DEPARTMENT OF ENVIRONMENT AND CONSERVATION

KOKODA INITIATIVE – STREAM B2 ARCHAEOLOGICAL DESKTOP STUDY

21 December 2012

A report by
ANU Enterprise Pty Ltd

Building 95, Fulton Muir Building
Corner Barry Drive & North Road
The Australian National University
Canberra ACT 0200
Australia
ACN 008 548 650

Pictures (M. Leavesley and M. Prebble) of Madilogo archaeological survey 2012 in clockwise order: A. sieving sediment (Rex, Jonah, Gilbert and Elton); B. Mrs Kabi Moea with stone axe; C. Mrs Deduri with stone axe D. Herman Mandui (NMAG) drawing stone axe.

AUTHORS

Dr Matthew Leavesley	Convener of Archaeology and Deputy Dean, School of Humanities and Social Sciences, University of Papua New Guinea, National Capital District, Papua New Guinea
Dr Matthew Prebble	Research Fellow, Archaeology & Natural History, School of Culture History and Languages, College of Asia & Pacific, Australian National University, Canberra, Australia

18 December 2012

A report by ANU Enterprise Pty Ltd for Department of Environment and Conservation
(Papua New Guinea Government, Port Moresby)

EXECUTIVE SUMMARY

This report was commissioned by the the Department of Environment and Conservation (DEC, Papua New Guinea) as part of work under the Joint Understanding between the Australian and Papua New Guinea governments. The report is a **Desktop Study**, with inputs from preliminary consultations and fact-finding in Port Moresby, namely at the National Museum and Art Gallery, Papua New Guinea and University of Papua New Guinea Library, but also at the National Library, National Archives and Australian National University Libraries in Canberra, Australia. This report also outlines the utility of aerial imagery from early surveys obtained since 1956 as a tool for archaeological interpretation within the AOI.

An initial baseline social mapping study was conducted in 2008 which included a chapter describing the current state of archaeology within the broad proximity of the AOI (Burton et al. 2009; Ballard, 2009). Subsequent to this, a series of social mapping studies including Burton (2010) and Burton, J. and L.S. digim'Rina (2011) were conducted, and in following from Ballard (2009), they conclude that no archaeological surveys have been undertaken in the area due to inaccessibility. Due to the importance of the archaeology, specifically to the Naoro-Brown catchment, here we present a desktop study of the archaeology and environmental archaeology.

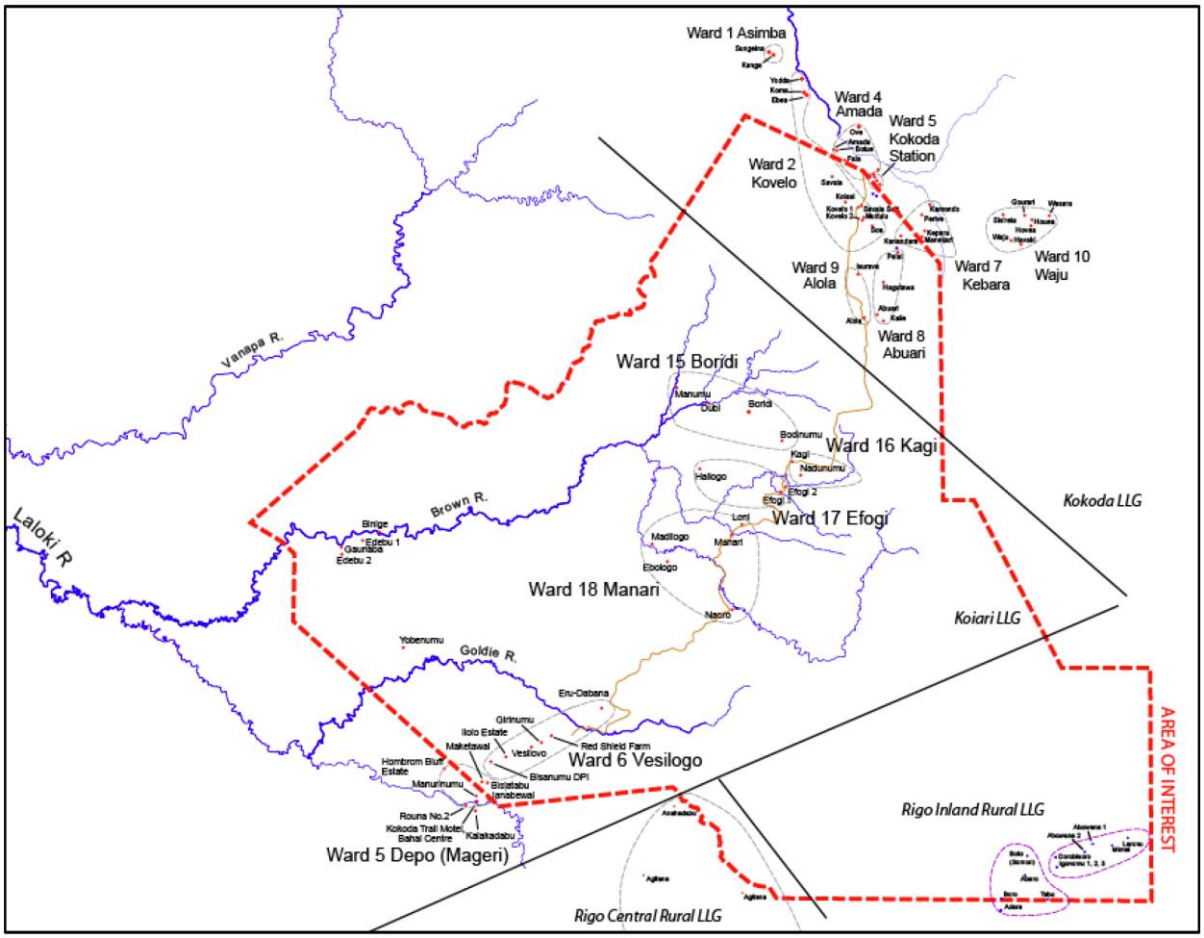
Recommendations based on the results of the desktop survey and of the preliminary archaeological survey at Madilogo are provided (see Prebble et al. 2012). The Owen Stanley Range is a pivotal area for the archaeology of late Pleistocene occupation (last 50,000 years) in Papua New Guinea given the presence of buried soil horizons from periodic and massive ash deposition from the Mt Lamington volcano, only around 40 km to the east of the periphery of the AOI. This potential still needs to be assessed following more intensive archaeological excavation.

Note: **Appendix 1** contains draft Terms of Reference for a programme of social mapping field work (*per TOR, for development in consultation with SEWPaC and DEC*).

ACKNOWLEDGEMENTS

We thank the following people for assisting with this report:
Elton Kaitokai and James Sabi at the Department of Environment and Conservation (Papua New Guinea Government, Port Moresby); Herman Mandui and Dr Andrew Moutu of the National Museum and Art Gallery, Papua New Guinea; Dr John Burton, Dr Robin Hide, Dr Chris Ballard, Dr Pam Swadling and Em. Prof. Geoff Hope of the Australian National University. Prof. Glenn Summerhayes of the University of Otago, and Em. Prof. Peter White of the University of Sydney. Finally we would like to thank Karen Fominas and Adam Folkard of ANU Enterprise Pty Ltd.

FRONT PIECE



Map 1 Location of AOI and LLG Wards in the Kokoda Track Local Level Government Special Purpose Authority.

ABBREVIATIONS

ANU	Australian National University, Canberra
AOI	Area of Interest
BP	Before Present
DEC	Department of Environment and Conservation, Papua New Guinea
KTA	Kokoda Track Authority, proclaimed 11 June 2003
LLG	Local Level Government
NMAG	National Museum and Art Gallery, Papua New Guinea
NAA	National Archives of Australia, Canberra
NLA	National Library of Australia, Canberra
RIHN	Research Institute of Humanity and Nature, Kyoto, Japan
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities (Australia)
UO	University of Otago, Dunedin, New Zealand
UPNG	University of Papua New Guinea, Papua New Guinea

ARCHAEOLOGICAL RESEARCH TIMELINE

First contacts relevant for archaeological research adapted from Burton et al. (2009):

1875 Octavius Stone in Port Moresby; describes 'three tribes': Motu, Koita and Koiari (Stone, 1876).

1879 Rev. James Chalmers went with Rev. William Goldie for one day's walk beyond the Laloki River (Chalmers, 1886)

1887 Henry Forbes expedition down the Naoro River and probably up the Dobunumu ridgeline to Mt Ginianumu (Trotter, 1890). Dense population noted.

1889 William MacGregor, Lieutenant Governor of British New Guinea, climbed and named Mt Victoria (Joyce, 1974).

1897 Report of J. Brownlee on geography of Brown and Naoro Rivers, (Cairns Morning Post 29 Jul 1897). MacGregor found a new track from the 'head of the Brown River' to the Mambare River: 'the natives were numerous' (Sydney Morning Herald, 17 Sep 1897).

1899 Government Surveyor, H. H. Stuart Russell, patrols through the Mountain Koiari to find a 'road' from Brown River to the Yodda gold field; writes of 'Koriri', i.e. Koiari, people.

Archaeological interest:

1917 E.R. Stanley documents a limestone burial cave at Iawarere (Stanley, 1917)

1922 W.M. Strong documents four rock art sites around Eriama (Strong, 1924)

1931 F.E. Williams documents rock art sites and conducted test excavations in the Sogeri region (Williams, 1931)

1943 M. Leask documents more rock sites in the Sogeri region including a hilltop midden (Leask, 1943)

1964 J.P. White and C. Shrire document more rock art sites in the Sogeri region (White and White, 1964)

1968-69 S. Bulmer documents more rock art sites in the Sogeri region

1978 S. Bulmer included rock art sites from Sogeri region in her PhD thesis

1980s P. Swadling (NMAG, PNG) documents a further 19 rock art sites

2008 G. Summerhayes (UO), H. Mandui and N. Araho (NMAG), H. Davies (UPNG), P. Matthews and L. Hosoya (RIHN), G. Hope and M. Prebble (ANU) document the archaeology, environmental archaeology and ethnobotany of the Kokoda Valley (focused on Wards 1 and 7, immediately to the north of the AOI). Forthcoming edited volume due in 2013.

