Survey of Stone Mounds, Dunoon Dam Site
Far North Coast NSW

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Executive Summary

Rous Water commissioned a cultural heritage survey of the proposed Dunoon Dam Site by in November 2011. During this survey a group of some 15 stone mounds were discovered which were subsequently identified as an Aboriginal Burial Ground by the Traditional Owners accompanying the survey. Aboriginal burials have a particular significance for Aboriginal people today and provide important physical and spiritual connections with the land, culture and their past. Due to the high cultural significance of the site a further survey was commissioned by Rous Water in August 2012 to document the site in detail and to assess it archaeologically and ethnographically.

This report presents the results of this survey and scientific assessment to determine if the features classified as aboriginal burials are likely to be burials and if so what options are available to Rous Water to mitigate these features in future planning.

The scientific significance assessment comprised a detailed survey of the site to investigate its extent and to record the number and dimensions of the stone mounds discovered during the initial cultural heritage impact survey conducted by Ainsworth Heritage in November 2011.

The site, situated in a discrete and isolated area in the north east corner of the proposed dam site, was found to contain 25 stone mounds of various sizes, shapes and orientations. Metric analysis of the dimensions of the mounds and their location were compared to see if they bore any similarities to early ethnographic records of Aboriginal Burial Grounds in this part of Australia.

The results of this analysis and interpretation of the physical evidence when taken collectively indicate that there is an extremely high probability that the site is indeed an Aboriginal Burial Ground and support the previous conclusions of the initial cultural heritage survey. There is essentially no other plausible explanation that could account for the formation of the site. Further recommendations are suggested for possible investigation, mitigation and management of the site.

Survey and assessment of an identified Aboriginal Burial Ground within the proposed Dunoon Dam site.

During the initial archaeological survey of the proposed Dunoon Dam Site in November 2011 by Ainsworth Heritage an Aboriginal Burial Ground consisting of a group of at least 15 stone mounds was discovered in the north east corner of the planned inundation area. Traditional Owners accompanying the survey team identified the area as an Aboriginal Burial Ground and thus has high cultural significance for Aboriginal people. Because of the cultural significance and the high degree of sensitivity surrounding the site a desktop assessment researching the original conclusions further was commissioned by Rous Water. This research concluded that the site was highly likely to be an Aboriginal Burial Ground As a result a second field survey was undertaken on 22 August 2012 to investigate and document the area fully to enable scientific assessment the site.

The survey party included Matt Alexander of Ainsworth Heritage, who led the initial survey, Rob Cawley Heritage Officer representing Rous Water, Douglas Hobbs Senior Archaeological Consultant and Wayne Franklin Director of Technical Services Rous Water.

This report documents the results of this survey and gives a site assessment and possible management options.

Site Description

The site is situated in the north eastern corner of the proposed Dunoon Dam Site in the upper reaches of Rocky Creek where the valley begins to become more deeply incised and the topography becomes steeper and less accessible. The site lies at the base of a north easterly trending ridge which descends steeply from the plateau 100 metres above. The toe of this basalt ridge has been truncated by the Rocky Creek stream channel which now flows 5-7 metres below lowest point of the site (H) well above the flood line. The site slopes 10° in a south westerly direction in the south west and rises to 12° in the north east. It covers an area of approximately 2,200 square metres measuring 55 metres north to south by 40 metres east west. 25 stone mounds of various sizes and condition are distributed throughout this area. The site is vegetated with a dense tree cover and an understorey of fern, vines and privet. The basalt stones used to construct the mounds were sourced locally within the site. Two weathered layers of eroded basalt rock outcrop from the soil across the site at two points. One east west across the middle of the site and the other east west across the northern edge. The site is situated on higher well drained ground that is isolated by a wetland to west, a steep gully to east and Rocky Creek to the south making it difficult to access and thus remote.

Figure 1: Oblique view of the north eastern corner of the Dunoon Dam Site showing location of the stone mounds.

Survey Strategy

The first objective was to survey the area to establish the extent and nature of the site and the number of stone mounds. As the site was heavily overgrown it was necessary to clear vegetation from each mound prior to recording. Once cleared the position of each mound was fixed by GPS within 5 metres. The orientation of each mound was measured by compass as many of the mounds were observed to be aligned either north south or east west. The overall dimensions of length, width and height each mound was measured using a laser rangefinder to establish shape, size and approximate volume. An estimate of the number of visible stones in each mound was made as well as the average stone sizes and the degree of displacement of stones around the mounds. Each mound was then photographed from two different angles using a GPS enabled 16 megapixel camera (see Appendix A). The data recorded was then compiled to develop a data base for analysis to see if any correlations yielded further information other than that observed (see table Appendix B).

