EIS 1514

AA067922

Archaeological survey of proposed extension to overburden site at Hymix Quarry, Kulura, NSW : report prepared for Masterplan Consultants Pty Ltd and Travers Morgan Pty Ltd on behalf of Hymix Quarries Pty Ltd

Archaeological Survey

of

proposed extension to overburden site

at

Hymix Quarry, Kulnura, NSW.

April, 1991

Brayshaw McDonald Pty Ltd
51 Thompson Street, Drummoyne, 2047

Consultant Archaeologists
Telephone 02-8197962

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Hymix Quarries Pty Ltd.

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1. INTRODUCTION

This report was commissioned by Masterplan Consultants Pty Ltd and Travers Morgan Pty Ltd on behalf of Hymix Quarries Pty Ltd. It details an archaeological survey of a proposed overburden site adjacent to an existing overburden site at the Hymix Kulnura Quarry (see Figure 1).

The consultant was contacted by the clients after Mr Gary Chestnut (Environmental Officer, Gosford City Council) observed the presence of an Aboriginal axe-grinding groove site in a creekline within the study area. The consultant was briefed to:-

1) record this grinding groove site;

2) survey the remainder of the study area for possible further Aboriginal relics; and,

3) make appropriate management recommendations for the known site and any further relics located during the survey.

Summary of Findings and Recommendations

The known site was recorded and found to have in the order of 100 grooves visible. Also found in the vicinity were several stone artefacts. No other sites were located within the study area.

There is no direct threat to the site from the proposed overburden development. The overburden area and Aboriginal site will be separated by a sediment trap dam and catch drain. At present the site is in close proximity to the location of this proposed dam (see Figure 3) . Discussions with the clients have resolved that the dam can be constructed further upstream than indicated on Figure 3, and that therefore the site can be protected.

It is recommended that the site be preserved and that appropriate management techniques be put in place to ensure the site's continued protection.

2. THE STUDY AREA

The study area is located immediately north of the existing Hymix Blue Metal Quarry, off George Downes Drive, Kulnura (Figure 1). Immediately west of the study area is the MacPherson State Forest and to the north is privately owned land. The overburden placement is confined within Lots 1 and 2 of DP 233808.

The study area is situated in the headwaters of Warre Warren Creek, and the area not affected by the existing overburden dump and related features, is relatively undisturbed dry schlerophyll forest with areas of swamp heath.

The bedrock in the area is of the Hawkesbury sandstone formation. The Hymix quarry is mining a plug of Tertiary volcanic material. There is one other sizeable volcanic plug in the local area (headwaters of Popran Creek: being mined by Boral Quarries); there are several smaller such plugs <10km to the north, around Basalt Hill near Koree Creek.

3. ARCHAEOLOGICAL CONTEXT

Archaeological sites in the Sydney Region provide extensive evidence for the Aboriginal culture which existed prior to white settlement. Due to the proximity of this archaeological resource to what has always been Australia's largest (white) population centre, the prehistory of the Region has been the focus of considerable interest over the last 200 years and more recently has been much researched.

3.1 Regional Context

Time Frame for Occupation

On the basis of several excavations in south-eastern N.S.W., both in coastal and hinterland sites, a chronological sequence of change within the Aboriginal stone tool assemblage has been identified (the Eastern Regional Sequence [ERS]). This Sequence has been substantiated and refined by numerous excavations within the Sydney Basin.

From these excavations it is possible to state that Aboriginal occupation in this Region had commenced by 13,000 years ago (Kohen *et al* 1984). At this

time it would appear that occupation was sporadic and that the population size was probably fairly low. Attenbrow states that it was not until 5,000 BP (years Before Present) that "an increasing and continued use of shelters began, or was frequent enough to be archaeologically visible" (Attenbrow 1981: 169). The greater majority of excavated sites within the Region date to 2,500 years ago or younger (Attenbrow 1981, Koettig 1985, McDonald 1985b) and Attenbrow's later research in Upper Mangrove Creek revised her earlier view. She states:- "the increase in the number of habitations used was gradual until the second millenium BP; then there were substantial increases in both the second and the first millenium BP" (1987: 199). Over the 13,000 years of occupation in the Region changes in the stone tool assemblage can be observed, and temporal markers have been identified.

The Eastern Regional Sequence (ERS) spans the late Pleistocene and Holocene and is a regional variant of the Core Tool and Scraper Tradition changing to the Small Tool Tradition. The most widely used terminology for phases within the ERS are Capertian, followed by Early, Middle & Late Bondaian (Attenbrow 1981, 1987, Koettig 1985, McDonald 1985b). Generally speaking these phases can be characterised as follows:-

The Capertian:- consists of large heavy artefacts, uniface pebble tools, core tools, denticulate saws, scrapers, hammerstones and some bipolars and burins.

The change from Capertian to Bondaian takes place sometime after 5,000 BP and is characterised by a major shift in raw material use and the later predominance of smaller implements. Phases within the Bondaian are based on the introduction and subsequent decline of backed implements, and the increasing predominance of the bipolar technique. Change in the proportions of raw materials is also a factor. The introduction of ground implements around 4,000 BP and shell fishhooks in the last 1,000 years are major innovations.

Early Bondaian:- fine grained silicious materials (i.e. silcrete and chert) predominate. Features of the Capertian continue, but backed inplements and ground edge implements are introduced. Dated to between 5,000 - 2,800 BP.

Middle Bondaian:- the percentage of bondi points increases and is still greater than the percentage of bipolar pieces. The proportion of quartz is

increasing. Edge ground implements are present. Dated to between 2,800 - 1,600 BP.

Late Bondaian:- bondi points disappear and quartz is the predominant raw material. Elouras, bipolar pieces and edge ground axes predominate in the assemblage. Bone and shell implements are present in some sites (but an earlier introduction for these implements is posited by Bowdler 1970, Lampert 1971).

In summary, Aboriginal occupation of the Sydney Region had commenced by 13,000 years ago. At this time it would appear that occupation was sporadic and that the population was probably fairly low. The greater majority of sites within the Region date to 2,500 years ago or younger. Axe grinding groove sites can all be presumed to be younger than 4,000 years, on the basis that ground edged axes are only present in the stone tool assemblages younger than this date.

