Kiama West Masterplan: Aboriginal Due Diligence Assessment

FINAL REPORT

Prepared for Traders in Purple

31 January 2023

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- Traders in Purple: Thomas Zdun

Biosis staff involved in this project were:

- Jenny Beckius - mapping

Contents

Tables

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Photos

Glossary

ACHA	Aboriginal Cultural Heritage Assessment
ADDA	Aboriginal Due Diligence Assessment
AHIMS	Aboriginal Heritage Information Management System
Biosis	Biosis Pty Ltd
Consultation requirements	*Aboriginal Cultural Heritage Consultation Requirements for Proponents*
Due diligence code	*Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*
EP&A Act	*Environmental Planning and Assessment Act 1979*
GSV	Ground Surface Visibility
Heritage NSW	Heritage NSW, Department of Planning and Environment
ICOMOS	International Council on Monuments and Sites
LEP	Local Environment Plan
LGA	Local Government Area
NPW Act	*National Parks and Wildlife Act 1974*
NSW	New South Wales
PAD	Potential archaeological deposit
Study area	West Kiama (Lots and DPs 1/DP995058, 1/DP1003719, 156/DP751279, 1320/DP1060995, 201/DP1148007, 1/DP1178500, 185/DP751279, 183/DP751279, 187/DP751279, 186/DP751279, 189/DP751279, 2/DP1135218, 102/DP1176643, 188/DP751279.)
The Code	The *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*
WDRA	West Dapto Release Area

Summary

Biosis Pty Ltd (Biosis) has been commissioned by Traders in Purple to undertake an Aboriginal Due Diligence Assessment (ADDA) for an area of land proposed for rezoning and development as a new residential area west of Kiama, New South Wales (NSW) (Figure 1 and Figure 2). This ADDA has been prepared in accordance with the requirements of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010a) (due diligence code).

The masterplan presented in *Kiama Longbrush Road. Initial Urban Design Concepts* proposes the rezoning of the study area for the purposes of a mixture of high, standard and medium density residences along with large residential lots, and spaces for educational, eco (low impact) tourism and other uses/activation (e8urban & Sprout Studio 2022). The proposed development will be assessed in accordance with Part 3 of the *Environmental Planning and Assessment Act 1979 NSW* (EP&A Act).

The study area is located within the Kiama Local Government Area (LGA), within the suburbs of Kiama and Jerrara comprising: 103 Jamberoo Road; 33 Greyleigh Drive; and 177 Long Brush Road. It is currently zoned RU2 Rural Landscape and encompasses approximately 114 hectares of private land.

Background research included an extensive search of the Aboriginal Heritage Information Management System (AHIMS) database conducted on 22 August 2022 (Client service ID: 710712), along with a review of relevant reports. The AHIMS search identified 90 Aboriginal archaeological sites recorded within a 7 kilometre search area, centred on the study area. None of these registered sites are located *within* the study area.

Previous surveys within the local and regional areas and their findings were also reviewed as part of this assessment. The results of the previous surveys along with a review of the geology, hydrology and soil landscape characteristics have been examined to provide a series of predictive statements of the study area's archaeological potential. The predictive statements indicated that there was high potential for artefacts and PAD to be present within the study area, and moderate potential for shell midden and grinding groove sites to be present within the study area.

An archaeological survey was undertaken on 15 and 16 September 2022 in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b) (the Code). Due to dense grass coverage throughout the study area, no Aboriginal objects were located. Despite portions of the study area being extensively disturbed, 11 areas of moderate archaeological potential were identified during the archaeological survey. These potential archaeological deposits (PADs) were identified by their presence on favourable landforms and their proximity to Spring Creek, a third-order perennial watercourse. Beyond providing fresh water, perennial water sources support an abundance of resources. These areas of PAD have also remained relatively undisturbed, suggesting the potential for intact deposits. The remainder of the study area has been assessed as holding low potential to contain archaeological deposits as these areas featured shallow soils, previous disturbances from agricultural or residential land use, or were located in unfavourable locations within the landform (for example, lack of proximity to a watercourse).

The presence of 11 areas of PAD have been identified within the study area. Further assessment in the form of an Aboriginal Cultural Heritage Assessment (ACHA) is needed to investigate the nature and extent of these areas of PAD. The ACHA should be undertaken in accordance with *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010c) (consultation requirements).

Four heritage strategies for the masterplan have also been developed:

- Strategy 1: Conserve, incorporate and promote the intangible and tangible Aboriginal cultural heritage values where culturally appropriate.

- Strategy 2: Develop public spaces and infrastructure that us visually appropriate for the rural character setting of the site and vicinity. This infrastructure should be sympathetic to the intangible and tangible Aboriginal cultural heritage values of the study area.
- Strategy 3: Utilise landscaping and plantings to create an environment for residents and visitors which respects and celebrates intangible and tangible Aboriginal cultural heritage values of the study area.
- Strategy 4: Provide opportunity for the Traditional Owners to contribute to the design of new public spaces to ensure intangible and tangible Aboriginal cultural heritage values are protected and where appropriate presented to the wider community respectfully.

The following management recommendations have been developed relevant to the study area and influenced by:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practise, widely considered to include:
  - Ethos of the Australia ICOMOS Burra Charter (Australia ICOMOS 2013).
  - The Code.

Prior to any impacts occurring within the study area, the following is recommended:

Recommendation 1: Avoid impacts through redesign

It is recommended that impacts to the 11 areas of PAD should be avoided through redesign of the current masterplan.

Should it not be possible to avoid impacts to any areas of PAD, Recommendation 2 must be implemented.

Recommendation 2: Further investigation in the form of an ACHA

This ADDA has found there are 11 areas of PAD within the study area. Should it not be possible to avoid impacts to these areas through redesign, further investigation in the form of an ACHA will need to be undertaken, including Aboriginal community consultation, and test excavations, to determine the nature and extent of the 11 areas of PAD. The ACHA and community consultation must meet the requirements of the Code and the consultation requirements.

Recommendation 3: Discovery of Unanticipated Aboriginal Objects

All Aboriginal objects and Places are protected under the *National Parks and Wildlife Act 1974* (NPW Act). It is an offence to disturb an Aboriginal site without a consent permit issued by the Heritage NSW, Department of Planning and Environment (Heritage NSW). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the Heritage NSW and Aboriginal stakeholders.

Recommendation 4: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. Immediately cease all work at that location and not further move or disturb the remains.

2. Notify the NSW Police and Heritage NSW' Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.
3. Not recommence work at that location unless authorised in writing by Heritage NSW.

1 Introduction

1.1 Project background

Biosis has been commissioned by Traders in Purple (client) to undertake an Aboriginal Due Diligence Assessment (ADDA) to provide heritage advice and identify constraints for the proposed development at West Kiama, NSW (the project). The project involves the development of residential and commercial properties.

An assessment in accordance with the due diligence code has been undertaken for the study area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the (the Code) was conducted, in order adequately map areas of high, moderate and low archaeological potential.

1.2 Location of the study area

The study area is located within the suburbs of Kiama and Jerrara in the Kiama Local Government Area , Parish of Kiama, County of Camden (refer to Figure 1). The study area incorporates Lots and DPs 1/DP995058, 1/DP1003719, 156/DP751279, 1320/DP1060995, 201/DP1148007, 1/DP1178500, 185/DP751279, 183/DP751279, 187/DP751279, 186/DP751279, 189/DP751279, 2/DP1135218, 102/DP1176643, 188/DP751279. The study area is bounded by Jamberoo Road to the north, Old Saddleback Road to the south, farmland to the west and residential properties to the east (refer to Figure 2).

1.3 Planning approvals

The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979* NSW (EP&A Act). Other relevant legislation and planning instruments that will inform the assessment include:

- NPW Act.
- *National Parks and Wildlife Amendment Act 2010* (NSW).
- *Kiama Local Environmental Plan 2011* (LEP).
- *Kiama Development Control Plan 2020* (DCP).

1.4 Scope of the assessment

The following is a summary of the major objectives of the assessment:

- Conduct background research in order to recognise any identifiable trends in site distribution and location, including a search of the AHIMS.
- Undertake archaeological survey as per requirement 5 of the Code, with particular focus on landforms with high potential for heritage places within the study area, as identified through background research.

- Record and assess sites identified during the survey in compliance with the guidelines endorsed by Heritage NSW.
- Determine levels of archaeological and cultural significance of the study area.
- Make recommendations to mitigate and manage any cultural heritage values identified within the study area.

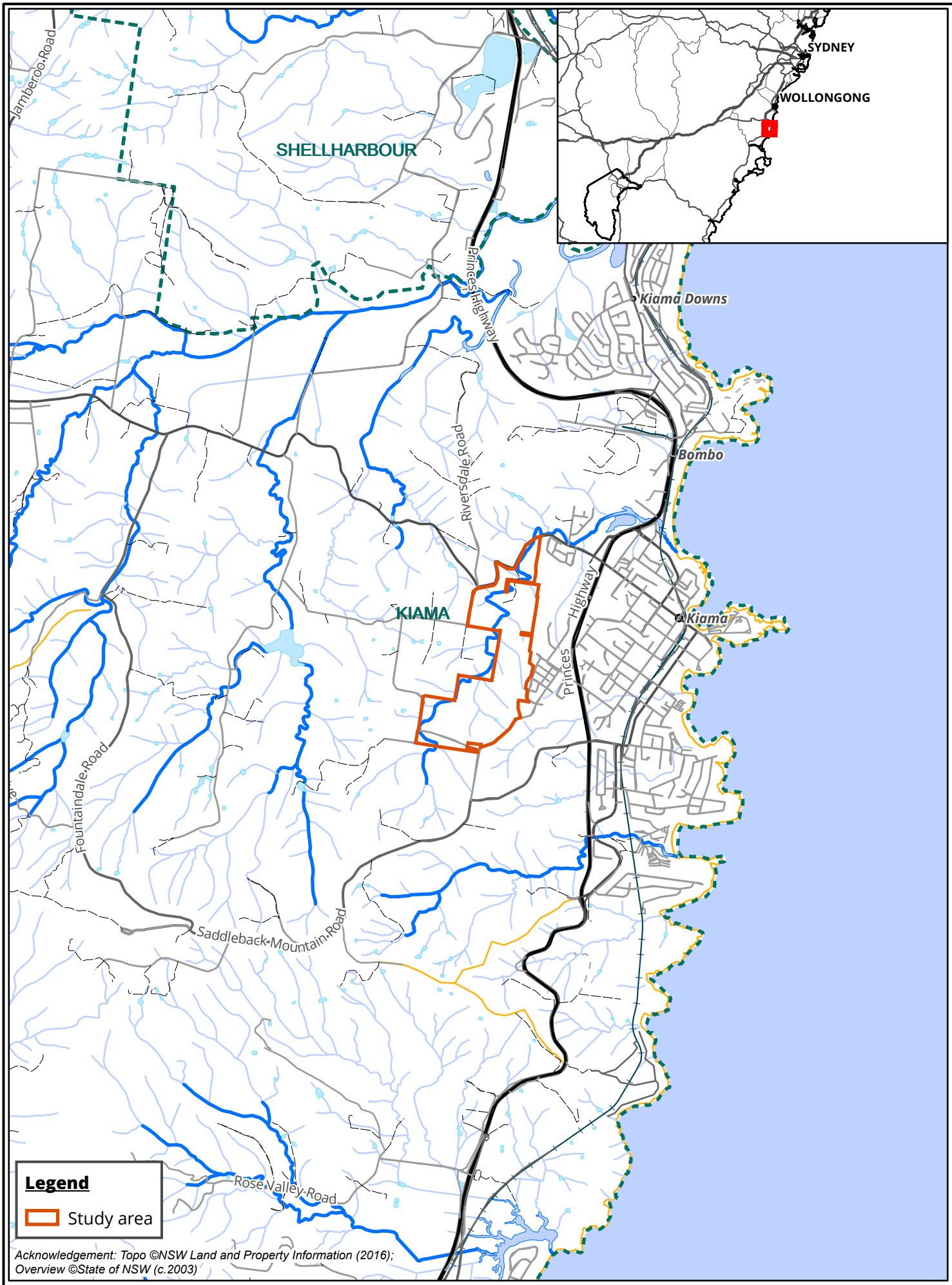

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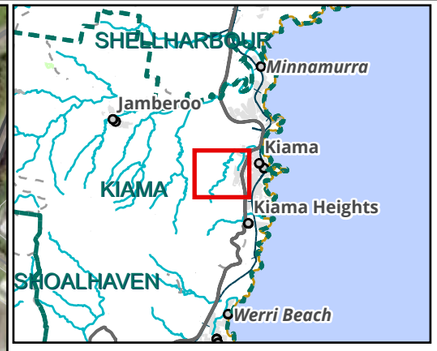
Figure 1 Location of the study area

Matter: 37550
Date: 25 August 2022,
Drawn by: JB, Checked by: JM, Last edited by: jbeckius
Location:P:\37500s\37550\Mapping\
37550_ADDA_KiamaWest_Masterplan, Layout: 37550_ADDA_F1_Locality

0 400 800 1,200 1,600 2,000
Metres
Scale 1:50,000@ A4, GDA 1994 MGA Zone 56

N



Legend

- Study area
- Lot

Figure 2 Study area detail

0 50 100 150 200

Metres

Scale: 1:8,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

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Matter: 37550, Date: 25 August 2022,
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37550_ADDA_KiamaWest_Masterplan, Layout: 37550_ADDA_F2_StudyArea

2 Desktop assessment

A brief desktop assessment has been undertaken to review existing archaeological studies for the study area and surrounding region. This information has been synthesised to develop some Aboriginal site predictive statements for the study area and identify known Aboriginal sites and/or places recorded in the study area. This desktop assessment has been prepared in accordance with requirements 1 to 4 of the Code.

2.1 Landscape context

It is important to consider the local environment of the study area in any heritage assessment. The local environmental characteristics can influence human occupation and associated land use and consequently the distribution and character of cultural material. Environmental characteristics and geomorphological processes can affect the preservation of cultural heritage materials to varying degrees or even destroy them completely. Lastly, landscape features can contribute to the cultural significance that places can have for people.

2.2 Geology, soils and landforms

The study area lies within the Coastal Plain physiographic region that is located between the Illawarra Escarpment and the ocean (Hazelton 1992, pp. 2). It consists of the gentle rises of the Illawarra Coal Measures, rolling to steep low hills of volcanic materials, and moderate to steep slopes. The majority of the study area is situated on the Bumbo Latite Member geological unit, with the Broughton formation and alluvial valley deposits present in the northern portion in the vicinity of Spring Creek. The Coastal Plain is characterised as a mosaic of foothills, ridges, spurs, hillocks and floodplains with slopes varying from very gently inclined to steep with the occasional low cliff. It is dissected by easterly flowing streams at intervals that become more frequent towards the north (Fuller 1982, pp. 18).

Stream order and topography is recognised as a factor which helps the development of predictive modelling for Aboriginal archaeology in eastern NSW. Predictive models which have been developed for the region have a tendency to favour permanent water courses as the locations of complex sites that have been continuously occupied, as they would have been more likely to provide a stable source of water and by extension other resources which would have been used by Aboriginal groups (Jo McDonald Cultural Heritage Management 2000, pp. 19).

The stream order system used for this assessment was originally developed by Strahler (1952). It functions by adding two streams of equal order at their confluence to form a higher order stream, as shown in Photo 1. As stream order increases, so does the likelihood that the stream would be a perennial source of water.

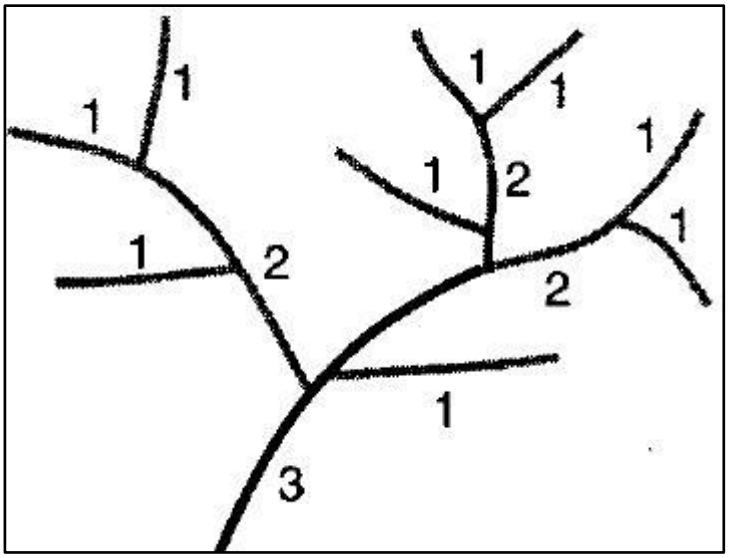


Photo 1 Diagram showing Strahler stream order (Ritter, Kochel, & Miller 1995, pp. 151)

There are a number of water sources within the study area (Figure 4). Spring Creek, a third-order perennial watercourse, transects the study area from north to south, with multiple first- and second-order tributaries. The study area is also located approximately 1.6 kilometres west of Kiama Harbour and the South Pacific Ocean.