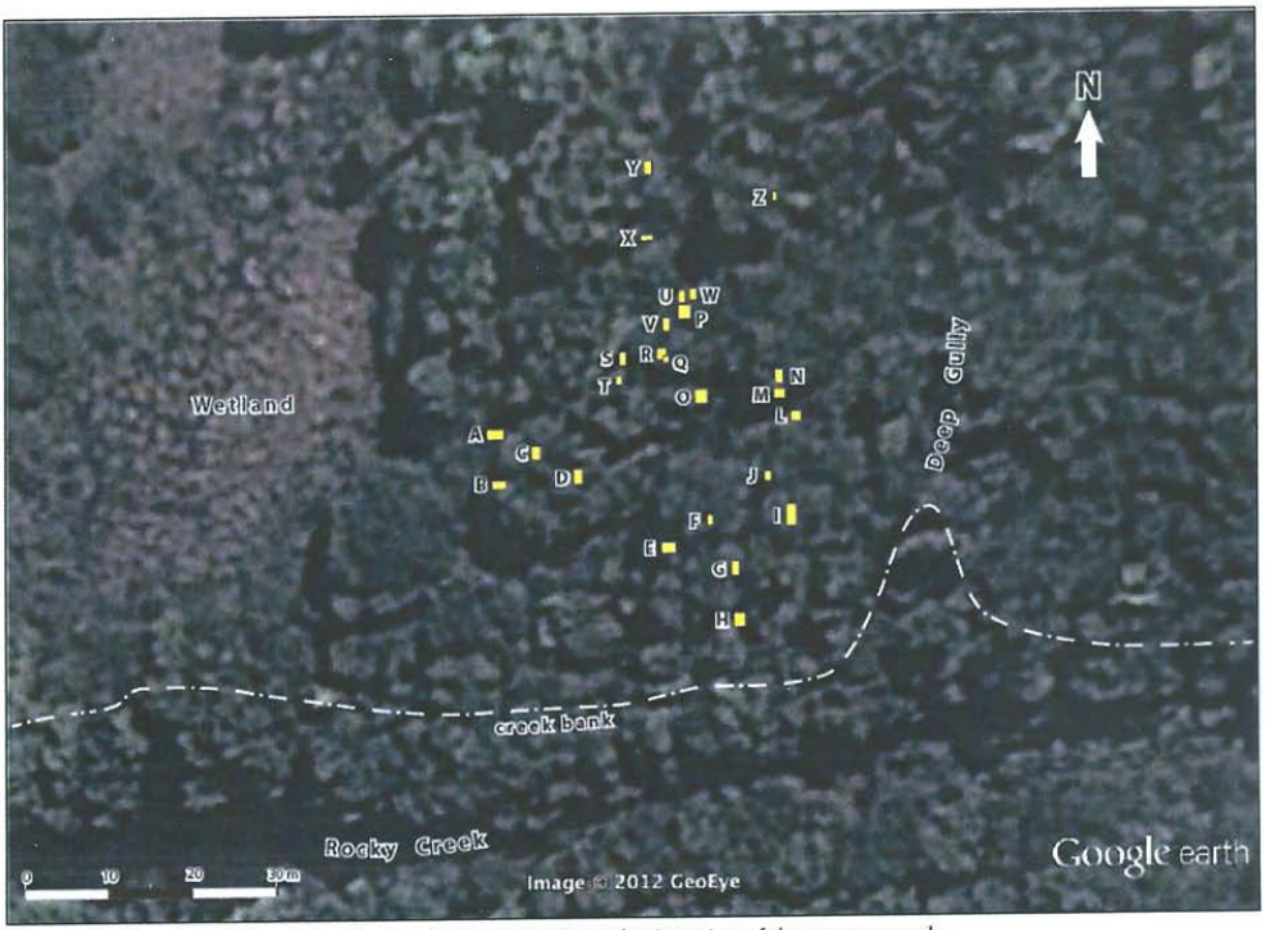
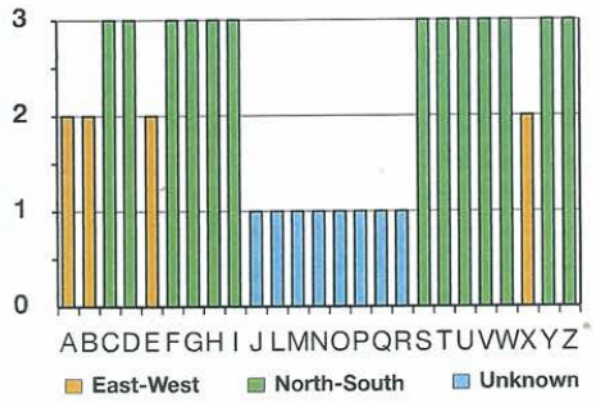


Figure 2: Plan view of the of the site showing location, size and orientation of the stone mounds.

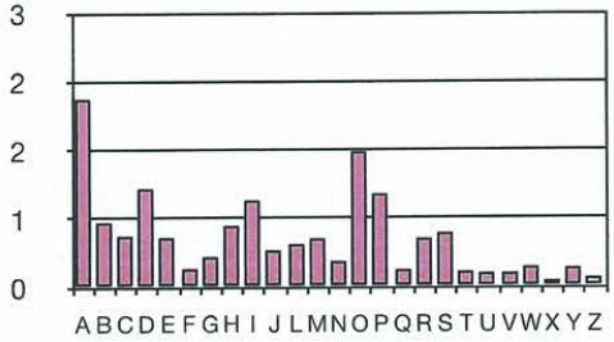
Survey Results

In total 25 stone mounds were located these were numbered from A-X with the exception of K which proved to a be a natural formation. The stone mounds occurred in two distinct shapes, either rectangular (n. 17) or circular oval (n. 8). All the rectangular stone mounds were clearly oriented either north-south (n. 13) or east-west (n. 4). Orientation of the circular oval stone mounds (n. 8) could not be conclusively established. The Graph 1 below shows the orientation of all the stone mounds. It is interesting to note that the circular oval stone mounds (J-R) are grouped in a loose cluster around the centre of the site. This could be evidence to suggest that these stone mounds could relate to a use in a different period of cultural practice compared to the more intact rectilinear stone mounds (A-I) in the south of the site. The rectilinear sites U-Z in the north of the site appeared even older than the other two groups and could predate all the other mounds.

