

# APPENDIX 9

## Archaeological Assessment



JANDRA QUARRY  
EXTENSION

*Archaeological Assessment*

For:  
CSR CONSTRUCTION MATERIALS

October 1999  
58110RP2

## Report No. 58110RP2

This report was prepared in accordance with the scope of services set out in the contract between ERM Mitchell McCotter Pty Ltd ACN 002 773 248 (ERMMM) and CSR. To the best of our knowledge, the proposal presented herein accurately reflects the CSR's intentions when the report was printed. However, the application of conditions of approval or impacts of unanticipated future events could modify the outcomes described in this document. In preparing the report, ERMMM used data, surveys, analyses, designs, plans and other information provided by the individuals and organisations referenced herein. While checks were undertaken to ensure that such materials were the correct and current versions of the materials provided, except as otherwise stated, ERMMM did not independently verify the accuracy or completeness of these information sources.

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# INTRODUCTION

## 1.1 SUMMARY

Jandra Quarry is owned and operated by CSR Pty Ltd. The quarry produces blue metal utilised as road base. CSR propose to extend the quarry void and create an additional administration - facilities area.

This report outlines the archaeological assessment of the proposed works. The location of the quarry is Lot 2, 11, 12, 13, 14, & 15 DP 790056, Parish of Beryan, County of Gloucester (now referred to as the study area). The study area lies on the boundary of two land councils. The field survey was conducted in conjunction with Taree-Purfleet Local Aboriginal Land Council and Forster Local Aboriginal Land Council.

Seven sites were located including a historic scarred tree related to the timber felling industry. The remaining sites, with the exception of the PAD 2, are disturbed.

A preliminary research permit (# 1174) was granted to sub-surface test areas which would be disturbed by the proposed development. The Taree-Purfleet and Forster Land Councils participated at all stages of the investigations and their report is included as *Appendix A*.

The management results recommend protection for sites J4 (historic site) and PAD 2 the small creek terrace which will not be impacted by the proposal. The other sites have been recommended to become subject to consent to destroy applications with the support of the Forster and Taree-Purfleet Local Aboriginal Land Councils. Site J6 was found to contain archaeological material and can be conserved for educational purposes until the quarry void is extended into the site in approximately 20 to 25 years time.

## 1.2 INTRODUCTION

CSR Pty Ltd propose to extend their hardrock operations at Jandra Quarry which is located 12 kilometres south of Taree (*Figure 1.1*). The continued operations at the quarry require an expansion of the existing pit to the east and west and a new site facilities area to the north west of the existing site office. This report documents a



survey and subsurface testing of the study area. The project was undertaken by Angela Besant (ERM Mitchell McCotter) and field officers of Forster and Taree-Purfleet Local Aboriginal Land Councils.