Soil landscapes have distinct morphological and topological characteristics that result in specific archaeological potential. They are defined by a combination of soils, topography, vegetation and weathering conditions. Soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure.

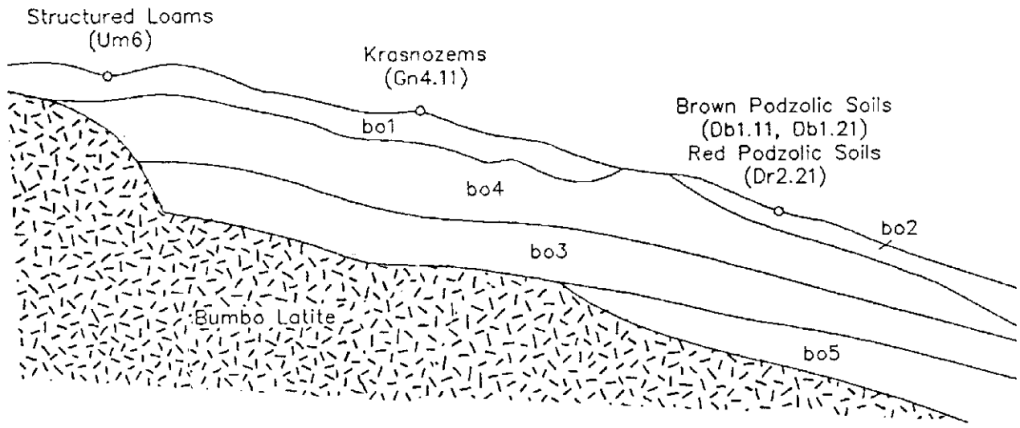
The study area is located within the Bombo soil landscape (Department of Planning, Industry and Environment 2020, pp. 43). This landscape is comprised of rolling low hills with relief of 40–100 metres and slope gradients of 15–25%. Crests within this landscape are narrow, while convex ridges are long and gently inclined. Moderately inclined slopes with isolated steep (25–40%) slopes are present, with scattered benches and terracettes on upper slopes and narrow incised drainage lines. Springs may occur on the mid and footslopes. Soils within this landscape generally feature shallow (<50 centimetre) structured loams on crests, moderately deep (50–100 centimetre) krasnozems on upper slopes and benches, with brown podzolic soils and red podzolic soils on mid and lower slopes (see Table 1, Photo 2).

Bombo soils are classed as erosional. Landscapes of this nature comprise soils that are generally subject to movement of shallow soils, which can result in poor preservation of the archaeological record. Additionally, when the land is cleared of vegetation, the soils can be subjected to more extensive levels of erosion. As this soil type is characterised as highly erosional, the soils can be shallow, highly permeable, and have low levels of soil fertility. This could suggest that Aboriginal sites and objects may unlikely be present where erosion has occurred (Chapman et al. 1989, pp. 64–67, McInnes 1997, p.45, cited by Umwelt (Australia) Pty Limited 2016, pp. 13).

Table 1 Bombo soil landscape characteristics (Hazelton 1992)

Soil material	Description
Bombo 1 (bo1)	Friable brown sandy loam topsoil; high organic content; reddish brown in colour; inclusions consist of abundant roots.
Bombo 2 (bo2)	Hard setting sandy loam topsoil; colour ranges from brownish black to dark reddish

Soil material	Description
	brown; inclusions consist of 2-6mm stones (2-10%) and abundant roots.
Bombo 3 (bo3)	Light medium clay subsoil; colour is reddish brown; inclusions can be localised rounded basalt or latite stones of 20-60mm (2-10%).
Bombo 4 (bo4)	Sandy clay subsoil; reddish brown in colour; inclusions consist of many ex-ped roots.
Bombo 5 (bo5)	Strongly pedal medium clay subsoil; brown in colour; no inclusions.

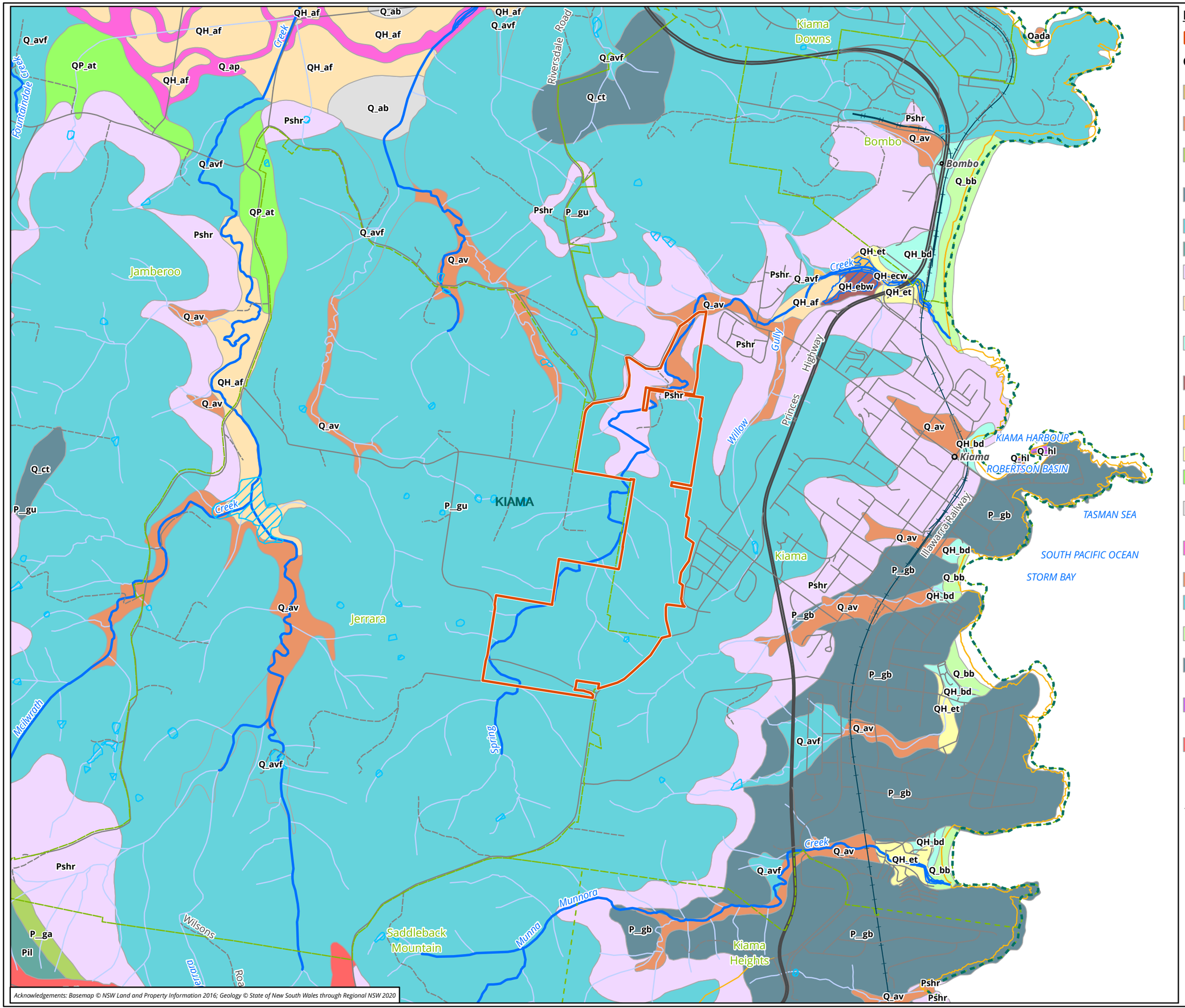


■ *Schematic cross-section of Bombo soil landscape illustrating the occurrence and relationship of the dominant soil materials.*

Photo 2 Schematic cross-section of the Bombo soil landscape (Department of Planning, Industry and Environment 2020, pp. 45)

A geotechnical report of the south-eastern portion of the study area was developed by Cardno (2018) and the site was visited by an Engineering Geologist in April 2018. During the site visit, observations of the near surface geology generally indicate residual clay overlaying shallow weathered rock, which was identified through outcrops at several locations over the site as well as exposures in creeks and the base of dam excavations. Soil observed at the surface was found to be medium plasticity clay to silty clay. Soil was generally moist to wet and was found to contain sub-rounded cobbles of latite. The southern portion of the site generally exhibited gently sloping grass fields with minor vegetation along the westernmost boundary, with potential evidence of erodibility noted along creek lines in the study area (Cardno 2018, pp. 11). The report concluded that the site was observed to be underlain by a shallow cover of silty sand topsoil over residual silty clay, which in turn overlies moderately to highly weathered latite (Cardno 2018, pp. 12).

Photo 3 Approximate site extents for Cardno geotechnical investigations (Source: (Cardno 2018, pp. 5)



Acknowledgements: Basemap © NSW Land and Property Information 2016; Geology © State of New South Wales through Regional NSW 2020

Legend

Study area

Geological units

- MZ__s,Saddleback Mountain Agglomerate
- Oada,Abercrombie Formation
- P__ga,Cambewarra Latite Member
- P__gb,Blow Hole Latite Member
- P__gu,Bumbo Latite Member
- Pil,Illawarra Coal Measures
- Pshr,Broughton Formation
- QH_af,Alluvial floodplain deposits
- QH_bd,Coastal deposits - dune facies
- QH_ebw,Estuarine basin and bay (subaqueous)
- QH_ecw,Estuarine channel deposits (subaqueous)
- QH_et,Estuarine tidal-delta flat
- QP_at,Alluvial terrace deposits
- Q_ab,Alluvial backswamp deposits
- Q_ap,Alluvial palaeochannel deposits
- Q_av,Alluvial valley deposits
- Q_avf,Alluvial fan deposits
- Q_bb,Coastal deposits - beach facies
- Q_ct,Colluvial talus deposits
- Q_hl,Anthropogenic breakwaters, embankments and artificial levees
- Tuib,Bong Bong Basalt

Figure 3 Geological units in the vicinity of the study area

0 200 400 600 800

Metres

Scale: 1:20,000@ A3

Coordinate System: GDA 1994 MGA Zone 56

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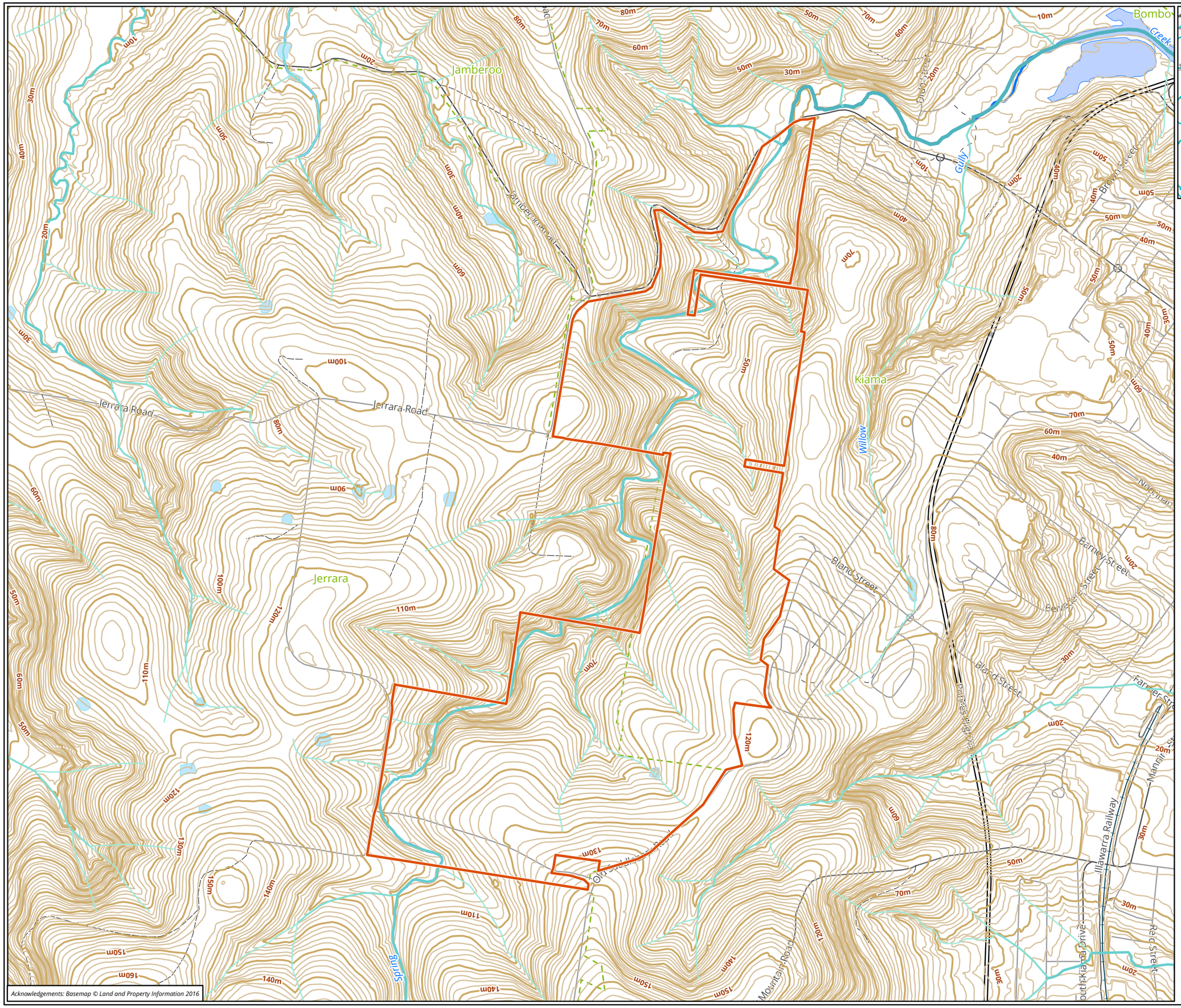

Figure 4 Hydrology and topography in the vicinity of the study area

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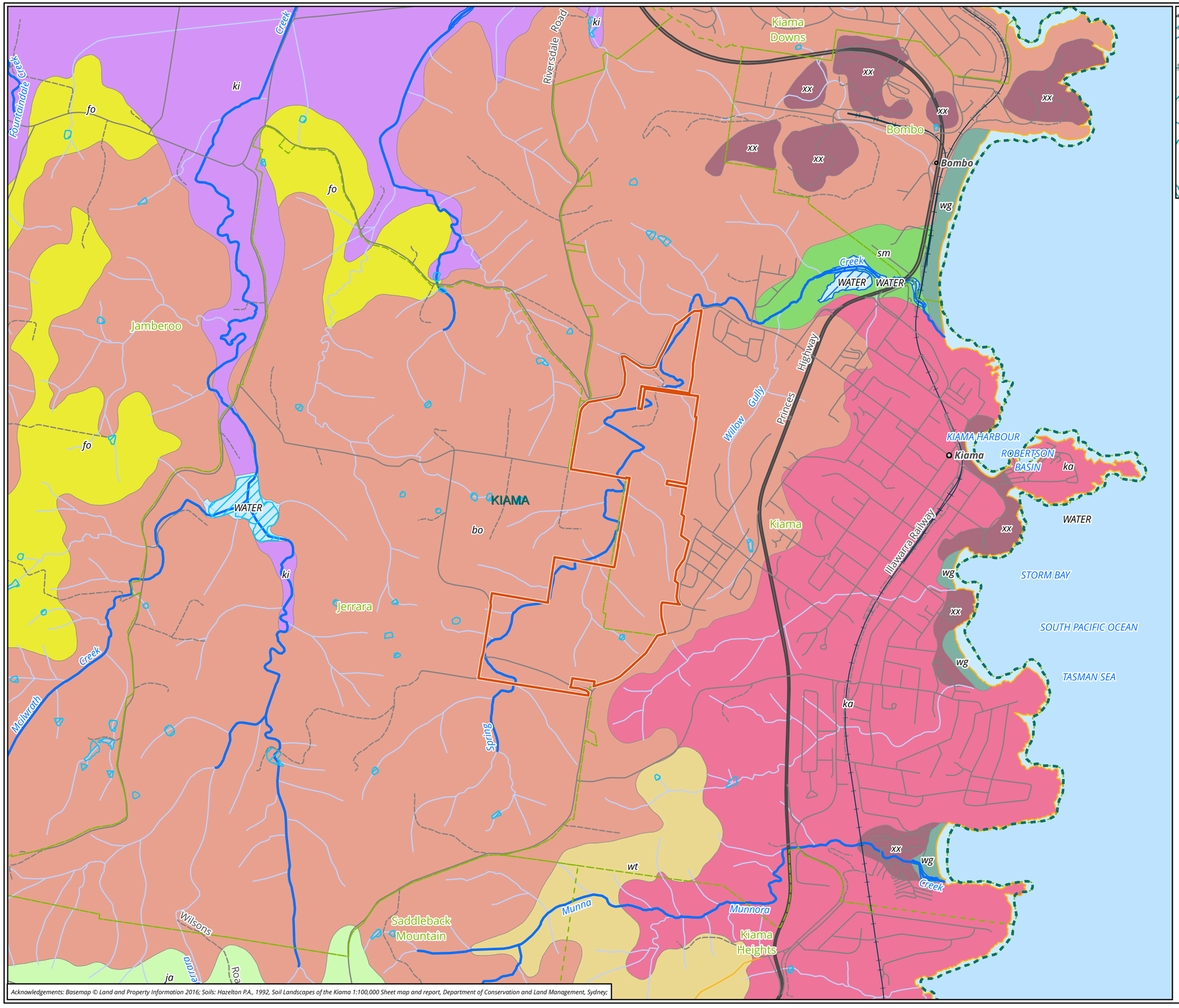

