

Appendix 8

Original Archaeological Survey of the Site

**SURVEY FOR ABORIGINAL ARCHAEOLOGICAL
SITES ON LOTS 1 & 2, DP547255
MARROOTA, NSW**

by

Tessa Corkill & John Edgar

August 1998

Report to

Lyall & Macoun Consulting Engineers

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- 1 Looking east along track near northern boundary of survey area. Note silcrete cobble in centre foreground, regrowth forest uphill.
- 2 Close-up of silcrete cobble.
- 3 Looking north west in southern section of survey area. Note disturbance from dam building, track works and orchards, and surface exposure on track.
- 4 South western section of survey area looking east across typical exposed rock surface. Note heath-like vegetation in this area.

EXECUTIVE SUMMARY

This report was commissioned by Lyall & Macoun Consulting Engineers, on behalf of Dixon Sand (Penrith) Pty Ltd. It details a survey for Aboriginal archaeological sites within Lots 1 and 2 DP547255 Maroota, NSW, for inclusion in an Environmental Impact Statement. Sand extraction is proposed for part of this area.

AIMS

- i. Search National Parks & Wildlife Service Register for recorded Aboriginal sites in the area and surveys previously carried out.
- ii. Undertake a field survey in collaboration with Aboriginal representatives to identify Aboriginal sites or potential sites in the development area.
- iii. Make recommendations for management of any sites found.

NPWS REGISTER SEARCH

Fifty seven Aboriginal archaeological sites are recorded in the Register within 5 kilometres of the proposed development area. One site is within about 1 kilometre of the boundaries of this area and one may be within them.

FIELD SURVEY

The survey took place on August 20, 1998. Present were: Archaeologists Tessa Corkill and John Edgar. A Deerubbin Local Aboriginal Land Council (DLALC) representative intended to be present but had to cancel at the last minute due to flooding and other weather problems. The DLALC will inspect the area at a later date and will forward a separate report.

The archaeologists covered the entire area (approximately 27 hectares) on foot.

RESULTS

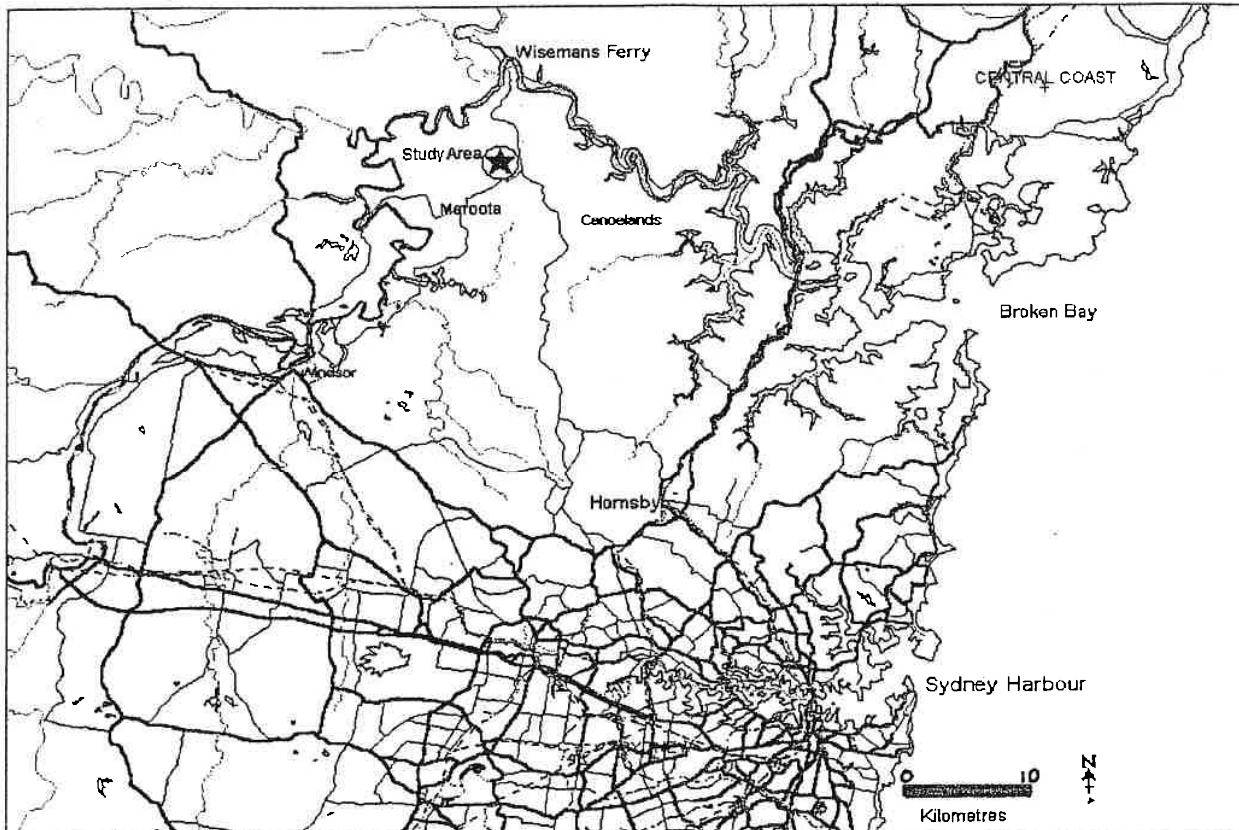
No Aboriginal archaeological sites or areas of potential archaeological deposit were identified. An unworked silcrete cobble and other potential artefact source materials were found in areas covered by the Maroota Sands geological formation.