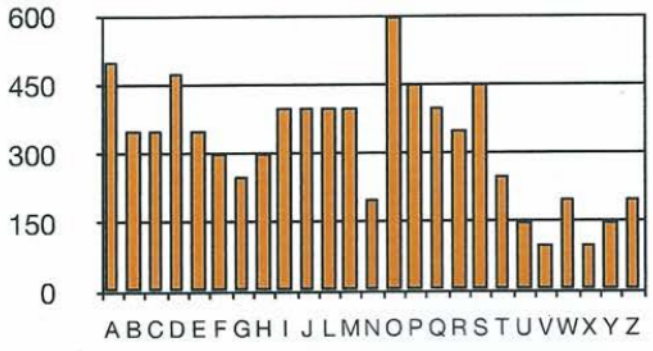


Graph 1: Orientation of the stone mounds.

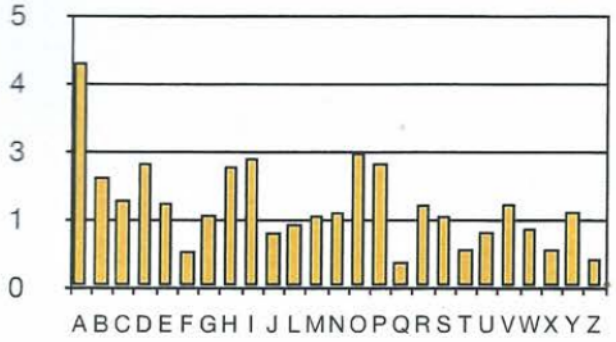
The size of each mound varied considerably from large to small the length varied between 2 metres and .7 metre with an average of 1.37 metres. The width varied from 1.91 to .62 metres with an average of 1.05 metres. Approximate volume ranged from 2.06 to .10 cubic metres, the smallest volumes being mounds T-Z in the northern area of the site this can be seen clearly in Graph 2 below. The stone mounds are constructed of locally derived basalt boulders averaging 200-300mm in diameter. Larger stones of up to 500mm diameter were observed but usually placed at the head and sometimes at the toe as well of the rectilinear stone mounds. The condition of the stone mounds varied from being almost completely intact to mounds where very few stones remained in situ with many of the stones dispersed and partially buried by soil sedimentation. This was particularly true for the stone mounds U-Z in the northern portion of the site. Graphs 3 & 4 below compare the relative heights and areas of the stone mounds and demonstrate how much smaller and eroded the sites U-Z are in volume and height. These mounds in the northern area of the site appeared to predate the other stone mounds judging by the amount of stone dispersal around them and the degree of alluvial sedimentation.



Graph 2: Comparative volumes of the stone mounds.



Graph 3: Comparative heights of the stone mounds.



Graph 4: Comparative areas of the stone mounds.

Archaeological assessment of the site

Although the site was identified as an Aboriginal Burial Ground by Traditional Owners, local Aboriginal knowledge of the site appears to have ben lost overtime. This survey was undertaken to document the site in detail to see if the physical evidence corroborated the initial survey report (Nov 2011) and the following desktop assessment (Feb 2012) which both concluded that the site is most likely to be an Aboriginal Burial Ground.

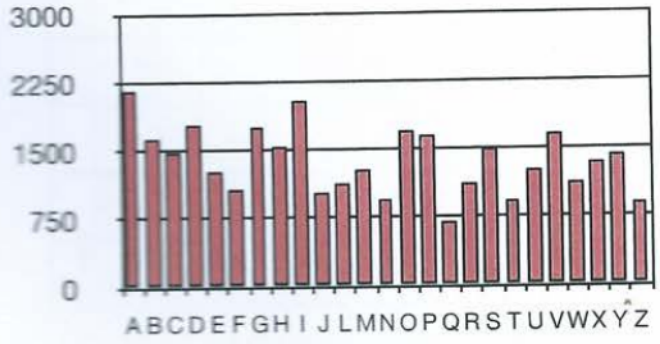
The stone mounds are definitely the product of human activity and the burial stone mound is typical of Aboriginal east coast inland burial practices in this part of Australia. They are not the remnant of European land clearing where the general practice was to push loose boulders into gullies or creeks. European clearing of loose rocks is evident along the northern boundary of the site where rocks have been cleared in a line either side of an old fence line (see photograph Appendix A). The area has been cleared and fenced at least once by Europeans judging by the high number of exotic tree and shrub species now covering the site and the remnants of an old fence. When the stone mounds were erected the site would most likely have been cleared. The evidence of a number of mounds with large trees growing through them suggest that there was most likely a richer nutrient source under the mounds which supports the idea of the stone mounds being burial markers. The grouping of the stone mounds appears generally random in distribution and are not rocks piles made during European land clearing. They are clearly intentional based on shape, orientation and choice and size of the rocks used. The mounds do not exhibit any patterning that is associated with any other known Aboriginal ceremonial grounds or stone arrangements.

The orientation of graves is of great cultural significance to Aboriginal people and offers a major clue in determining the status of the site as an Aboriginal Burial Ground. It was a belief of great importance in Aboriginal cultural that on interment of the corpse the head should face east. The rectilinear mounds are clearly oriented either east west or north south. Where burials were oriented with the head facing north the face was turned so the eyes looked to the east. In the case of the group of circular oval mounds where orientation could not be determined the mounds conform with crouch burials where the corpse was bound in a crouched sitting position and buried facing east. The circular oval mounds tend to cluster near the centre of the site and appear to belong to a different burial tradition than the rectilinear mounds. The site has possibly had three different phases based on the typology and the taphonomy of the mounds:

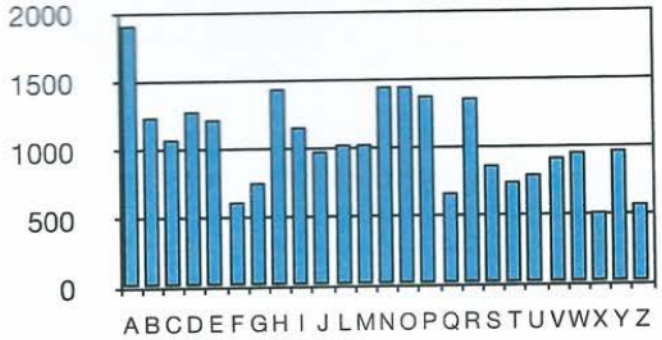
Late Phase: Mounds A-I, **Middle Phase:** Mounds J-R, **Early Phase 1:** Mounds S-Z.