2012 M. Leavesley, H. Mandui, E. Kaitokai and M. Prebble archaeological survey of Madilogo

OWEN STANLEY RANGE ARCHAEOLOGICAL SUMMARY

45 Ka	Initial Pleistocene colonisation of the Owen Stanley Range at Kosipe, Ivane Valley, Central Province (Summerhayes et al., 2010).
25-14 Ka	Occupation hiatus in Kosipe sequence
10 Ka -	Occupational sequence poorly described, probably introduction of root crops in the mid-Holocene; significant movement of people and adaptation to lower montane ecosystems.

OWEN STANLEY RANGE ENVIRONMENTAL ARCHAEOLOGY TIMELINE

~90-70 Ka	Super eruption at Mt Lamington blanketing the Owen Stanley Range in meters of ash (Ruxton, 1988).
45-40 Ka	Initial human colonization (Summerhayes et al., 2010).
25-14 Ka	Tree-line is pushed down to around 2000-1500 m in elevation leaving open habitats dominated by tree ferns and grassland.
~12Ka	Numba ash from the Mangalese sequence (Ruxton, 1988).
~9.5 Ka	Surani ash from the Mangalese sequence (Ruxton, 1988).
~9 Ka	Owalama ash from the Mangalese sequence (Ruxton, 1988).
~7 Ka	Dea ash from the Mangalese and Ash 5 from the Touku sequence (Ruxton, 1988, Hope et al. in prep.).
~6.6 Ka	Ash 4 from the Touku sequence (Hope et al in prep).
~5.5 Ka	Ash 3 from the Touku sequence (Hope et al in prep).
~4.2 Ka	Ash 2 from the Touku sequence (Hope et al in prep).
0.5 Ka	Ash 1 from the Touku sequence (Hope et al in prep).
1690 AD	Tibito ash, marked across Papua New Guinea in many lake and swamp sequences.
1951 AD	Mt Lamington erupts depositing ash as far as Port Moresby.

Contents

ARCHAEOLOGY

National Museum (NMAG) site records

Ballard (2009) identified a number of sites within the region listed in Appendix G. Appendix 2 lists all the sites listed in Appendix G as well as a number of additional sites according to their proximity to the AOI. A more complete description of each site is given in **Appendix 2** of this report. None of the sites located during the 2012 survey of Madilogo have been included in this list. Please see Prebble et al. (2012) for details. Most of the sites listed are located outside the Kokoda Trail (Burton 2010: 1). Of the nine sites located within the AOI almost all of these are located near Uberi village at the southern end of the trail. They consist of a rockshelter with paintings, human bones and pottery sherds. A number of sites are located close by the AOI, but all of these are also situated near Uberi village. The AOI has clearly received little attention from archaeologists. However, much can be gained from a consideration of nearby regions that have been subjected to archaeological research. In particular, these areas include; the Sogeri Plateau, the Laloki River valley coastal Papua and Kosipe. What follows is a brief description of the archaeology of each area with particular attention to how these studies might inform archaeology within the AOI.

Pleistocene human occupation

The earliest evidence of human occupation in New Guinea indicates that hunter-gatherers occupied rainforests to at least 2000 m asl. by 46,000 BP (Summerhayes et al. 2010). The Ivane Valley is a wide flat valley with a long volcanic history. Indeed the sites consist of strata dominated by volcanic tephra. Research in the Ivane Valley demonstrates that people produced various types of stone implements including axe/adzes using raw materials collected from the local area. They also collected various plant foods including *Pandanus* sp. (Julianettii complex) and yams (*Dioscorea* spp.). White et al. (1972) suggested that the first people to colonise the Papuan Mountains were drawn to the seasonally available *Pandanus* sp. nuts known as *karuka*.
Little evidence was recovered for the period between 40,000 and 8,000 BP. However, after 8,000 BP the archaeological signature in the Ivane Valley suggests the beginnings of sedentary subsistence strategies based on swidden agriculture. Occupation appears to have been fairly stable from this time forth.

Archaeological and Environmental Archaeology research at Kosipe have demonstrated a number of aspects of human subsistence in the Pleistocene applicable to the AOI. Firstly, the Kosipe research indicates that Pleistocene hunter-gatherers are likely to have occupied the AOI for something in the order of 50,000 years. Secondly, open sites similar to those identified in the Ivane Valley are likely to exist across the AOI. Thirdly, at Kosipe, a number of Pleistocene sites are located on low spurs overlooking relatively broad flat valleys. Although the AOI does not include valleys of the same scale as Kosipe there are a number of valleys with similarities. These include; the middle and upper Naoro River valley and the alluvial basins of Myola 1 and 2 amongst others. Fourthly, although volcanoes tend to be incredibly destructive, ash deposits can act to preserve archaeological sites, either by overlaying a cap of ash, providing a substrate with which hearths and other features may become

embedded, or, by creating depositional environments suitable for the preservation of organic remains (i.e. by impounding river catchments).

Early to Mid-Holocene

The best evidence for the early to mid-Holocene occupation of the broader region comes from the Papuan coast. Sites have been reported from the Yule Island region (Vanderwal, 1973) and at Caution Bay (McNiven et al. 2011; McNiven et al. 2012; David et al. 2011 and David et al. 2012). The Caution Bay project is ongoing but some useful preliminary results are already available. Previously the consensus was that Koita hunter-gatherers stayed primarily in the foothills of the Owen Stanley Ranges and visited the coastal regions during specific periods of the year to hunt. In particular it was thought that they hunted *Thylogale sp*. and *Dorcopsus sp*. wallabies. Their subsistence strategy was thought to be primarily based on the exploitation of inland and riverine resources. One hypothesis proposed for the minimal presence of people along the coastal swamp-dominated foot hills of the Owen Stanley Range was the likely prevalence of endemic *Plasmodium vivax* malaria spread by the widely distributed *Anopheles* mosquito that thrives in swampy habitats. This disease currently accounts for 65% of cases of malaria in the region; (http://www.cdc.gov/malaria/) and may have limited the occupation of people to certain coastal environments.

At around 2,000 years BP a new group of coastal traders appeared on the landscape and were thought to be the forebears of contemporary Motuans. This all changed with the evidence recently provided from the Caution Bay excavations. Now it is clear that the Koita, or their ancestors were active exploiters of littoral zone and marine resources (McNiven et al. 2012). They occupied coastal sand dunes where they also buried their dead (McNiven et al. 2012). On the available evidence it is currently unknown as to whether they were only seasonal occupiers of the coast as previously believed. Given that they occupied sand-dunes, away from the larger swamp and mangrove areas, this may have minimised the prevalence of malaria, if it was ever prevalent at all. The evidence from the Papuan coast is particularly informative in our considerations of the Mountain Koiari. Ancestral hunter-gatherers in this region were very mobile moving from the coast to the Owen Stanley Ranges. They were incredibly adaptable subsisting on both coastal resource zones as well as the extensive river systems of the dense lowland forests of the Range.

Late-Holocene

The late-Holocene archaeological record along the Papuan coast is dominated by investigations of trade and exchange. While archaeologists have taken a particular interest in coastal trade and exchange, dominated by the movement of pottery, there is also important evidence of trade inland. In particular, Allen (1977a) reports Motuans on Motupore exchanging their catch of fish for wallabies caught by Koita. Elsewhere Allen (1977b) reports trade/exchange networks wherein pottery produced by Motuans is exchanged for various other items culminating with the significant quantities of pottery moving inland.

The evidence from the Late-Holocene is particularly informative when considering the archaeological potential of the Mountain Koiari region in general and the Kokoda Trail region in particular. Firstly, archaeologists are yet to map the full extent of inland trade networks. Pottery that

was almost certainly produced on the coast has been found on the Sogeri Plateau (Allen 1972; Bulmer 1968, 1975, 1978; Lampert 1969; Swadling 1977, 1978; White and O'Connell 1982, Worthing and White 1985). However, as no archaeological research has been undertaken north of the Plateau we simply don't know how much further it was transferred. Only research into the Mountain Koiari region will give us the answer. Secondly, we know that pottery was an important trade item that originated at the coast and travelled inland. However, we have little idea about what other coastal resources were exchanged inland. Only archaeological research into the Mountain Koiari region will give us the answers.

Ballard (2009) also points out that: 'It is also evident that extensive integration has taken place between the Austronesian and non-Austronesian communities of the region, ...This observation is supported by the findings of an early genetic study of Motu and Koita (Groves et al. 1957), which demonstrated that the two language communities had intermarried so extensively, at some period prior to European contact, that they could no longer be distinguished genetically from each other.'

Rock art, rock shelters and caves

A series of rock painting panels have been located in sites along the Laloki River Valley, especially above the confluence with the Goldie River and extending at least as far up river as Sirinumu and across the Sogeri Plateau.