RECOMMENDATIONS

1. As the Maroota Sands contain potential source material for stone artefacts manufactured by Aboriginal people in the past, cover only a limited area, and are fast disappearing due to sandmining and other activities, it should be considered whether a typical section of the outcrop should be preserved on archaeological or geological grounds, either within the current project area or elsewhere in the district.
2. Apart from the suggestions in 1, above, no objection should be raised, on archaeological grounds, to the proposed sandmining program proceeding as planned.
3. In the event that any archaeological material is found during development, operations in the area should cease immediately and NPWS should be contacted to expedite an assessment of the situation.

1 INTRODUCTION

This report was commissioned by Lyall & Macoun Consulting Engineers on behalf of Dixon Sand (Penrith) Pty Ltd, and details a survey for Aboriginal archaeological sites within Lots 1 and 2, DP547255 Maroota, to the north of Sydney, NSW (Figures 1-3), for inclusion in an Environmental Impact Statement. Sand extraction is proposed for part of the area, but no detailed development plans are yet available. The extent of the survey area is illustrated in Figure 3.

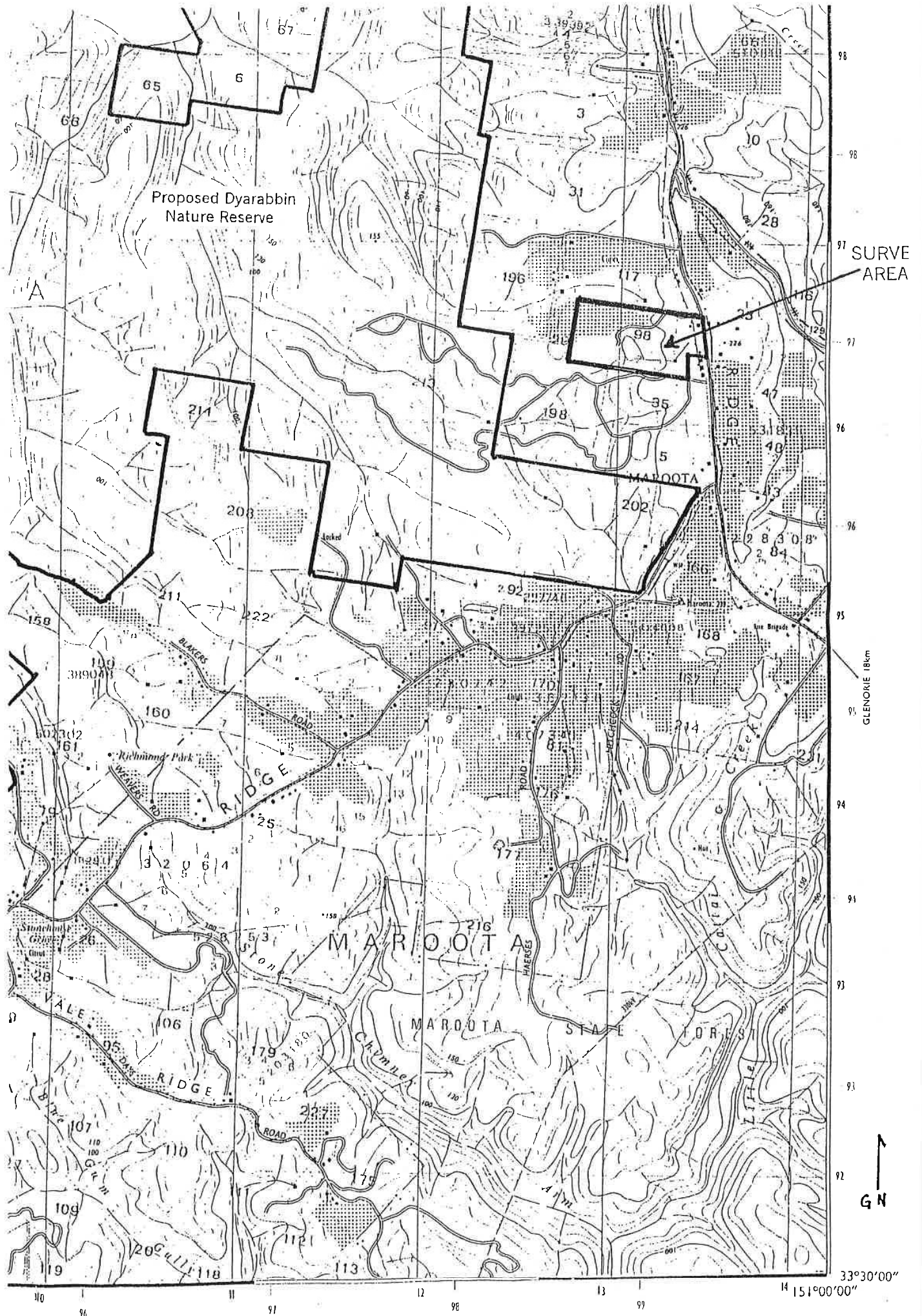


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Figure 1. Regional Location 1:500 000 (Base map Auslig©)

The aims were:

- to carry out a search of the National Parks & Wildlife Service (NPWS) Aboriginal Sites Register, for sites recorded and surveys carried out in the area;
- to undertake a field survey, in conjunction with the Deerubbin Local Aboriginal Land Council, to identify sites and areas of archaeological potential in the area proposed for further extraction, and in the immediately adjoining zones;
- to make preliminary recordings and assessments of any sites found;
- to produce a report on the findings and recommend future strategies if sites or areas of archaeological potential were found.