It is most probable the site is prehistoric and dates to the pre-contact period when the valley was still inhabited and uninterrupted by European settlement. It bears similar characteristics to those observed when European arrived and and matches their descriptions closely. The lack of knowledge among today's local Traditional Owners also suggests the site has been there for some considerable time.

The shape and size of the mounds accords with early ethnographic observations. Meehan (1971, Vol.1, p55-6) states that the shapes can be roughly divided into crescentic, rectangular or circular-oval with grave lengths varying from 1- 2 m divided roughly into three categories: Short (800 - 1100 mm), Medium (1200 - 1400 mm) and Long (1500 - 2000 mm). The widths ranged from 450 - 1200 mm divided into three categories: Narrow (450 mm), Medium (750 mm) and Wide (1- 1.2 mm). Graphs 5 & 6 below show the distribution of length and width of the mounds. The dimensions of the mounds fall within the sizes observed by early European ethnographers.



Graph 5: Comparative length of the stone mounds.



Graph 6: Comparative width of the stone mounds.

The wide variation of sizes of mounds, from large to very small, indicate that each of these mounds most likely represent burials markers from babies and children to adults. The proximity to the Nimbin Burial Mounds 10 km to the north west further supports the likelihood that area was a burial ground. Aboriginal Burial Grounds are only found where large groups and permanent but finite resources coincide (Pardoe 1988a). This indicates that the immediate area formed by the virtually closed valley encompassing the Proposed Dunoon Dam Site would have most likely been an ecologically self contained clan estate that would have supported a steady aboriginal population. The site, located in a discrete and remote area at the head of the valley, is consistent with what we know of aboriginal burial practices in this part of Australia where they buried their dead well away from the wider open areas to the south which would have provided an area for hunting and foraging.

When the evidence is taken collectively, particularly the mound variables of orientation, size, shape and distribution as well as the remote location, combine to support the previous conclusions of the initial cultural heritage survey. There is essentially no other plausible explanation that could account for the formation of the site. On balance the evidence appears to confirm that the site is in fact an Aboriginal Burial Ground and thus is of high cultural significance.

Further Recommendations

It is recommended that a wider liaison with local Aboriginal groups be carried out to ascertain if any knowledge survives of the site.

Ground Penetrating Radar (GPR) has been suggested as a possible technique for non-invasively investigating the sub soil beneath the mounds for indications of a burial. Its is doubtful that GPR would yield an identifiable signal because of soil moisture, the clay soils and compaction of soil over a long period in a high rainfall area. Compounding this it would be almost impossible logistically to achieve because of the dense vegetation and uneven nature of the site preventing access for the remote sensing equipment.

The only way to conclusively prove if the mounds do mark burials would be to excavate two of the mounds to test for the presence of human remains and grave goods. The objections to this option is that it is destructive and culturally invasive and would unlikely to be agreed to by the Traditional Owners.
An alternative option would be to get the Traditional Owners to agree to allow the site to be left in situ and inundated by the dam and thus preserved. If this was agreeable there would be problems of disturbance during clearing of large trees and the protection of the area during the dam construction

As Rous Water are the legal owners of the land the Burial Ground is situated on it is recommended that Rous Water establish means to protect the site now that it has been identified and recorded and will be placed on the NSW Register of Aboriginal sites as a significant site.