### 1.3 ABORIGINAL COMMUNITIES COLLABORATION

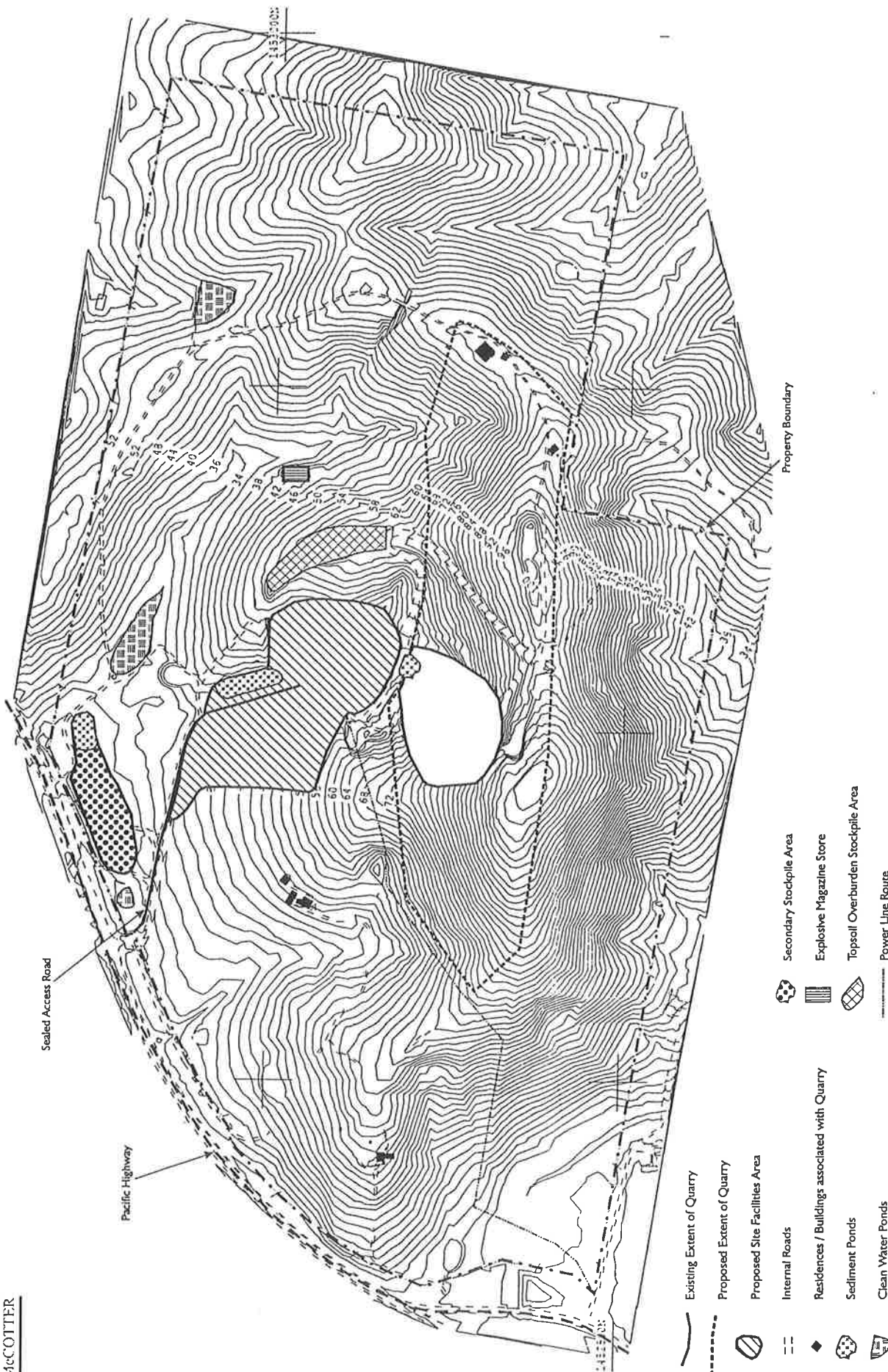
The study area is located on the boundary of Taree-Purfleet Local Aboriginal Land Council and Forster Local Aboriginal Land Council. The survey was conducted by field officers of both representative bodies, Mick Leon and Bob Paulson (Forster LALC) and Vienna Maslin (Taree-Purfleet LALC). The field team concurred with the decision to undertake further sub surface testing in the prescribed areas.

The preliminary research methodology was reviewed by Mick Leon and members of both Land Councils were involved in the sub surface testing program.

### 1.4 DESCRIPTION OF IMPACT

The extension of the quarry will involve the complete clearing and excavation of the landscape in the area of the pit. The proposed facility area would require clearing of vegetation and some cut and fill to allow level pads for construction of sheds etc. The impact would be sufficient to destroy any sites within the area of works. The 132 kva powerline which is located to the north west of the pit will require relocation to the west of the pit where it shall be brought up a steep slope and then follow the top of the pit to the site facility area to the north-east.

The landform units which will be effected are ridge crest and slope (*Figure 1.2*). The area of land in which the quarry operates is approximately 40 hectares, the area of proposed development is approximately 10 hectares or a maximum of one quarter of the available area. The proposed extension to operations is confined to the ridge slopes and ridge tops. There is a small amount of drainage line flats which will not be impacted by the proposal.





## 1.5 OBJECTIVES OF THE STUDY

The objectives of the study are to:

- ❑ work in conjunction with the appropriate Aboriginal community representatives;
- ❑ formulate a study plan based on environmental factors and existing records of archaeological patterns within the broader area;
- ❑ survey the study area to identify archaeological sites;
- ❑ conduct sub-surface probes where necessary; and
- ❑ provide a report detailing the process above.

## 1.6 ARCHAEOLOGICAL CONTEXT

A site register search revealed thirty sites within a twenty kilometre radius. A variety of site types have been recorded in the vicinity. The variety of environments also exist in the surrounding area including beach, Pleistocene dunes, broad river flats, low ridges and spurs elevated to 20 to 30 metres AHD and steeper ridges with elevations to 120 metres as in the study area. The frequency of site types can be seen in *Table 1.1*.