PLAN SHOWING SELECTED DETAIL AND CONTOURS

OVER PARTS OF PORTIONS 29 AND 196
AND PARTS OF LOTS 1 & 2 D.P. 547255
PARISH OF CORNELIA COUNTY OF CUMBERLAND
OLD NORTHERN ROAD MAROOTA NSW

KEOWN & DRUMMOND PTY. LTD.

CONSULTING SURVEYORS & TOWN PLANNERS

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REF No.:	7370
DATE:	JULY 1990

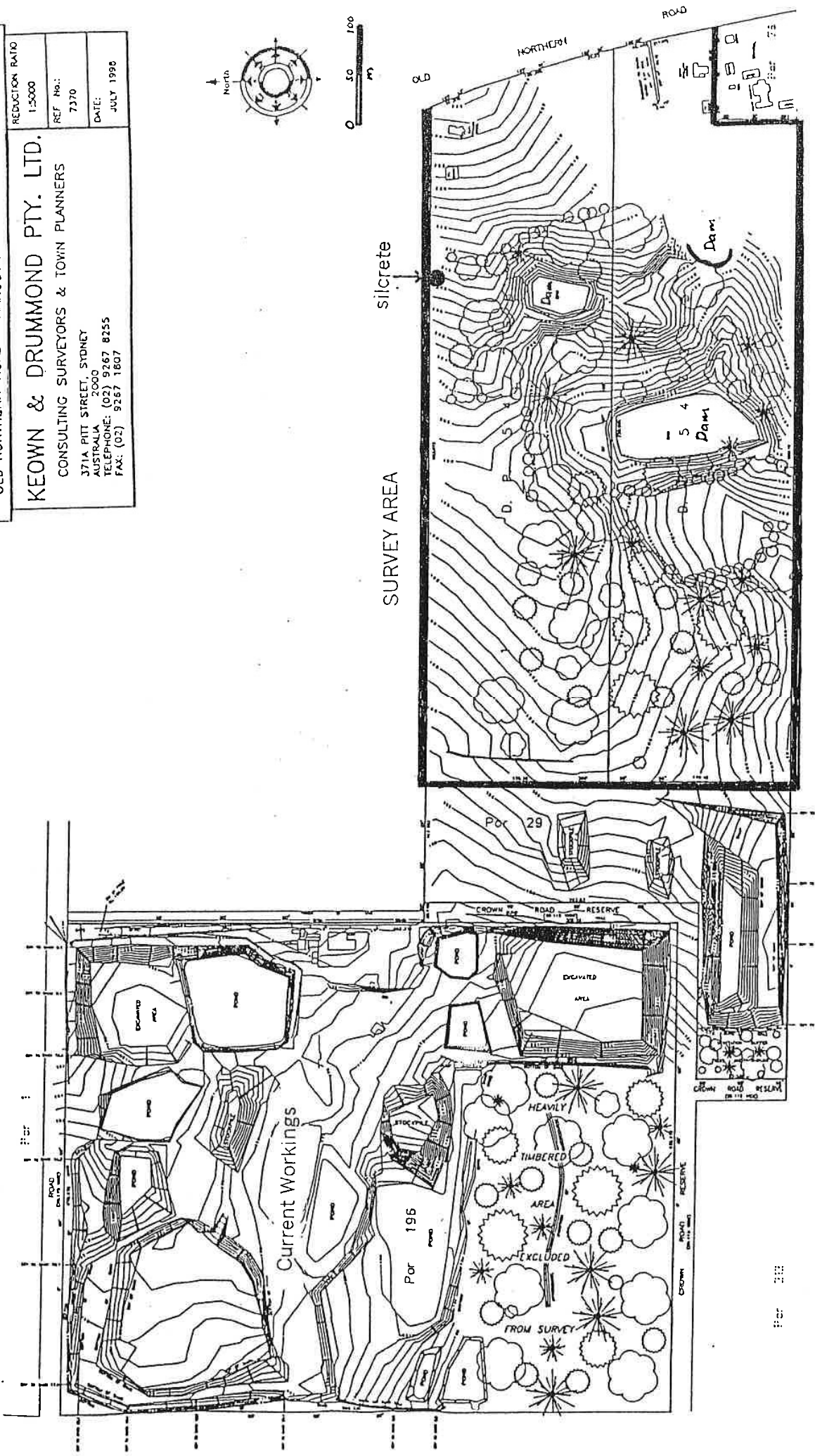


Figure 3. General Site Plan (dark outline). Source: Lyall & Macoun Consulting Engineers.

2 ABORIGINAL CONSULTATION

Aboriginal archaeological sites are protected under the National Parks and Wildlife Act of 1974 (as amended), administered by the Director of NSW National Parks and Wildlife. It is the policy of the NPWS and such bodies as the Australian Association of Consulting Archaeologists (AACA Inc) to support and encourage Aboriginal involvement in the care and control of the part of the Australian heritage which relates to their ancestors. The present study area falls within the territory administered by the Deerubbin Local Aboriginal Land Council (DLALC). A representative of the Council was to have taken part in the field survey but had to cancel at the last minute because of flood and other weather problems. The DLALC will inspect the area at a later time. Their views and recommendations will be presented separately.

It is recommended that a copy of my report be forwarded to the Deerubbin LALC for their consideration.