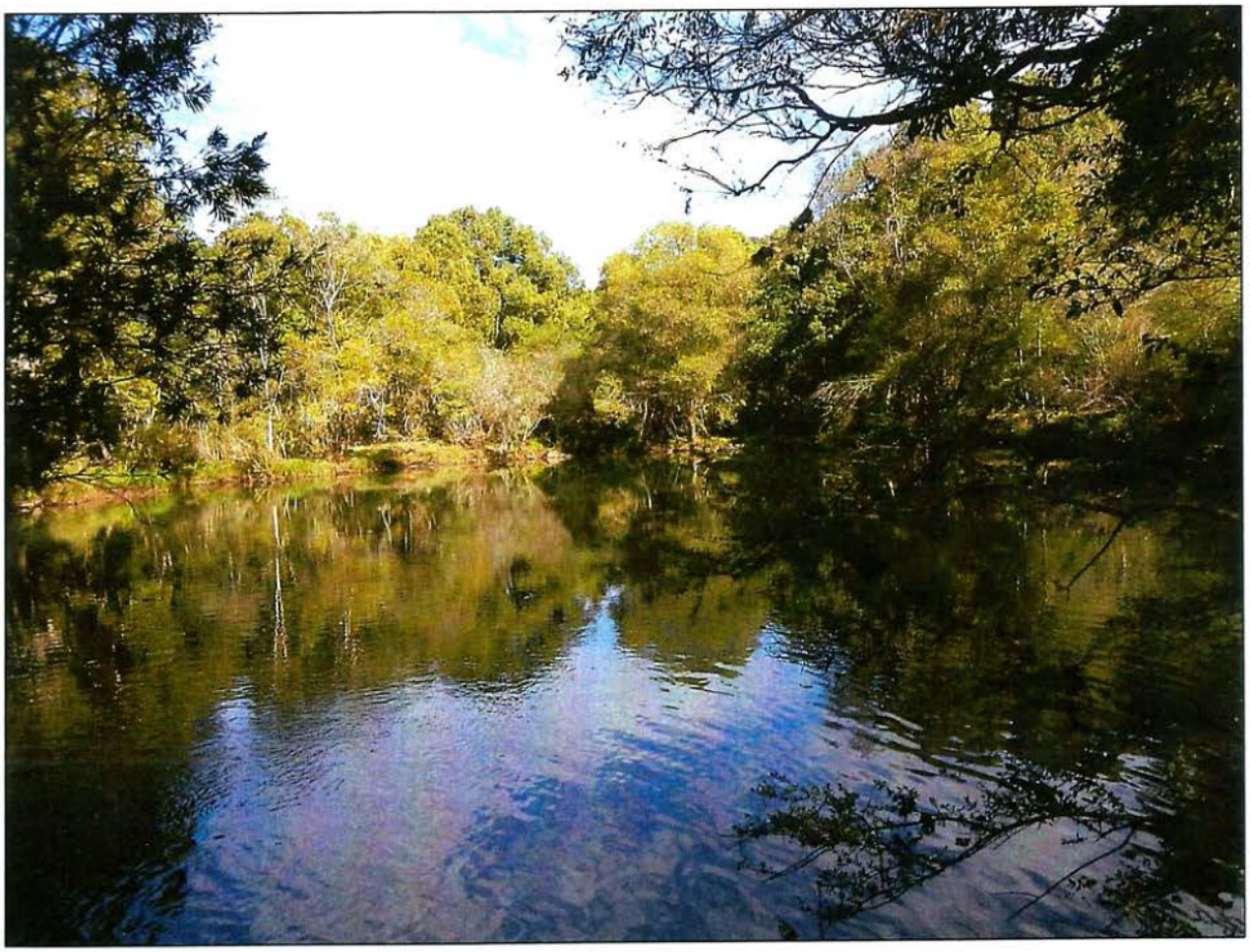
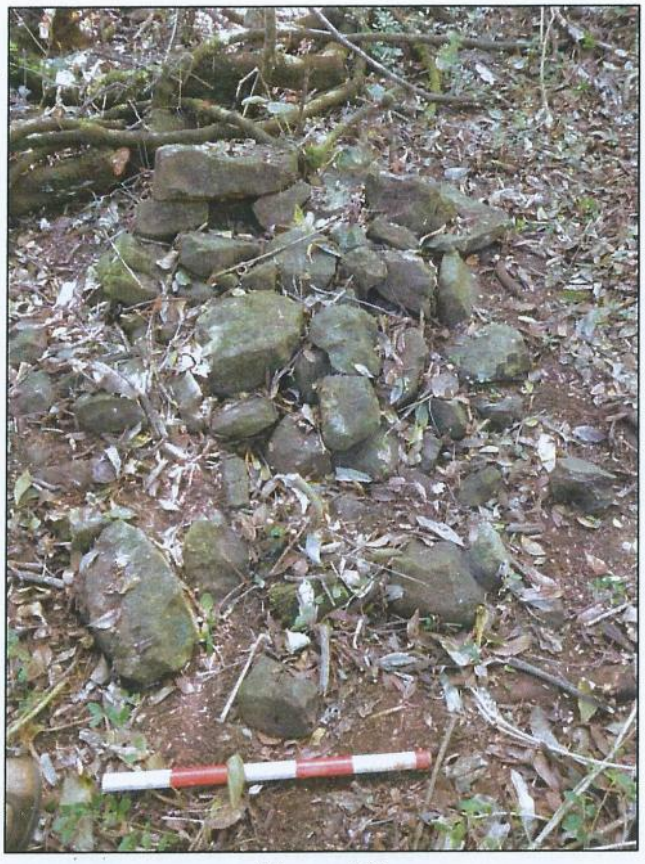


Figure 3: View of large pool in Rocky Creek below the Burial Site.