3.2 Local Context

Four major research projects have been carried out in the immediate vicinity of the study area (Vinnicombe 1980, Attenbrow 1981, 1987, McDonald 1988 and Smith 1983). The first three of these involved intensive survey work (with the second undertaking subsequent excavation and analysis). The fourth involved the analysis of art sites from Mangrove Creek and the Macdonald River area.

Vinnicombe's (1980) work covered the Gosford and Wyong Shires and was divided into three sample areas based on major eco-systems - open coastline and coastal estuary, riverine estuary and inland schlerophyll forest. The aim of the project was to obtain reliable data on numbers and types of sites and their distribution within the two shires, leading ultimately to the formulation of a predictive model for site location. The pressures of urban development within this area and the need for a co-ordinated planning approach were the impetus.

Vinnicombe makes detailed statements on the predicted location and content of different site types across her area (1980:IX:1-7). On the basis of the site densities which she observed, and on the proportions of the ecological zones within the area, she predicted that an overall total of 13,000 sites may be expected to occur. The frequency of occurrence for different site types was predicted to follow that found in the intensive surveys i.e. "a predominance of rock shelters containing art and/or deposit, followed by grinding grooves and then engravings" (op cit: XI:8).

Vinnicombe's Inland Schlerophyll sample was located in Upper Mangrove Creek. This is the same area that was investigated subsequently by Attenbrow (1981, 1987). Vinnicombe's 10 sq kilometres sample here relied heavily on the results obtained by Attenbrow - who took over the the survey, excavation and analysis of sites in the Upper Mangrove Creek catchment. The site density recorded in this area was lower than that found in the two other environmental zones being in the order of 6 sites/sq km compared with 8/sq km at Spencer and 11.5/sq km at Brisbane Water.

This pattern of site density is described by Vinnicombe as coinciding with increased distance from marine resources (1980: XIV:1-2). However, while she sees overall seasonal patterning in the distribution of sites (oriented towards marine resources in summer and terrestrial resources in winter) the "great variety of closely juxtaposed micro-environments (allowed for an) opportunistic flexibility" (*op cit:* 6-7) in the adaptive strategies employed by the Aborigines in this area.

Attenbrow's (1981) report details the salvage excavation work which took place in the Mangrove Creek Dam inundation area. Twenty five sites were excavated during this salvage operation. Four of these were partially excavated, the remaining 21 were test excavated (1981:169).

The oldest basal date achieved in this area was 11,050 ± 135 BP (SUA-931) from Loggers Shelter. Mussel Shelter was also occupied from a very early time (8,460 ±120 BP SUA-1506), while the majority of the sites dated were found to have been occupied within the last 4,000 years.

Attenbrow's 1987 results illustrate clearly the nature and degree of inter-site variability that can occur in a localised area. Her research in Upper Mangrove Creek also showed that change in prehistoric Aboriginal society

was complex and occurred more frequently than previously thought or than suggested by qualitative changes in artefact assemblages (*ibid*:: 385).

McDonald (1988) work in the McPherson State Forest was aimed at assessing the proposal that an Aboriginal Place be declared within the Forest. A total of fifty-seven (57) sites were recorded during the fieldwork period. The survey and recording programme brought to a total of 71 the known sites in southern McPherson State Forest.

Of the 71 sites recorded in the McPherson study area, the following proportions of site type were found (from McDonald 1988: Table 7):-

Table 1: All Archaeological features present in McPherson Study Area (total area 85 sq km).

Archaeological Feature	Number	%	Density (sites/sq km)
Shelters with deposit	23	23.0	0.3
Open sites	11	11.0	0.1
Shelter with art	49	49.0	0.6
Open engraving	2	2.0	0.0
Shelters with gg grooves	4	4.0	0.0
Open grinding grooves	11	11.0	0.1
TOTAL FEATURES	100	100.0	-
TOTAL SITES	71	-	0.8

Grinding groove sites

McDonald's (1988) analysis discovered that on the whole, this site type was sparsely distributed, and most sites (87%) had less than nine grooves. Only two sites were found to have more than nine grooves, and these had 83 and 55 grooves (Swinton's II and #45-3-1285 respectively).

A large number (eight) and percentage (53%) of grinding grooves in the McPherson area were associated with other archaeological features (deposit and art). They are often, therefore, found within shelter sites.

Broad, normal and narrow grooves were recorded in the McPherson area, as was the occurrence of sub-incised grooves (broad grooves which have been

subsequently thinly incised in their centre). These thin grooves may be evidence for the sharpening of spears or women's digging sticks.

Site in vicinity of study area

Of the 71 sites in the McPherson study area, three are located within 1km of the current study area (see Figure 4). These are:- a shelter with art (NPWS # 45-3-1284), another grinding groove site (NPWS # 45-3-1285) and an open artefact scatter (NPWS # 45-3-1634). The first two of these sites were recorded in 1982 (by Bob Conroy, NPWS) in relation to a proposed Wildlife Reserve within Portion 3 DP 620901 (HO Instruction CR/06020). These sites were inspected in 1988 by McDonald, whereupon the open site was found along one of the tracks. This last site is located along the same track which forms the northern boundary of the current study area. The site, however, falls outside the study area.

4. ABORIGINAL CONSULTATION

The study area falls within the boundaries of the Darkinjung Local Aboriginal Land Council. Mr Glenn Hennessy belongs to the Darkinjung LALC, and is the Regional Land Council's Sites Officer. He accompanied the survey team when the fieldwork was being undertaken.

A copy of this report will be sent to the LALC for their discussion at a general meeting. Mr Hennessy will then be able to write a report advising of the Council's views with regards the study area and the recommendations made in this report.

Likely recommendations were discussed with Glen Hennessy during the survey and he was in general agreement with the findings and assessments made in the field. A letter from Mr Hennessy accompanies this report (see Appendix 2).

5. FIELDWORK PROCEDURES

The survey and recording exercise was undertaken on Thursday 14th March, 1991. The consultant was assisted by Kate Sullivan and Glen Hennessy. The team was shown to the site by Mr Ray Matthews (Hymix Quarry Site Manager), who also pointed out other various features of the existing overburden site and the proposed extension area.

The creekline between the site and the small dam in its headwaters was inspected by the consultant. The remainder of the proposed impact area (see Figure 3) was surveyed by the team.