Legend

Study area

Soil landscape units

- bo - BOMBO
- fo - FOUNTAINDALE
- ja - JAMBEROO
- ka - KIAMA
- ki - KILLALEA
- sm - SEVEN MILE
- WATER - WATER
- wg - WOLLONGONG
- wt - WATTAMOLLA ROAD
- xx - DISTURBED TERRAIN

Figure 5 Soil landscapes in the vicinity of the study area

0 200 400 600 800

Metres

Scale: 1:20,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

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Matter: 37550 Date: 25 August 2022,
Drawn by: JB, Checked by: JM, Last edited by: jbeckius
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37550_ADDA_KiamaWest_Masterplan, Layout: 37550_ADDA_F5_Soils

Acknowledgements: Basemap © Land and Property Information 2016; Soils: Hazelton P.A., 1992, Soil Landscapes of the Kiama 1:100,000 Sheet map and report, Department of Conservation and Land Management, Sydney;

2.3 Flora and fauna

The wider region includes distinct ecological zones, including open forest and open woodland, with riparian vegetation extending along many of the watercourses. Each ecological zone hosts a different array of floral and faunal species, many of which would have been utilised according to seasonal availability. Aboriginal inhabitants of the region would have had access to a wide range of avian, terrestrial and aquatic fauna and repeated firing of the vegetation would have opened up the foliage allowing ease of access through and between different resource zones.

Plant resources were used in a variety of ways. Fibres were twisted into string, which was used for many purposes, including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Bark was used in the provision of shelter; a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2002).

Vegetation supported by the Bombo soil landscape include closed-forest and tall open-forest, often extensively cleared with remnant stands (Department of Planning, Industry and Environment 2020, pp. 43–44). Prior to vegetation clearance, Red Cedar *Toona australis* was dominant within the landscape. It was noted by Surveyor-General John Oxley in 1826 that the majority of the main cedar grounds was situated 3 miles from the boat harbour of 'Kiarmi', and that nine-tenths of the cedar brought to Sydney for trade was harvested from this location (Department of Public Works and Services Heritage Group 1998).

Other floral species supported by the Bombo soil landscape include common closed-forest species such as Cabbage Tree Palm *Livistona australis*, Bastard Rosewood *Synoum glandulosum*, Red Cedar *Toona australis*, Brush Cherry *Syzygium australe*, Bolly Gum *Litsea reticulata*, White Cedar *Melia azedarach var. australasica*, Northern Boobialla *Myoporum acuminatum*, Smooth Mock Olive *Notelaea venosa*, Snow-Wood *Parachidendron pruinsom*, Celery Wood *Polyscias elegans*, Black Apple *Planchonella australis*, Plum Pine *Polocarpus elatus*, Yellowwood, Moreton Bay Fig *Ficus macrophylla*, Port Jackson Fig *Ficus rubiginosa* and Flintwood *Scolopia braunii* (Department of Planning, Industry and Environment 2020, pp. 43–44).

Common tall open-forest species include Turpentine *Syncarpia glomulifera*, Grey Ironbark *Eucalyptus paniculata*, Pittosporum *Pittosporum spp.* and Sydney Blue Gum/Bangalay *Eucalyptus saligna/botryoides.* Forest Red Gum *Eucalyptus tereticornis* and Prickly-Leaved Paperbark *Melaleuca styphelioides* are found in poorly drained areas. The vegetation on the associated soil material includes Coastal Tea-Tree *Leptospermum laevigatum*, Coastal Banksia *Banksia integrifolia*, Swamp Oak *Casuarina glauca*, Bracelet Honeymyrtle *Melaleuca armillaris* and Drooping She-Oak *Allocasuarina verticillata* (Department of Planning, Industry and Environment 2020, pp. 43–44).

As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, have been identified in the archaeological record. Animals such as Brush-tailed Possums were highly prized for their fur, with possum skin cloaks worn fastened over one shoulder and under the other. Kangaroo teeth were incorporated into decorative items, such as head bands (Attenbrow 2002).

A variety of fauna have been recorded in the Kiama region (Atlas of Living Australia 2022). This includes mammal species such as Short-beaked Echidna *Tachyglossus aculeatus,* Bare-nosed Wombat *Vombatus ursinus,* Common Ringtail Possum *Pseudocheirus peregrinus,* Swamp Wallaby *Wallabia bicolor,* Australian Fur-seal *Arctocephalus pusillus doriferus* and Risso's Dolphin *Grampus griseus.* Bird species including Australian Magpie *Gymnorhina tibicen,* Australian Raven *Corvus coronoides,* Magpie-lark *Grallina cyanoleuca,* Lewin's Honeyeater *Meliphaga (Meliphaga) lewinii,* Matuka *Egretta novaehollandiae,* Satin Bowerbird *Ptilonorhynchus violaceus,* Eastern Whipbird *Psophodes (Psophodes) olivaceus* and Eastern Spinebill *Acanthorhynchus tenuirostris* have also been recorded. Fish that may have inhabited the study area include Parore *Girella tricuspidate,*

Hard-gut Mullet *Mugil cephalus,* Mud Flathead *Platycephalus fuscus,* Yellowfin Leatherjacket *Meuschenia trachylepis,* Tarwhine *Rhabdosargus sarba* and Yellowfin Bream *Acanthopagrus australis.*

2.4 Land use history

Historical aerial photography provides a record of development within the study area during the 20th century. Imagery dated to 1963 shows extensive vegetation clearance within the study area, with vegetation remaining primarily in proximity to waterlines and along property boundaries (Photo 4). The land has been divided into agricultural properties with few developments. In the far southern portion of the study area several structures and Long Brush Road are visible, while several structures are visible in the north, adjacent to Spring Creek. There are few changes visible in aerial photographs dated to 1979 (Photo 5).

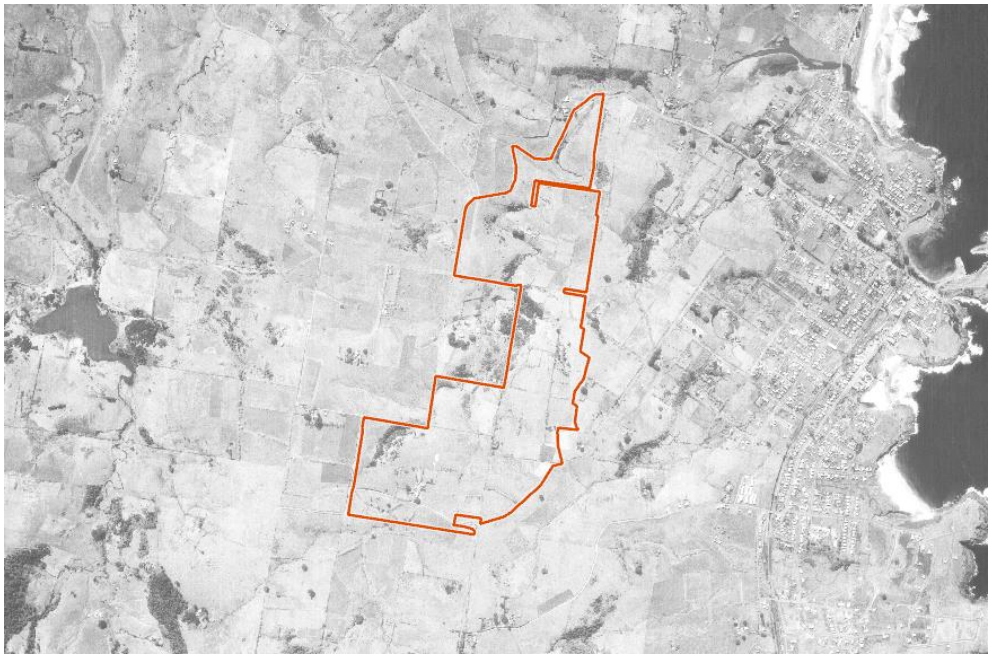


Photo 4 Historical aerial from 1963 with the study area outlined in red (Source: NSW Spatial Services)

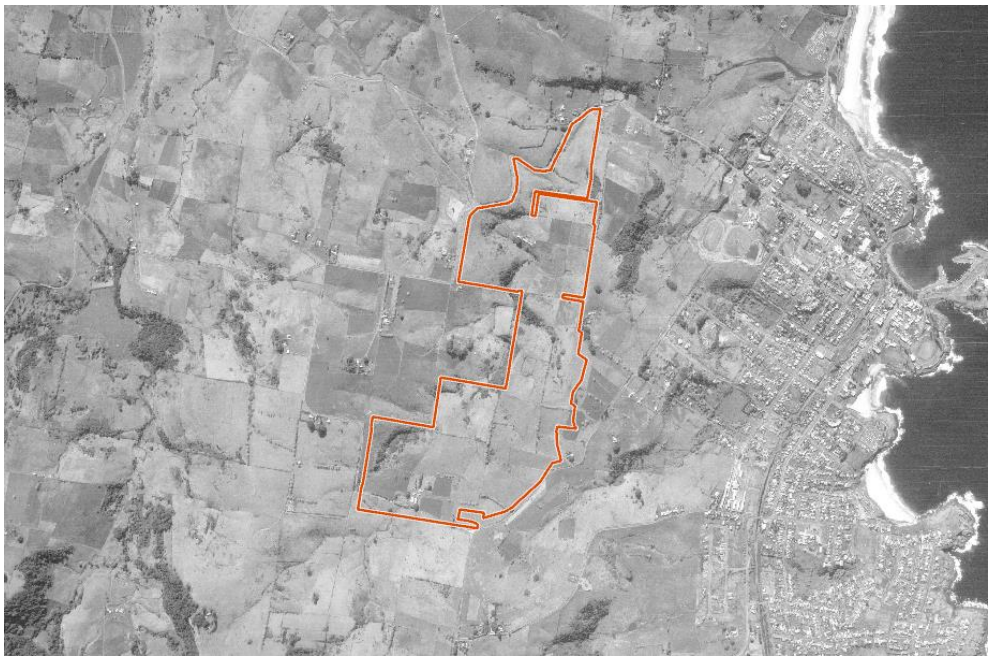


Photo 5 Historical aerial from 1979 with the study area outlined in red (Source: NSW Spatial Services)

By 1993, further structures have been constructed in the property to the far south (Photo 6). Several access tracks to and through the properties in the northern portion of the study area are visible in this photograph. These tracks are less visible in imagery from 2006 which shows overall few other developments within the study area (Photo 7).

Photo 6 Historical aerial from 1993 with the study area outlined in red (Source: NSW Spatial Services)

Photo 7 Historical aerial from 2006 with the study area outlined in red (Source: NSW Spatial Services)

3 Aboriginal context

3.1 Ethnohistory and contact history

It is generally accepted that Aboriginal peoples have inhabited Australia for the last 50,000 years (Allen & O'Connell 2003). Despite a proliferation of known Aboriginal sites there is considerable ongoing debate about the nature, territory and range of pre-contact Indigenous language groups in the Illawarra region. These debates have arisen largely due to the lack of ethnographic and linguistic information recorded at the time of European contact. By the time colonial diarists, missionaries and proto-anthropologists began making detailed records of Indigenous people in the late 19th Century; pre-European Indigenous groups had been broken up and reconfigured by European settlement activity. The following information relating to Aboriginal people on the Illawarra is based on such early detailed records.

The Illawarra region is the traditional land of the Wodi Wodi, a group of people who spoke a variant of the Dharawal language (Wesson 2005). The area of this group extended from Botany Bay down the coast to around Nowra. To the north of the Wodi Wodi, the Darug are identified, to the west are the Gundanguura, and in the south the Thoorga are identified (Tindale 1974).

Traditional stories tell of the Wodi Wodi's journey in canoes from the north to the mouth of Lake Illawarra, in the time when the Spiritual Ancestors were animals. They brought with them the sacred Dharawal (cabbage tree palm) from which their language is named (Wesson 2005).

The areas inhabited by each of the groups are considered to be indicative only and would have changed through time and possibly also depending on circumstances (i.e. availability and distribution of resources).

Analysis of middens in the region has provided dates of occupation dating back 6,000 to 7,000 years on the coast and at Lake Illawarra, and it is accepted that Aboriginal occupation of the south coast dates to around 20,000 years ago (AMBS 2008, pp. 33).

Interactions between the first recorded contact between Aboriginal and European peoples occurred in 1770, when Captain Cook sailed down the east coast of Australia in the *Endeavour* and observed cook fires and Aboriginal people carrying canoes along the coast (Organ 1990, pp. 2). The next recorded contact occurred in 1796, when Flinders and Bass travelled along the coast in the *Tom Thumb* (Organ 1990, pp. 8). Organ (1993, pp. 49) also notes an expedition from Jervis Bay by George William Evans, in which the expedition met several groups of Aboriginal people on the way through the Wollongong area in 1812.

3.2 Regional context

Paton (1998) undertook an archaeological investigation of a proposed hard rock quarry extension near Albion Park, NSW in support of Cleary Bros rezoning application. The aims of the study were to: locate and record any Aboriginal sites in the study area, consult with the local Aboriginal community, and identify any Aboriginal heritage constraints on the quarry expansion. A thorough field survey was undertaken that involved the systematic walking of all transects and areas where ground surface visibility was present. Areas of less visibility were also traversed and inspected in detail. No Aboriginal sites were discovered during the survey, although Paton noted that the ground surface visibility was very poor, being approximately 1-5%.

Paton developed a predictive statement based on previous archaeological studies and the local environment that predicted sites would occur on ridgelines, on flatter areas adjacent to creek lines, and large and more complex sites would occur in close proximity to permanent fresh water sources. Paton recommended that

further archaeological investigation be undertaken to include test excavation of three areas of archaeological sensitivity (two ridge lines and the creek confluence) and some limited areas outside of these sensitive zones.

The assessment for a water supply upgrade to Albion Park was undertaken by Dominic Steele (2000). The initial assessment of the survey area noted that there were a number of tracks, buildings and paddocks which had caused disturbance in the area. The terrain varied between gently undulating and steep grassland, largely cleared of timber. The predictive modelling employed noted the potential for the discovery of middens and stone artefacts (Steele 2000, pp. 18–19).

The survey did not identify any artefacts or sites within the area studied; however, Survey Units I and II were determined to be areas of potential archaeological sensitivity. Within Survey Unit I, it was noted that there was greater exposure to the north, caused by vehicle and animal tracks (Steele 2000, pp. 25). The southern portion of the survey unit was steeper and more heavily grassed. The conclusions of the report noted that this southern portion had moderate potential sensitivity (Steele 2000, pp. 30), with some potential to retain intact deposits, unlike the area further to the north, which had been disturbed by recent land use practices.

Dallas (2001) undertook an Aboriginal Archaeological Survey & Assessment for the Albion Park Quarry Proposed Extension. This investigation was undertaken as part of the preparation of the local environmental study for Cleary Bros rezoning proposal. Dallas undertook a comprehensive survey accompanied by a representative from the Illawarra Local Aboriginal Land Council, who was also the spokesperson for the Wodi Wodi Tribal Elders Corporation. Poor surface visibility was evident in some parts of the study area; however, Dallas noted that locations most likely to contain Aboriginal sites had exposed surfaces with good visibility due to erosion, rock exposure, animal and vehicle tracks, cuttings and dam construction. Dallas also reinspected Paton's (1998, cited by Dallas 2001) areas of archaeological sensitivity and found these to be disturbed with exposures of bedrock and little to no soil development. She also noted that Paton's (1998, cited by Dallas 2001) description of his archaeologically sensitive ridgeline was in fact a spur and as such was reassessed to have low to minimal archaeological potential

Dallas also noted that the poorly watered, steep rocky terrain and shallow soils of the Shellharbour and Dunmore latite hills strongly suggest that the landforms would have low archaeological potential and that only low density artefact scatters may be present within the study area. Dallas concluded by stating that while the study area may contain evidence of past Aboriginal use, it is likely that it was sporadic use by people moving between the hinterland plateau and coast; therefore, no further archaeological investigation was recommended.