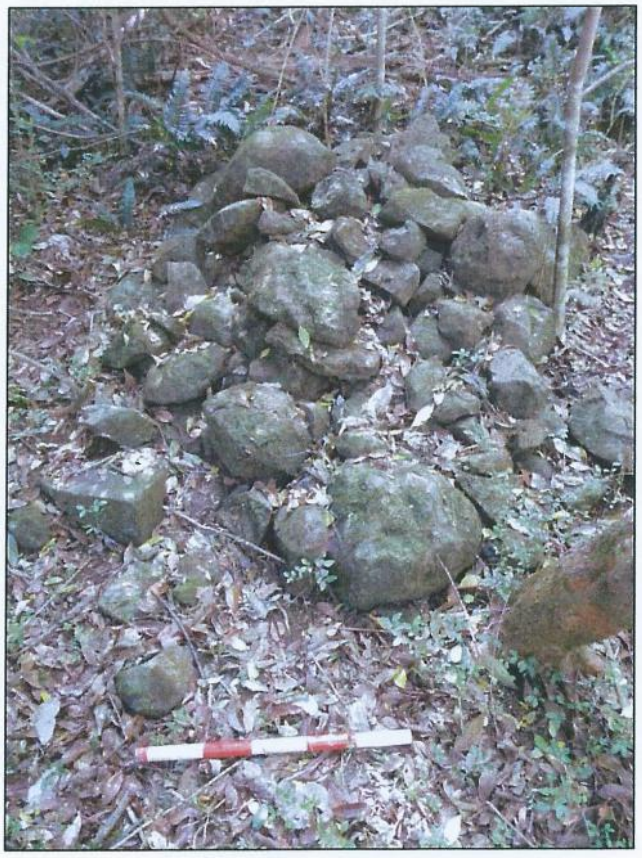
Appendix A - Photographs

Mound A

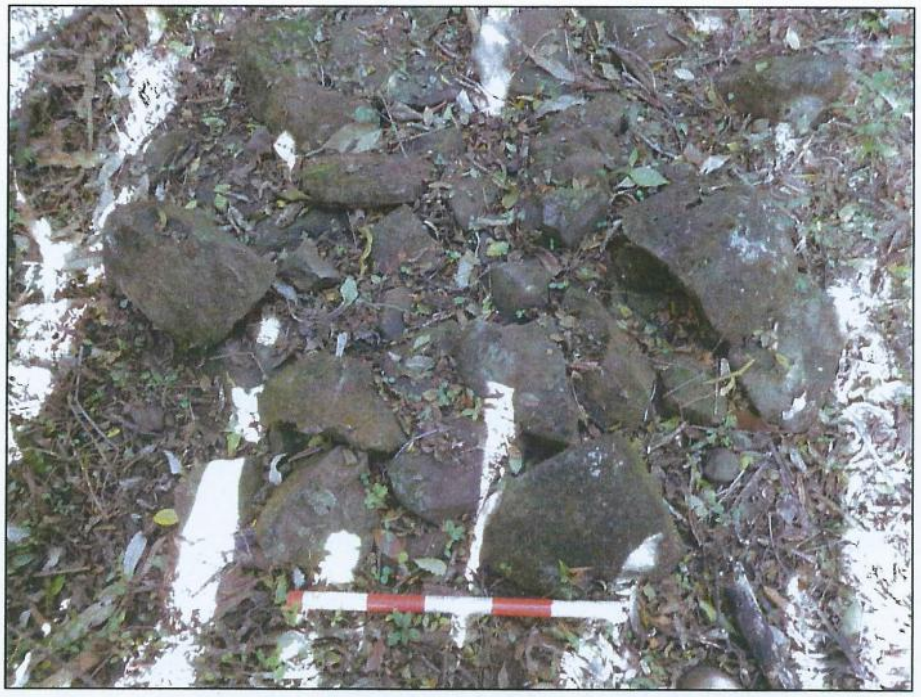
Mound B



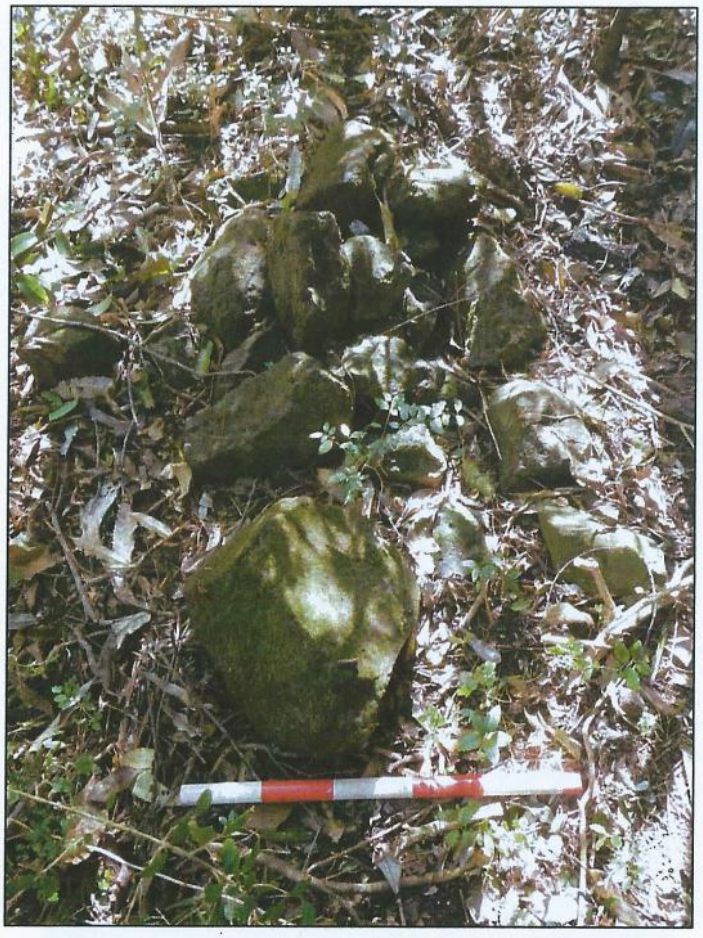
Mound C



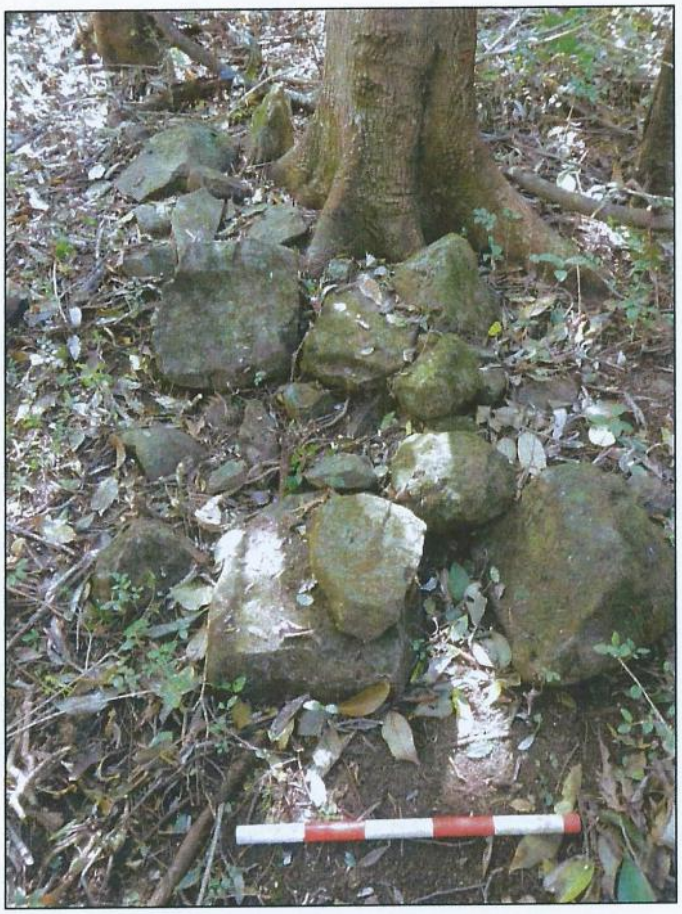
Mound D



Mound E



Mound F



Mound G

Mound H

Mound I

Mound J

Mound L

Mound M