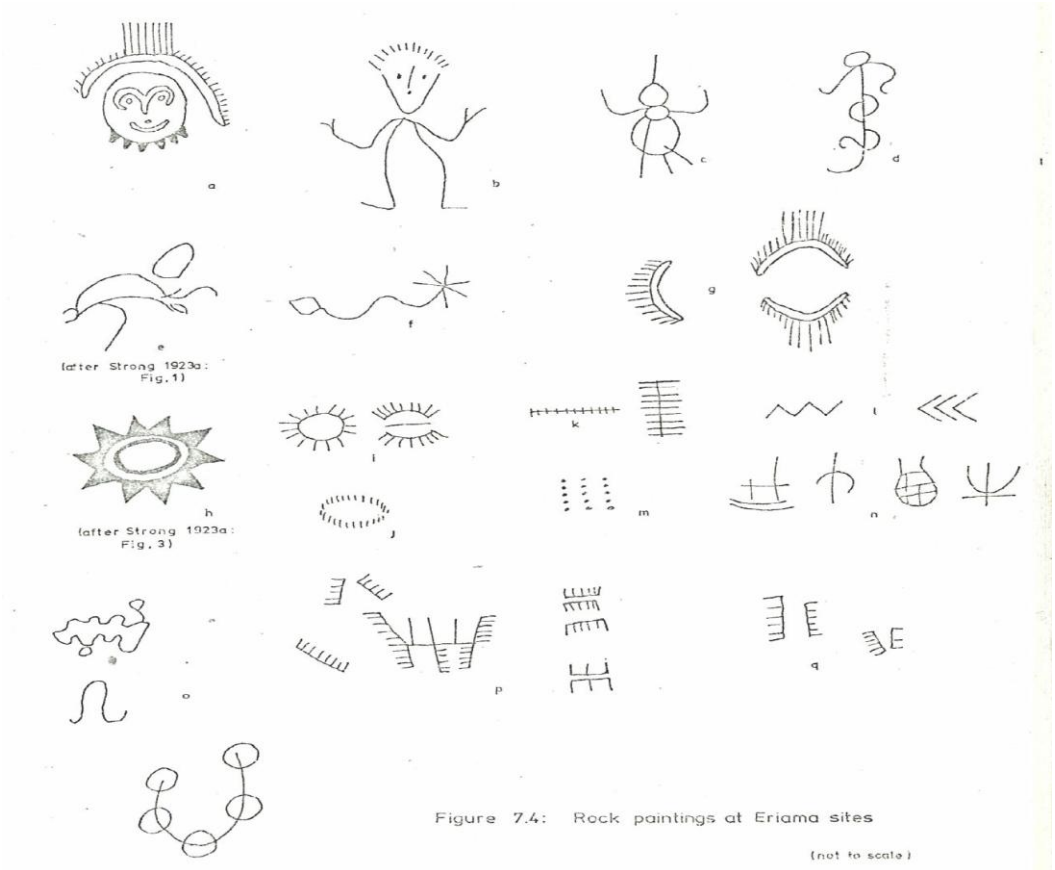


Figure 1. Rock 'paintings' from Eriama sites after Bulmer (1978 :206) and Strong (1923b) in Bulmer (1978).

On current evidence the highest density of paintings exists around Mt. Eriama. These paintings commonly occur on panels hidden by the weather either on the under sides of large boulders or inside rockshelters. They commonly consist of line drawings in various colours (Figure 1); namely, yellow, white and red.

The rock shelters also contain human remains. Human bones were also deposited in small cracks in the cliffs or niches. Occasionally, pottery sherds were found in the rockshelters. Currently, all the known sites are in Versigo Creek, just south of Uberi village on the Kokoda Trail. Although a small number (3) of these sites have been subject to excavations they have yielded relatively little reliable evidence either on the age of the deposits or the rock art.

Suffice to say, the current Koita land owners of the Laloki Valley and the Koiari land owners of the Sogeri Plateau claim cultural connectivity to these sites. The evidence from the Laloki Valley and Sogeri Plateau suggests a number of things for the Mountain Koiari region. Potentially, rock shelters may hold various types of archaeological evidence. These include aspects of trade and exchange, stone artefact production and other cultural materials. In some cases they may provide data with regards to the disposal of the dead which in turn might ultimately provide insights into cosmological beliefs of the past.

Of note is a rockshelter first described in 1917 by E.R. Stanley, a geologist for the then Territory of Papua. Stanley (1917: 10) notes the following from his survey of a 'Crystalline Limestone' Outcrop at Iawarere in the Rigo Inland Rural LLG (See Map 1):

'*Large cavernous limestone outcrops occur at Iawarere about the Ereme river, which have in part been covered by lava flows. The caves in these parts were utilised as burial grounds for the tribes, there being a number of skulls still in them.*'

This site is not on the NMAG records and as far as we are aware, the value of the site for archaeology has not been accessed since 1916. Stanley (1917) also surveyed limestone outcrops in other parts of the Owen Stanley Range including between the Owalama and Balatana Range and below Oivi between the Kumusi and Kokoda. The potential to locate more rock shelters or caves exists in these areas.

Kokoda Valley archaeology

As described by Ballard (2009), surface finds of large stone tools and artefacts, retrieved during early mining activity at the Yodda Valley Goldfield, to the north of Kokoda, are also suggestive of a rich archaeological sequence in the upland areas of both sides of the Owen Stanley Range. These finds include flaked obsidian (Figure 2) as well as stone mortars and pestles (Casey 1934, Chinnery 1919, Etheridge 1908, Seligman 1915, Seligman and Joyce 1907). No means of dating these finds is available, but the production of stone mortars and pestles is generally regarded as dating broadly to the mid-Holocene, from 8000-3000 yr BP (Swadling et al. 2008). The presence of perforated stone discs (Figure 3 and 4) also seems to be common throughout the Range as in other parts of Papua New Guinea. As discussed in Prebble et al. (2012), *mokmok*, is an East New Britain term for a stone disc with a perforation. These were apparently used as stone currency or for decoration, tied on a belt of a chief, but other functional uses of these types of stone may also include fibre production as

an early form of spindle whorl for processing vine fibres. Similar discs have been located in Late Pleistocene sites in Southern China (Judith Cameron pers. comm.). Another alternative is that these served as a stone weight on early digging sticks as found in many stone tool assemblages in different parts of Africa (e.g. Davies, 1967).

Of note is a recent field survey led by Glenn Summerhayes (UO) in 2008 who located many surface artefacts from the Yodda, Mambare and Kumusi catchments (see Figure 5 for an illustration of one of the sites visited). An edited monograph on the archaeology and environmental archaeology of these catchments is currently in preparation (G. Summerhayes, pers. comm. 2012).

Figure 2. Obsidian sourced to the East New Britain, Talasea Quarry found in the Kokoda Valley (Photo: G. Summerhayes)

Figure 3. Household collections of wooden and stone artefacts from the Kokoda Valley (Photo: G. Hope), including a perforated stone disc with the almost exact dimensions of discs found at Madilogo and Kosipe.

Figure 4. Michael Kopa's perforated stone disc with the almost exact dimensions of discs found at Madilogo and Kokoda, Ivane Valley (Photo: M. Leavesley).

Figure 5. An alluvial terrace cutting below Komu/Obau Village within the Yodda Valley where artefacts have been found eroding out of the upper sedimentary units.

Archaeology – summary

In reference to the summary of Ballard (2009) as part of our TOR (**Appendix 1**)

1. We concur with his statement that archaeological research within AOI has been minimal 'and restricted almost entirely to surveys of rock art sites and occasional test excavations of rockshelters, with little result'.
2. Substantial archaeological sites, particularly at Kosipe and Caution Bay, suggest that a rich record of human colonisation, habitation and changing land use and subsistence practice is also likely to be found within the AOI. This will include open settlement sites dating back to the Late Pleistocene, evidence for subsistence from both seed and megafauna remains, mid-late Holocene agricultural/tree crop adaptations as well as fossil rich cave and rockshelter deposits.
3. The greatest density of known rock art sites in Papua New Guinea exists in the region immediately to the south of the AOI. Despite their position outside of the AOI, they still require a comprehensive review and field survey. We agree with Ballard (2009) in suggesting that the 'detailed records available for some of these sites from the 1920s, 1930s and 1960s will enable a thorough program of conservation and monitoring of the art'.
4. Consultation of the Site Survey Files on the National Site Register at NMAG has provided further details for known sites, and has revealed further archaeological or cultural heritage sites in or around the study area. Further examination of surveyor's reports has also been useful in recognising additional sites with great potential for understanding the archaeology of the AOI.

ENVIRONMENTAL ARCHAEOLOGY

Kosipe

As described in Prebble et al. (2012), the underlying sediments and soils found across the Owen Stanley Range are dominated by a series of volcanic tephras that are probably derived from Mt Lamington, situated around 40 km from the eastern edge of the AOI (Ruxton, 1988; see Map 2). This volcano is known to have deposited metres of ash as far as 120 km from the source. The sediment stratigraphy of the earliest archaeological site in the Range, and in Papua New Guinea overall, is around 100km to the NW of Mt Lamington at Kosipe Swamp at an elevation of 2000m (Map 2). The six late Pleistocene sites located all have a set of five identified layers: a dark brown topsoil (layer 1), a brown-orange clay (layer 2); a black-brown soil (layers 3a and 3b), and a gray soil (layer 4). These occupation layers overlay culturally sterile orange clay (layer 5; Summerhayes et al., 2010). Layer 5 has not been accurately dated but probably resulted from a series of volcanic ash deposits occurring between 90-70,000 years ago. The cultural layers date to between 45-40,000 years BP. The deposition, retention and weathering of the basal Lamington ashes has been addressed by Ruxton (1988) and follows a model reliant on the underlying and varying geology, topography and precipitation. At Kosipe it is likely that metres of ash impounded a drainage basin and allowed a large swamp deposit to establish and a black soil horizon to form which is still visible across the Ivane Valley today (Hope 2009). How this ash and the overlying black soil developed in other parts of the Range remains to be answered. Recent analysis of the 'Kosipe Type' black soils, dated to at least 45,000 years BP from the AER archaeological section at Kosipe, show that seeds (especially *karuka Pandanus*; see Summerhayes et al, 2010), pollen and other organic remains are preserved and allow the background vegetation history at the site to be reconstructed and related to the broader environmental archaeology sequence described below (Geoff Hope pers. comm. 2012).