3 SOURCES OF INFORMATION

The Register of Aboriginal sites, kept by NPWS, is the main source of information about prehistoric and other Aboriginal sites in NSW. The information listed in the Register varies from brief descriptions with vague relocation directions to detailed reports of sites, their environment, interpretation and available documentation. The NPWS also keeps a file of archaeological reports. The majority of these are the result of surveys in connection with Environmental Reviews (for example EISs or REFs) or more intensive archaeological investigations following such surveys. Both Sites and Reports Registers were investigated for this study (refer to REFERENCES section for relevant report titles and Section 5 for Archaeological Context).

In addition, information concerning past Aboriginal activities can be gained from the study of artefacts held in museums. The Australian Museum in Sydney is the legal repository for all Aboriginal archaeological material excavated or collected in New South Wales. The Museum holds many stone and other artefacts such as boomerangs, shields and spears, collected throughout the country since European settlement. Appraisal of the Museum's holdings was beyond the scope of the present project.

In many areas it is also possible to gain information about Aboriginal sites from local residents, however such information varies in quality and credibility.

4 ENVIRONMENTAL CONTEXT

The natural environment of an area influences not only the availability of local resources such as food and raw materials for artefacts but also the likely presence/absence of various archaeological site types and whether or not sites will be preserved.

Changes in the environment through time are important factors in this equation. For example, clearance of natural vegetation in an area can alter groundwater characteristics and lead to variations in the decomposition rates of organic material in an archaeological site. Clearance can also accelerate erosion of some sites and sedimentation of others, depending on their location.

4.1 Climate

The climate of Sydney today is generally moderate. Annual rainfall in the survey area approximates 8-900mm, with slightly more in the first half of the year than the second. Temperatures typically range from over 38 deg.C. on several days during the summer to frequent frosty mornings in winter. The area is subject to occasional periods of high intensity rainfall and also to spells of hot, dry weather, the latter often resulting in bush fires and the former in sheet wash on hillsides. (Australian Bureau of Meteorology Information booklet; 1:25,000 local Topographic maps).

Climatic factors influenced Aboriginal choice of the past activity areas which have become today's archaeological sites. The same factors have affected the visibility and preservation of these sites. For example, past bushfires may have destroyed organic material such as bone or wooden artefacts and sheetwash during rainstorms may have carried archaeological material to lower levels on a hillside or downstream along creeks.

4.2 Description and Topography

The study area is situated on the western side of the Old Northern Road, north of its junction with Wisemans Ferry Road, Maroota. It lies on a main north-south ridgeline running from Parramatta in the south to Wisemans Ferry in the north. The survey area covers approximately 27 hectares immediately below the local ridgetop highpoint of 226m AHD (Figures 2 & 3).

General topography of the area consists of a plateau-like ridgetop, dissected by gullies feeding into northwest running creeklines which eventually empty into the Hawkesbury River. Ridgesides in the system are rocky, with frequent scarps interspersed with more level benches. Elevation within the study area varies from 220m AHD at the highest point, near the Old Northern Road in the northeast corner, to 180m AHD in the southwestern section (Figure 2).

The hillside in the study area slopes gently down to the west, broken by a steep-sided south west trending gully system which has been dammed in three places.

The western section of Lot 1 has been cleared in the past and carried a citrus orchard, which has since been removed. This area is now covered in grass and herbs with extensive areas of lantana and blackberry and a few feral citrus trees. Further east is a band of regrowth forest, mainly Casuarina, around the head of a steep-sided gully containing a dam. Beyond this and extending to the Old Northern Road the area has been cleared and contains a house, shedding and an old orchard.

From west to east Lot 2 has areas of heath like vegetation with some expanses of exposed sandstone (Photo 4), and a steep-sided gully containing some mature trees - mainly Angophoras, Turpentines and Bloodwoods. The gully contains two dams and sections of its sides have been terraced for stone fruit orchards (Photo 3). Further east the area is clear of trees and carries a heavy grass cover. There is also a house and shedding here, adjacent to a separate block occupied by the Maroota Public School.

Young Turpentines with a few mature specimens are present at the western end of both lots.

4.3 Geology and Soils

Outcropping bedrock in the survey area is Hawkesbury Sandstone, overlain in many places by the Maroota Sands. The Maroota Sands were mapped by Etheridge (1980) and consist of

the remains of river channels which ran through the area during the Tertiary period, prior to the uplift of the Hornsby Plateau.

Hawkesbury Sandstone is the main type of rock used for engraved art and artefact-grinding by Sydney Aboriginal groups and also the probable location of most of the useable rock shelters (the latter hypothesis has not been rigorously tested, but see Vinnicombe 1980). Some raw materials for flaked stone artefacts, particularly quartz pebbles, may be found in bands of conglomerate within the Hawkesbury Sandstone.

Quartz and other materials suitable for the manufacture of flaked artefacts, such as quartzite, jasper, chert, petrified wood and (rarely) silcrete, are obtainable locally from lenses and eroded lag deposits of the Maroota Sands (Etheridge 1980; T. Corkill: note on recent discovery of silcrete in the Maroota Sands - forthcoming publication; see also below, Section 6.2). These materials are also available from areas further afield, such as the Cumberland Plain and the Nepean-Hawkesbury River gravel beds. Fine-grained volcanic material (for example basalt and dolerite) for making ground-edged implements such as hatchet heads, would have had to be brought from the gravel beds, or (perhaps) from basalt outcrops more locally.

The natural soils and sediments on the hillsides generally maintain an acid-tending pH value (refer Chesnut, 1983:198; see also Hughes 1980, 50-2). Such a tendency, together with the rainfall regime, is a further factor (see 4.1 above) that would tend to accelerate the breakdown of organic material in archaeological sites.