Mound N

Mound O

Mound P

Mound Q

Mound R

Mound S

Mound T

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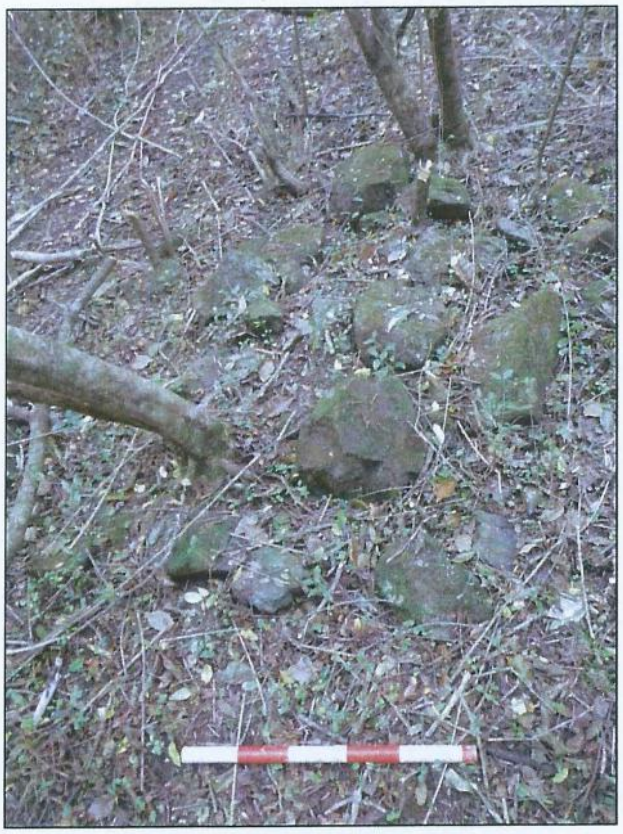
Mound V

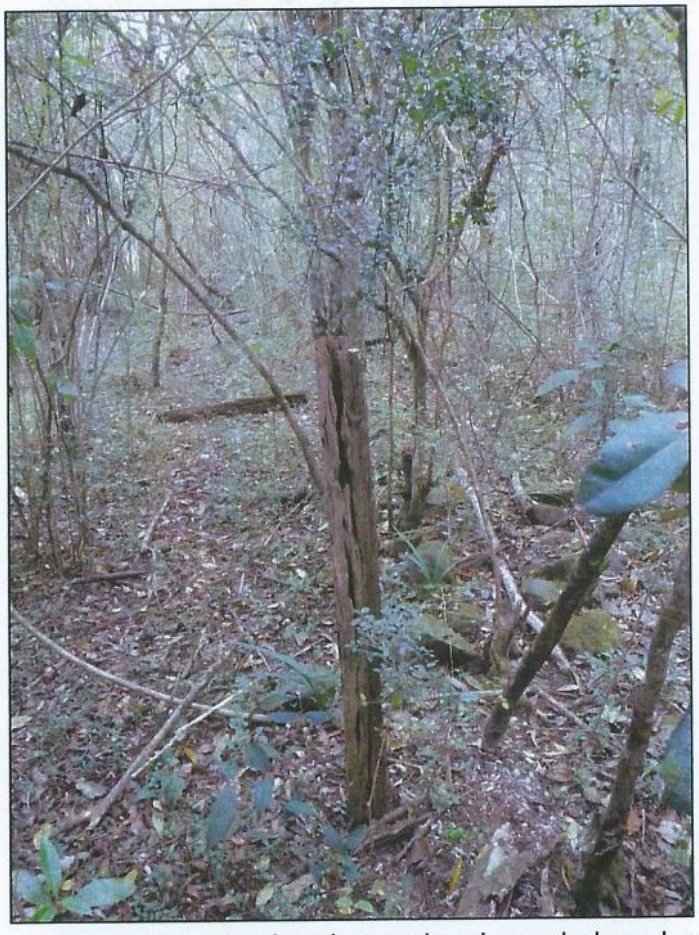
Mound W

Mound X



Mound Y

Mound Z



Old European fence line showing rocks cleared along boundary.