The grinding groove site was recorded and mapped, and the location of the grooves within the rock platform plotted. Each groove was then measured (length x breadth x depth). Those grooves completely below the water line and beneath encroaching soil and vegetation were not fully measured. The site was named "Warre Warren # 3", following the naming of the two sites further downstream (NPWS # 45-3-1284 and 1285).

6. SURVEY RESULTS

A total of 102 grooves were recorded at the site; several of these disappear below encroaching soil and vegetation and it is possible that more grooves exist at the site. Two stone artefacts were also observed on the track immediately north of the rock platform. These were an indurated mudstone flake (focal platform) with retouch/usewear on two edges (measuring 3.0 x 5.0 x 1.8 cm); and, a quartz split pebble core (bipolar, measuring 3.5 x 2.6 x 1.4 cm).

Warre Warren Creek # 3 Mangrove 1:25,000

The grooves are located on a small sandstone platform (7.0m x 4.0m) located in the bed of Warre Warren Creek. There is a pool adjacent to the western edge of the platform and a deep pool below the eastern side of the site.

Grooves were located on almost all available space across the platform and several of the grooves must have been manufactured by a person standing in the water of the deep pool (see site plan and photographs).

Table 2: Site Warre Warren 3, groove measurements

Groove#	l x br x dpth (cm)	Groove#	l x br x dpth (cm)
1.	16.5 x 2.5 x 0.3	2.	22.5 x 2.5 x <1
3.	19.0 x 5.0 x 2.5	4.	34.0 x 21.0 x 4.5
5.	37.5 x 10 x 2.5	6.	39.0 x 9.5 x 4.5
7.	30.3 x 7.0 x 2.0	8.	40.2 x 10.0 x 3.0
9.	30.2 x 5? x <1 (very narrow)	10.	26.0 x 7.0 x 2.5
11.	26.5 x 7.0 x 1.5	12.	33.0 x 10.0 x 1.75
13.	33.0 x 12.0 x 1.75	14. - 17.	unmeasurable
18.	31.0 x 14.0 x 5.0	19.	22.0 x 8.0 x <1
20.	42.0 x 4.5 x 2.0	21.	36.0 x 11.0 x 2.5
22.	30.0 x 7.0 x 2.5	21. & 22.	conjoined
23.	35.0 x 9.0 x 2.5	24.	26.0 x 10.0 x 3.0
25.	23.0 x 7.0 x <1	26.	32.0 x 9.0 x 2.0
27.	27.0 x 10.0 x 2.0	28.	29.0 x 7.5 x 2.0
29.	22.0 x 6.0 x 1.5	30.	37.0 x 9.0 x 3.0
31.	46.0 x 14.0 x 5.0	32.	25.0 x 10.0 x 2.5
33.	26.0 x 7.0 x 2.0		(double head E end)
34.	26.0 x 7.0 x 2.0	35.	21.0 x 4.0 x 1.0 (damaged)
36.	27.0 x 6.0 x 2.0 (damaged)	37.	31.0 x 10.0 x 3.0
38.	30.0 x 13.0 x 3.5	39.	30.0 x 11.0 x 3.0
40.	26.0 x 11.0 x 2.5	41.	23.0 x 9.0 x 2.0
42.	30.0 x 10.0 x 4.0	43.	30.0 x 9.0 x 3.0
44.	35.0 x 10.0 x 3.0	45.	29.0 x 7.0 x 2.0
46.	32.0 x 10.0 x 2.5	47.	37.0 x 12.0 x 4.0
48.	36.0 x 13.0 x 5.0	49.	37.0 x 8.0 x 2.5
50.	41.0 x 10.0 x 3.0	51.	26.0 x 7.0 x 2.0 (damaged)
52.	31.0 x 10.0 x 3.0	53.	30.0 x 11.0 x 3.0
54.	30.0 x 8.0 x 2.0	55.	17.0 x 3.0 x 1.0
56.	34.0 x 9.0 x 3.0	57.	19.0 x 6.0 x 2.0
58.	15.0 x 7.0 x 1.0	59.	34.0 x 7.5 x 1.5
60.	36.0 x 7.0 x 2.5	61.	26.0 x 8.0 x 2.0
62.	36.0 x 9.5 x 2.5	64.	40.0 x 9.0 x 3.0
65.	20.0 x 5.0 x 2.0	66.	34.0 x 8.0 x 3.0

Table 2: Site Warre Warren 3, groove measurements (cont.)

Groove#	l x br x dpth (cm)	Groove#	l x br x dpth (cm)
67.	37.0 x 15.0 x 3.0	68.	22.0 x 6.0 x <1
69.	44.0 x 12.0 x 6.0	70.	36.0 x 9.5 x 2.5
71.	28.0 x 6.0 x <1	72.	28.0 x 5.0 x 2.0
73.	28.0 x 10.0 x 2.5	74.	32.0 x 11.0 x 3.0
75.	18.0 x 8.0 x 2.0	76.	26.0 x 10.0 x 2.0
77.	29.0 x 9.5 x 3.0	78.	24.0 x 9.0 x 2.0
79.	26.0 x 8.0 x 2.5	80.	30.0 x 7.0 x 3.5
	(share centreline which is considerably lower than outside edges)		
81.	25.0 x 10.0 x 2.0	82.	31.0 x 8.0 x 2.0
83.	30.0 x 9.0 x <1	84.	27.0 x 5.0 x <1
85.	26.0 x 5.0 x <1	86. & 87 = spear grooves, under water	
88.	25.0 x 8.0 x 2.0	89.	26.0 x 7.0 x 1.75
90. - 102. unmeasurable, under water			

7. DISCUSSION

The Aboriginal grinding groove site identified previously by Mr Gary Chestnut is the only Aboriginal site within the study area. As well as the grooves identified earlier, there is also evidence that stone tools were used or made in this location. This site has now been fully recorded.

Given our understanding of grinding groove sites within the local context, this site is of considerable significance. It possesses the largest number of grooves recorded at an open grinding groove site within a considerable area. It also contains a variety of groove sizes and shapes, suggesting that a range of grinding activities may have taken place here.

The site is beyond the impact area for the proposed overburden extension. It is, however, very close to the proposed location for the siltation dam (as indicated on Figure 3). Discussions with Phil Conacher (Travers Morgan) and Sheryl Chaffer (Masterplan Consultants) have indicated that the placement of this dam is schematic at this stage, and both it and the

overburden (as indicated on Figure 3) can be pushed further upstream to avoid the Aboriginal site. The site can thus be protected both during the construction phase for the associated works, and once the extension area for the overburden is in operation.