4.4 Vegetation and Fauna

Many plant species potentially useful to past Aboriginal inhabitants would have been present in all vegetation communities. People often assume that the wetter swamplands and rainforests would have been the richest areas for useful plants, but a recent survey on less than 10 hectares of dry, rocky ridgetop at Maroota, to the north of the study area, identified nearly 50 edible and 35 otherwise useful species (1994b).

A selection of some of the useful plants most likely to have been present in the study area includes *Acacia* spp (seeds eaten), *Persoonia* spp, *Billardiera scandens*, *Schizomeria ovata*, and *Leptomeria ovata* (Geebung, Apple Berry, Native Crabapple, & Native Currant - fruit eaten), *Banksia* spp (nectar eaten), *Pteridium esculentum* and other species of Bracken Fern (roots and young shoots edible), many species of Orchids (tubers edible), *Xanthorrhoea* spp (Grass Tree - dried flower stem used for spearshafts and fire-making, dried seeds and flowers used as tinder, gum used as adhesive, nectar and leaf bases eaten, as well as grubs that are often present in the trunk or root areas), *Eucalyptus haemastoma* & *Angophora costata* (gnarls used for containers), stringy-bark Eucalypts (bark used for shelters etc), *Pimelia linifolia* (Rice Flower - stem fibre used to make string).

Some of the above are available throughout the year and some, such as fruits and nectar, are seasonal. Regulated firing of specific areas of bushland was carried out by Aboriginal groups in many areas to clear dense undergrowth or drive game from hollows or into traps. Fire also encourages growth, flowering and fruiting of some plants including Burrawangs and Grass Trees. (Information from Benson & Howell, 1990; Cherikoff & Isaacs, 1990; Corkill 1995; Robinson, 1994).

Useful local terrestrial fauna in the past would have included macropods, possums, koalas, echidnas, snakes, lizards and various kinds of insects and their larvae.

5 ARCHAEOLOGICAL CONTEXT

5.1 Regional

5.1.1 Occupation Based on archaeological evidence from a number of sites it appears that Aboriginal occupation of the Sydney region had commenced by 13,000 years ago (Kohen et al 1984; see also Attenbrow 1987) and possibly much earlier - a date of around 40,000 BP (before present) from the Cranebrook Terraces on the Nepean River, to the south west of the study area, has been revised downwards to around 20-25,000 BP (Jim Kohen, 1994 Australian Archaeological Association conference paper; see also Nanson et al 1987 and Stockton & Holland 1974). Low levels of occupation appear to have been followed by more intensive activity within the past few thousand years (Attenbrow 1987; Kohen 1986; see also McDonald 1990).

5.1.2 Ethnohistory

The arrival of Europeans in the Sydney area during the late eighteenth century permanently altered the lifestyle of the Aboriginal inhabitants. Haglund (1990:5) states that:

European exploration and settlement of the Sydney region had a disastrous effect both on the Aboriginal inhabitants and on the material evidence of their traditions and landuse. They were rapidly decimated by introduced diseases such as smallpox and influenza, and dispossessed of their land, which caused intergroup conflict and widespread starvation..

Their traditional way of life was severely disrupted and few attempts made by Europeans to record their customs and language. Consequently there has been little information available about the Aboriginal occupants of the region but work is proceeding on gathering information through archaeological studies and oral history.

Early ethnohistoric observations in the Sydney area are severely limited. However it would appear that when the First Fleet arrived in 1788, a number of named Aboriginal groups and sub-groups, each having control over varying aspects of land use in different areas, were present between the Hawkesbury-Nepean River system and the coast (for discussion of the evidence see for example Kohen & Lampert 1987, Rich 1986, Ross 1976). Little is known of the significance of cultural boundaries in the Sydney region, in terms of such factors as land-use and various rights and obligations. Neither is it known how far back in Aboriginal history particular boundaries may have existed.

Notwithstanding the limitations of the data base, ethnohistoric evidence suggests that coastal groups appeared to rely heavily on fish and shellfish and inland groups on terrestrial plant and animal resources.

5.1.3 Site Location & Identification

Material evidence for the activities of past inhabitants of an area survives to varying degrees, depending on the type of material involved and the environmental conditions to which it has been subjected. Such evidence, be it art on the wall of a rock shelter, grinding grooves in a creek bed or stone artefacts at a camp site, constitutes the archaeological sites that are identified today.

Although it may be an artificial distinction, in the Sydney region it has become traditional to group archaeological sites in terms of their geological base. The usefulness of this classification follows from the fact that, where systematic surveys and analyses have been

carried out, the relative percentages of certain site types seem to be fairly consistent within geological boundaries. For example, rock engravings, shelter art sites and grinding grooves are the sites most frequently recorded in the ruggedly incised ridges and valleys of the Hawkesbury Sandstone country, whereas stone artefact scatters predominate in the more gentle landscape of the Cumberland Plain, underlain by Wianamatta Group bedrock (see for example Vinnicombe 1980; Attenbrow 1987; Koettig 1988; Smith 1988).

Large scale research into these and other possible correlations has not yet reached a point where site numbers and exact locations can confidently be predicted within specific areas and, in view of the numerous possible variables, it is unlikely that predictions for particular localities will ever be more than general. However, there is widespread agreement on the types of sites likely to be found and the broad divisions of topographic location where each might be expected. Expected site types for the study area are listed at the end of Section 5.2.