Prebble et al (2012) aimed to use the approach taken at Kosipe to examine the village complexes at Madilogo in their recent field survey. It is probable that the Mt Lamington ashfall events and possibly other ash layers (known ashfalls are listed on p. 7 and in Appendix 3 of Prebble et al 2012) are represented at Madilogo and throughout the Owen Stanley Range particularly within the Naoro catchment and the alluvial basins at Myola 1 and 2 (see the section on **Further Archaeological Research** below. Samples were collected from the Tubelogo Village auger profile by Prebble et al (2012) and have yielded fossil pollen and charcoal particles and other environmental proxies, but await radiocarbon dates, in order to establish the age and background vegetation change and cultural sequence found at Madilogo. This initial examination suggests that pollen preservation and charcoal particles will allow a vegetation and fire history to be reconstructed for the site.

Map 2 Google Earth map showing the position of some of the main environmental archaeology sites discussed in the text, marked by the shaded-white spheres.

The background environmental archaeology for Kosipe has been described by Hope (2009). Since 1974, Hope and other researchers have been regularly visiting Kosipe, collecting peat cores from the swamps within the valley and adjacent to the main archaeological site at the old Kosipe Mission. They have also been gathering background environmental information as a means of interpreting the fossil records analysed from the peat cores. In summarising this research, Hope (2009) found that at around 30-40,000 years BP the site had clearings and supported grassland with abundant treeferns. After this time the environment became cooler and grasses and subalpine plants encroached upon the restricted forest present on the basin. At the earliest date of occupation, Kosipe possessed grassy clearings in a montane beech forest which was at that time close to the subalpine treeline. The subalpine forest of 30-20,000 yr BP did not resemble the modern subalpine forest and may have been more diverse. The grass-dominated clearings are likely to have been created by people, as sediment has very high levels of micro-charcoal indicative of regular burning of the surrounding vegetation. During the early Holocene (10,000-6,000 years BP), sedge-grass peat accumulated rapidly within the valley, probably making access into the swamp to procure karuka nuts or hunt wallabies (or surviving megafauna) more difficult. Later in the Holocene (5000 years BP to the present) swamp forest developed on eroded sediments that cover the peat from the east of the valley. This erosion may have occurred as a result of increased use of fire within the valley, indicated by rising levels of micro-charcoal particles found within the peat cores. This may be a signal of increased population pressure, perhaps as a response to the introduction or adaptation of agricultural crops (e.g. taro and yam).

Figure 6. M. Prebble and land owners of Touku Swamp, near Pirive collecting peat cores in 2008.

Touku

At an elevation of 400 m, Touku is a Swamp lying adjacent to the main Saiho Road (between Kokoda and Popondetta), around 11.5 km SE from Kokoda. The swamp is currently utilised by local land owners as a swamp sago grove. In 2008, a 6 m core was collected from the swamp in order to identify changes in lowland vegetation and potentially evidence of human use of the site (see Figure 6). Radiocarbon dates reveal an 8000 year old record showing increased evidence for human activity after 5000 years BP (Hope et al. in prep). Touku swamp is currently the only record of its kind anywhere in any lowland part of the Owen Stanley Range, providing a useful index of the types of vegetation changes and past human influences that may have taken place in other lowland parts of the Range. Micro-charcoal particles and increasing evidence for cleared vegetation suggest people were modifying the swamp, potentially for agriculture, particularly sago production after 5000 years BP.

What the Touku core also shows is the periodic deposition of volcanic ashes, presumably sourced from Mt Lamington. The predicted ages for these ashes listed on p. 7 show that the largest ash was deposited at around 4200 years BP. The effect of these volcanic events on human

population cannot be directly understood from the core record. Given the devastation that occurred in the 1951 eruption, causing 3000 deaths as a result of hot ash fall and asphyxiation from the high intensity sulphuric gases, the impact of these ancient eruptions recorded at Touku must have been huge. The Touku record also provides an index of eruption events which can be located in other parts of the Owen Stanley Range. By locating specific ash events, the age of sedimentary landforms that may encompass buried archaeological sites across the Range can be more readily assessed. Like at Kosipe the age and extent of the main ash event has been measured across the Ivani Valley, providing an effective age marker for any subsequent archaeological sites that may be found in the region.

Myola 1 and 2

Similar archaeological deposits and sedimentary archives found within the Ivane Valley may be located within the alluvial basins of Myola 1 and Myola 2 directly within the AOI (See Map 2). These areas sit at around 1800 m above sea level, a similar elevation to the Ivane Valley. Such records would potentially substantiate any current inferences that on the basis of the Kosipe record alone, the whole of the Owen Stanley Range was occupied 50,000 years ago. They may also provide comparative records of human subsistence activity in an area also dominated by *karuka* nut *Pandanus*.

Map 3. Google Earth Image of Myola 2, with a Bing Maps image overlay onto Google Earth of Myola 1

Environmental Archaeology – summary

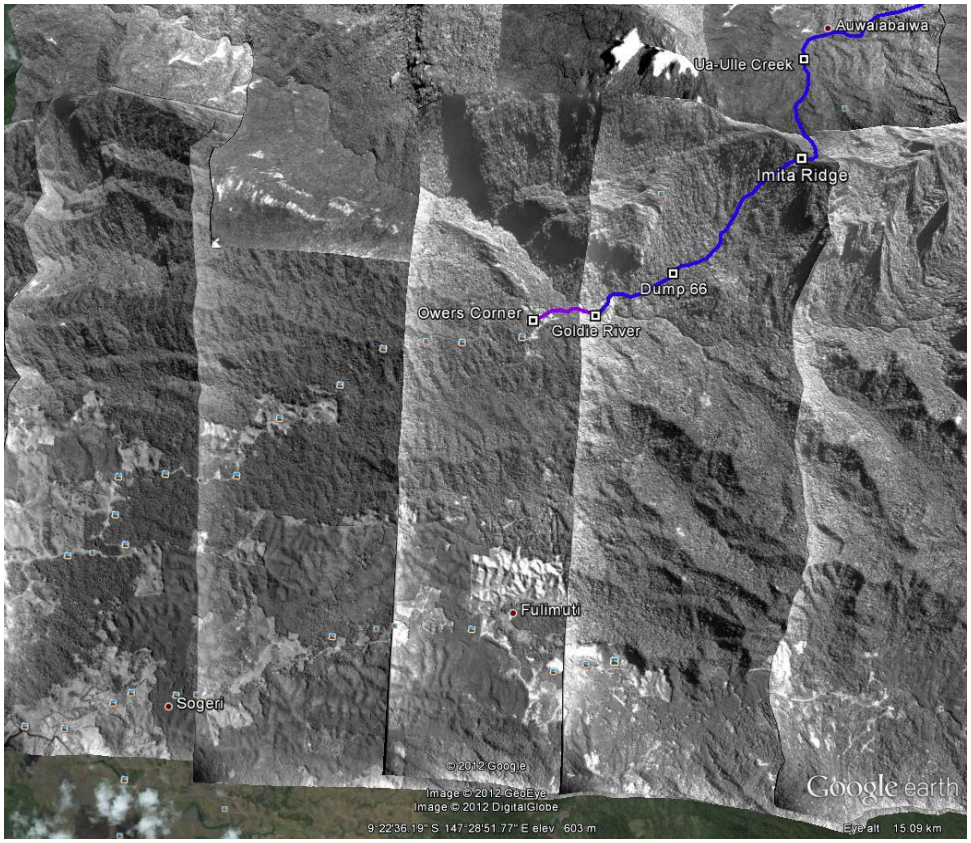
1. The AOI provides a landscape with great potential for environmental archaeology, particularly for identifying the presence of humans in the landscape, from both late Pleistocene and Holocene sedimentary deposits.
2. The volcanic history of the Owen Stanley Range provides high preservation potential in situations where ash has accumulated, such as in alluvial basins (e.g. Kosipe and Touku) at the base of valleys, saddles along ridgelines and in many other locations.
3. Significant questions such as the timing of sustained human occupation during the late Pleistocene or the onset of agricultural production in the mid Holocene remain elusive, but potentially resolvable in the Owen Stanley Range, from the types of available sedimentary archives.
4. The elevation gradient found in the AOI, from the coastal foot hills, at near sea-level, to the montane rainforest above 2500 m provides a rare opportunity to understand how Papua New Guineans have adapted to both changing and vastly different environmental conditions over the last 50,000 years