It must be ensured that the proposed catchdrain dam does not encroach on the site. A buffer zone of at least 50m should be retained around the Aboriginal site. This will protect the site during construction of the drain, sediment trap and associated work, and maintain the scenic context of the site.

While the site will be beyond any direct impact, it will be susceptible to indirect forms of impact, such as increased siltation and perhaps by increased visitation. Changes to the siltation regime would result in grooves being covered by soil and thence vegetation. This would damage the grooves (as a result of increased acidity and moisture) and would eventually result in the site being completely obscured.

The site will need to be protected from increased siltation, which may result from the changed hydrological conditions upstream. There must be a spring somewhere in the headwaters of this creek. Despite being a very dry summer, the creek was running at the time of the survey. As the site is less than 1km from the creek's headwaters, some permanent water source must exist. This observation was confirmed by both Phil Conacher (Travers Morgan) and Ray Matthews (Hymix Kulnura Quarries), although the exact location of the spring is not known.

When the siltation mitigation works are put in place, the client must ensure that the spring is not damaged and that the existing water flow is not altered. This will require the provision of overflow facilities on the dam, either an overflow pipe (of certain dimensions, to be ascertained) or by some other mechanism. Ray Matthews suggested (telephone conversation 2/4/91) that an overflow channel around one side of the dam would be the most appropriate method to use, as this would lessen both the erosional impact and the danger of blockages during torrential rains.

8. RECOMMENDATIONS

The following recommendations are made on the basis of:

1) legal requirements under the terms of the National Parks and Wildlife Act of 1974 (as amended) whereby it is illegal to damage, deface or destroy an Aboriginal Relic without the prior written consent of the Director, NPWS;

2) the results of the comprehensive survey within the proposed development area;

3) the assessment made of the site's archaeological significance;

and,

4) the interests of the Darkinjung Local Aboriginal Land Council;

It is recommended that:-

1. The grinding groove site is outside the direct impact zone for the overburden site but is currently threatened by the proposed location for associated works;

2. The proposed dam location, and therefore the northern boundary of the proposed extension to the overburden, should be shifted upstream approximately 50m to avoid the Aboriginal site;

3. Surveyors should be employed to ascertain the exact location of the Aboriginal site, and its position in relation to the proposed dam location, prior to the construction of the dam;

4. Efforts must be made during the construction period to protect the site (and creekline generally) from damage and disturbance;

5. The dam design should incorporate an overflow facility to ensure that the normal creekflow is maintained;

6. Protective measure should be introduced in order to cease the movement of traffic across the site, along the existing logging track. It is envisaged that protection could be afforded by felling a medium sized tree somewhere along the track on both sides of the creek (at least 30m from the site);

7. There are no other archeological constraints on the proposed development;

8.1 One copy of this report should be forwarded to:

Mr Glen Hennessy,
Site Officer,
Darkinjung LALC,
PO Box 401
Wyong, NSW, 2259.

8.2 This report should be tabled at a general meeting of the Land Council for discussion.

9.1 Four copies of this report should be forwarded to:

Ms Bronwyn Conyers,
Cultural Resources Co-ordinator,
Central Region,
NSW NPWS
PO Box 95,
PARRAMATTA, NSW, 2150.

9. REFERENCES

Attenbrow, VJ 1981 Mangrove Creek Dam: Salvage Excavation Project. Volumes 1 & 2. Report to NPWS NSW on behalf of PWD.

1987 The Upper Mangrove Creek Catchment: A study of quantitative changes in the archaeological record. Unpub. PhD Thesis, University of Sydney.

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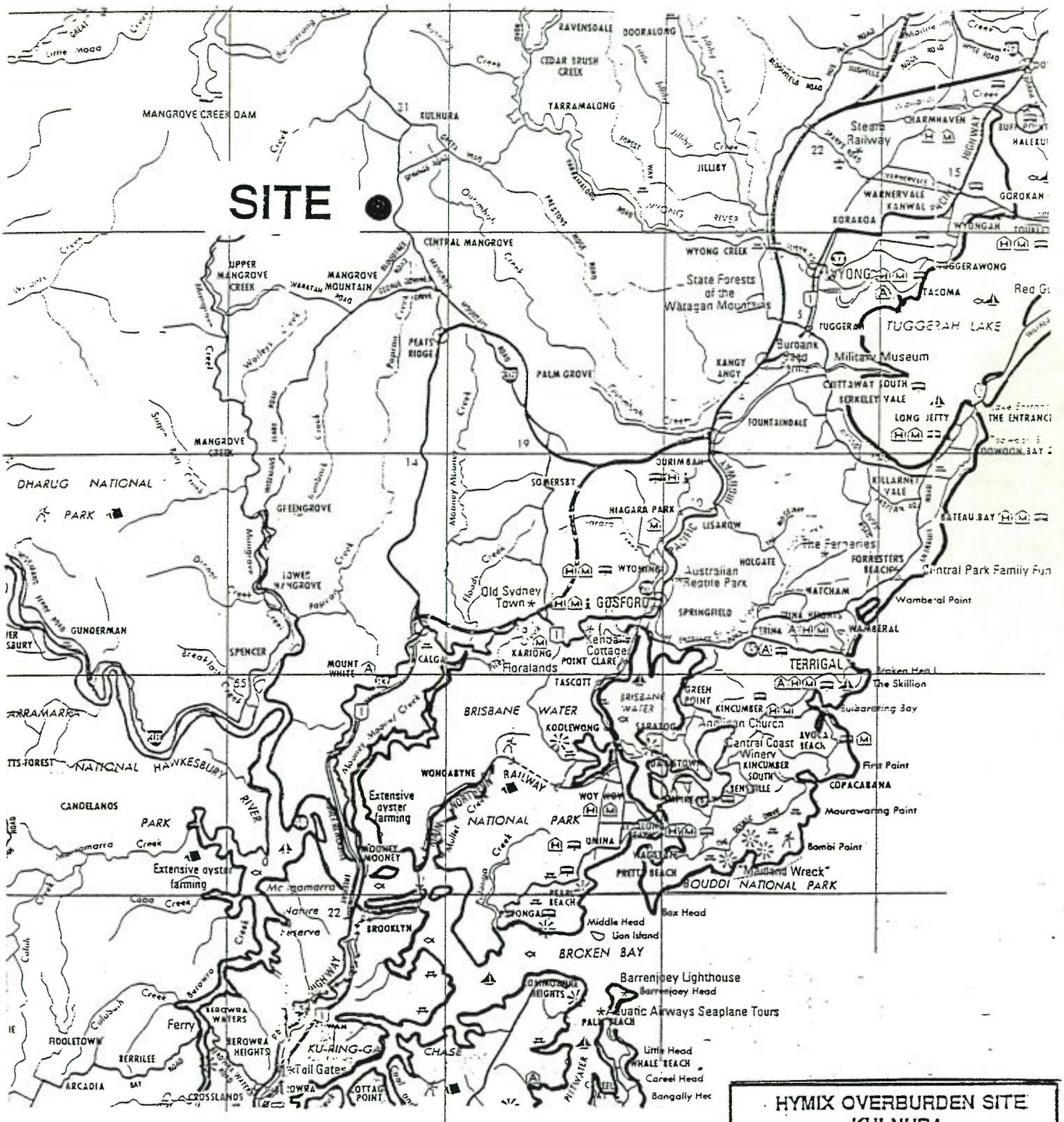
Smith, Lj 1983 What's in the Size of a Macropod? A Study of variance in prehistoric pictures from the Mangrove Creek Area. Unpub. BA(Hons) Thesis, University of Sydney.