In addition to the above factors, it has been demonstrated that the number of stone artefacts visible on the ground surface in rockshelters or open areas appears to be an extremely poor predictor of what is present in sub-surface sediments. For example, in the Gosford/Wyong area, test excavations in 14 rockshelters with potential archaeological deposit (PAD - areas of *in situ* sediment with no visible surface artefacts) revealed that 65% were archaeological sites (Attenbrow 1987). At Upper Mill Creek, Koettig & McDonald tested 3 shelters with PAD and all were found to contain stone artefacts in the deposit (information from McDonald 1991). Of 4 PADs tested in the Darling Mills Creek catchment, three were found to contain stone artefacts (Corkill 1993). In the Darling Mills State Forest, only two artefacts were found on the floor of a large rockshelter during the original survey, but, when excavated, the deposit was found to be extremely rich in stone material (Attenbrow 1992).

Excavations of 4 PADs on the proposed Hornsby - Berowra Freeway route did not support the above results, as all excavated units were found to be archaeologically sterile. However, not all of the available deposit was excavated, so artefactual presence cannot be completely ruled out. It was suggested that the orientation of the four shelters (southerly) differed from those in Gosford/Wyong, which tended to face north east and that this might have been a factor of occupation preference, with south facing shelters being the least attractive (Greer 1985). Orientations of the three Darling Mills Creek shelters with evidence for occupation tend not to agree with this hypothesis, being ENE, ESE and S (Corkill 1993). Orientations of the Mill Creek shelters have not been checked.

5.2 Local

No previous archaeological surveys are known to have been carried out within the present survey area. However a number of surveys have taken place on adjacent properties and in the immediately surrounding district. Archaeological sites have been identified during some of these investigations. Recent surveys include:

Corkill 1989, 1991a, c, d, 1994b

Surveys at Maroota, near the present survey area, for proposed sandmining developments. No sites identified.

Corkill 1991b

Survey to west of area for proposed waste disposal area. One shelter with PAD identified and recommended for sub-surface testing prior to significance assessment. Development did not go ahead and no testing was undertaken.

- | | |
|-----------------------|--|
| Corkill 1994a | Survey at Maroota, to north east of present area, for proposed sandmining. Four sites and one PAD found. Sites included an engraving, grinding grooves and shelters with stone artefacts. Sites recommended for protection. Exclusion zone extended by developer to comply with recommendation. |
| Corkill 1995 | Survey for Aboriginal Archaeological Sites at 19-25 Canoelands Road, Canoelands, NSW. Two sites consisting of rockshelters with art (drawings and stencils) and two potential sites were located. |
| Corkill & Edgar 1998a | Survey for Aboriginal Archaeological Sites at Lot 4 DP802951 (No. 19) Canoelands Rd., Canoelands, NSW. No sites were located. |
| Corkill & Edgar 1998b | Survey for Aboriginal archaeological sites at Lot 37, Old North Road, Canoelands, NSW. No sites found. |
| Edgar 1995 | Survey for Aboriginal Archaeological Sites in the Vicinity of Maroota Trig Station (approx. 100 hectares). One open site (artefact scatter) and two isolated stone artefacts were identified. |
| Koettig 1989 | Survey in former Maroota State Forest, to west of present study, for proposed waste disposal area. Around 400 hectares surveyed. 15 sites found, including shelters with art/artefacts, grinding grooves and one engraving. 90 PADs also found & many recommended for testing prior to development (development did not proceed so no shelters were tested). |
| Kohen 1992 | Survey at Maroota, of area proposed for sandmining. No sites found. Note that this survey duplicated that of Corkill 1991c. |
| McDonald 1986 | Survey of the area surrounding "Devil's Rock" a significant Aboriginal engraving site, about 3km to the north. Further engraving, grinding groove, rock shelter and other sites were found. |
| McDonald 1992 | Survey of proposed "paintball arena" at Canoelands Road, No sites found. |

(Refer to REFERENCE Section of this report for titles of reports,
copies of which are lodged with NPWS)

In addition W.D. Campbell, a government surveyor, recorded many rock engravings in the Sydney area, and some in the study region, in the late 19th century (Campbell 1899). During the present century F.D. McCarthy, F. Hanson, J. McDonald and I. Sim re-recorded many of these and others (see Hanson 1947; McCarthy 1983; McDonald 1990 and many volumes of Mankind). McDonald's Sydney Rock Art study for NPWS includes both engraving and drawing/painting/ stencil art sites.

Archaeological sites recorded during the above investigations, and others that have been reported on individually are included in Table 1, below. Within 5 kilometres of the study

area 57 Aboriginal archaeological sites are recorded in the NPWS Sites Register (see Table 1). These sites contain a total of 69 "traits" (for example a rock shelter site with midden, art and archaeological deposit is counted as 3 "traits". Archaeological deposit usually implies the presence of stone artefacts).

SITE TYPE/TRAIT	NUMBER	PERCENT
Shelter with deposit	6	9
Shelter with art	15	22
Rock engraving	26	38
Grinding groove	17	25
Stone Arrangement	3	4
Water hole/well	1	1
Artefact scatter	1	1
	<hr/>	<hr/>
	69	100
	<hr/>	<hr/>

Table 1: Archaeological traits recorded within 5 km of the survey area.

It can be seen that rock engravings (26 groups) are the most commonly recorded site trait, followed by grinding grooves (17) and rock shelters with art (15).

In the 1950s F. D. McCarthy recorded a rock engraving site (NPWS 45-2-86) in the Maroota district noting that "its precise location cannot be disclosed." A later grid reference calculated by an unknown individual places this site close to or within the current survey area.

