE ASSESSMENT

The basic processes of assessing significance for items of heritage are outlined by *The Australian International Council on Monuments and Sites (ICOMOS) Charter for the Conservation of Places of Cultural Significance: The Burra Charter* and its associated *Guidelines*. Sites may be significant according to several criteria, including scientific or archaeological significance, significance to Aboriginal people, aesthetic value, representativeness and value as an educational resource. The nature of significance relates to historic, aesthetic, social, scientific, cultural or educational. Sites are also assessed on the degree to which they are rare, representative or characteristic, or whether they exhibit historic or cultural connections.

### 4.1.1 Scientific Significance

In order to determine scientific significance it is necessary to first place sites within a local and regional context. This process enables the assessment of any individual site in terms of merit against other sites of similar nature within similar contexts.

Within a regional context the sites reinforce a pattern of site distribution noted by Klaver and Heffernan (1991), Haglund (1992) and Kuskie (1994). The distribution of sites demonstrates the wide use of the majority of landforms by Aboriginal people. The scientific significance of site distribution implies that all sites are significant because they impart information about that particular landscape unit, and collectively about variations in site patterning in different regions.

The conservation of sites requires the selection of sites which have the ability to impart further information or those which are rare or representative of their type. The majority of the sites located in the study area by surface survey and sub-surface testing do not retain the ability to add further information to the scientific record because they are not undisturbed examples and retain little or no integrity. The small artefact scatters are unlikely to be rare and it is highly probable that the infrequency with which they are reported in the general area is a result of the few development related studies which produce such reports.

The midden material at J2 may have been a rare example of a midden - open site if it could be shown that the shell's location was a result of Aboriginal activity.



Unfortunately the location of the shell, on top of a layer of imported gravel within what was a garden does not provide this evidence. The moderately acid soil of the test probes also indicates conditions which are not as conducive to the preservation of shell material however it is also possible that the pH of the soil has been modified by leaching from the chicken shed located upslope a few metres south east of the probes.

#### *4.1.2 Public Significance*

The sites have limited educational value to the general community as the greywacke artefacts are small and difficult to see against the natural background gravels. Site J6 which will be subject to destruction toward the end of the life of the current proposal can be conserved to provide educational value to researchers in the interim. Site J4 (historic site) and site J7 (PAD 2) can be conserved for future educational purposes after the life of the quarry.

#### *4.1.3 Cultural Significance*

Generally, all sites are of significance to the Aboriginal people. It has been recognised however that with the widespread nature of site distribution, sites will eventually be impacted upon by development. It is however necessary to conserve where possible sites which are of high significance to the community.

The cultural significance of the material located has been assessed by the Forster Local Aboriginal Land Council and the Taree - Purfleet Local Aboriginal Land Council. The view of these representatives can be found in *Appendix A*.

#### *4.1.4 Site significance*

Site significance is rated low, medium or high. The significance of individual sites is determined by comparison with known sites in the region which have not been destroyed. These ratings apply to the sites located by the survey as shown in *Table 4.1*.

**Table 4.1 SITE SIGNIFICANCE AND IMPACT OF DEVELOPMENT**

Site	Significance	Degree of impact
J1	Low - due to disturbance this isolated artefact appears out of context (ie mid-slope in centre of road)	Increased traffic and road resurfacing will effectively destroy the site
J2	Low - while midden material at this elevation is of significance there is no evidence to exclude transportation to the site by activity related to the house site. The stone material has been pushed to one side by earthmoving.	Site will be destroyed by the expansion of the void.
J3	Low - open camp site highly disturbed by road with break of slope either side diminishing potential for sub-surface material	Site will be destroyed by the increase in the quarry void in stages 1 to 3.
J4	Medium - a historic site of general interest to community, however this site type is fairly common in the area.	No need for impact. Avoidance to be recommended
J5	Low - Open camp site highly disturbed. The steep slope and broad area of erosion to the B horizon presents little opportunity for in-situ material.	Shall be impacted by powerline realignment.
J6 (PAD 1)	Medium - The presence of artefacts at PAD 1 confirms the use of the saddle area by Aboriginal People. The restricted portion of the landform undisturbed reduced the significance of the site to low- moderate as only a portion of the potential activities which have occurred on the landform can be expected to be represented.	Shall be impacted in approx. 20 years time. To be conserved in the interim as possible research resource.
J7 (PAD 2)	Unknown - The potential for PAD on the narrow creek terrace was not tested within this program. Therefore it is not possible to define the significance of the site.	This site will not be impacted by any of the proposed development.