Sullivan, S & Bowdler, S 1984 Site Surveys & Significance Assessment in Australian Archaeology. RSPacS, ANU, Canberra.

Vinnicombe, P 1980 Prediction and Predilection. A study of Aboriginal sites in the Gosford-Wyong Region. Report to NPWS NSW.

Figure 1 - Locality Map: (from EIS 1990: Fig 1)



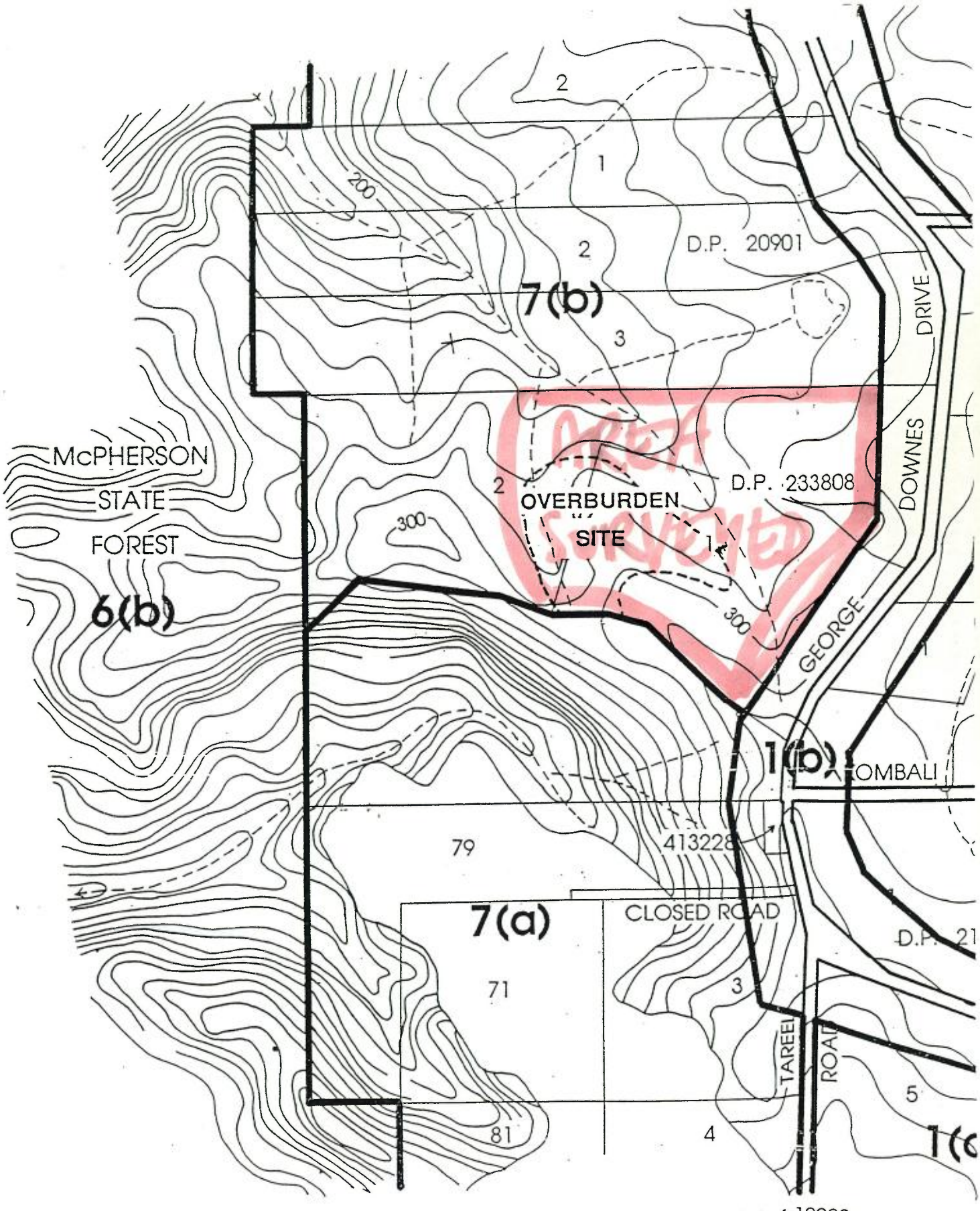
HYMIX OVERBURDEN SITE
KULNURA

Fig. 1

REGIONAL LOCATION

MASTERPLAN CONSULTANTS

Figure 2 - The Study Area: (from EIS 1990: Fig 10)



Compiled Plan: Scale approximately 1:10000

Figure 3 - The proposed development (from EIS 1990: Fig 16)