Remote sensing resources for archaeology and environmental archaeology

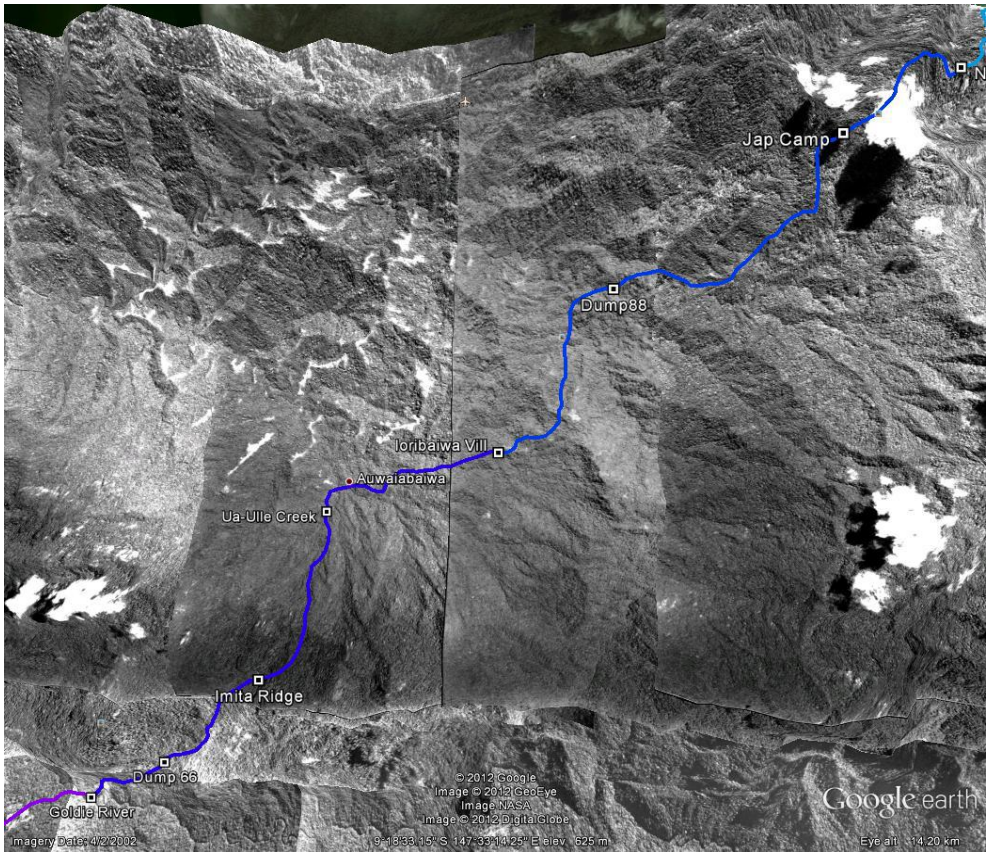
Substantial archives of aerial imagery are located at the NLA particularly between the period of 1948 until the late 1960s. Many of the images have not been catalogued and the images have no provenance. It is likely that aerial imagery of the AOI will be contained in these archives. The best aerial imagery archives, to date, are from the 1956-57 aerial survey conducted by the RAAF. The full-set of both negatives and photographs (A5 in size) for the entire AOI from this series are available within the NLA collection.

The utility of these aerial images for archaeological research cannot be understated. For many parts of the AOI, little information is available regarding the location or extent of past villages and how this may reflect local mobility of the Mountain Koiari people. The recent Madilogo archaeological survey conducted in November 2012, utilized this imagery as a means of identifying the position of villages described by local informants. In 1956 images of Madilogo show the extent of the old Madilogo Village, now abandoned, and that the current Mai Madilogo Village was unoccupied at that time. These images can be used as additional evidence, providing supporting documentation to the claims made by local informants. Another feature of these images, when compared to recent images (for example from Google Earth), is that they show the extent of roads, logging areas, the movement of rivers and in some cases the regeneration of forest.

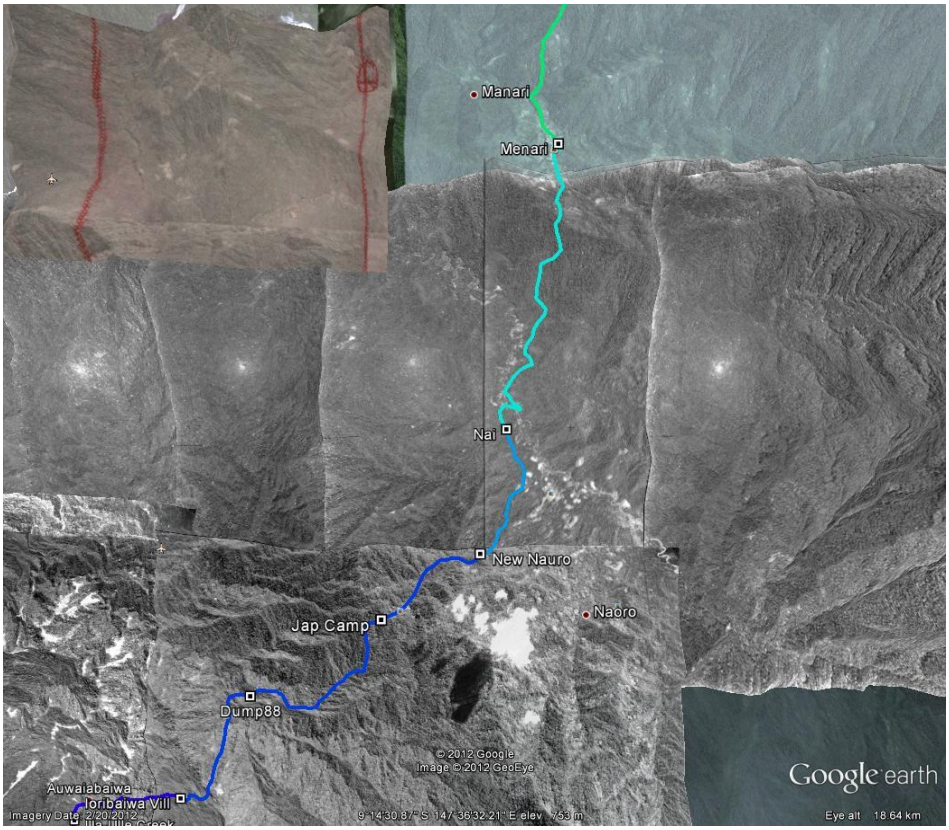
To demonstrate the utility of these images we have overlayed the Uberi series of 1956-57 images onto Google Earth. An overview of these images, focused upon them and the southern section of the Kokoda track including wards 5, 6 and 18 of the LLG (see Map 1), is presented in Maps 4, 5 and 6.



Maps 4A (1956-57) and 4B (~2005 Google Earth image) showing the clear reduction in forest cover around Owers Corner and the replacement of rubber plantations with pasture. Also shown is the apparent regeneration of forest over the ridgelines above the southern catchment of the Goldie River.



Maps 5A (1956-57) and 5B (~2005 Google Earth image) showing the apparent regeneration of forest over the ridgelines to the NW of Ioribaiwa Village. This may reflect either clearance resulting from WWII activity or the reduction in thoroughfare due to reduced hunting activity in recent years.



Maps 6A (1956-57) and 6B (~2005 Google Earth image) showing the movement of the upper Naoro River since 1956. The position of some of the main bends in the river and of old oxbows is clear. Due to the higher energy movement of this river and others within the AOI, flood plains are clearly areas with limited archaeological potential.

FURTHER ARCHAEOLOGICAL RESEARCH

We conclude that the Owen Stanley Range provides a rich archaeological landscape which needs considerable further assessment. The Range provides one of the few opportunities to assess the extent of the archaeological record and of human adaptation to a variety of ecosystems in one of the largest continuous tracts of montane to coastal rainforest in the Asia-Pacific region. The existing archaeological sites within the AOI and in the immediate vicinity should be protected and assessed for their national significance. Where resources are available cultural heritage plans should be developed. Further surface archaeological research should be concentrated around the older ridgelines, or near ridgeline village sites in the upper catchment of Naori Catchment. Local oral traditions, such as those recorded at Madilogo (Prebble et al. 2012), suggest that older village sites were occupied prior to the 1950s and village sites may have been more strategically placed along ridgelines prior to European contact. It is also likely that the series of ash layers found in other parts of the Owen Stanley Range (e.g. Kosipe) may be better preserved on the flats or saddles found along the main ridgelines, this potentially having greater archaeological preservation. An examination of the 1956-57 aerial images shows that the Naoro River and other rivers have moved substantially with large adjustments in the position of the present day meanders and oxbows. It is unlikely that the alluvial terraces surrounding these rivers will reveal archaeological material with stratigraphic integrity. Surface artefacts may be located along the river flats, but are unlikely to be found in context. Three areas within the AOI have been identified with the greatest archaeological potential. These include the Naoro River catchment (as mentioned above), the Myola 1 and 2 basins and the limestone outcrops around Iawarere which may possess more caves containing burials or other archaeological features. The Myola basins may preserve substantial organic/sedimentary deposits potentially providing a rich source of information about early human occupation in the region and of past human-induced vegetation changes, similar to that found within the Ivane Valley. These areas should be prioritized for both archaeological survey and environmental archaeology.

BIBLIOGRAPHY

Allen, F.J. 1972. Nebira 4: an early Austronesian site on the Papuan coast. *Archaeology and Physical Anthropology in Oceania* 7(2): 92-124.

Allen, J. 1977a. Fishing for wallabies: trade as a mechanism of social interaction, integration and elaboration on the Central Papuan coast. In J. Friedman and M.J. Rowlands (eds) *The evolution of social systems*, Duckworth, London. Pp. 419-455.

Allen, J. 1977b. Sea traffic, trade and expanding horizons. In: J. Allen, J. Golson and R. Jones (eds.) *Sunda and Sahul: Prehistoric Studies in Southeast Asia, Melanesia and Australia*. London, Academic Press. Pp. 387–417.

Arnold, R. 1971. A description of the Eriama rockshelter remains. Unpublished ts.

Ballard, C. 2009 Chapter 5: Archaeology In: J. Burton (ed.) *Kokoda Track-Brown River Catchment Region Preliminary Social Mapping Study*. ANU Enterprise, CAP, ANU, Canberra. Pp 53-56.

Bulmer, S. E. 1968. Archaeological field survey and excavations in Central Papua, 1968. Unpublished report, Department of Anthropology and Sociology, University of Papua New Guinea.

Bulmer, S. E. 1975. Settlement and economy in prehistoric Papua New Guinea: a review of the archaeological evidence. *Journal de la Société des Océanistes* 31(46): 7-75.

Bulmer, S. 1978. Prehistoric Culture Change in the Port Moresby Region. Unpublished Ph.D. thesis, University of Papua New Guinea.

Burton, J. 2010. Kokoda Initiative–Phase 2 Social Mapping: Trip Report, Koiari LLG, 20 Sep – 1 Oct 2010. A report by ANU Enterprise Pty Ltd for Department of Environment and Conservation (Papua New Guinea Government, Port Moresby) and the Department of Sustainability, Environment, Water, Population and Communities (Australian Government, Canberra).