## 4.2 MANAGEMENT RECOMMENDATIONS

Management recommendations are made taking the following in to account;

- the National Parks and Wildlife Act 1974 which states that it is an offence to damage or destroy any Aboriginal relic without the written consent of the Director;
- the Environmental Planning and Assessment Act, 1979 Section 79C (b) which states that the impacts of any development on the environment must be addressed within land use planning and decision making;
- the assessment of the cultural significance of the area by the Forster LALC and the Taree - Purfleet LALC;
- the results of fieldwork; and
- the plan of the proposed quarry extension and facilities area.

The management recommendations are as follows;

- consent to destroy permits should be sought for sites J1, J2, J3 and J5;
- site J6 (previously PAD 1), can be conserved until the quarry extension impacts on this area in at least 25 years time, at which time a consent to destroy should be applied for. This would enable the site to be available for further study in the interim;
- sites J4 and J7 (PAD 2) should be protected from unintentional damage throughout the life of the quarry. As these sites are not located near any of the main quarry areas and as they have remained unharmed to the present, awareness of their presence by key quarry staff should be adequate protection. Site J4 is protected under the Heritage Act 1977 (Heritage Office - Dept. Urban Affairs & Planning) and J7 under the National Parks and Wildlife Act 1974.

# REFERENCES

- Acacia Environmental Planning, 1996  
*Pacific Highway Bulahdelah to /Coolongolook Deviation: Review of Environmental Assessments Recommendations.* Report to the Roads and Traffic Authority.
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# APPENDICES



Appendix A

FORSTER AND TAREE-PURFLEET LALC  
REPORTS



**Forster Local Aboriginal  
Land Council Culture &  
Heritage Unit**

# **Jandra Quarry Auger Test Pits**

Further Report on Auger Testing at Jandra  
Quarry 27<sup>th</sup> & 28<sup>th</sup> May 1999

Prepared by M.Leon and R.Paulson

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## Summary

CSR propose to extend their operations at the current locality of the crushing plant, Jandra near Nabyac Mid North Coast NSW over the next 20 years.

**Initial survey revealed cultural material existing at site and further sub surface investigation will be required during extension operations.**

Forster Local Aboriginal Land Council Culture & Heritage Unit and Consultant Archaeologist, Angela Besant did carry out auger test pit operations.

- 1) It was decided to conduct a number of augers around this property.
- 2) The augers are to be 5 meters apart and approximately 1 meter deep.
- 3) 2 locations were selected for the auger testing.
- 4) The first being beside the pigeon pen next to the remnants of a house. This is above the quarry, where some estuarine shell was seen on the first survey.
- 5) There was to be 5 auger pits excavated at this location.

### Wet Sieve

- To conduct a proper analysis of the samples taken a wet sieve was required. Prior to the auger testing, dry sieve tests concluded that the ground needed some form of softening to obtain a proper evaluation of the sub surface contents.

NPWS required that certain conditions be adhered to while carrying out these excavating operations. All field staff were informed and complied with the conditions.

### Shell Auger (South)



Unfortunately the location of the shell, on top of a layer of imported gravel within what was a garden does not provide this evidence. The moderately acid soil of the test probes also indicates conditions which are not as conducive to the preservation of shell material however it is also possible that the pH of the soil has been modified by leaching from the chicken shed located upslope a few metres south east of the probes.

#### *4.1.2 Public Significance*

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- ❑ the results of fieldwork; and
- ❑ the plan of the proposed quarry extension and facilities area.

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