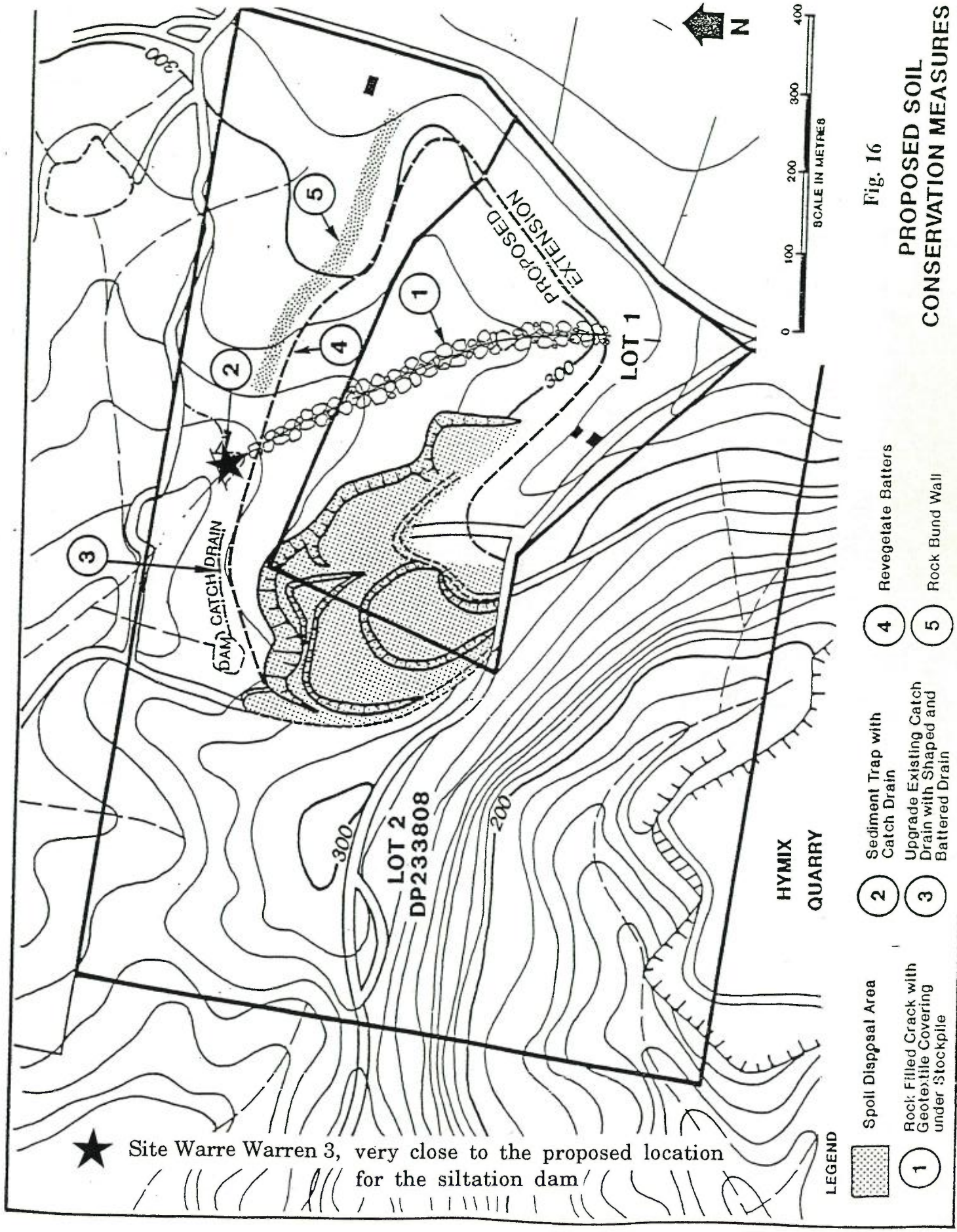
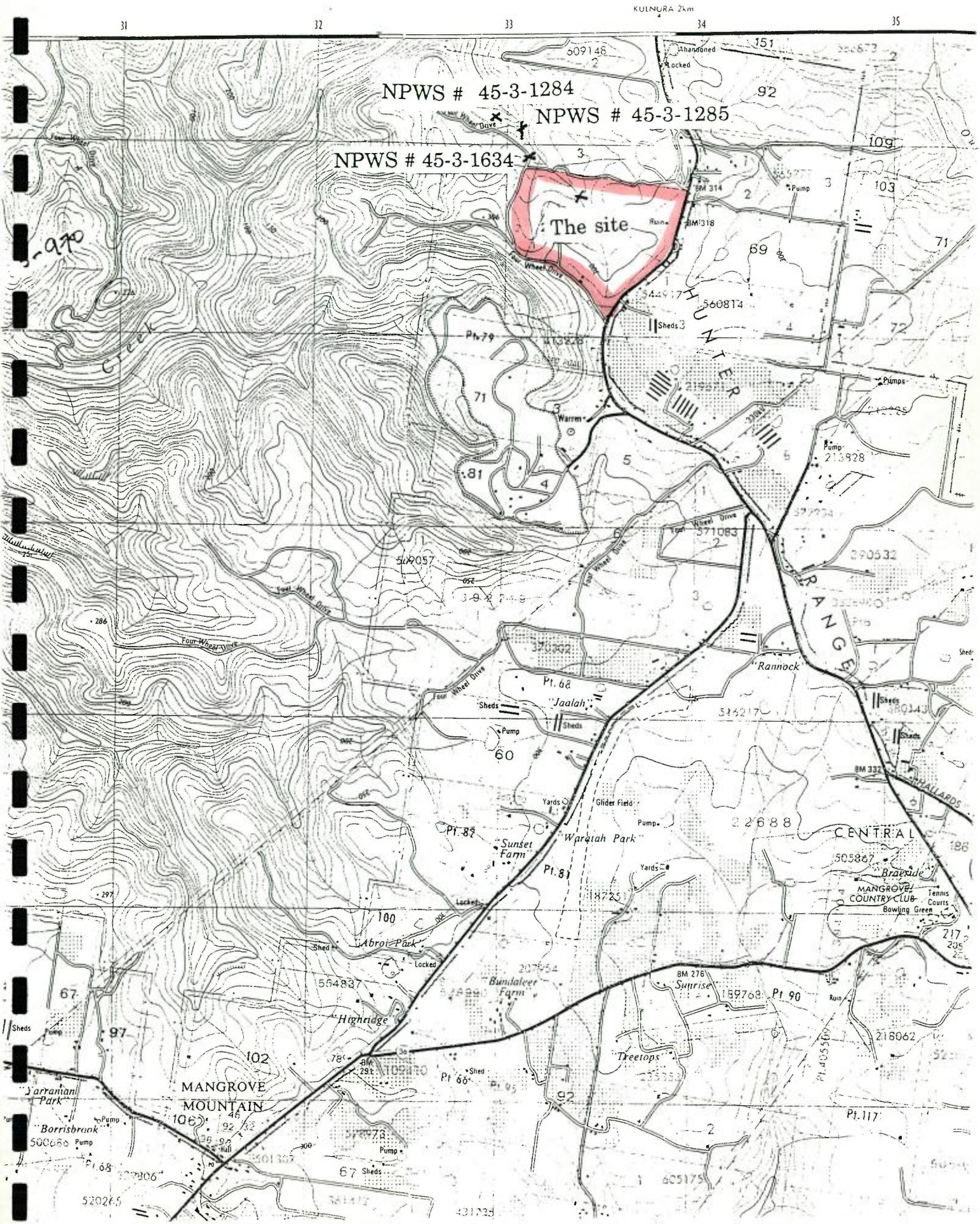