*Table 1.1* RECORDED SITES IN A TWENTY KILOMETRE RADIUS OF JANDRA

Site type	No. recorded the NPWS Site Register
Carved tree / scarred tree	5
Bora / ceremonial site	3
Midden	11
Stone arrangement	1
Isolated find	4
Open camp site	2
Shelter with midden	3
Natural mythological site	2

*Notes:* 1. Source NPWS Sites Register 22.6.1999. AMG 43800 to 45800 E and 6444000 to 6464000 N Nablac 1:25,000

While 30 sites are recorded on the register a total of 32 for the different site types is due to some sites being recorded under one site number but are recorded for two different site types (ie. bora/ ceremonial and carved tree).

The closest sites are a stone arrangement (NPWS 38-2-19) located within forestry reserves on the top of a steep ridge. The second was an open artefact scatter located within a minerals sand mining lease which has since been destroyed (NPWS 38-2-73). The site occurred to the east on Pleistocene sand dunes and has limited comparative value. The third is an isolated orange chert flake (NPWS 38-2-0097) at Possum Brush quarry a kilometre south of the study area. The artefact was located on a spur elevated to 20 metres overlooking a creek (Appleton, 1998).

Archaeological surveys conducted in the wider area have, over time, indicated that sites can be located within a variety of environmental settings. Klaver and Heffernan (1991), found that the estimated site density of one per 100 kilometres square based on the forty two recorded sites within the City of Greater Taree, was not an accurate reflection of Aboriginal cultural material. They conducted a survey of less than a square kilometre and added fifty-nine sites to the forty two known sites in the NPWS register. The survey results indicated that sites occur in rugged to steep slopes as well as on creek flats and indicated Aboriginal land use throughout the landscape (Klaver & Heffernan 1991). The site register search of the study area would indicate that the majority of these sites were located in coastline contexts.

Jandra Quarry was surveyed prior to the excavation of the existing pit (Stockton and Haglund 1983). An isolated find was located on the southern boundary although it does not appear on the site register. The 1983 survey concentrated on a strip of land which had been cleared for the erection of a boundary fence, old logging tracks and vehicle tracks. Visibility in these areas was better than the remainder of the site which was considered very low. Due to the general steep slope of the land no further work was recommended.

Investigations related to the Coolongolook - Bulahdelah bypass undertaken by Haglund (1992) occurred directly south of the study area on the Wootton 1:25,000 map sheet. Sub-surface testing of sites BC5 and BC9 and analysis of surface material indicated at the very least intermittent use of the forests by small groups of highly mobile people. The site types were overnight camp sites and activity areas (ie. a stop to sharpen implements). Artefacts appeared to have been swept into hearths when the occupants moved on after short-term use. A clear preference for ridge tops, saddles or spurs was indicated however the results may be skewed by poor visibility on the slopes (Haglund 1992).

Byrne who conducted a study of Aboriginal sites within rainforests (1987) found that Aboriginal land use patterns comprised base camps located in open river valleys or low elevated areas around lakes. Travel routes between these areas utilised

ridgelines. Rich (in Haglund 1992) suggested that Aboriginal use of the forests may increase in frequency (therefore density of material remnants) closer to the coast.

The assessment of archaeological potential for the Bulahdelah to Failford upgrade of the Pacific Highway located sites on gentle slopes near water courses. The sites located comprised three isolated finds and three areas of potential deposit. Two of the isolated artefacts were chert (Navin and Klaver 1993).

The assessment of various different options for the duplication of the Pacific Highway from Coolongolook to Possum Brush found that undulating ridges, slopes and river flats were considered to have the highest potential for archaeological sites (Klaver 1993).

A survey of Minimbah land fill site (Appleton 1997) did not locate any sites in spite of containing the potentially sensitive land form of undulating spurs with elevation of 20 to 50 metres AHD. The lack of sites was attributed to the broad swampy nature of the Bundacree Creek valley in this location.

An investigation of the Taree to Coopernook bypass north of Taree (Collins 1998), found that the low lying back-plain which comprised the majority of the study area were unlikely to contain archaeological material because of poor drainage. Two areas of potential deposit were identified on a relatively well drained river terrace. The report also referred to the salvage of sites 30-5-22 and 30-5-43 located on adjacent ridgelines. Natural outcrops of mudstone, chert, jasper, quartz, quartzite and volcanics had been a focus of stone procurement at site 30-5-43 where stone was tested and the early stages of core reduction undertaken. The adjacent ridge 30-5-22 showed evidence of tool production and use with material selected from the previously discussed ridge (in Collins 1998).