Apart from this, the closest known recorded sites are a rock shelter with art, artefacts and deposit approximately 1km to the south west, an open artefact scatter 1.5km to the south and a group of sites including two rockshelters with deposit, a rock engraving and grinding grooves 2km to the north east.

Based on past experience during surveys it is possible to say that there are likely to be many more archaeological sites present but unrecorded, in the many parts of the region that have not been fully surveyed or where archaeological evidence may be obscured by sedimentation or surface vegetation.

To sum up, topographic and geological features, plus regional site frequencies (Table 1) indicate that site types or traits to be expected in the survey area are:

- rock engravings
- grinding grooves/abraded grooves
- rock shelters with art, and/or archaeological deposit
- scarred trees (rare)
- stone arrangements (rare)
- stone artefact scatters (rare)
- burials (in shelters)
- water holes/wells

6 THE FIELD SURVEY

6.1 Survey Procedure

The field survey took place on August 20, 1998. Present were archaeologists Tessa Corkill and John Edgar. A representative of the Deerubbin LALC was also to have taken part but had to cancel at the last minute because of flood and other weather related problems. We were shown the boundaries by Bruce Ramm, of Dixon Sands, who are the proposed sandminers of the area.

The map used in the field was provided by the client (see Figure 3). This is basically a topographic map with some environmental information. No development maps were available but Bruce Ramm (Dixon Sands) informed us that sandmining is likely to be confined to the western section of the two lots. There is also a 250m exclusion zone around the Maroota Public School and a 10m zone along the north and south boundaries (Tim Macoun pers. comm.).

The entire area was covered on foot. West-east and east-west transects were walked starting in the northwestern corner of Lot 1.

6.2 Survey Results and Discussion

No Aboriginal archaeological sites or areas of potential archaeological deposit were identified.

Small areas of exposed rock suitable for engraving were noted (Photo. 4). These were carefully examined in adequate light, especially because of the possible presence of site 45-2-86. None of the rock surfaces identified matched McCarthy's description of being U-shaped with patches of tessellation. Either the grid reference is incorrect or the site has been destroyed by the considerable past disturbance of this area. A large dam which was previously a clay extraction pit (Etheridge, 1980) occupies the area adjacent to the grid reference position of this site.

No rock overhangs suitable for shelters were present in the survey area.

The level of grass and leaf litter cover made it difficult to identify open artefact scatters. As these are rare in this type of landscape (Table 1, above) and considering the general level of surface disturbance, it is unlikely that any *in situ* artefacts are present. There may be occasional stone artefacts on the surface which have been obscured by vegetation or mechanical disturbance, as Aboriginal people are likely to have used this area in the past for foraging and hunting. However, there were no localities particularly suitable for camping or activities likely to result in significant quantities of archaeological material.

During the survey numerous Maroota Sands' pebbles were observed. As noted by Etheridge (1980) the majority were of quartz and quartzite, with some jasper, chert and petrified wood also seen. Most of the pebbles were under 10cm long (the majority under 1cm). However, occasional larger ones were observed. The latter included a 40cm long silcrete cobble found on the north eastern boundary of the survey area (see Figure 3, Photos 1,2). The cobble maintained remnants of the nearby iron-rich conglomerate matrix from which it had eroded. Although Etheridge's 1980 report makes no mention of silcrete occurring in the Maroota Sands, there appears to be no reason why it should not be present - for example silcrete is present in the Tertiary gravels of the Cumberland Basin to the south and in the Hunter Valley to the north, to name but two known source areas. A few smaller silcrete pebbles were also found nearby, in amongst pebbles of other materials. Some shattered silcrete pieces were

observed on a track in the same general area as the cobble. These are not Aboriginal artefacts but suggest that there might be more silcrete cobbles nearby which have been subject to natural weathering fractures or mechanical breakage by heavy machinery.

The silcrete cobble showed no sign of having been flaked and no stone artefacts were found either here or elsewhere in the survey area.

As silcrete was extensively used for the manufacture of stone artefacts in the past, and no other source of this material has been previously identified in the area, the find is of some significance. I (TC) intend to report the discovery in an appropriate geological publication and to include it in my current postgraduate archaeological research thesis. As the Maroota Sands cover only a limited area and are fast disappearing due to sandmining and other activities, it should be considered whether a typical section of the outcrop should be preserved, on either archaeological or geological grounds, either within the current project area or elsewhere in the district.

Ground Surface Visibility

Within the approximately 27 hectare total area, about 2.5 kilometres of dirt tracks up to 4 metres wide provided 80% visibility for open site detection. The generally dense grass and herb cover in the open ploughed areas and leaf litter in the forested section provided minimal surface visibility ranging up to about 5%.

A small area (approximately 300 square metres) of exposed rock surface provided 100% visibility for the detection of evidence of engraving or grooves. These surfaces were wet at the time of inspection. This aids in the detection of engravings.

Overall ground surface visibility was assessed at 5% of the study area.

NB.: This calculation is based on an estimate of visibility made by the two archaeologists under the specific conditions prevailing at the time of survey and is, therefore, **not** comparable with estimates by other observers in other places under other conditions.

Given the previous development activities in the survey area and its relatively small size, there are unlikely to be any major undetected, undisturbed Aboriginal sites in this area.