Figure 4 - The Study Area: showing location of known sites to the north, and site Warre Warren #3. Mangrove 1:25,000



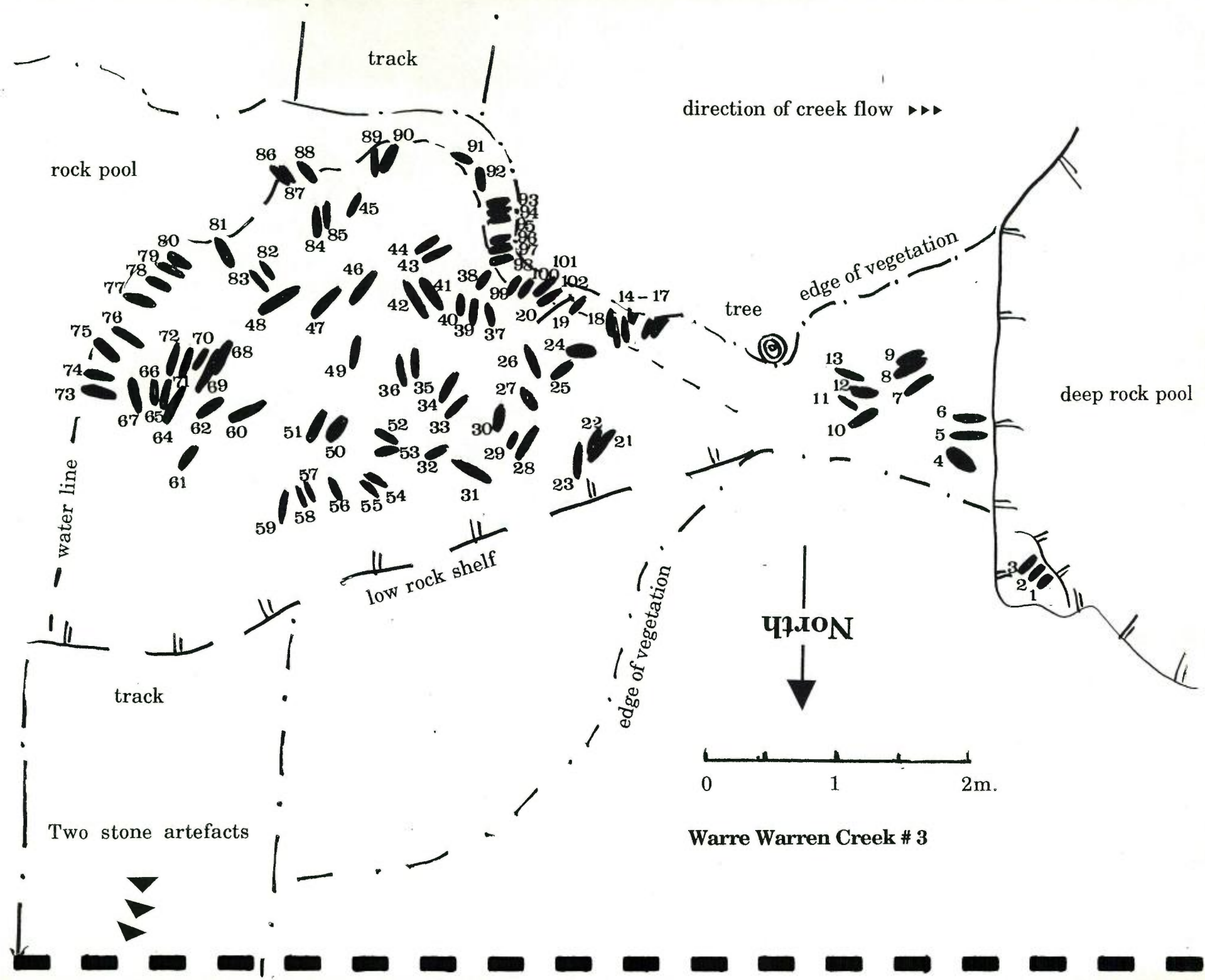


Figure 5 - Site Plan for site Warre Warren #3

APPENDIX 1

PHOTOGRAPHS

APPENDIX 1 - Photographic Record

1. View of the existing overburden area from the proposed extension area. Camera facing west.

2. Edge of the existing overburden - camera facing north.

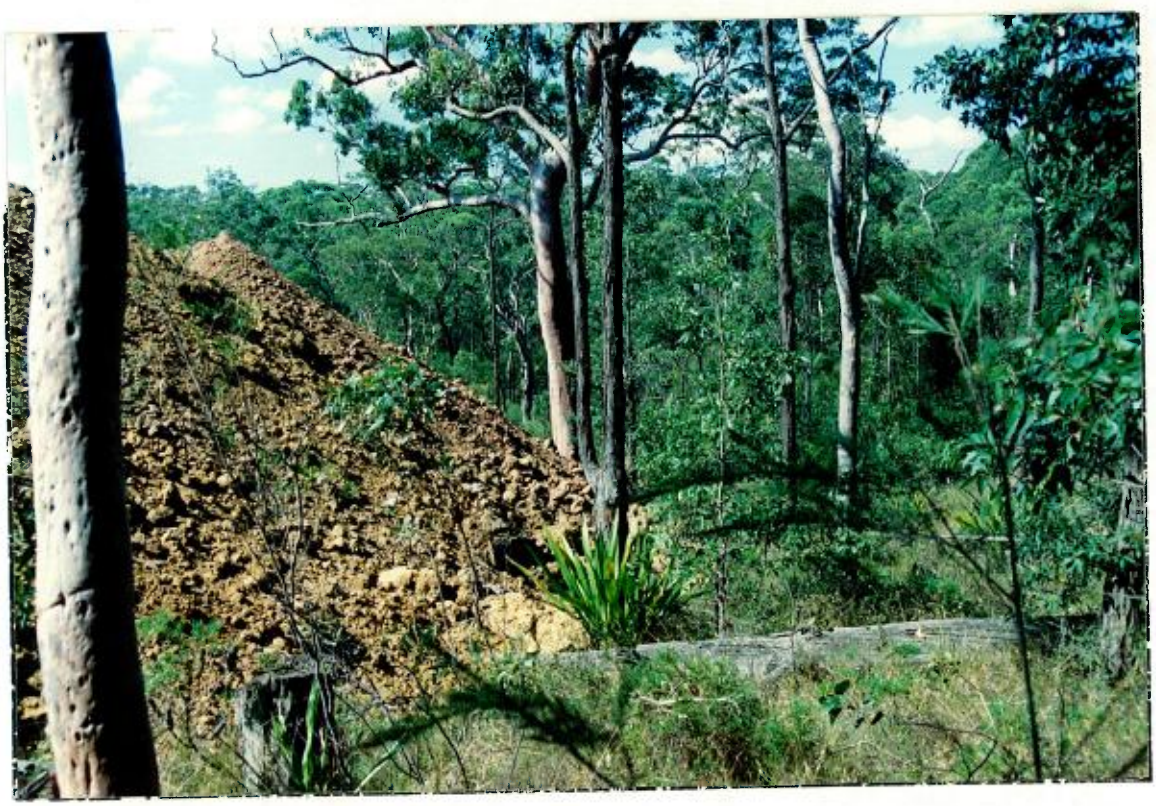
3. Site Warre Warren # 3: grinding grooves #4-6 on lip of waterfall. Note the very large groove (#4) on left hand side. Shot taken (by G Hennessy) while standing in deep pool.

4. Site Warre Warren # 3: grinding grooves #1-3 on low shelf just above deep pool. Shot taken (by G Hennessy) while standing in deep pool.

5. View across the crek to the site from the track. Grooves are visible in foreground (partially submerged) and on flat main surface of platform.

6. Recording the grooves on the lip of the small waterfall. Mr Hennessy very obligingly submerged for this part of the recording exercise!

1



2

3

4

5

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APPENDIX 2

LETTER FROM

DARKINJUNG LALC

DARKINJUNG LOCAL ABORIGINAL LAND COUNCIL

P.O. BOX 401, WYONG. 2259 TELEPHONE [043] 24 6017
66 SHOWGROUND ROAD, GOSFORD. 2250

March 18, 1991

ARCHAEOLOGICAL SURVEY
THURSDAY MARCH 14 , KULNURA

On Thursday March 14 I went on an archaeological survey at the Hymix quarry at Kulnura with the archaeologist Joe McDonald on behalf of Masterplan who I believe were acting for Hymix.

The site is at 151°15'00" by 33°15'00", in the Parish of Eglington at Kulnura. The quarry occupies lot 233808 in Eglington and mines basalt from an ancient volcanic plug which intrudes into the Hawkesbury sandstone plateau.

Mr. Ray Mathews from the quarry told us that the Gosford City Council had said there were axe grinding grooves in the vicinity. After checking with his office that there was no blasting going on he escorted us to the edge of the quarry near the areas to be investigated.

This landscape was devasted, like the surface of the moon. Ms. McDonald commented that she didnt like the prospects of finding anything and that she was disappointed with these jobs where "you lock the stable door after the horse has bolted".

As it turned out this wasnt true. Mr Mathews took us down an old timber trail on the northern side of the site and quite close to the mullock heap, on the periphery of the lot (2 in DP 2333808). At this point an old timber trail intersects a creek just above a waterfall, below which is a deep pool. This pool appears to be a constant source of water. All of the swampland around the heath is dry yet this water still flows.