Navin Officer (2004) assessed a series of fringe lands being considered for residential development and encompassed around 380 hectares of land around the outer fringes of Albion Park and Dunmore. The initial assessment in this report identified level ground on hill crests close to water as having moderate potential for artefact occurrences, particularly given the likely use of watershed crests as access routes for the rangelands and coastal plain. Grinding grooves were assessed as having a moderate potential to occur, if sandstone outcrops were present; the same was said of scarred trees, if mature growth trees were present. The general assessment of the area stated that 'areas of archaeological potential within this zone are generally level ground on ridge and spurline crests and benches, especially locally elevated landforms adjacent to freshwater' (Navin Officer 2004, pp. 19).

The survey identified seven PADs in total, with four of these PADS: SUFA4 was identified on a gentle to flat section of ground between a deeply incised creek line and a shallow gulley; SUFA 5 was located on a spur crest above a drainage line; SUFA 6 is part of a major spur leading from Shellharbour to the coast; and SUFA 7 is a crest on a major spurline upon which Shellharbour Road has been constructed.

AMBS (2006) completed an Aboriginal Heritage Management Plan for the West Dapto Release Area (WDRA). From the initial survey program, a total of 24 archaeological sites;13 open camp sites, six isolated finds, five scarred trees, were located within the boundaries of the WDRA project area. These were positioned on all

landforms including creek lines (six), alluvial flats (three), spanning creek lines and alluvial flats (three), hillslopes (eight) and spur crests (four). A second stage of assessment was a subsurface testing of a 100 square metre area (100, 1 metre by 1 metre test pits) undertaken across all representative landforms of the Mullet, Duck and Marshall Mount Creeks catchment area. A third stage of testing was carried out at Darkes Road Town Centre and Bong Bong Road Town Centre.

A total of 425 artefacts (353 from within < 20 centimetres of deposit) were recovered from the following landscape contexts:

- Hillslopes (158, of which 146 were from one test pit).
- Alluvial flats – Pleistocene and Holocene terraces more than 10 metres away from stream channels (118).
- Streams – edges of Pleistocene and Holocene terraces within 10 metres of stream channels (86).
- Spur crests (63).

A range of raw materials were represented including, chert, quartz, quartzite, silcrete, silicified tuff and fine-grained siliceous rock. Artefact types included broken flakes, flakes, flaked pieces and cores. The range of raw materials and artefact types is considered characteristic of the region. AMBS concluded that from known site patterning it is likely that additional archaeological sites may occur throughout all landforms of the WDRA – although at varying site and artefact densities – and subsequently all parts of the project area are considered to have some archaeological potential. In general, the highest artefact density was encountered along second-order streams, followed by the first order streams, spur crests and then hillslopes. Although artefact numbers recovered from individual test pit was low, high artefact recovery across all the landforms illustrate that the use of WDRA area was widespread, but not intensive. It was concluded that low density artefact scatters would be relatively common within the entire WDRA area (AMBS 2006, pp. 245).

Austral Archaeology (2010) was commissioned by Eco Logical Australia Pty Ltd on behalf of Delfin Lend Lease Ltd to undertake the Aboriginal archaeological and cultural heritage assessment of the Calderwood Part 3A Project. An initial desktop assessment was followed by fieldwork, resulting in the discussion of the archaeological and Aboriginal cultural sensitivity of the Calderwood Project area, a 700 hectare area within the Shellharbour and Wollongong LGAs, NSW.

The Aboriginal archaeological and cultural heritage field assessment was undertaken over nine days in December 2009 and January 2010, involving representatives from the Illawarra Local Aboriginal Land Council . Thirty-four new Aboriginal archaeological sites, containing at least 189 surface artefacts, were identified during field assessment. They consisted of 18 isolated finds (52.94%), 11 open artefact scatters (32.35%), four open artefact scatters with associated potential archaeological deposit (11.78%) and one potential archaeological deposit without surface material (2.94%). The dominant raw material was silcrete, followed by chert, mudstone, FGS, petrified wood, quartz, basalt and river cobble. Flakes or flake fragments were the most common artefact types, followed by cores, flaked pieces, and a single instance each of a hand axe, a milling stone or pestle, and a possible broken hammerstone.

Biosis (2012) was commissioned by Wollongong City Council to undertake an Aboriginal Cultural Heritage Assessment (ACHA) for the proposed realignment of Shone Avenue in West Dapto. A field survey identified three PADs and subsurface testing was undertaken to assess these areas for presence of Aboriginal archaeological deposits and objects. Of the three PADs identified, PAD 1 contained areas of two previously recorded sites, low density artefact scatters AHIMS 52-2-1033/Wongawilli, Camden and AHIMS 52-2-3293/WDRA_AX_18. Subsurface testing was completed in 2011, resulting in expanding the boundaries of AHIMS 52-2-1033/Wongawilli, Camden and AHIMS 52-2-3293/WDRA_AX_18and indicating that these sites represented the same site. It was concluded that AHIMS 52-2-1033/Wongawilli, Camden is of low scientific significance as it is a low density artefact scatter that contains a limited range of artefact types, lacks stratified

deposits and is a common site type within the local region. Site AHIMS 52-2-1033/Wongawilli, Camden had some limited potential to provide new information about the exploitation of raw material and the site patterning across the region. An AHIP was issued by the Office of Environment and Heritage (now Heritage NSW) (AHIP no. 1131695) to impact on parts of both Aboriginal sites.

AHMS (2012) was commissioned by Stockland to undertake Aboriginal cultural heritage assessment for the proposed residential subdivision within two parcels of land, referred to as 'McPhail Lands', north of Bong Bong Road in West Dapto. The assessment followed up from the one completed in 2010 with the revision of the proposed subdivision. Two registered Aboriginal sites were located in the assessed area: AHIMS 52-2-3779/WDSY1 and AHIMS 52-2-3778/WDSY2 . An additional survey was undertaken for both sites, and test excavations of site AHIMS 52-2-3779/WDSY1. A total of 546 artefacts were recovered from 75 test pits. Most artefacts were located within the western part of the eastern terrace and it was determined that the site extended to the spur crest (AHMS 2012, pp. 98). Division of the test excavation results according to AMBS landform definitions illustrate that the highest density of artefacts occur within alluvial flats, followed by hillslope and then spur lines. Site AHIMS 52-2-3779/WDSY1 was assessed as having high archaeological significance due to its rarity in the area, high number of artefacts and its research potential for obtaining a maximum age for the deposit using the underlying fluvial deposits (AHMS 2012, pp. 103). Salvage was recommended for site AHIMS 52-2-3779/WDSY1 prior to ground disturbance works associated with the proposed development.

Biosis (2011) was commissioned by Cardno on behalf of RW Sheargold Pty Ltd to undertake an Aboriginal archaeological and cultural heritage assessment for the proposed large lot precinct for the Wongawilli Neighbourhood Master Plan development proposal. A survey was completed that resulted in mapping areas of high, moderate and low archaeological sensitivity. Areas deemed as having high archaeological sensitivity was a hill crest where a recorded Aboriginal site AHIMS 52-2-3281/WDRA_AX_17 was identified during a program of subsurface investigation by AMBS in 2006. Moderate sensitivity was determined for upper hill slopes, and low in other landforms due to the levels of previous disturbance. Further archaeological testing was recommended that was completed by Biosis (2014) in 2013. The site extent of the site AHIMS 52-2-3281/WDRA_AX_17 was determined and a new site, AHIMS 52-2-4103/Wongawilli Village 1 was identified within the upper hill slope. Both sites were low density artefact scatters that are most likely remnants of people traversing the area or represent short-term camping grounds. The most suitable locations for short-term occupation for those travelling along the ridge line are likely to be on hill crest and gently sloped sections of the side slopes due to the more level gradient of these locations. Occupation within these landforms would have been transient, isolated events that might have been frequent in the hill crest as it offers the most expansive vista including views to the west that are not possible from the east of the crest (Biosis Pty Ltd 2014, pp. 59). An AHIP was issued in order to impact on both sites prior to the proposed development.

Biosis (2015) was commissioned by MMJ Real Estate to undertake an Aboriginal heritage assessment, which was in support of a Neighborhood Master Plan for two properties in the suburb of Horsley, NSW. The assessment identified two previously recoded sites (AHIMS 52-2-3283/WDRA_AX_2 and 52-2-3284WDRA_AX_21) as well as four additional sites. The assessment identified areas of high and moderate potential associated with alluvial flats and ridgelines associated with Robins Creek. The assessment concluded that flat, levelled ground above flood level, as well as extensive views towards the Escarpment, would have made the place ideal for long-term occupation. Swampy soils across the alluvial flats are aggrading, indicating that any archaeological materiel would have been buried and retained. Recent land use activities in the area would not have resulted in removal or displacement of soil layers, other than the very surface soils. Further assessment of high and moderate potential landforms was recommended as part of any future approvals.

Artefact Heritage (2015) was commissioned by Hyder Cardno Joint Venture to prepare an Aboriginal cultural heritage assessment for the Albion Park Bypass project. Following an archaeological survey in 2013, which identified two previously recorded Aboriginal sites and one new area of PAD, test excavations were

recommended and carried out in 2014. One Aboriginal site (AHIMS 52-5-0512/WDRA_AS_09) and six areas of PAD were excavated. Four areas of PAD contained low density subsurface artefact deposits while the other two areas of PAD had moderate density subsurface artefact deposits. A total of 99 artefacts were recovered with a variety of raw materials; however, silcrete and quartz were the most abundant raw material types. From this assessment, a predictive model was developed which stated that all levels of the Western foothills zone and the Coastal Plain within 100 metres of a creek situated on quaternary deposits (floodplains), Budgong Sandstone, and Berry Siltstone are archaeologically sensitive.

3.3 Local context

Connell Wagner Pty Ltd commissioned Silcox (1990) to undertake an archaeological survey to identify and assess the significance of any Aboriginal or European sites that would be affected by the corridor of the north Kiama by-pass. The survey identified four Aboriginal sites, three of which had been previously identified (AHIMS 52-5-0253/Dunmore 3, AHIMS 52-5-0251/Dunmore 1 and AHIMS 52-5-0072/Minnamurra Glengowrie) and one new site. AHIMS 52-5-0253/Dunmore 3 consisted of 15 artefacts located in a spoil heap from an animal burial, AHIMS 52-5-0251/Dunmore 1 contained 5 artefacts and 2 shell fragments, while AHIMS 52-5-0072/Minnamurra Glengowrie was recorded but not described in the report. The new site (KB1) consisted of a sparse scatter of shell fragments and two stone artefacts that covered an area of 10 metres by 10 metres. The site was located on the eastern side of a sand mine directly opposite AHIMS 52-5-0072/Minnamurra Glengowrie. The survey also resulted in the identification of two PADs (KBx and KBy). KBx consisted of a terrace surface in the vicinity of AHIMS 52-5-0253/Dunmore 3, while KBy involved a low ridge further south. Due to poor surface visibility no artefacts were evident, and the existence of the campsites could only be established through test excavation. Silcox recommended that no further archaeological investigations were needed for AHIMS 52-5-0251/Dunmore 1, an AHIP for a consent to destroy be obtained for KB1, and limited test excavations be carried out at the campsite locations.

Giles Hamm (1993) was commissioned by Telecom Australia to undertake a heritage assessment for their proposed installation of an optical fibre cable between Kiama and Jamberoo. The survey was carried out on the 17 September 1993 with Mr Jim Davis of the Illawarra Local Aboriginal Land Council. No Aboriginal sites were located along the proposed route. It was recommended that Telecom Australia proceed with their project, with no further archaeological investigation. Two creek crossings at Spring Creek and Jerrara Creek, however, were recommended to be monitored.

Navin Officer (1998) conducted an archaeological survey of approximately 15 hectares of land located one and a half kilometres inland from the coastline at Kiama, at the foothills of the Illawarra Range. The study area consisted of a descending ridgeline from Saddleback Mountain on a southwest-northeast orientation, which formed the watershed between Spring Creek and the coastal catchment of the immediate Kiama hinterland. The gradients within the study area were relatively low and were situated on spur and ridgeline crests, and upper slopes. The survey resulted in the location of one isolated find, a single stone artefact, and one area of archaeological potential.

As part of a Statement of Environmental Effects, Saunders (2004) was commissioned to undertake an archaeological assessment for a residential development at Cedar Grove Estate, Jamberoo Road, Kiama as part of a development application. The assessment included background research and a field survey; however no Aboriginal archaeological sites or areas of Aboriginal archaeological potential were located within the study area. The survey was hampered by low exposure and visibility rates, and the assessment of low potential was based on unfavourable landforms and previous disturbances from residential development, landscaping and intensive domestic use.

Navin Officer (2005) conducted an archaeological assessment of the proposed Gerroa Sand Mine Extension area. The surface survey of the area identified one new Aboriginal archaeological site (AHIMS 52-2-0452/East

Cordeaux) and a number of surface expressions of shell midden material. Those areas that remain undisturbed were considered to be of moderate to high archaeological significance, including previously identified conservation areas A and B. Further archaeological investigations were recommended.

Following a previous assessment carried out by Austral Archaeology in 2006 which identified two PADs, Mary Dallas (2007) carried out test excavations at 60–70 South Kiama Drive, approximately 200 metres to the east of the current study area. The PADs were initially identified on the basis of their undisturbed nature and proximity to Munna Munnora Creek. The excavations recovered one isolated artefact from each PAD and both PADs were no longer considered to retain any further archaeological potential.

Biosis (2010) completed an ADDA for Allen, Price and Associates on South Kiama Drive. It assessed the area as holding low archaeological potential due to a lack of deep stratified deposits and the erosional nature of the soils. The two isolated artefacts identified by previous test excavations carried out by Mary Dallas (2007) were considered to represent lost or discarded cultural material not associated with long term occupation or tool production.

Biosis (Biosis 2020a, Biosis 2020b) completed an ACHA for a planning proposal of an area located approximately 630 metres south-east of the study area. Background research and field survey indicated that area had been cleared and used for pastoral purposes over much of the last 150 years. Scattered residential development was observed in the southern portion of the site, and a cemetery near its centre, but otherwise the site was relatively undisturbed. Three areas of archaeological potential were identified, associated with either a raised terrace or lower slope landforms, or due to their proximity to creeklines (Biosis 2020b, pp. 41).

In subsequent test excavations, four low density sub-surface scatters were identified within pits which generally did not reach 500 millimetres before reaching clay. A total of 16 artefacts were recovered from slope and flat landforms. Artefacts were primarily recovered from lower and mid-slope landforms, with the highest density (6 artefacts) recovered from a single test pit located on a lower slope. The assemblage recovered from the test excavations was dominated by complete flakes (31.25%) and angular fragments (31.25%), which made up a total of 62.5% of the entire assemblage. Distal flake fragments, proximal flake fragments and longitudinally split fragments were also present. The predominant material in the assemblage was chert at 37.5%, followed by silcrete (25%) and quartz (18.75%). Mudstone and crystal quartz were also present (Biosis 2020b, pp. 73).

3.4 Previous studies within the study area

Biosis (2018) undertook an ADDA for the proposed Backsaddle Planning Proposal, Kiama NSW. This site covers the south-eastern portion of the current study area. The visual inspection consisted of a systematic survey targeting all landforms within the study area to identify and record any Aboriginal archaeological sites visible on the surface or areas of Aboriginal archaeological potential. Large steep hillslopes and ridge crests were the dominant landforms in the area. These landforms were considered to be of low archaeological potential because of their shallow soil deposits and erosional nature. GSV of the study area was low at approximately 10% due to extensive grass coverage present across the study area. No new Aboriginal objects or sites were located during the site inspection. The results of the site inspection indicated that the study area contained low archaeological potential.

3.4.1 Identified Aboriginal archaeological sites

An extensive search of the AHIMS database was conducted on 22 August 2022 (Client service ID: 710712). The search identified 90 Aboriginal archaeological sites within a 7 kilometre search area, centred on the study area (Table 2). None of these registered sites are located *within* the study area (Figure 6). The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on

maps from Aboriginal heritage reports where available. These descriptions and maps were relied upon where notable discrepancies occurred.

It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area. Some recorded sites consist of more than one element, for example artefacts and a modified tree, however for the purposes of this breakdown and the predictive modelling, all individual site types will be studied and compared. This explains why there are 116 results presented here, compared to 90 sites identified in AHIMS.