The results of work to date would indicate that Aboriginal land use patterns in the forested ridges, peaks and valleys adjacent to the coast have not been tested. Further, inland ridges appear to have been used as travelling routes and the saddles on the ridges are the most likely location of concentrations of artefactual material. Whether saddles closer to the coast which also have access to broad river valleys contain the same frequency of camp sites is not known.

## 1.7 LANDSCAPE CONTEXT

The study area comprises slopes and ridges with elevation between 20 metres and 110 metres above sea level. The study area forms part of a ridgeline which effectively divides the more coastal landscape from the elevated and heavily dissected country to the west. The study area is 8 kilometres from the coast.

The vegetation of the area has been modified by timber felling and clearing, with the study area comprising a few old growth trees and regrowth eucalypt forest approximately 30 years in age. Understorey species which would have provided food resources in the past include *Lomandra longifolia*, *Acacia*, *Persoonia*, *Exocarpus* and ferns. The quarry manager has frequently seen wallabies and snakes within the study area.

The geology of the site comprises shale and greywacke hornfels. The soils of the site are weathered in-situ apart from where downslope movement has moved soil along the drainage lines which are generally located outside the study area.

More recent land uses in the study area are soldier settlement block post 1918, timber getting for a local mill and banana plantation (Stockton 1983).



# ARCHAEOLOGICAL ASSESSMENT

## 2.1 STUDY PLAN

The study area comprises a ridge line which would have provided a travelling route from the mountains and plateau's to the west, to the flats of Bungwahl Creek and swamp to the east and on to the coast in the Black Head area. Oral tradition places a large base camp area on Bungwahl Creek (Mick Leon FLALC pers. comm.).

The review of previous archaeological investigations in the region would indicate that ridge lines, saddles, spurs adjacent to water and river terraces are areas likely to contain material culture of Aboriginal society. Large sites could be expected on the river flats and elevated river terraces a hundred metres south of the study areas' southern boundary. Within the study area smaller sites along the ridgeline and within the saddles may occur.

The site is predominantly a ridgeline, and therefore the survey concentrated on the ridgetops, crests, spurs and saddles. The slopes in the study area are generally too steep to have been suitable for camp sites.

## 2.2 SURVEY STRATEGY

The survey strategy was to utilise all exposures. The exposures tended to occur along the ridgelines in the form of dirt tracks with minimal camber. The site types which would be expected to be found are small artefact scatters and isolated finds. Other heritage items relating to the timber cutting history and banana farm phase of land use may be located.

## 2.3 FIELD METHODS

The field team surveyed the area on foot along the ridgelines. Other vehicle tracks up and down the slopes were inspected by vehicle initially and re-inspected if any reasonable exposure, more than 10 per cent, was present. As the quarry is a functioning roadbase quarry very few road surfaces had not been coated in crushed gravel to some degree.

## 2.4 SURVEY COVERAGE DATA

The coverage achieved was confined to the ridgetops and saddles (*Figure 2.1*). The track had good visibility of eighty per cent in areas which were relatively level near saddles and ridgetops. On the slopes in between variable amounts of road base limited visibility to between ten and fifty per cent.

Houses had been constructed in the two saddles which occur within the study area. One of these houses has been partly demolished, the other remains occupied. The surrounds of the demolished house afforded good visibility however the surface appears excavated down to the B horizon in the process of levelling the house and shed site.

The slopes were only sampled by transects 5, 7 and 8. In general, the slopes within the study area are unlikely to have provided suitable camping areas due to moderate to steep slopes. All slopes generally are heavily timbered and with the exception of one track, which had no visibility. This track had a moderate cover of road base and only offered five per cent visibility.

### *i. Survey Limitations*

There are several limitations which require recognition in order for the survey to be assessed accurately. The most significant of these are geomorphic processes and clearing of the landscape for agriculture and timber getting will have resulted in downslope soil movement which could displace artefacts from ridges and bury material at the foot of slopes.

The limited visibility of the study area and the high impact nature of quarry operations renders the area difficult to assess on the basis of the visibility available at the time of survey.