I saw the sandstone platform and immediately noted the grooves. I exclaimed to Ms. McDonald because of the number and the conditon of the grooves: "look at this!" We abandoned earlier ideas of inspecting the landscape further because there was so much to be done at this one site.Mr. Mathews asked me how I could be certain of the grooves being evidence of Aboriginal occupation . I pointed out one large axe groove in the middle of the platform which had been damaged through mechanical force and remarked that fracturing of sandstone is quite clearly different from abrasion. The basalt from the dyke which they are mining is clearly the material which has been worked.

We counted 98 grooves in assemblages of spear and axe grinding. Three grooves were below the lip of the sandstone waterfall below which was another ledge upon which a man could st and. The edge of the waterfall was then at chest height and the next three sets of three grooves were within reach. I am 176 cm tall of Malyangapa origin and expect the men who worked this site were of similar build. Ms. McDonald commented some of the 'spear' grooves could also have been grooves from sharpening yamsticks.

I investigated lower down from the pool where the timber trail fords the creek. There wa nothing visible on the banks of a human origin.. There was a large mam of about 5 kg mass which could have been a water rat. It did swim, splashing int the creek which is why I noticed it.

Later in the afternoon we disturbed a black rock wallaby which is suprisingngiven the large trucks and the main road adjacent. The presence of such large fauna in such a disturbed area points to relatively secure bioemes in the area, despite the presence of feral foxes and cats.

A worked stone was found approximately 10 metres from the rock platform. It was a tan yellow silicrete quite different to any stone in the vicinity. It resembled silicrete transported to the the North.Hentrance from the Hunter Valley.

The area proposed to be buried includes the headwaters of the creek which feed the permanent pool, by which the grooves are located. the creek flow would be interrupted by such an extension. The creek should not be disturbed any further.

Hymix has taken measures to protect the creek from siltation and I praise them for it. They have established two dams and a drainage channel to curtail effluent from the workings. This is evidence of a real concern and care for the environment which could well be emulated by other companies. A concern for the heritage value of the evidence of Aborginal occupation seems naturally to follow.

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