Table 2 AHIMS sites within the vicinity of the study area

Site type	Occurrences	Frequency (%)
Artefact	69	59.48%
Shell	22	18.97%
PAD	17	14.66%
Burial	2	1.72%
Grinding Groove	2	1.72%
Modified Tree (Carved or Scarred)	2	1.72%
Art (Pigment or Engraved)	1	0.86%
Stone arrangement	1	0.86%
Total	**116**	**100.00%**

A simple analysis of the Aboriginal cultural heritage sites registered within a 7 kilometre search area surrounding the study area indicates that the dominant site type is artefact, representing 59.48% (n=69), with shell of 18.97% (n=22), followed by PAD sites of 14.66% (n=17). Burial, grinding groove and modified tree sites each represent 1.72% of sites (n=2 each). Art and stone arrangement sites are least represented at 0.86% each (n=1 each).

Legend

- Study area
- AHIMS

NOT TO BE MADE PUBLIC

Figure 6 AHIMS within the vicinity of the study area

0 0.25 0.5 0.75 1

Kilometers

Scale: 1:35,000@ A3

Coordinate System:
GDA 1994 MGA Zone 56

N

Matter: 37550, Date: 25 August 2022,
Drawn by: JB, Checked by: JM, Last edited by: jbeckius
Location: P:\37500s\37550\Mapping\
37550_ADDA_KiamaWest_Masterplan, Layout: 37550_ADDA_F6_AHIMS

3.4.2 Predictive statements

A series of statements been formulated to broadly predict the type and character of Aboriginal cultural heritage sites likely to exist throughout the study area and where they are more likely to be located.

This model is based on:

- Local and regional site distribution in relation to landform features identified within the study area.
- Consideration of site type, raw material types and site densities likely to be present within the study area.
- Findings of the ethnohistorical research on the potential for material traces to present within the study area.
- Potential Aboriginal use of natural resources present or once present within the study area.
- Consideration of the temporal and spatial relationships of sites within the study area and surrounding region.

Based on this information, a predictive model has been developed, indicating the site types most likely to be encountered during the survey and subsequent sub-surface investigations across the present study area (Table 3). The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the study area.

Table 3 Aboriginal site prediction statements

Site type	Site description	Potential
Flaked stone artefact scatters and isolated artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	High: Stone artefact sites have been previously recorded in the region on level, well-drained topographies in close proximity to reliable sources of fresh water. Due to the distance from permanent fresh water resources, the potential for artefacts to be present within the study area is assessed as high.
PADs	Potential sub surface deposits of cultural material.	High: PADs have been previously recorded in the region across a wide range of landforms. PADs are likely to be present within areas adjacent to water courses or on high points in undisturbed landforms.
Shell middens	Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time.	Low: While shell midden sites have been recorded within the vicinity of the study area, they are adjacent to or within swampy areas to the north, with the study area landforms being less conducive for midden sites.
Grinding grooves	Grooves created in stone platforms through ground stone tool manufacture.	Moderate: Suitable horizontal sandstone rock outcrops could occur along drainage lines.

Site type	Site description	Potential
Quarries	Raw stone material procurement sites.	Low: There is no record of any quarries being within or surrounding the study area.
Modified trees	Trees with cultural modifications	Low: Scarred trees are not highly represented within the vicinity of the study area. Due to extensive vegetation clearance only a small number of mature native trees have survived.
Burials	Aboriginal burial sites.	Low: Aboriginal burial sites are generally situated within deep, soft sediments, caves or hollow trees. Areas of deep sandy deposits will have the potential for Aboriginal burials. The soil profiles associated with the study area are not commonly associated with burials.
Aboriginal Ceremony and Dreaming sites	Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants.	Low: There are currently no recorded mythological stories for the study area.
Post-contact sites	These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with post-contact Aboriginal use.	Low: There are no post-contact sites previously recorded in the study area and historical sources do not identify one.
Aboriginal places	Aboriginal places may not contain any 'archaeological' indicators of a site, but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings.	Low: There are currently no recorded Aboriginal historical associations for the study area.
Rock shelters with art and / or deposit	Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves.	Nil: The sites will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist, which are not present within the study area.

4 Archaeological investigation

An archaeological investigation of the study area was undertaken on 15 and 16 September 2022 by Joshua Madden (Biosis, Principal Archaeologist) and Hannah Mills (Biosis, Archaeologist). The survey sampling strategy, methodology and a discussion of results are provided below.

4.1 Archaeological survey aims

The principle aims of the survey were to:

- Undertake a systematic survey of the study area targeting areas with the potential for Aboriginal heritage.
- Identify and record Aboriginal archaeological sites visible on the ground surface.
- Identify and record areas of Aboriginal archaeological sensitivity.

4.2 Survey methods

The survey was conducted on foot. Recording during the survey followed the archaeological survey requirements of the Code and industry best practice methodology. Information that recorded during the survey included:

- Aboriginal objects or sites present in the study area during the survey.
- Survey coverage.
- Any resources that may have potentially been exploited by Aboriginal people.
- Landform elements, distinguishable areas of land approximately 40m across or with a 20m radius (CSIRO 2009).
- Photographs of the site indicating landform.
- Ground surface visibility (GSV) and areas of exposure.
- Observable past or present disturbances to the landscape from human or animal activities.
- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.

Where possible, the identification of natural soil deposits within the study area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units, landform, vegetation coverage, GSV and the recording of soil information for each survey unit were possible. Any potential Aboriginal objects observed during the survey were documented and photographed. The location of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

4.3 Constraints to the survey

With any archaeological survey there are several factors that influence the effectiveness (the likelihood of finding sites) of the survey. The factors that contributed most to the effectiveness of the survey within the study area were extensive grass coverage throughout the study area, and steep hillslopes to the waterlines.

4.4 Visibility

In most archaeological reports and guidelines visibility refers to GSV, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2010b). Visibility across the study area was generally low (10%) due to extensive grass coverage and areas of dense vegetation (see Photo 8, Photo 9). Low ground visibility limited the possibility of identifying surface artefacts during the survey.

Photo 8 General visibility in the study area, photo facing north-west

Photo 9 General visibility in the study area, photo facing west

4.5 Exposure

Exposure refers to the geomorphic conditions of the local landform being surveyed and attempts to describe the relationship between those conditions and the likelihood the prevailing conditions provide for the exposure of (buried) archaeological materials. Whilst also usually expressed as a percentage estimate, exposure is different to visibility in that it is in part a summation of geomorphic processes, rather than a simple observation of the ground surface (Burke & Smith 2004, pp. 79, DECCW 2010b). Overall, the study area displayed few areas of exposure associated with erosion along certain waterlines, vehicle access tracks and beneath trees. Approximately 5% of the study area was subject to exposure. In some areas, generally those adjacent to steeper slopes along waterlines, the underlying bedrock was exposed on the surface (Photo 13). This can be an indication of shallow soils in these areas.

Photo 10 Area of exposure associated with trees

Photo 11 Area of exposure associated with Spring Creek

Photo 12 Area of exposure associated with vehicle access at a gate

Photo 13 Underlying bedrock visible at ground level, indicating shallow soil profiles

4.6 Disturbances

Disturbance in the study area is associated with natural and human agents. Natural agents generally affect small areas and include the burrowing and scratching in soil by animals, such as wombats, foxes, rabbits and

wallabies, and sometimes exposure from slumping or scouring. Disturbances associated with recent human action affect larger areas of land and can include residential development such as landscaping and construction of residential buildings; farming practices, such as initial vegetation clearance for creation of paddocks, fencing and stock grazing; agricultural practices such as fruit orchards; light industrial practices such as nursery and creation of artificial dams throughout the entire study area.

The primary areas of significant disturbance within the study area are associated with the residential and agricultural building complexes located in the south and north of the study area. Other notable disturbances included the construction of artificial dams, historic dry stone walls throughout the study area, an orchard and garden, fencing, and paved access roads (see Photo 14, Photo 15, Photo 16, Photo 17 and Photo 18).

Despite the extent of disturbances noted during the survey, these disturbances are largely restricted to the areas immediately surrounding the two residential properties within the study area. Large portions of the study area appeared undisturbed on inspection.

Photo 14 Disturbance associated with residential construction and car park

Photo 15 Disturbance associated with artificial dam and relevant landscaping

Photo 16 Disturbance associated with historic dry-stone walls

Photo 17 Disturbance associated with an orchard, located in the south of the study area

Photo 18 Disturbance associated with bridge construction and paved access roads

4.7 Investigation results and discussion

The archaeological investigation consisted of two meandering transects walked across the study area, targeting favourable landforms. Survey coverage is marked within Figure 7. The results of the field investigation have been summarised below and in Figure 8.

Background research suggested that the study area is located close to several permanent water sources, both freshwater (Spring Creek, which transects the study area) and saltwater (Kiama Harbour, located approximately 1.6 kilometres east). Previous regional predictive modelling indicates that sites are more likely to be located on ridgelines or flatter areas adjacent to creek lines, with larger and more complex sites occurring in close proximity to permanent fresh water sources (Robert Paton Archaeological Studies 1998, Artefact Heritage 2015). Previous studies have also indicated the potential for shallow soils within the study area (Biosis Pty Ltd 2018, Cardno 2018).

The Kiama Development Control Plan 2020 acknowledges these predictive models, listing the landscape features listed below as sensitive landscapes with "features that may potentially hold Aboriginal cultural heritage sites/objects" (Kiama Municipal Council 2020, pp. 4.17):

- The riparian corridor 200 metres wide on each side of permanent or ephemeral creeks.
- Watercourses (including waterways subsequently modified by post settlement activity).
- Spurs, ridgelines, ridge tops and high points or knolls.

Beyond providing fresh water, perennial water sources support an abundance of resources. Animals that have been recorded in the vicinity of the study area include Swamp Wallaby *Wallabia bicolor,* and numerous fish species including Parore, Hard-gut Mullet, Mud Flathead, Yellowfin Leatherjacket, Tarwhine and Yellowfin Bream (Atlas of Living Australia 2022).

The study area is contained within the Bombo soil landscape, underlain by the Coastal Plain physiographic region. The Bombo soil landscape is associated with shallow soils within rolling low hills, narrow crests and long, gently inclined ridgelines. The soil landscape is classed as erosional, which can result in poor preservation of archaeological materials particularly in areas where high levels of erosion has occurred (Chapman et al. 1989, pp. 64–67, McInnes 1997, p.45, cited by Umwelt (Australia) Pty Limited 2016, pp. 13). These shallow soils were observed during the survey in areas where the underlying shale was visible on the surface. This was observed most frequently at the top of steeper slopes adjacent to waterlines, consistent with the geotechnical report previously conducted by Cardno (2018).

A search of the AHIMS register did not identify previously recorded sites within the study area. A review of historical aerial photographs shows high levels of disturbance associated with residential and agricultural land use in two specific areas, but generally low levels of disturbance otherwise. Major disturbances noted in these areas during the survey, located in the north and south, include structural developments in the north and south, road paving and orcharding. Other disturbances included landscaping associated with artificial dams and the presence of historic dry-stone walls throughout the study area.

Although the survey demonstrated that portions of the study area have been extensively disturbed, 11 areas of PAD were identified (see Figure 8). Due to dense grass coverage throughout the study area, no Aboriginal objects were located. These PADs were identified by their presence on favourable landforms and their proximity to Spring Creek, a perennial watercourse. Most PADs identified are within 100 metres of Spring Creek. One PAD is located at a further distance, located in the north-west of the study area adjacent to Jerrara Road. This PAD lies on a flat, elevated crest at a distance of almost 200 metres from Spring Creek, with excellent views of the coast and surrounding the area (see Photo 19). The southern-most area of PAD and four northern-most areas of PAD are located at lower points within the landscape. These PADs instead are located on level areas directly adjacent to Spring Creek (see Photo 20, Photo 21, Photo 22).

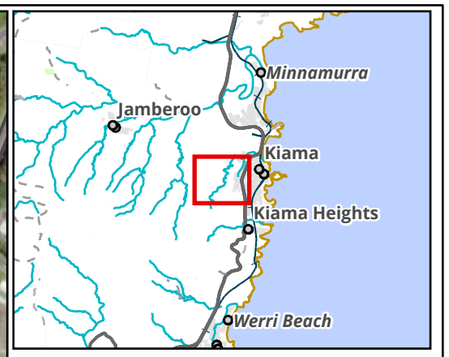
These areas of PAD have been assessed to have moderate potential to contain archaeological deposits. This assessment takes into consideration their locations within sensitive landforms such as crests, ridgelines or flatter areas in close proximity to permanent fresh water sources, supported by predictive modelling (Robert Paton Archaeological Studies 1998). These areas have also remained relatively undisturbed suggesting the potential for intact deposits. The survey also identified that the remainder of the study area has low potential to contain archaeological deposits as these areas featured shallow soils, previous disturbances from agricultural or residential land use, or were located in unfavourable locations within the landform (for example, lack of proximity to a watercourse or steep slopes). These results have been summarised in Figure 8.

Photo 19 View of PAD located within a crest landform in the north-west of the study area, photo facing east

Photo 20 View of PAD adjacent to Spring Creek located in the south of the study area, photo facing east

Photo 21 View of PAD adjacent to Spring Creek located in the north of the study area with the tree line indicating Spring Creek, photo facing north-west

Photo 22 View to two northern-most PADs located adjacent to Spring Creek, photo facing north



Legend

- Study area
- Survey tracks
- Contour (2m)

Figure 7 Survey effort coverage

0 50 100 150 200

Metres

Scale: 1:8,000@ A3

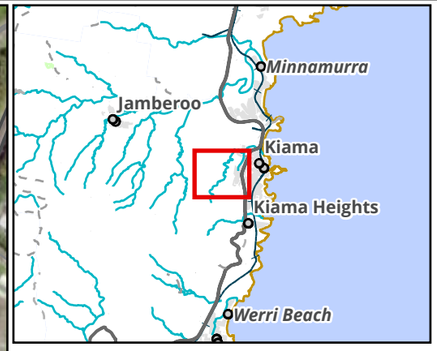
Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Matter: 37550, Date: 23 September 2022,
Drawn by: JB, Checked by: JM, Last edited by: jbeckius
Location: P:\37500s\37550\Mapping\
37550_ADDA_KiamaWest_Masterplan, Layout: 37550_ADDA_F7_SurveyEffort

Acknowledgements: Basemap © Land and Property Information 2016; public/NSW_Imagery: © Department of Customer Service 2020



Legend

- Study area
- PAD

Figure 8 Survey results

0 50 100 150 200

Metres

Scale: 1:8,000@ A3

Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Matter: 37550, Date: 26 September 2022,
Drawn by: JB, Checked by: JM, Last edited by: jbeckius
Location: P:\37500s\37550\Mapping\
37550_ADDA_KiamaWest_Masterplan, Layout: 37550_ADDA_F8_SurveyResults

5 Strategic management planning

5.1 Masterplan details

The masterplan presented in *Kiama Longbrush Road. Initial Urban Design Concepts* (e8urban & Sprout Studio 2022) proposes the rezoning of the study area for the purposes of a mixture of high, standard and medium density residences along with large residential lots, and spaces for educational, eco (low impact) tourism and other uses/activation (see Appendix 2). The masterplan has been developed with the following values in mind:

- Access to open space, local shops and services.
- Connection to country.
- Coastal and rural lifestyle.
- Diverse character, uniqueness and pride in place.
- Promote tourism, visitation and pride in the region.
- Respectful of the heritage that surrounds the study area.
- Healthy natural environment.
- Housing choice, diversity and affordability.
- Respectful of existing natural systems.
- Authentic and honest.
- Transitional – urban to hinterland.

As part of the masterplan, new roads and connections will be created to link into the existing settlement of Kiama, with internal circulation focused along Spring Creek. Development areas have considered the existing green belt vegetation, topography, hydrology and views within the study area, along with the existing rural setting of larger lots and small villages or homesteads scattered throughout the landscape.

Higher intensity uses are located adjacent to Spring Creek, along the valley floor where there is less visual impact to the surrounding landscape. Opportunities for place activation include small scale retail, food and beverage spaces with a focus on local produce, hotel and glamping and the potential for an Agricultural College or School. Due to the topography of the study area, the edges and interface of the study area have a high visual sensitivity. The masterplan proposes to make these areas as open as possible and respond to particular contexts appropriately, for example through the use of large lots, open space or other uses that complement the immediate locality, views and/or vistas. The slopes form the transition between the higher intensity uses along Spring Creek and the interface on the study area boundaries. The form of the transition zones varies according to the local topography, location of key links and the desire to create nodal points at intersections.

An overview of the concept and masterplan is presented in Photo 23.