8 RECOMMENDATIONS

The following recommendations are made on the basis of:

1. The legal requirements of the National Parks and Wildlife Act of 1974 (as amended) which states that it is illegal to deface, damage or destroy an Aboriginal relic without the prior written consent of the Director of the NSW National Parks and Wildlife.
2. A survey of the designated area of Lots 1 and 2 DP547255 Maroota, NSW.
3. A search of records concerning studies and previously recorded archaeological sites in the area.

Subject to the considerations of the Deerubbin Local Aboriginal Land Council it is recommended that:

1. As the Maroota Sands contain potential source material for stone artefacts manufactured by Aboriginal people in the past, cover only a limited area, and are fast disappearing due to sandmining and other activities, it should be considered whether a typical section of the outcrop should be preserved on archaeological or geological grounds, either within the current project area or elsewhere in the district.
2. Apart from the suggestions in 1, above, no objection should be raised, on archaeological grounds, to the proposed sandmining program proceeding as planned.
3. In the event that any further archaeological material is found during development, operations in the area should cease immediately and NPWS should be contacted to expedite an assessment of the situation.

It is further recommended that:

Three copies of this report be sent to:

Sydney Zone Archaeologist
National Parks & Wildlife Service
PO Box 1967
HURSTVILLE 2220

One copy of this report be sent to:

Sites Officer
Deerubbin Local Aboriginal Land Council
PO Box V184
Mt Druitt Village 2770

REFERENCES

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Photo. 1 Looking east along track near northern boundary of survey area.
Note silcrete cobble in centre foreground, regrowth forest uphill.

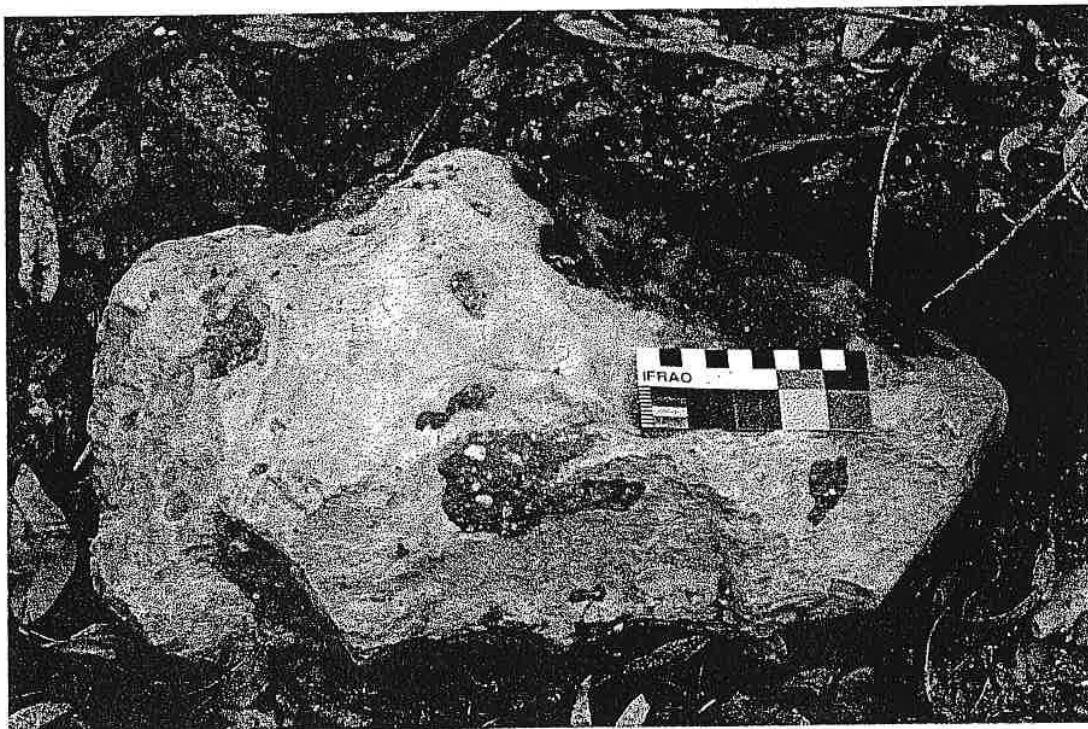


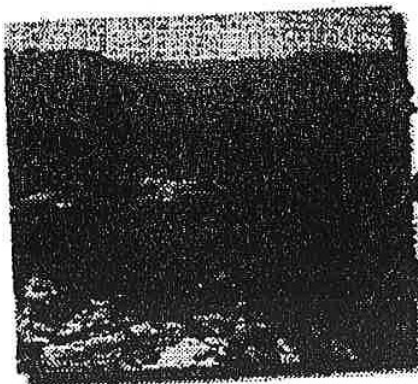
Photo 2. Close-up of silcrete cobble.



Photo. 3 Looking north west in southern section of survey area. Note disturbance from dam building, track works and orchards, and surface exposure on track.



Photo. 4 South western section of survey area looking east across typical exposed rock surface. Note heath-like vegetation in this area.



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Ken Dixon
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18 September, 1998

ABORIGINAL CULTURAL HERITAGE ASSESSMENT LOTS 1 AND 2 OLD NORTHERN ROAD, MAROOTA

Dear Mr Dixon

As you are aware, representatives of the Deerubbin Local Aboriginal Land Council (DLALC) undertook an Aboriginal cultural heritage assessment of Lots 1 and 2, Old Northern Road, Maroota, on the 11 September, 1998.

Deerubbin Local Aboriginal Land Council recommends that it has no objection to the proposal on cultural heritage grounds.

Yours Sincerely


(Frank Vincent
Chairperson)

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