Burton, J. and L. S. digim'Rina 2011. Kokoda Initiative: Phase 2 Social Mapping: Draft report on fieldwork in Koiari Rural LLG, 20-24 September 2010. A report by ANU Enterprise Pty Ltd for Department of Environment and Conservation (Papua New Guinea Government, Port Moresby) and the Department of Sustainability, Environment, Water, Population and Communities (Australian Government, Canberra).

Casey, D.A. 1934. An uncommon type of stone implement from Australia and New Guinea. *Memoirs of the National Museum of Victoria* 8: 94-99.

Chalmers, J. 1886. Adventures in New Guinea. The Religious Tract Society, London.

Chinnery, E. W. Pearson 1919. Stone-work and goldfields in British New Guinea. *Journal of the Royal Anthropological Institute* 49: 271-291.

David, B., I. J. McNiven, T. Richards, S. P. Connaughton, M. Leavesley, B. Barker, and C. Rowe. 2011. Lapita Sites in the Central Province of mainland Papua New Guinea. World Archaeology 43 (4) (December): 576–593. doi:10.1080/00438243.2011.624720.

David, B., I. J. McNiven, M. Leavesley, B. Barker, H. Mandui, and R. Skelley 2012. A new ceramic assemblage from Caution Bay, south coast of mainland PNG: The linear shell edge impressed tradition from Bogi 1. *Journal of Pacific Archaeology* 3: 73-89.

Davies, O. 1967 West Africa before the Europeans, Taylor and Francis. London.

Etheridge, R. 1908. Ancient stone implements from the Yodda Valley Goldfield, north-east British New Guinea. *Records of the Australian Museum* 7: 24-28.

Ford, A. 2012. *Learning the lithic landscape in the Ivane Valley, Papua New Guinea: modelling colonisation and occupation using lithic sources and stone tool technology*. PhD Thesis, Department of Archaeology and Anthropology, University of Otago, Dunedin.

Groube, L. 1993. Contradictions and Malaria in Melanesian and Australian prehistory. In: M. Spriggs, D.E. Yen, W. Ambrose, R. Jones, A. Thorne, and A. Andrews (eds). *A Community of Culture: the People and Prehistory of the Pacific*. Occasional Papers in Prehistory No. 21. ANU, Canberra. Pp. 164-186.

Groves, M., A.V.G. Price, R.J. Walsh and Olga Kooptzoff 1957. Blood groups of the Motu and Koita Peoples. *Oceania* 28: 222-238.

Haddon, A. C. 1900b. A classification of the stone clubs of British New Guinea. *Journal of the Royal Anthropological Institute* 30: 221-250.

Holdsworth, D. K. 1976. Horned heads and sun discs. *Hemisphere* 20(6): 32-37.

Holdsworth, D. K. 1981. Every picture tells a story. *New Nation Year Book 1980*, pp. 58-59.

Holdsworth, D. K. 1986. *The Central Province, Papua New Guinea*. Bathurst: Robert Brown and Associates.

Hope, G. 2009. Environmental Change and Fire in the Owen Stanley Ranges, Papua New Guinea. *Quaternary Science Reviews* 28 (23-24) 2261–2276.

Hope, G., M. Prebble et al in prep A lowland record of vegetation change and ash deposition in the Owen Stanley Range, Papua New Guinea.

Joyce, R. B. 1974. MacGregor, Sir William (1846–1919), Australian Dictionary of Biography, Volume 5, Melbourne University Press, pp 158–160.

Kleckham, F. 1966. Previously unrecorded rock carvings in the Sogeri area, Papua. *Transactions of the Papua New Guinea Science Society* 7: 12-16.

Lampert, R. J. 1969. Some archaeological sites of the Motu and Koiari areas. *Journal of the Papua and New Guinea Society* 2(2): 73-78.

Leask, M. F. 1943a. A kitchen midden in Papua. *Oceania* 13: 235-242.

Leask, M. F. 1943b. Rock engravings and paintings of the Sogeri District of Papua. *Mankind* 3(4): 116-120.

McNiven, I. J., David, B., Richards, T., Aplin, K., Asmussen, B., Mialanes, J., Leavesley, M., Faulkner, P. and Ulm, S. 2011. New direction in human colonisation of the Pacific: Lapita settlement of south coast New Guinea. *Australian Archaeology* 72: 1–6.

McNiven, I. J., B. David, T. Richards, K. Aplin, J. Mialanes, B. Asmussen, S. Ulm, P. Faulkner, P., C. Rowe and T. Richards 2012. Terrestrial engagements by terminal Lapita specialists on the southern Papuan coast. In: S.G. Haberle and B. David (eds), *Peoples Landscapes: Archaeological and Biogeographic Approaches to Landscape*. Terra Australis 34. ANU E Press, Canberra. Pp. 121-156.

Stone, O. C. 1876. ‗Description of the country and natives of Port Moresby and neighbourhood, New Guinea.' *Journal of the Royal Geographical Society of London* 46: 34-62

Papua and New Guinea Villager 1958. Rock paintings. *Papua and New Guinea Villager* 9(10): 84-85.

The Papuan Villager 1932. Rock paintings. *The Papuan Villager* 4(1): 3-5.

*Pietrusewesky, M. 1976. *Prehistoric Human Skeletal Remains from Papua New Guinea and the Marquesas*. Asian and Pacific Archaeology Series No.7. Honolulu: Social Sciences and Linguistics Institute, University of Hawaii at Manoa.

Prebble, M., M. Leavesley and H. Mandui 2012 KOKODA INITIATIVE – STREAM B2 ARCHAEOLOGICAL SURVEY: REPORT ON Kokoda Initiative – Stream B2 Archaeological Survey: Report on field work in Madilogo, 5-8th Nov 2012.

Pretty, G. L. 1967. *Preliminary Catalogue of Archaeological Monuments in the Territory of Papua and New Guinea*. Papua and New Guinea Museum Publication No.4. Port Moresby: Papua and New Guinea Museum.

Ruxton, B. P. 1988. Towards a Weathering Model of Mount Lamington Ash, Papua New Guinea. *Earth-Science Reviews* 25 (5–6) (December): 387–397. doi:10.1016/0012-8252(88)90006-2.

Seligman, C. G. 1915. Notes on an obsidian axe or adze blade from Papua. *Man* 15(91): 161-162.

Seligmann, C. G. and T. A. Joyce 1907. On prehistoric objects in British New Guinea. *In* W. H. R. Rivers, R. R. Marett and N. W. Thomas (eds) *Anthropological Essays Presented to Edward Burnett Tyler*. Oxford: Clarendon Press, pp. 325-341.

Stanley, E. R. 1917. Report on a geological expedition across the Owen Stanley Range. Government House, Port Moresby, Territory of Papua. Series A1, Item Barcode 36374, National Library of Australia. This item has been digitised.

Strong, W. M. 1923a. Annual report by Government Anthropologist. *Territory of Papua, Annual Report for 1921/22*, pp. 24-25.

Strong, W. M. 1923b. Rock paintings from the Central District, Papua (British New Guinea). *Man* 23: 185-186.

Strong, W. M. 1924. More rock paintings from Papua. *Man* 24: 97-99.

Summerhayes, G. R., M. Leavesley, A. Fairbairn, H. Mandui, J. Field, A. Ford, and R. Fullagar. 2010. Human Adaptation and Plant Use in Highland New Guinea 49,000 to 44,000 Years Ago. *Science* 330 (6000): 78–81.

Swadling, P. 1977. A review of the traditional and archaeological evidence for early Motu, Koita and Koiari settlement along the central South Papuan coast. *Oral History* 5(2): 37-57.

Swadling, P. 1978. The settlement history of the Motu and Koita speaking people of the Central Province, Papua New Guinea. *In* Donald Denoon and Roderic Lacey (eds) *Oral Tradition in Melanesia*. Port Moresby: University of Papua New Guinea and Institute of Papua New Guinea Studies, pp. 240-251.

Swadling, P., P. Wiessner and A. Tumu 2008. Prehistoric stone artefacts from Enga and the implication of links between the highlands, lowlands and islands for early agriculture in Papua New Guinea. *Journal de la Société des Océanistes* 126-127: 271-292.

Vanderwal, R. 1973. Prehistoric Studies in the Central Coast Papua. Unpublished PhD Thesis. Australian National University, Canberra.

Vanderwal, R. 1978. Exchange in Prehistoric Coastal Papua. *Mankind* 11:416-28

White, J. P., Crook, K. A. W., Ruxton, B. P., 1970. Kosipe: a late Pleistocene site in the Papuan highlands. *Proceedings of the Prehistoric Society* 36, 152–170.

APPENDIX 1 DRAFT TERMS OF REFERENCE

Task leaders: Matthew Prebble (MP) and Matthew Leavesley (ML)

Activity:

1. **Review Current Literature**

a. To add material and update the initial desktop study conducted by Ballard (2009), particularly consulting with Peter White, Pam Swadling and Susan Bulmer regarding their surveys conducted from the 1960-80s and obtaining any available grey literature.(MP)

b. Consultation of the Site Survey Files on the National Site Register at the PNG National Museum and Art Gallery and the archives of the Michael Somare Library, University of Papua New Guinea (not included in the desktop study of Ballard, 2009) will provide further details for known sites, and may reveal further archaeological or cultural heritage features in or around the study area. (ML)

2. **Review Remote Sensing Resources**

Access and assess both the latest satellite imagery from the available digital archives subscribed to by Department of Environment and Conservation, but also historical aerial photography archived since the post WWII era and now housed at the National Library of Australia. This can be used to locate various landscape features, assess how they have changed, but also provide indications of archaeological potential or the likely absence of archaeological features in an area. (MP)

In initial draft, not the final TOR

3. Additional aspects addressed: Scoping of Prioritised Areas for 'Salvage Archaeology'

Access the required logistics to conduct a field survey of the following prioritised areas:

a. Madilogo: inundation area, road access and the plant sites

b. Sites near Sogeri at 12 mile

c. Sites on the Kokoda track

d. Sites within the Myola Basin

APPENDIX 2 ARCHAEOLOGICAL SITES OF THE KOKODA STUDY AREA AND SURROUNDS IN THE PNG NATIONAL SITE REGISTER

Site descriptions: Expansion of list presented in Appendix G of Ballard (2009)

These descriptions are drawn from the Site Registry held at NMAG in Waigani. The **Lower Laloki** includes those sites west of Rouna. **Upper Laloki** includes site located between Rouna and Sogeri. **Sirinumu** includes sites located between Sogeri and the Sirinumu Spillway.