To supplement the limited visibility, this assessment has used the current understanding of the nature of Aboriginal land use in relation to topography in the Hastings Region. An overall summary of the survey coverage data can be found in *Table 2.1*.

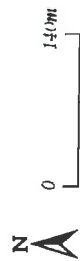
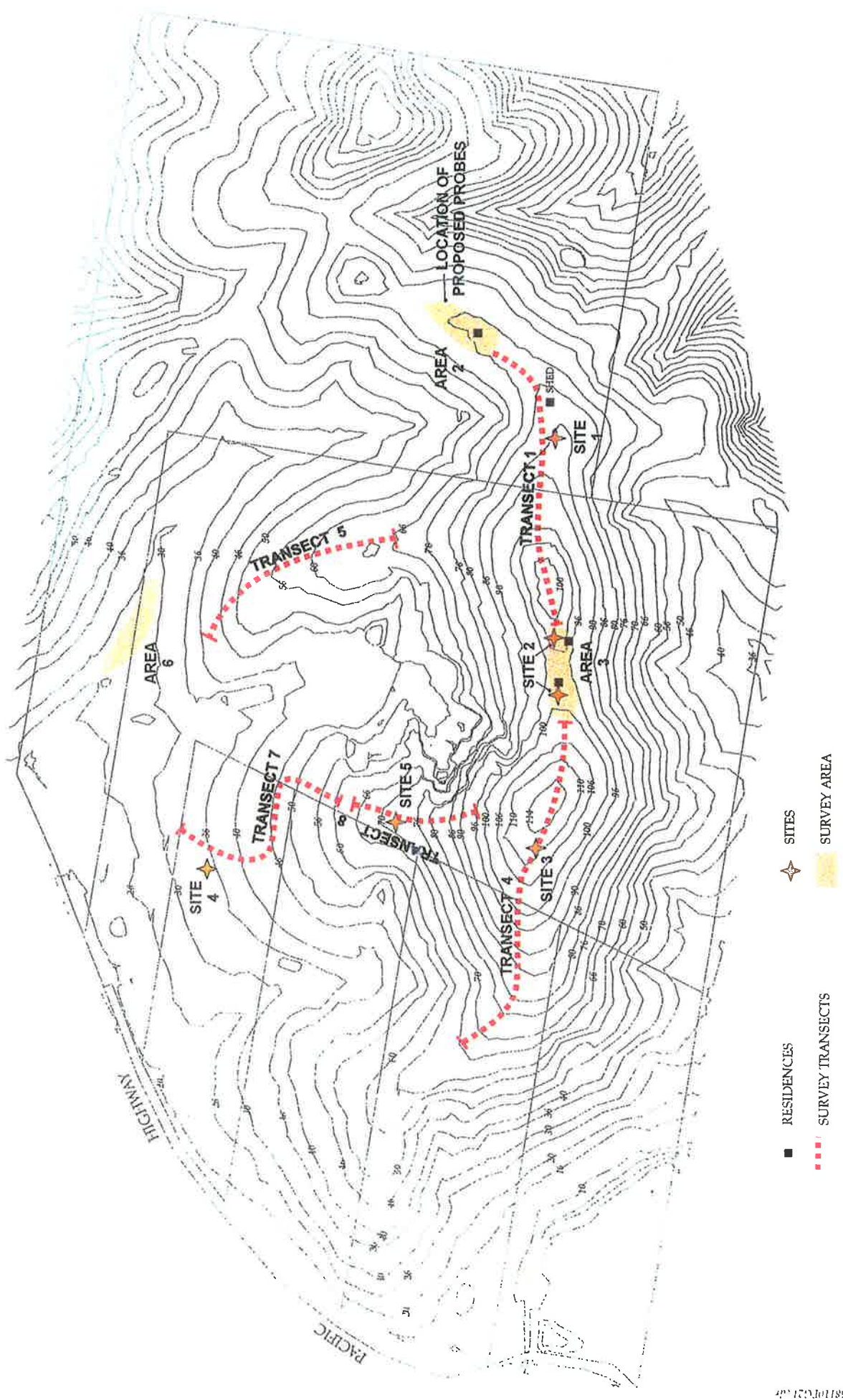


Figure 2.1 AREAS SURVEYED AND RESULTS



Table 2.1 SURVEY COVERAGE DATA

Survey unit no.	Environment	Length x width	Exposure (%)	Visibility (%)	Effective cover
1	ridge tops	500m x 2.5m	70%	80%	700 sq metres
2	level area on spur	200m x 100m	25%	50%	2500 sq metres
3	saddle	200m x 75m	25%	70%	2625 sq metres
4	ridgetop	250m x 2.5m	80%	50%	250 sq metres
5	creek flats	250m x 3m	10%	1%	0.75 sq metres
6	slope	250m x 2m	50%	50%	125 sq metres
				total cover	0.55 hectares

Notes: 1. Exposure and visibility are averaged over the transect or survey area.