Appendix B - Survey Data Set

IDENT	ZONE	EASTING	NORTHING	DATE/TIME	ALTITUDE	ORIENTATION	LENGTH	WIDTH	HEIGHT	STONECOUNT	MAX_STONE	AREA	VOLUME	PHOTOS	NOTES
A	56J	529937.00	6829517.00	22-AUG-12 9:44:17AM	76.00	EW	2160	1910	500	50+	500	4.13	2.06	12-16	Some displaced rocks scattered to southwest
B	56J	529942.00	6829518.00	22-AUG-12 10:32:34A	77.00	EW	1630	1240	350	40+	400	2.02	0.71	17-18	A large tree has grown through east side of mound displacing the rocks
C	56J	529941.88	6829515.72	22-AUG-12 10:40:19A	76.00	NS	1480	1080	350	40+	450	1.60	0.56	19-20	Some displaced rocks scattered to south
D	56J	529946.37	6829513.27	22-AUG-12 10:59:57A	76.00	NS	1780	1280	475	50+	650	2.28	1.08	21-22	Limited scatter of displaced rocks, mound in good condiditon
E	56J	529955.93	6829505.49	22-AUG-12 11:12:17A	75.00	EW	1270	1220	350	30+	300	1.55	0.54	23-25	Broad and low with displaced stones scattered to south
F	56J	529960.33	6829508.47	22-AUG-12 11:38:20A	76.00	NS	1070	620	300	20+	300	0.66	0.20	26-27	Smaller mound with limited scattered rocks
G	56J	529963.15	6829503.25	22-AUG-12 11:43:44A	75.00	NS	1750	760	250	25+	300	1.33	0.33	28-29	Tree growing through the northern end of mound displacing the rocks
H	56J	529963.63	6829497.71	22-AUG-12 11:49:25A	75.00	NS	1540	1440	300	50+	400	2.22	0.67	30-31	Broad burial with possible displaced stones scattered downslope. Orientation not entirely clear
I	56J	529969.03	6829509.00	22-AUG-12 12:02:54P	76.00	NS	2040	1160	400	20+	750	2.37	0.95	32-33	Very large stones and long mound with some scattered displaced stones
J	56J	529966.40	6829513.11	22-AUG-12 12:11:33P	77.00	Unknown	1030	980	400	30+	450	1.01	0.40	34-35	Some rocks displaced. Possible crouch burial.
L	56J	529969.25	6829519.30	22-AUG-12 12:14:51P	78.00	Unknown	1130	1030	400	15+	300	1.16	0.47	36-37	Circular, possible crouch
M	56J	529967.70	6829522.19	22-AUG-12 12:16:18P	79.00	Unknown	1280	1030	400	30+	500	1.32	0.53	38-39	Circular, possible crouch
N	56J	529967.41	6829523.41	22-AUG-12 12:19:28P	79.00	Unknown	950	1450	200	15+	250	1.38	0.28	40-41	Small burial with moderate scatter of displaced rocks downslope
O	56J	529959.39	6829521.43	22-AUG-12 12:21:09P	78.00	Unknown	1700	1450	600	50+	400	2.47	1.48	42-43	Large circular mound with rocks scattered downslope
P	56J	529957.57	6829530.10	22-AUG-12 12:24:13P	79.00	Unknown	1650	1380	450	40+	350	2.28	1.02	46-47	Large mound with limited displaced rock scatter
Q	56J	529955.63	6829525.30	22-AUG-12 12:27:24P	78.00	Unknown	700	670	400	10+	300	0.47	0.19	44-45	Small mound with limited scatter of displaced rock. Possibly a child's burial
R	56J	529955.24	6829525.78	22-AUG-12 12:28:34P	78.00	Unknown	1120	1360	350	25+	300	1.52	0.53	48-49	Moderate mound with downhill scatter of displaced rock
S	56J	529951.19	6829525.41	22-AUG-12 12:29:45P	78.00	NS	1500	870	450	10+	500	1.31	0.59	51-51	Large stones in mound with displaced rock scattered downslope
T	56J	529950.78	6829523.19	22-AUG-12 12:31:09P	78.00	NS	930	750	250	20+	300	0.70	0.17	52-53	Mound with displaced rocks widely scattered
U	56J	529957.36	6829531.53	22-AUG-12 12:33:12P	80.00	NS	1270	800	150	20+	150	1.02	0.15	54-55	Lower mound with smaller stones
V	56J	529955.71	6829528.73	22-AUG-12 12:34:08P	79.00	NS	1660	920	100	10+	200	1.53	0.15	56-57	Small stones in mound, potential to not be a burial
W	56J	529958.50	6829531.80	22-AUG-12 12:35:26P	80.00	NS	1130	960	200	15+	300	1.08	0.22	58-59	Small mound with displaced rocks scattered
X	56J	529953.73	6829537.47	22-AUG-12 12:36:40P	80.00	EW	1350	520	100	15+	400	0.70	0.07	60-61	Small mound with moderate scattering of displaced rocks
Y	56J	529953.89	6829544.28	22-AUG-12 12:38:32P	82.00	NS	1430	970	150	20+	250	1.39	0.21	62-63	Broad and loose rock scatter around a central mound
Z	56J	529966.70	6829541.21	22-AUG-12 2:21:59PM	82.00	NS	900	580	200	15+	200	0.52	0.10	64-65	Small mound with limited scatter of displaced rocks. Possibly a child's burial

Table 1: Survey Dataset

References

Meehan, B. 1971. The form, distribution and antiquity of Australian Aboriginal mortuary practices. Vols. 1,2,3. Unpublished M.A. Thesis, University of Sydney.

Pardoe, C. 1988a. The cemetery as a symbol. The distribution of prehistoric burial grounds in south eastern Australia. Archaeology and Oceania, Vol. 23, No. 1, April 1988.