Sites inside the Area of Interest (AOI)

ACB

Location: Uberi village

Site: Pestle and mortar held by the Uberi village head man.

AEA

Location: Goldie River headwaters, near Owers Corner, ¾ mile from Uberi village.

Site type: Very large overhang facing E 25°. Area ca. 60' x 10'. The site has engravings at the western end partially covered with lichen in 1964. The site is called Ver Vani I.

The landowners are at Uberi village. The site was recorded by White and may be in White and White (1964) but definitely is represented by Pretty (1966:10).

ALG

Location: Goldie River headwaters, near Owers Corner, 1 mile from Uberi village.

Site type: Very large overhang facing E 60°. Area ca. 50' x 20'. The site is called Ver Vani III.

The landowners are from Uberi village. The site was recorded by White and may be described in White and White (1964).

[**In the AOI**]

AEB

Location: Vesirogo creek near Vesirogo village is ca. 4 km west of Owers Corner on the main road back to Sogeri.

Site type: A rock shelter at the foot of a 100' conglomerate bluff. The site exhibited no surface finds in 1964. The site consists of a single engravings associated with some rows of dots.

The site is called Vefai Yani.

Reported by White and White (1964:775), White 1967a, II:iii), Holdsworth (1976:32-33), Pretty (1966:10), Kleckham 1966).

[**In the AOI**].

ALT

Site Location:

Site name:

Site type: A pestle was acquired by NMAG in 1972. It was recovered from a garden near Kagi hamlet near Efogi.

[Efogi District – **inside the AOI**]

AWW

Location: Uberi village ground

Site name:

Site type: Find spot for a stone mortar and pestle 3 miles from Owers Corner, near Uberi.

[near Uberi village– **inside the AOI**]

AYS

Site Location: Madilogo village

Site name:

Site type: This site code represents the acquisition of 3 stone artefacts by NMAG, namely, a stone axe blade, a cylindrical stone club and a flat disk club head. These objects were acquired by Oltomo in 1984.

[Efogi District –**inside the AOI**]

AYT

Site Location: Uberi village

Site name:

Site type: Gentleman by the name of Yauru Mau sold a little collection to NMAG in 1984. The collection included 6 stone objects variously described as axes, files and clubs. Another was reported to have magical properties.

[Uberi village– **inside the AOI**]

AYU

Site Location: Manari village near Efogi.

Site name:

Site type: Artefacts, namely; 3 tapa beaters, 1 stone club head and 1 stone axe acquired by NMAG collected variously by Guise and Mondol.

[Efogi – **inside the AOI**]

Sites very near the Area of Interest (AOI)

AEC

Location: Between the Sirinumu Spillway and Sogeri.

[Laloki valley on the road between Sogeri and Owers Corner – **very near the AOI**]

Site type: a small overhanging rock ~10' above the Laloki River. There is a semi-circular basin in the rock floor. Area 15' x 10'. Depth none.

The rock art includes many paintings. Red pigment is sometimes painted over white in rock engravings. There are 84 engravings, all red except 3 that are unpainted and two with white pigment under the red pigment.

The site is known as Sakurukuru or Ifa-Karukwa

Near and most likely part of the same site complex as AYB and ACF.

Reported by White and White (1964:775), White (1967 col II – iii), Holdsworth (1976:32-33), Pretty (1966:10). White suggests that this is one of the two sites described by Kleckham (1966). Also visited by Mr Alu Guise (NMAG) in 1983.

ALE

Site location: ~5km due south of Owers Corner on the Itikinumu plantation.

Site name: Subitana

Site type: This site is a cave with a chimney at the back. According to White, the pottery, skull and human bones fell in from the top of the chimney.

[Sogeri Plateau, south of ~5km due south of Owers Corner – **very near the AOI**]

Sites outside the Area of Interest (AOI)

ABZ

Location: west bank of the Laloki River, near Sirinumu, between Boda village (on the east bank) and Mt Donadabu to the west. Sogeri

[south of Sogeri – **outside the AOI**].

Site Type: Rockshelter with engravings and paintings. Also consists of a hilltop site over looking river. SSF also makes reference to an air raid shelter during WWII.

ACF

Located 2-3 km downstream (north) from the Sirinumu spillway.

[south of Sogeri – **outside the AOI**].

Site type: Rockshleter with rock paintings. Alu Guise (pers. comm.) recalls that "it is a very good one".

Described briefly by S. Bulmer (1978: 381).

ACJ

Located at the Nebiri quarry.

[West of the Hiritano – **outside the AOI**].

Excavated by Sue Bulmer in the early 1970s and reported as Nebira 2 (Bulmer 1975). The site contained a series of human burials located under a village that sat in the saddle of the twin peaked Nebira hill. Dated to a few hundred years ago.

The site was obliterated by the quarrying activities some years back (perhaps 20 years ago).

ACL

Located at the Nebiri quarry.

[West of the Hiritano – **outside the AOI**].

Excavated by Jim Allen and published in 1972 as Nebira 4. Allen published a ceramic series with the caveat that the site was at least partially disturbed. The 2000 BP pottery sequence was ground-breaking at the time of publication. It is currently being re-assessed based on new evidence from Caution Bay (see Mc Niven et al. 2011).

It has recently (within the last two years) been obliterated by the quarrying activities.

Mt Eriama

The southern and south eastern slopes have a number of archaeological sites. These include a range of rock paintings on boulders and cliffs. There are also a number of shelters and niches. The niches formerly contained human skulls. Pottery was also recovered by the NMAG staff.

ACR

Location: Mt. Eriama; boulder near the water plant.

[South of the Hubert Murray Highway (HMH) in the vicinity of Marianville Sec. School and **outside the AOI**]

Site type: A boulder is situated on a hilltop and has a single painting on it.

The painting is reported by Bulmer (1978:201-206, 382, figs 7.2 and 7.4). See Figure 1.

ACT

Location: Mt. Eriama; cliff.

[South of the Hubert Murray Highway (HMH) in the vicinity of Marianville Sec. School and **outside the AOI**]

Site type: Multiple paintings on boulders in a cliff face.

The paintings are reported by Bulmer (1978:201-206, 382, figs 7.2 and 7.4). See Figure 1.

ACU

Location: Mt. Eriama.

[South of the Hubert Murray Highway (HMH) in the vicinity of Marianville Sec. School and **outside the AOI**]

Site type: Multiple paintings on boulders.

The paintings are reported by Bulmer (1978:201-206, 382, figs 7.2 and 7.4). See Figure 1. These include a group of paintings on a large white boulder including those resembling humans. The rockshelter floor included a scatter of pottery fragments some of which were collected by NMAG staff. The site has variously been reported by Strong (1923b:85), Williams (1931:122-123), Pretty (1967:2) and Bulmer (1978:201-206, 382, figs 7.2 and 7.4).

ACV

Location: Mt Eriama.

[South of the Hubert Murray Highway (HMH) in the vicinity of Marianville Sec. School and **outside the AOI**]

Site type: Rockshelter. Known as Eriama 1 to denote the location at which Bulmer undertook her excavations. The rockshelter has a series of faded red paintings and burials. The paintings include a series of stars (more precisely asterix). The site is described in Pretty as site 5.

Reported by Bulmer (1978:201-206, 382, figs 7.2 and 7.4). See Figure 1.

ACW

Location: Mt. Eriama

[South of the Hubert Murray Highway (HMH) in the vicinity of Marianville Sec. School and **outside the AOI**]

Site type: Rock paintings located high on a ridge below the summit rocks. The paintings consist of three (3) stencilled hands. Reported by Bulmer (1978: 203-204; figs 7.2 and 7.4). See Figure 1.

ACX

Location: Mt. Eriama

[South of the Hubert Murray Highway (HMH) in the vicinity of Marianville Sec. School and **outside the AOI**]

Site type: Although the site was reported as a shelter and midden (Bulmer 1978:201-206, 382, figs 7.2 and 7.4) a later visit by Groube (unpublished data) failed to identify any surface material. A visit by NMAG staff in 1983 did find the previously reported hand stencil.

Laloki River

A number of sites have been located along the banks of the Laloki River.

ADT

Location: Laloki River. The site is 4/5 miles west of Wagava, close to Nahatana village in the Aghoberi area.

[On the banks of the Laloki River and **outside the AOI**]

Site type: the consists of paintings and engravings.

Reported in Strong (1924:97 Station II), Williams 1931: 125, 127), and Pretty 1966:3).

ADU

Location: Lohanunidabu village situated at the headwaters of the Musgrave River (one days walk from Yaritari).

Site type: Rock engravings in the middle of the village.

Reported by Williams (1931:129-130) and Pretty (1966:4).

[The Musgrave River drains into the Kemp Welsh which itself drains east of Kwikila and is **outside the AOI**]

ADW (duplicate of ALA)

Location: Rouna Laloki River

Site type: Rockshelter with paintings. Situated near the Govt rest house, ½ ,mile from the river at the foot of a huge conglomerate bluff, ¾ mile below Rouna falls. The rockshelter is 58” long and 12” deep and faces NW.