## 2.5 DEFINITION OF A SITE

A site is defined by different means dependant upon the environment in which it may occur. Within the study area the following sites are considered more likely to occur based on the topography of the area and previous archaeological work within the region.

### *i. Open sites*

Open sites can range from a single stone artefact (often referred to as an isolated find) to an extensive scatter of a wide range of artefact types (usually designated an open site, open camp site or artefact scatter). There may be evidence of a working floor where stone has been knapped and artefacts may include stone tools, cores, flakes, flaked material, hammerstones or ground stone implements. Associated cultural remains may include hearths and charcoal, ochre, shell or bone.

Such sites may be found on the surface or stratified in subsurface levels which may be capable of dating. An area of potential subsurface material is recognised by characteristics such as an area of likely site location, which has been covered by soil movement due to geomorphic processes, is known as a potential archaeological deposit (PAD). PAD is considered a site until it has been defined by further investigation such as sub-surface testing.

Raw materials found in open sites may be local or introduced and can provide evidence of population movement and exchange systems. Open camp sites or artefact scatters are the most common site types in the Hastings Region.

### *ii. Scarred trees*

Trees were scarred by the removal of bark for a number of purposes. Bark was used to make containers, shields and canoes but scarring can also be due to cutting toe-holds for climbing or holes for access to hollows to secure honey, grubs or possums. Scars vary in size according to purpose. Cultural scarring is distinguishable from natural scarring, using criteria such as:

- the maturity of the tree, usually trees need to be at least 100 years old;
- generally regular shape of scarring, usually elongated or oval;
- termination of scar above ground level;

- ❑ exposed heartwood exhibits no signs of major irregularities;
- ❑ absence of branching at the top of the scarring;
- ❑ in some circumstances, scarring may be modified by carving in traditional cultural patterns; and
- ❑ the presence of stone tools or other sites in the vicinity of the tree can also be an indicator.

Scarred trees may also indicate later human activity in the landscape in the form of surveyors marks or timber felling with the use of planks and hand axes. These sites can have historic importance.

A number of carved trees have also been recorded in the vicinity of Jandra. Carvings generally tend to be geometric designs cut to the heartwood of the tree after the removal of the bark.

### *iii. Stone Arrangements*

A stone arrangement is located at Breakneck Hill, four kilometres north west along the ridgeline from the study area (NPWS 38-2-19). The site comprised clusters of small granite stones placed in a circular arrangement. The majority of the site has been destroyed. Stone arrangements are recognised by the appearance of rocks placed in a regular pattern, which will appear out of context to the general landscape.

An inspection of topographic map and aerial photographs indicated that it is unlikely for rock shelters to occur in the area.

## **2.6 ARCHAEOLOGICAL RECORDING OF SITES**

A total of seven sites were recorded during the initial field survey (*Figure 2.1*). Sites J1 - J5 contained artefacts. Site J1 consisted of one isolated artefact, a massive flaked quartzite pebble, one margin step flaked and grinding striations on a cortical surface. Sites J3 and J5 are small open artefact scatters, site J2 contained potential midden material and J4 is a historic scared tree. Sites J6 and J7 were identified as potential archaeological deposits (PADs). The environmental setting of the site location and site contents are described in *Table 2.2*.