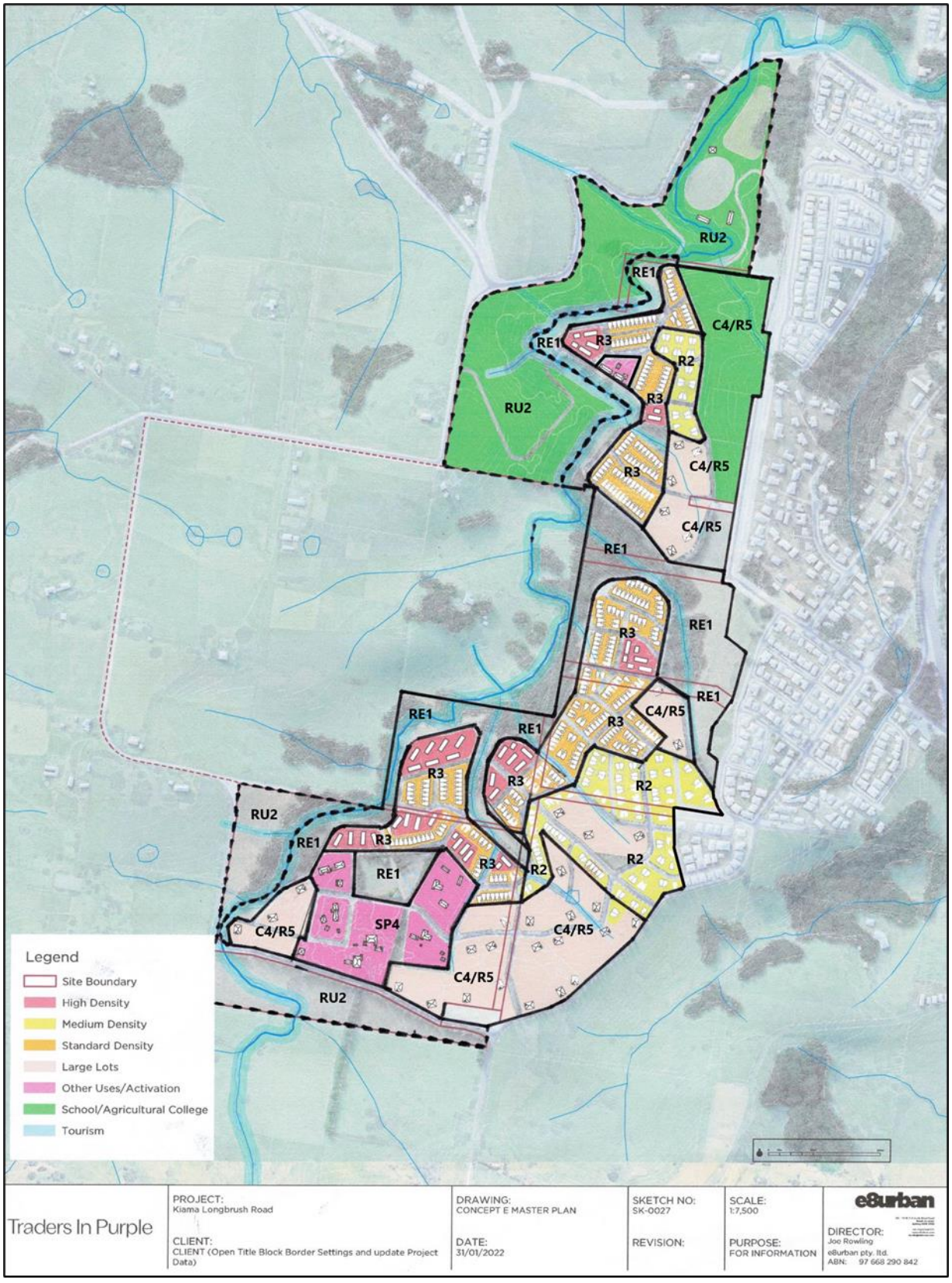


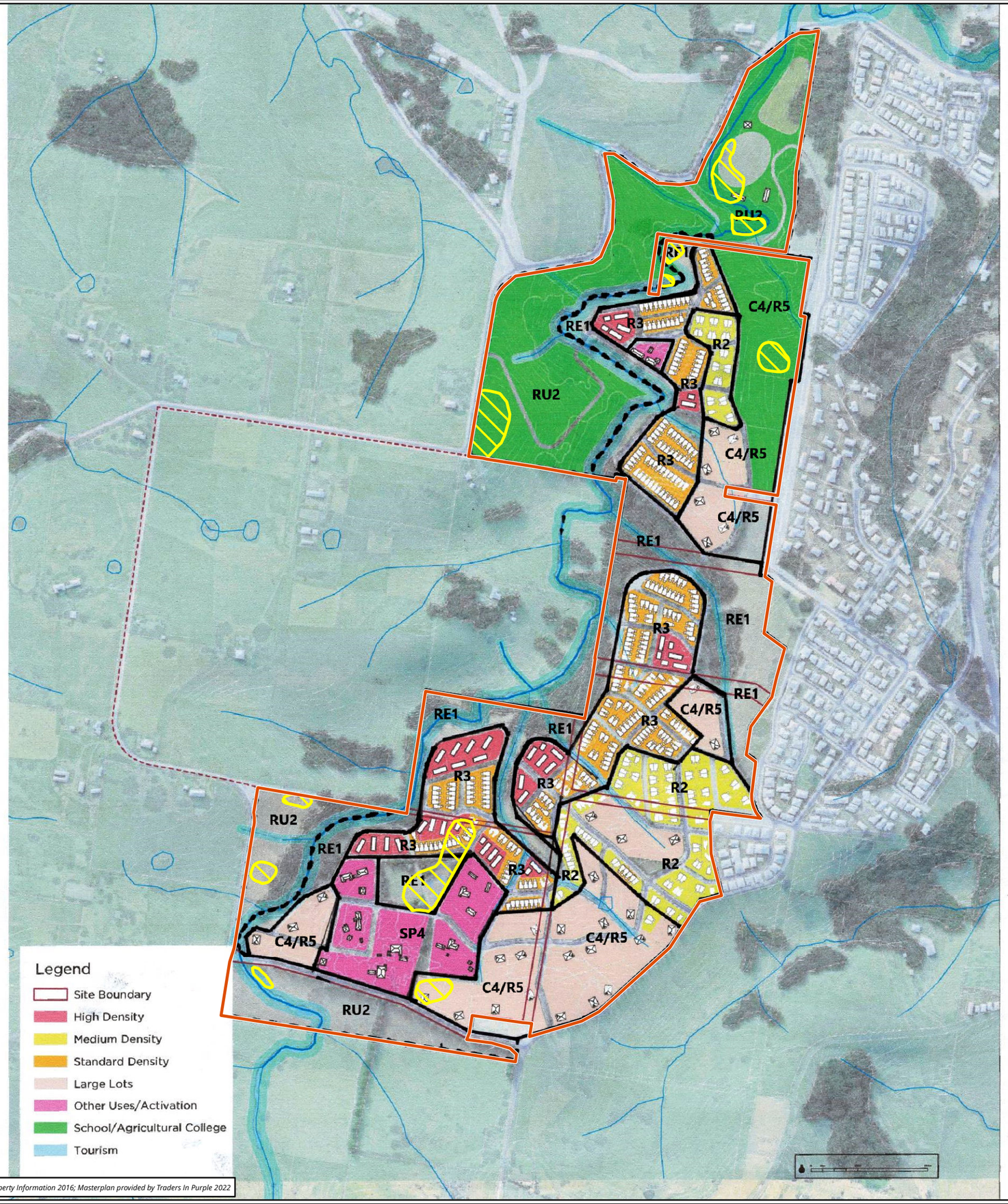
Photo 23 Concept and masterplan for the study area including zoning and function spaces (Source: Traders in Purple, provided 6 June 2022)

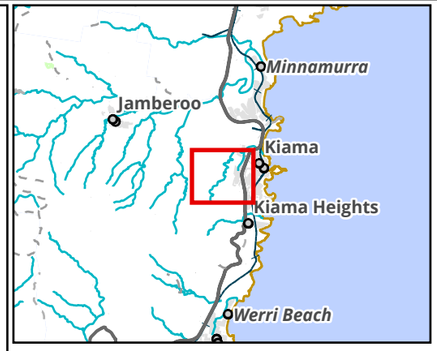
5.2 Aboriginal archaeological constraints

As is presented in Section 4, there are a range of PADs within the study area. In order to determine the impacts that may occur of as a result of the proposed masterplan, PADs have been overlaid over the masterplan and presented in Figure 9 below. It is noted that, consultation with Aboriginal stakeholders has not been undertaken. As such impacts to intangible heritage and potential tangible heritage are unknown currently.

- Four of the 11 identified PADs are entirely located within C4/R5: School/Agricultural college. Potential impacts to the PADs are unknown at this time. Detailed design of the educational facilities would be required before impacts to these PADs can be accurately determined.
- One of the 11 PADs is partially located within C4/R5: School/Agricultural college and RE1. Potential impacts to the PADs are unknown at this time. Detailed design would be required before impacts to these PAD can be accurately determined.
- Two of the 11 PADs are to be located within RE1. Potential impacts to the PADs are unknown at this time. Detailed design would be required before impacts to these PADs can be accurately determined.
- Three of the 11 PADs are located within RU2. Potential impacts to the PADs are unknown at this time. Detailed design would be required before impacts to these PADs can be accurately determined.
- One of the 11 PAD is partially located within R3: High density and RE1. The PAD will be, based on the current masterplan data, partially impacted by the works. However, the full impacts to the PAD are unknown at this time. Detailed design would be required before impacts to these PAD can be accurately determined.

A detailed Aboriginal Cultural Heritage Assessment (ACHA) would need to be undertaken for the study area. The ACHA should be undertaken in accordance with *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010c) (consultation requirements).





Legend

- Study area
- PAD

Figure 9 Heritage constraints

0 100 200 300 400 N

Metres

Scale: 1:9,000@ A3

Coordinate System: GDA 1994 MGA Zone 56

biosis

Matter: 37550, Date: 23 January 2023,
Drawn by: JB, Checked by: JM, Last edited by: jbeckius
Location: P:\37500s\37550\Mapping\
37550_ADDA_KiamaWest_Masterplan, Layout: 37550_ADDA_F9_Constraints

Acknowledgements: Basemap © Land and Property Information 2016; Masterplan provided by Traders In Purple 2022

5.3 Opportunities

The masterplan has been developed with the environmental and landscape context in mind whilst also considering social and community needs. A number of opportunities are available to reduce impacts to Aboriginal cultural heritage, and also to enhance the heritage elements (where culturally appropriate). These are summarised in Table 4.

Table 4 Heritage opportunities

Category		Opportunity	Heritage benefit
1	Conservation and enhancement of heritage elements and items	Heritage interpretation should be incorporated into the masterplan, and should be consistent across the development.	Including heritage interpretation into the masterplan at this early stage will allow for seamless integration of the Cultural heritage of the place into the design of the masterplan and enhance the holistic approach that has been taken for the proposed development. Heritage interpretation must be undertaken in consultation with the Aboriginal community.
		Further assessment of potential archaeology within the study area.	The study area has potential to contain tangible and intangible Aboriginal cultural values. A detailed ACHA would need to be undertaken for the study area. The ACHA should be undertaken in accordance with the consultation requirements. This data would then enable the development of mitigation measures to be implemented for the masterplan, such as avoiding areas which may contain intangible and tangible values, and provide the opportunity for Traditional Owners to ensure respectful integration of cultural heritage into the masterplan designs.
2	Parks and walks	Parks, playgrounds and off-leash dog parks to provide local activity spaces.	These facilities will provide much needed places for residents and visitors to exercise, socialise and interact within their community, and provides local infrastructure which is often left unconsidered in new piecemeal developments. The incorporation of parks, playgrounds and off-leash areas would also be a positive implementation of urban greening infrastructure in the development and could be used as a focus of the promotion of cultural heritage education and as interpretation spaces.
		Walking trails through green belt along Spring Creek and to view location on high ground.	Similar to the previous opportunity, walking trails will enable the exploration and appreciation of the natural environment, and will also contribute to the health and wellbeing of residents and visitors. The incorporation of walking trails and green belts would also be a positive implementation of urban greening infrastructure in the development and could be used as a focus of the promotion of cultural heritage education and as interpretation spaces.
3	Plantings and	Use of native plantings which	Prior to European arrival in the region, the study area was

Category		Opportunity	Heritage benefit
	vegetation	complement the existing native and exotic vegetation in the study area and vicinity.	part of a red cedar rainforest which was cleared by colonial settlers in the mid-19th century. The reintroduction of species native to the Kiama and Illawarra, such as red cedar, would allow for a part of this former native landscape to be represented as part of the masterplan and development. It is noted that any vegetation community planted should be assessed and approved by appropriately qualified ecologists and the Traditional owners of the region.
4	Stakeholder consultation	Connecting and designing with country.	While this assessment does not focus planning and architecture legislation, the incorporation of Connecting with Country and Designing with Country as part of the design process would be invaluable in developing a holistic masterplan for the development, which could enable the idea of placemaking within the local Aboriginal and wider community.
		Engaging with appropriate / relevant stakeholders and local community	The heritage of Kiama LGA is highly valued by the local community. By engaging early with stakeholders and the community, there is the opportunity to seek feedback and work with the local community and Traditional owners to achieve a positive outcome which would benefit the community and region.

6 Conclusions and recommendations

6.1 Conclusions

The study area is located within the Kiama LGA, within the suburbs of Kiama and Jerrara comprising: 103 Jamberoo Road; 33 Greyleigh Drive; and 177 Long Brush Road. It is currently zoned RU2 Rural Landscape and encompasses approximately 114 hectares of private land.

This assessment has identified 11 PADs within the study area. Given low levels of visibility during the survey, these areas were identified by landform, including elements such as proximity to water, elevation, and flat areas. The remainder of the study area has been identified as having low potential due to shallow soils, distance from water, prior disturbances from agricultural and residential land use, and unfavourable landforms.

The presence of 11 areas of PAD, has been identified as a major constraint to the proposed masterplan in its current form. If impacts cannot be avoided to the areas of moderate potential further assessment will be required. A detailed ACHA would need to be undertaken for the study area. The ACHA should be undertaken in accordance with the consultation requirements.

However, there are also a range of opportunities which would result in increased positive outcomes for heritage (Table 5).

Table 5 Proposed heritage strategies for the masterplan

Strategy no.	Strategy
1	Conserve, incorporate and promote the intangible and tangible Aboriginal cultural heritage values where culturally appropriate.
2	Develop public spaces and infrastructure that us visually appropriate for the rural character setting of the site and vicinity. This infrastructure should be sympathetic to the intangible and tangible Aboriginal cultural heritage values of the study area.
3	Utilise landscaping and plantings to create an environment for residents and visitors which respects and celebrates intangible and tangible Aboriginal cultural heritage values of the study area.
4	Provide opportunity for the Traditional Owners to contribute to the design of new public spaces to ensure intangible and tangible Aboriginal cultural heritage values are protected and where appropriate presented to the wider community respectfully.

6.2 Recommendations

The following management recommendations have been developed relevant to the study area and influenced by:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practise, widely considered to include:
  - Ethos of the Australia ICOMOS Burra Charter (Australia ICOMOS 2013).

- The Code.

Prior to any impacts occurring within the study area, the following is recommended:

Recommendation 1: Avoid impacts through redesign

It is recommended that impacts to the 11 areas of PAD should be avoided through redesign of the current masterplan.

Should it not be possible to avoid impacts to any areas of PAD, Recommendation 2 must be implemented.

Recommendation 2: Further investigation in the form of an ACHA

This ADDA has found there are 11 areas of PAD within the study area. Should it not be possible to avoid impacts to these areas through redesign, further investigation in the form of an ACHA will need to be undertaken, including Aboriginal community consultation, and test excavations, to determine the nature and extent of the 11 areas of PAD. The ACHA and community consultation must meet the requirements of the Code and the consultation requirements.

Recommendation 3: Discovery of Unanticipated Aboriginal Objects

All Aboriginal objects and Places are protected under the NPW Act. It is an offence to disturb an Aboriginal site without a consent permit issued by the Heritage NSW. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the Heritage NSW and Aboriginal stakeholders.

Recommendation 4: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

4. Immediately cease all work at that location and not further move or disturb the remains.
5. Notify the NSW Police and Heritage NSW' Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.
6. Not recommence work at that location unless authorised in writing by Heritage NSW.