Reported by Leask (1943:116 -117 (site I)), Williams (1931:123, 126), White and White (1964) and Pretty (1966:6-7), White 1967a, II: Map 3).

[In the Laloki River valley below Sogeri and is **outside the AOI**]

Site ALA refers to paintings on a boulder rather than in a rockshelter but given their close proximity they might be considered as two separate panels at the same or nearby sites and therefore as part of the same site complex.

AED (also reported as ALK)

Location: Laloki valley

Site name: Ramododo (Ramadoido yana)

Site type: Rock shelter facing W 75°E, below the Hombrom Bluff overlooking the Vesirogo Creek. The site is situated at 1080' asl. The floor slopes down slighty for 10' and then falls away rather steeply.

The rock shelter contains engravings (some with red paint infill), located on the lower 5'6" of the wall, extending below the current ground surface. Some of the images are exfoliating.

The Los are at Gubagegai and Namirinum villages.

[Overlooking the Vesirogo Creek – south west border of the AOI]

Reported by White and White (1964: 775, fig 2), White (1967a: II: i-ii), Pretty 1966:10).

AEE

Location: Half way between Raouna and Manurinumu - below Sogeri.

[**Outside the AOI**]

Site name: Upper Rapids B

Site type:Rock shelter with paintings

Reported by Leask (1943: 120) and Pretty (1966:12).

AEF

Location: Half way between Raouna and Manurinumu - below Sogeri. Three miles above Rouna Guest House.

[**Outside the AOI**]

Site name: Upper Rapids A

Site type: Rock shelter with engravings and paintings.

Reported by Leask (1943: 120) and Pretty (1966:11).

AEG

Location: Wagava village near Nahatana village in the upper Laloki valley

Site name:

Site type: Rock shelter containing engravings, paintings, bones and pottery.

Site was excavated by F.E. Williams (1931:123-124; 1932:4), Pretty (1966:13) and Strong (1924:97).

[Location unknown, **outside the AOI**]

AEH

Location: Overlooking the Laloki where it meets the Huima Koru Creek at Magibiri village

Site name: Wakuia Wai (Wakuia Wai Yani)

Site type: Rock shelter with engravings and paintings. It is a long overhang at the base of a bluff Faces NW and has an area of 200' x 6-12'.

The site contains human figures in red, one in red/yellow. Hand print in yellow. The red paintings are heavily weathered.

The Magibiri people are Los.

Reported by Pretty (1966:14), White (1967 vol II vi plate 2), and Williams 1931: 123, 126-7).

[South of HMH and **outside the AOI**]

AEI

Location: ½ mile below the Rouna falls. In the Laloki vaey off the Hornibrooke Buff Rd beyond Murinumu. It is above the Laloki River at the base of a bluff. About an hours walk down from the road.

Site name: Wureva Yani

Site type: Rock shelter (cave) with bones, painting, engravings and pottery. The cave depth is 80-90' with an area of 80' x 30'. (see Kariki). It was still in use as a burial cave in 1964.

Reported by White (1967:vol II, map 3), Pretty (1966:15), Leask 1943: 117, 120 (site 2)), Williams (1931:123, 126).

[Lower Laloki – **outside the AOI**]

AEJ

Location:Near Yaritari village in the Upper Musgrave Creek (east of Surinumu Dam).

Site name: Dwanibetana cave

Site type: Cave with paintings, a hearth and basalt flakes (no retouch) and flint of dimensions of between 9-20 inches (Williams 1931:123 127)

[east of Surinumu – **outside the AOI**].

Reported by Williams (1931:123,127), Pretty (1966:16).

AEK (previously referred to as AKZ & ANX)

Location: Immediately below Rouna.

Site name:Yoiworo 1 & 2

Site type: Rock shelters on the hillside 150 yards above the road (1/2 mile west of the turn off down to Sogeri power station. The rock shelters contain paintings. Yoiworo 2 is the lower of the two shelters. The floor area for Yoiworo 2 is 28' x 8'. Paintings are in dull red and others in white. The rock shelter faces N35°E. The paintings are at the SE end of the rock shelter. Holdsworth and Swadling noted pottery sherds on the ground surface in 1974.

[Lower Laloki – *outside the AOI*]

Reported by Williams (1931:123, 126; 1932:4), Strong (1923b; 1924) Pretty 1966:17), Holdsworth 1996:32, 35-36), White 1967 vol II:iii).

Omani villages are the Los.

AEN (also known as ALJ)

Location: Laloki valley on the right bank across the river from the Rouna power house pond.

Site name: Mokayani

Site type: rock shelter with paintings. A boulder with a concave lower surface. Also a small shelter under the down-hill side of the boulder. Area under the boulder is 15' x 8'.

Reported by White and White (1964) and White (1967 vol II:iii).

[Lower Laloki – **outside the AOI**]

AFK

Location: Saphire Creek

Site name:

Site type: Burial shelter 15(?) above the creek containing pottery and human bone.

Reported by Sue Bulmer

[Lower Laloki – **outside the AOI**]

AGD

Location: Mt Eriama

Site name:

Site type: Heavily painted site high on ridge top. Also includes a scatter of shell pottery and bone.

[Lower Laloki – **outside the AOI**]

ALI

Location: Hombrum Bluff

Site name:Toboalogo Yani

Site type: Rock overhang facing N.E. with a floor area of 30' x 10'. White identified surface pottery but saw no paintings.

[8-9 Km west of the Owers Corner – **outside the AOI**]

AWK

Site Location: Hombrom Bluff

Site name:

Site type: Rock cavity and nearby shelter. The cavity was used for human bones. Also included large pottery sherds.

[**outside the AOI**]

AXN

Site Location: Little Mt Lawes – west of the Hiritano

Site name:

Site type: Rock paintings

[**outside the AOI**]

AYB

Missing from NMAG site reg. However, the NMAG registry log indicates that it is a site located at Sakurukur village which is located between the Sirinumu Spillway and Sogeri.

[south of Sogeri – **outside the AOI**]

AYC

Site Location: Mt Eriama

Site name:

Site type: Rock art (red in colour) on a rock face in the valley below the three hand prints at the Eriama Water Treatment Plant.

[Lower Laloki – **outside the AOI**]

Reported by Oltomo & Ivuyo

AYD

Site Location: Mt Eriama

Site name:

Site type: Rock shelter with paintings protected from SE weather relocated by Swadling at the Eriama Water Treatment Plant. The paintings are in red, yellow and black and consist of thick waving lines.

[Lower Laloki – **outside the AOI**]

AYE

Site Location: Mt Eriama

Site name:

Site type: Painting on a boulder in red ochre reported by Alu Guise in 1983 and thought to be at the Eriama Water Treatment Plant. The drawing looks like an oval standing on its end with small appendages reminiscent of a fish.

[Lower Laloki – **outside the AOI**]

AYF

Site Location: Mt Eriama

Site name:

Site type: Paintings on a boulder face between ACX and ACV at the Eriama Water Treatment Plant reported by Alu Guise in 1983.

[Lower Laloki – **outside the AOI**]

AYG

Site Location: Mt Eriama

Site name:

Site type: A painted boulder amongst a number of rocks on the northern side of a small hill next to the peak north of the Eriama Water Treatment Plant. Reported by Wally Ainui.

[Lower Laloki – **outside the AOI**]

AYH

Site Location: Mt Eriama

Site name:

Site type: Painted site on rock face on the northern side of the hill east of the Eriama Water Treatment Plant. Reported by Guise in 1983.

[Lower Laloki – **outside the AOI**]

AYI

Site Location: Mt Eriama

Site name:

Site type: Painting under a boulder shelter. Has some crayon painting and ochre paintings Thought to be at the Eriama Water Treatment Plant. Reported by Alu Guise in 1983.

[Lower Laloki – **outside the AOI**]

AYJ

Site Location: Mt Eriama

Site name:

Site type: Rock paintings on the boulder behind ACX at the Eriama Water Treatment Plant. Reported by John and Pam.

[Lower Laloki – **outside the AOI**]

AYL

Missing from NMAG site registry. However, Mr Alu Guise informs me (and I think reliably) that this code represents a boulder with rock art at Mt Eriama.

[Lower Laloki – **outside the AOI**]

AYO

Site Location: Mt Eriama

Site name:

Site type: Paintings under a boulder shelter on the slope of Mt Eriama on the south side.

[Lower Laloki – **outside the AOI**]

AYP

Site Location: Mt Eriama

Site name:

Site type: Paintings on a rock face on the cliff face and south side of Eriama Peak. Reported by Oltomo.

[Lower Laloki – **outside the AOI**]

AYQ

Site Location: Mt Eriama

Site name:

Site type: Eriama rock art site. Reported by Swadling.

[Lower Laloki – **outside the AOI**]

AYV

Site Location: Mt Eriama

Site name:

Site type: Mt Eriama rock art on cliff face

[Lower Laloki – **outside the AOI**]

AYW

Site Location: Mt Eriama

Site name:

Site type: Mt Eriama rock art on cliff face

[Lower Laloki – **outside the AOI**]

The site record has precisely the same information as for AYV.

AYX

Missing from NMAG site registry. However, Mr Alu Guise informs me (and I think reliably) that this code represents a boulder with rock art at Mt Eriama.

[Lower Laloki – **outside the AOI**]

AYY

Missing from NMAG site registry. However, Mr Alu Guise informs me (and I think reliably) that this code represents a boulder with rock art at Mt Eriama.

Potentially this site code corresponds with Pretty (1966) site No. 3.

[Lower Laloki – **outside the AOI**]

AYZ

Site Location: Windcock Ridge, west of Variata Lookout

Site name:

Site type: Sherd found on the southern slopes during a bushwork from Mt. Diamond to lookout. Reported by Swadling in 1984.

[South of Rouna – **outside the AOI**]