Table 2.2 SITE CONTENTS AND ENVIRONMENT

Survey unit & AMG	Environment	Site contents	Site area	Comments
J1 Nabiac 1:25K 448800E 6453750N	ridgetop vehicle track mid slope	core broken grey FGS 6 neg scars	N/A	located in middle of track signs of vehicle damage
J2 Nabiac 1:25K 44863050E 6453750N	saddle part site on south end part on north. Disrupted by roads and house	south end of saddle contain possible midden material 12 shells oyster, cockle, whelk, pipi North contents 9 small flakes, 7x FGS secondary flakes, 1 x mottled grey FGS, 1 x cream FGS	6m x 3-4m	the midden and artefact scatter may well have extended over the saddle. now house, shed and vehicle tracks cut through
J3 1:25K Nabiac 44850E 6453250N	ridgetop vehicle track, little camber, artefact on top of 100 metre contour knoll adjacent to previous saddle	artefact scatter contents 10 pieces, 6 pieces split pebble FGS, 1 x flake piece FGS, 1x flake chert pink-grey, 2 x flakes FGS	10m x 2m	on vehicle track high level background gravel
J4 1:25K Nabiac 6454250N 448450E	on footslope to north west of quarry surrounded by regrowth	eucalypt stump 3m high with 3x wedges cut for boards for axemen to stand on	N/A	Post contact site related to timber felling for the timber industry or land clearing
J5 1:25K Nabiac 448500E 6454100N	on slope north west of quarry 70m contour	artefact scatter 3x bleached FGS flakes, 1x white chert, 1 white chert chip	5m x 2m	eroded to B horizon exposure adjacent to powerline
J6 1:25k Nabiac	saddle	PAD 1	60m x 45m	Saddle. House and outbuildings, road and services. Some area of natural land surface and areas of fill, perhaps over natural surface
J7 1:25K Nabiac	narrow creek flats	PAD 2	140m x 40m	Narrow creek flats colluvial deposit.

1. FGS fine grain siliceous unless stated otherwise grey in colour.
2. AMG references refer to the Nabiac 1:25,000 topographic mapsheet



The isolated find recorded by Stockton (1989), was not relocated. The artefact was located in an area which had been cleared for a fence line which has now regrown resulting in very low visibility. Dull wet conditions also hindered visibility.

### *2.6.1 Survey effectiveness*

Visibility was a limitation in most of the areas surveyed. The reduced visibility resulted from very high levels of background gravel and rock where exposures did occur. The use of crushed rock on sections of road with a steep gradient for filling wheel ruts and wash-outs also obscured exposures on slopes. However where road base had been used on the road along the ridgeline artefacts were found. This would indicate that the absence of artefacts on the slopes was indicative of site distribution not visibility.

## **2.7 ANALYSIS**

Sites were located in all landforms other than steeper slopes. PAD 1 (J6) was identified on the northern saddle and the narrow creek flat. The saddle is of adequate size to have been utilised as a camping place, and in a good position with access to the ridgeline extending west and swamps and coast to the east. The area has an occupied house with gardens which combines to obscure visibility. The similarity to the site BC5 located by Haglund (1992) during the survey of the Bulahdelah to Coolongolook Bypass was noted by the representatives of the LALC's. The team noted the distribution of imported topsoil related to lawns etc. Areas of exposure on the southern side of the house were inspected, however this area is on the shoulder of the spur and due to the increased slope, could be expected to have few artefacts (Haglund 1992).

No artefacts were located on the level area of the spur. The A horizon was eroded on the southern side. The heavily grassed areas have some potential to retain material under the layers of imported soil and soil moved down slope from the spur shoulder. The house lies on the edge of the north eastern side of the proposed expansion of the quarry and is scheduled for destruction toward the end of the project, in at least 25 years time.

The materials most commonly found was greywacke which occurs on the site. No further quartzite was located (f. previously located artefact). Chert was found in the study area which is consistent with other findings in the wider area (Appleton 1998, Navin & Klaver 1993, Collins 1998). Sources of chert could occur locally where outcrops of the Bundook Beds could provide greywacke, mudstone and chert (Appleton 1998).

All the sites located were disturbed, generally to a degree which reduces the potential significance of the material. The post contact site (the tree) however appears in good condition. The material does comply with the hypothesis put forward by Klaver and Heffernan (1991), that Aboriginal peoples utilised all forms of landscape in this region and sites can be expected to be found in a wide variety of topographic units. Chert outcrops also occur north of the study area in the Carboniferous Byabarra formations at Taree and in the conglomerates of the Camden Haven group north-west of Coopersnook.

The environmental similarity of J6 (PAD 1) to other areas which have revealed archaeological information (BC5, Haglund 1992) warranted further investigation. The investigations of BC5 revealed that intermittent use was made of such areas for stop-over camps. The question has been raised by Rich (in Haglund 1992), that the time between visits would decrease with less distance between the landform and the coast. The level area on the spur has the potential to test this hypothesis if cultural material remains beneath the fill related to the house site.