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Appendices

Appendix 1 AHIMS search results

This Appendix is not to be made public.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 37550 HM

Client Service ID : 710712

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
52-5-0850	Croome West AFT 2	GDA	56	299050	6168911	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Miss.Kristen Taylor					**Permits**		
52-5-0909	DLS Boral AFT 3	GDA	56	302177	6167036	Open site	Valid	Artefact : -		104811,104812
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Ms.Cristany Milicich					**Permits**		
52-5-0970	South Kiama-01	GDA	56	302383	6159058	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
52-5-0972	South Kiama-03	GDA	56	302397	6158893	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
52-5-0921	Dunmore Road Dunmore AFT 1	GDA	56	302232	6168906	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Miss.Kristen Taylor					**Permits**	4660	
52-5-0973	South Kiama-04	GDA	56	302448	6159456	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
52-5-0118	Dunmore;	AGD	56	304265	6168860	Open site	Valid	Artefact : -	Open Camp Site	102212
	Contact	**Recorders**	A Henderson					**Permits**		
52-5-0201	Dunmore Midden Shellharbour Waste Disposal Dump	AGD	56	302000	6167800	Open site	Valid	Artefact : -	Open Camp Site	901
	Contact	**Recorders**	Ms.Laila Haglund,Bonhomme Craib & Associates					**Permits**		
52-5-0213	Dunmore Midden	AGD	56	302000	6167800	Open site	Valid	Artefact : -, Shell : -	Midden,Open Camp Site	901
	Contact	**Recorders**	Bonhomme Craib & Associates					**Permits**		
52-5-0241	Minnamurra Site 1;	GDA	56	302910	6166310	Open site	Valid	Shell : -, Artefact : -	Midden	1525,104074,104075,104264,104265
	Contact	**Recorders**	I Lilley,Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**	4350,4551	
52-5-0912	MBW PAD 2	GDA	56	302953	6165955	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104264,104265
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats,Mrs.S					**Permits**	4551	
52-5-0329	Werri South	AGD	56	301600	6153050	Open site	Valid	Artefact : -	Open Camp Site	98125
	Contact	**Recorders**	Doctor.Sue Feary,Mr.Douglas Williams					**Permits**		
52-5-0072	Minnamurra Glengowrie	AGD	56	301450	6165490	Open site	Valid	Shell : -, Artefact : -	Midden	687,1662,2048
	Contact	**Recorders**	R.L Black					**Permits**		
52-5-0985	Henry Parkes Drive Artefact 1	GDA	56	301689	6164236	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Austral Archaeology Pty Ltd - Liverpool,Ms.sejal Pandya					**Permits**		
52-5-0311	EGP 3-35;Eastern Gas Pipline;	AGD	56	296370	6168200	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**		
52-5-0309	EGP 3-33;Minnamurra River 1;Eastern Gas Pipline;	AGD	56	297160	6163570	Open site	Valid	Artefact : -	Open Camp Site	99329
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**		

Report generated by AHIMS Web Service on 22/08/2022 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 293754.982 - 309015.691, Northings : 6153123.923 - 6169238.632 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 90

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 37550 HM

Client Service ID : 710712

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
52-5-0199	Killalea Beach;S.R.A.;Albion Park;	AGD	56	304150	6168000	Open site	Valid	Shell : -, Artefact : -	Midden	102212
	Contact	**Recorders**	A Anderson					**Permits**		
52-5-0112	Minnamurra;	AGD	56	302052	6165157	Open site	Valid	Shell : -, Artefact : -	Midden	2048
	Contact	**Recorders**	Kate Sullivan					**Permits**		
52-5-0400	TEST PITTING AREA 13	AGD	56	299730	6161500	Open site	Valid	Artefact : -		99329
	Contact	**Recorders**	Stuart Huys					**Permits**		
52-5-0514	Kiama Ramps PAD2	AGD	56	302486	6159224	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Jim Wheeler					**Permits**	2655,2765	
52-5-0065	Minnamurra River;	AGD	56	296025	6164672	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	
	Contact	**Recorders**	C.S Vale					**Permits**		
52-5-0849	Croome West AFT 3	GDA	56	298880	6168925	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Miss.Kristen Taylor					**Permits**		
52-5-0869	James Oates Reserve midden	GDA	56	303744	6165971	Open site	Valid	Shell : -		
	Contact	**Recorders**	Rod Wellington,NPWS - Narooma					**Permits**		
52-5-0116	Dunmore;Killalea;	AGD	56	303652	6167475	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	Kate Sullivan					**Permits**		
52-5-0240	Min 1;	AGD	56	300650	6164660	Open site	Valid	Shell : -, Artefact : -	Midden	1473,99329
	Contact	**Recorders**	Margrit Koettig					**Permits**		
52-5-0160	Minnamurra;	AGD	56	301143	6164865	Open site	Valid	Shell : -, Artefact : -	Midden	1473,99329
	Contact	**Recorders**	ASRSYS					**Permits**		
52-5-0216	Werri Beach Open Camp Site;	AGD	56	301420	6153010	Open site	Valid	Artefact : -	Open Camp Site	348,98125,98546
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA)					**Permits**	1286	
52-5-0310	EGP 3-34;Stockyard Mountain;Eastern Gas Pipline;	AGD	56	296370	6168200	Open site	Valid	Artefact : -	Isolated Find	
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**		
52-5-0986	Henry Parkes Drive Artefact 2	GDA	56	301653	6164252	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Austral Archaeology Pty Ltd - Liverpool,Ms.sejal Pandya					**Permits**		
52-5-0907	DLS Boral AFT 1	GDA	56	301970	6166341	Open site	Valid	Artefact : -		104811,104812
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Ms.Cristany Milicich,Mr.Matthew Kelleher,I					**Permits**		
52-5-0235	Tabbogong;	AGD	56	297200	6167000	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	1330
	Contact	**Recorders**	Kerry Navin					**Permits**		
52-5-0575	PASA 37	GDA	56	300750	6154212	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102301,102302,102640

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 37550 HM

Client Service ID : 710712

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**	3233,3397	
52-5-0911	MBW PAD 3	GDA	56	302975	6166230	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104264,104265
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats,Mrs.S					**Permits**	4551	
52-5-0242	Minammurra Site 2;	AGD	56	302900	6165500	Open site	Valid	Shell : -, Artefact : -	Midden	1525
	Contact	**Recorders**	I Lilley					**Permits**		
52-5-0382	SPS 685 Werri Creek	AGD	56	301650	6154740	Open site	Valid	Artefact : -		102301
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd					**Permits**		
52-5-0885	Werri Street	GDA	56	301989	6154969	Open site	Valid	Burial : -		
	Contact	**Recorders**	DPIE - Armidale,Ms.Sarah Robertson					**Permits**		
52-5-0195	Werri Beach;Gerringong;	AGD	56	302690	6155270	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	A Anderson					**Permits**		
52-5-0517	South Kiama Drive PAD2	AGD	56	302850	6159325	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact T Russell	**Recorders**	Austral Archaeology Pty Ltd - Liverpool					**Permits**		
52-5-0349	North Kiama Cemetery	AGD	56	303050	6162400	Open site	Valid	Burial : -	Burial/s	99329
	Contact	**Recorders**	Illawarra Mercury					**Permits**		
52-5-0416	East Gerringong 1 (EG1)	AGD	56	301500	6152980	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd					**Permits**	2103	
52-5-0832	Jamberoo PAD and AS 1	GDA	56	296800	6163516	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104169,104170
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Miss.Shannon Smith					**Permits**	4608	
52-5-0843	KBH PAD1	GDA	56	304114	6161307	Open site	Valid	Potential Archaeological Deposit (PAD) : -		103851,103852
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					**Permits**	4170	
52-5-0059	Jamberoo;	AGD	56	294847	6164099	Open site	Valid	Stone Arrangement : -	Stone Arrangement	
	Contact	**Recorders**	C.S Vale					**Permits**		
52-5-0566	G2BA3	GDA	56	295376	6153152	Open site	Valid	Artefact : 4		
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**		
52-5-0574	PASA 36	GDA	56	300250	6153265	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102301,102302
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**	3233	
52-5-0167	Minnamurra;Minnamurra Spit 2;	AGD	56	303260	6166700	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	Rod Wellington					**Permits**		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 37550 HM

Client Service ID : 710712

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
52-5-0830	Gerringong Upgrade Return Location 1	GDA	56	301207	6155657	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Mrs.Nicola Hayes					**Permits**		
52-5-0254	Dunmore 4;	AGD	56	301480	6167260	Open site	Valid	Artefact : -	Open Camp Site	1662
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**	1519	
52-5-0833	Jamberoo PAD and AS 2	GDA	56	296981	6163287	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104169,104170
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Miss.Shannon Smith					**Permits**	4608	
52-5-0253	Dunmore 3	AGD	56	301830	6166930	Open site	Valid	Artefact : -	Open Camp Site	687,1662,2048
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**		
52-5-0819	Riverside Drive 1	GDA	56	302395	6166973	Open site	Valid	Artefact : 1, Shell : 1		
	Contact	**Recorders**	Mr.Neville Baker,Baker Archaeology Pty Ltd					**Permits**		
52-5-0252	Dunmore 2;	AGD	56	301360	6166600	Open site	Valid	Artefact : -	Open Camp Site	1662
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**		
52-5-0413	Duke -9	AGD	56	297760	6168130	Open site	Valid	Artefact : 2		
	Contact	**Recorders**	Stuart Huys					**Permits**		
52-5-0470	South Kiama Drive PAD 2	AGD	56	302850	6159325	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact S Scanlon	**Recorders**	Austral Archaeology Pty Ltd - Liverpool					**Permits**	2584	
52-5-0469	South Kiama Drive PAD 1	AGD	56	302850	6159425	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Austral Archaeology Pty Ltd - Liverpool					**Permits**	2584	
52-5-0913	MBW PAD 1	GDA	56	302858	6164954	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		104264,104265
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats,Mrs.S					**Permits**	4551	
52-5-0851	Croome West AFT 1	GDA	56	299035	6168718	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Miss.Kristen Taylor					**Permits**		
52-5-0576	PASA 38	GDA	56	301223	6155480	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102301,102302
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**	3233,3397	
52-5-0609	G2B A8 (Omega Lane)	GDA	56	301419	6156624	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Mr.Kelvin Officer,Navin Officer Heritage Consultants Pty Ltd					**Permits**	3233	
52-5-1022	GVW-AS-004	GDA	56	296868	6163282	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Apex Archaeology,Ms.Jenni Bate					**Permits**		
52-5-0200	Minnamarra;S.R.A.;Albion Park;	AGD	56	302840	6166930	Open site	Valid	Shell : -, Artefact : -	Midden	

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 37550 HM

Client Service ID : 710712

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	A Anderson					**Permits**		
52-5-0071	Jerrara;Kiama;	AGD	56	299700	6161500	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	99329
	Contact	**Recorders**	David Bell					**Permits**		
52-5-0251	Dunmore 1	AGD	56	301540	6166460	Open site	Valid	Artefact : -	Open Camp Site	687,1662,2048
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**		
52-5-0117	Minnamurra;AFT	GDA	56	301740	6165565	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Kate Sullivan,Mr.Matthew Kelleher,Kelleher Nightingale Consulting Pty Ltd (Generi					**Permits**		
52-5-0707	PASA 54	GDA	56	300505	6154133	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	**Recorders**	Mr.Adrian Cressey					**Permits**	3397	
52-2-1791	DQ1;	AGD	56	299200	6168660	Open site	Valid	Artefact : -	Open Camp Site	1992
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**		
52-5-0168	Minamurra;Minamurra Spit 1;	AGD	56	303490	6166280	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	ASRSYS					**Permits**		
52-5-0397	TEST PITTING AREA 15	AGD	56	299550	6164900	Open site	Valid	Artefact : -		99329
	Contact	**Recorders**	Stuart Huys					**Permits**		
52-5-0411	East Gerringong 1	AGD	56	301500	6152980	Open site	Valid	Artefact : 4		98125
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd					**Permits**		
52-5-1020	GVW-AS-002	GDA	56	297025	6163527	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Apex Archaeology,Ms.Jenni Bate					**Permits**		
52-5-0526	Minnamurra River Shell Midden 1 (MR 1)	AGD	56	302054	6166338	Open site	Valid	Shell : -, Artefact : -		
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA)					**Permits**	2920	
52-5-0908	DLS Boral AFT 2	GDA	56	302231	6166976	Open site	Valid	Artefact : -		104811,104812
	Contact	**Recorders**	Kelleher Nightingale Consulting Pty Ltd,Ms.Cristany Milicich					**Permits**		
52-5-0264	Railway Parade;	AGD	56	303300	6161300	Open site	Valid	Shell : -, Artefact : -	Midden	2317,99329
	Contact	**Recorders**	Rod Wellington					**Permits**	353	
52-5-0159	Tabbagong;Tabbagong 1;	AGD	56	301865	6165336	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	Klim Gollan					**Permits**		
52-5-0420	ILC1	AGD	56	299680	6161670	Open site	Valid	Artefact : 11		99329
	Contact	**Recorders**	Mr.Sam Wickman					**Permits**		
52-5-0255	Dunmore 5;	AGD	56	301400	6167110	Open site	Valid	Artefact : -	Open Camp Site	1662
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**	1519	
52-5-0169	Minamurra;Bass Point SRA;	AGD	56	302750	6167400	Open site	Valid	Shell : -, Artefact : -	Midden	102212
	Contact	**Recorders**	Miss.Marjorie Sullivan					**Permits**		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 37550 HM

Client Service ID : 710712

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
52-5-0300	DQ2;	AGD	56	299130	6168350	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1992
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**	1770,2137	
52-5-1021	GVW-AS-003	GDA	56	296942	6163265	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Apex Archaeology,Ms.Jenni Bate					**Permits**		
52-5-0451	MR-IF-1, Kiama	AGD	56	301530	6165440	Open site	Valid	Artefact : 1		
	Contact T Russell	**Recorders**	Jim Kelton					**Permits**		
52-5-0948	GVW-AS-001	GDA	56	297073	6163376	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Kayandel Archaeological Services,Ms.Natalie Stiles					**Permits**		
52-5-0971	South Kiama-02	GDA	56	302192	6158829	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Biosis Pty Ltd - Wollongong,Mrs.Samantha Keats					**Permits**		
52-5-0825	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact	**Recorders**	Rod Wellington					**Permits**		
52-5-0577	PASA 39	GDA	56	301508	6155480	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		102301,102302,102640
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**	3233,3397	
52-5-0350	WKIF1	AGD	56	302100	6160750	Open site	Valid	Artefact : -	Isolated Find	99329
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**		
52-5-0243	Green Three"Minnamurra Golf Course";	AGD	56	302900	6165820	Open site	Valid	Shell : -, Artefact : -	Midden	
	Contact	**Recorders**	Doctor.Johan Kamminga					**Permits**		
52-5-0570	G2BA7	GDA	56	301296	6155655	Open site	Valid	Artefact : 3, Potential Archaeological Deposit (PAD) : 1		102301,102302,102640
	Contact	**Recorders**	Mr.Kelvin Officer					**Permits**	3233,3397	
52-5-0162	Minnamurra River;Gainsborough Estate;	AGD	56	302350	6164600	Open site	Valid	Shell : -, Artefact : -	Midden	99329
	Contact	**Recorders**	Rod Wellington					**Permits**		
52-5-0066	Minnamurra River;	AGD	56	296025	6164672	Open site	Valid	Art (Pigment or Engraved) : -	Rock Engraving	
	Contact	**Recorders**	ASRSYS					**Permits**		
52-5-0215	Werri Beach Shell Midden;	AGD	56	301680	6153000	Open site	Valid	Shell : -, Artefact : -	Midden	348,98125,98546
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA)					**Permits**		

Report generated by AHIMS Web Service on 22/08/2022 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 293754.982 - 309015.691, Northings : 6153123.923 - 6169238.632 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 90

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 37550 HM

Client Service ID : 710712

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 22/08/2022 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 293754.982 - 309015.691, Northings : 6153123.923 - 6169238.632 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 90

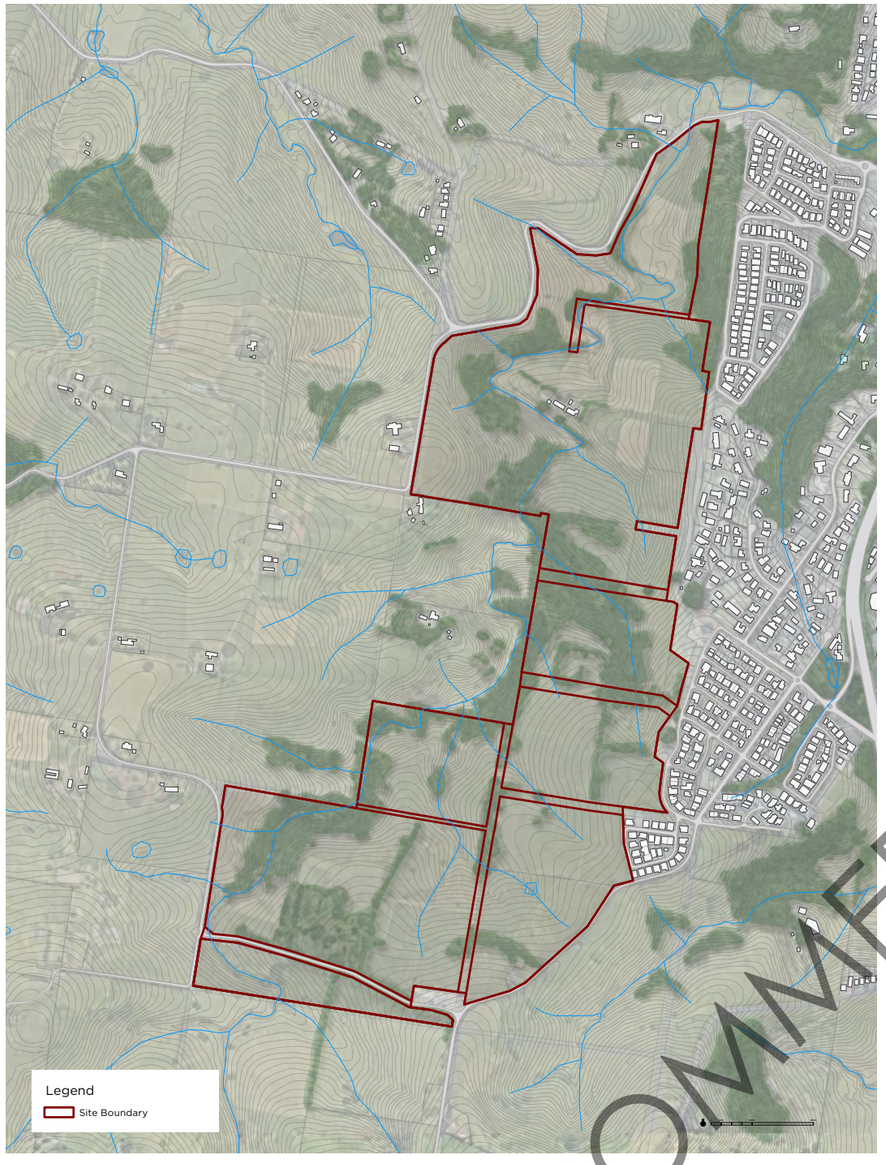
Appendix 2 Masterplan

Traders In Purple

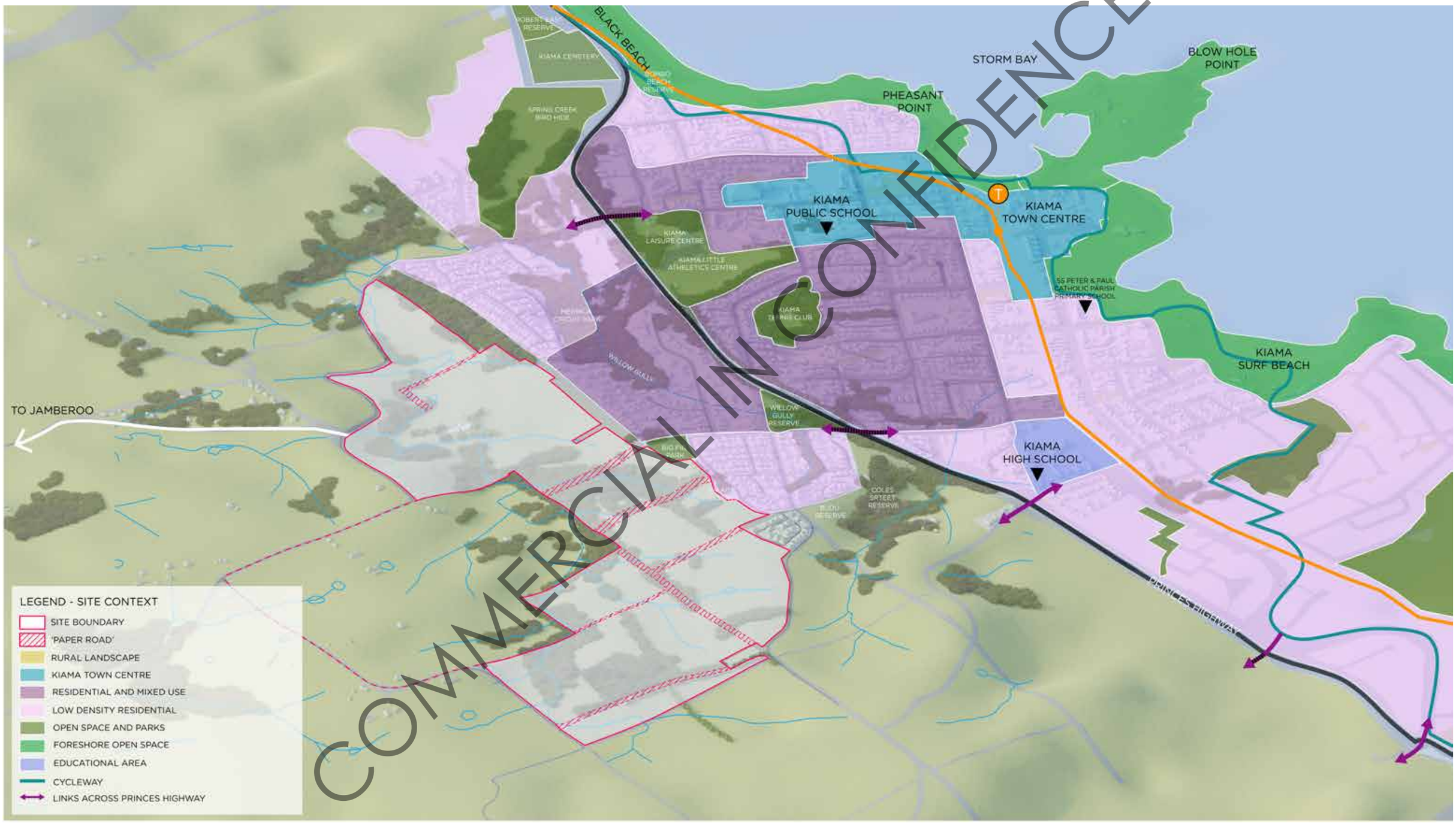
KIAMA LONGBRUSH ROAD

INITIAL URBAN DESIGN CONCEPTS

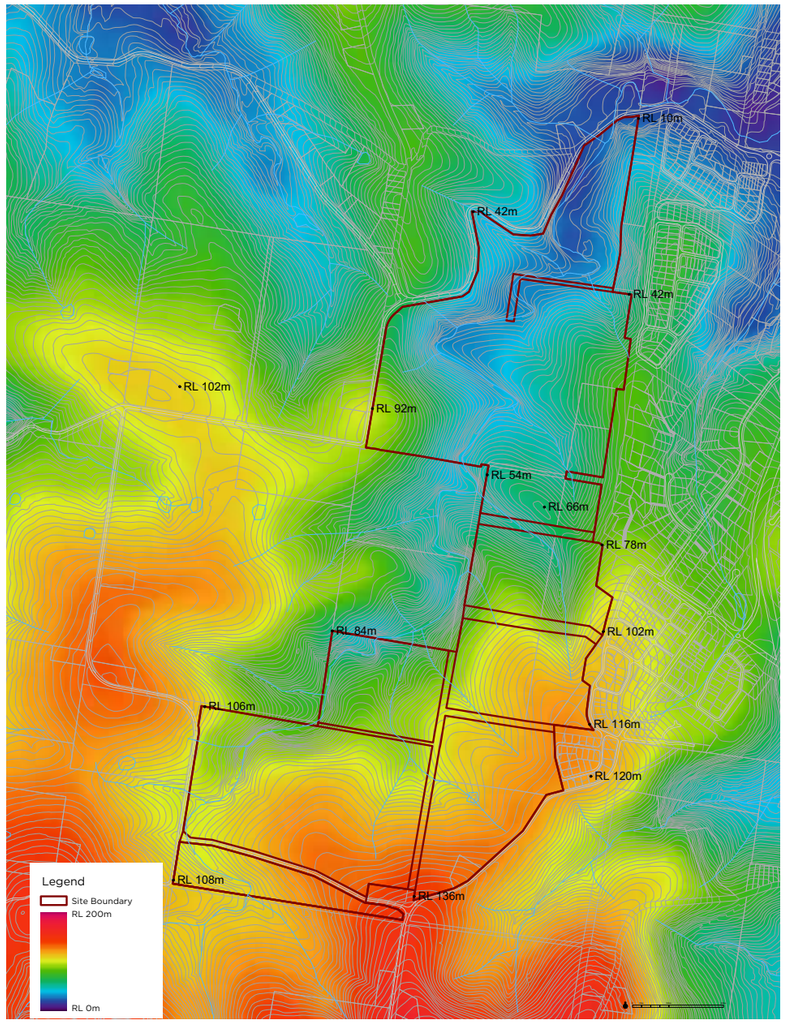
Site + Character



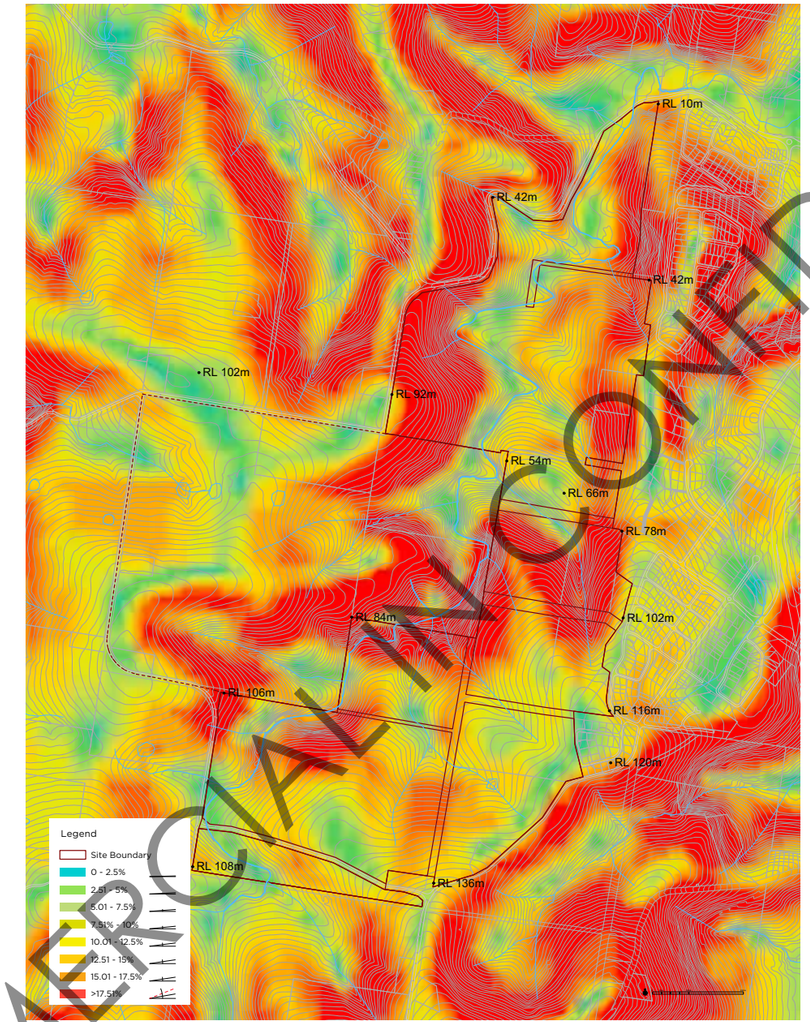
Context



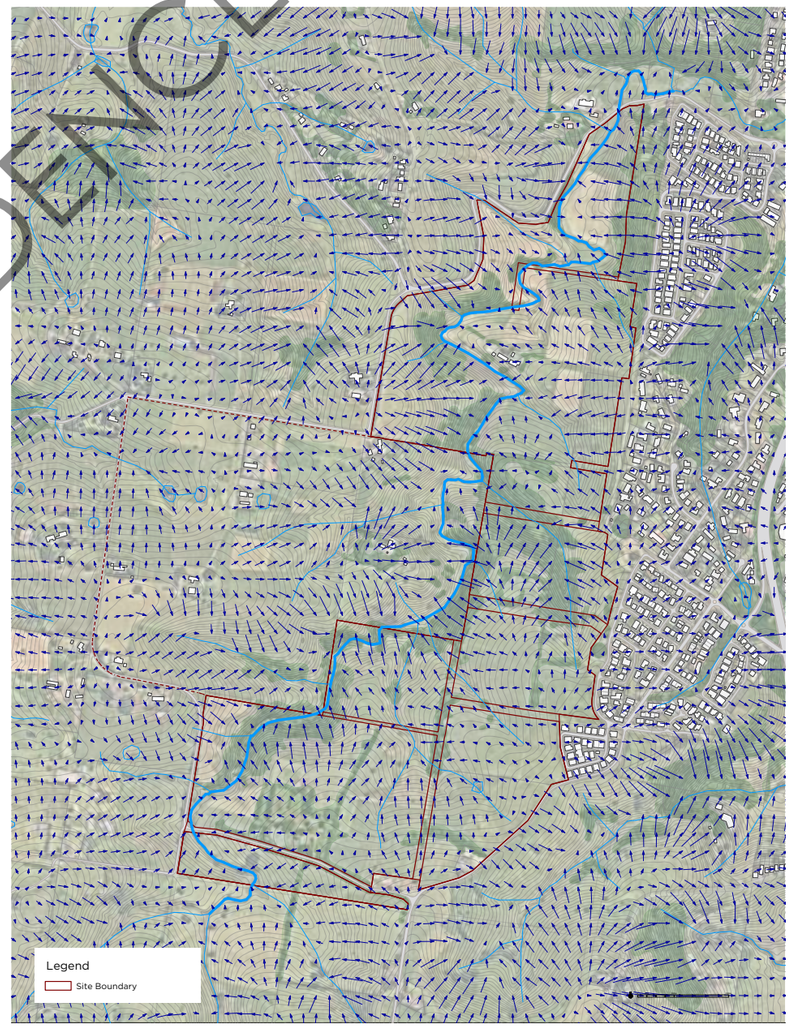
Site + Landscape Analysis



Topography + Elevation

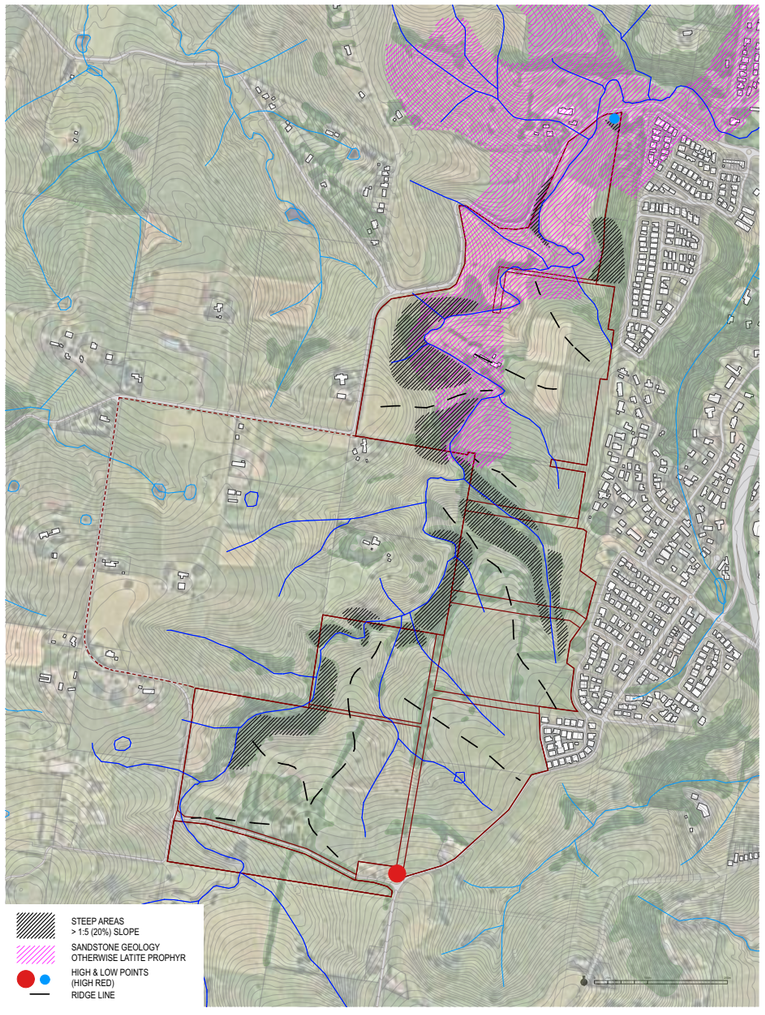


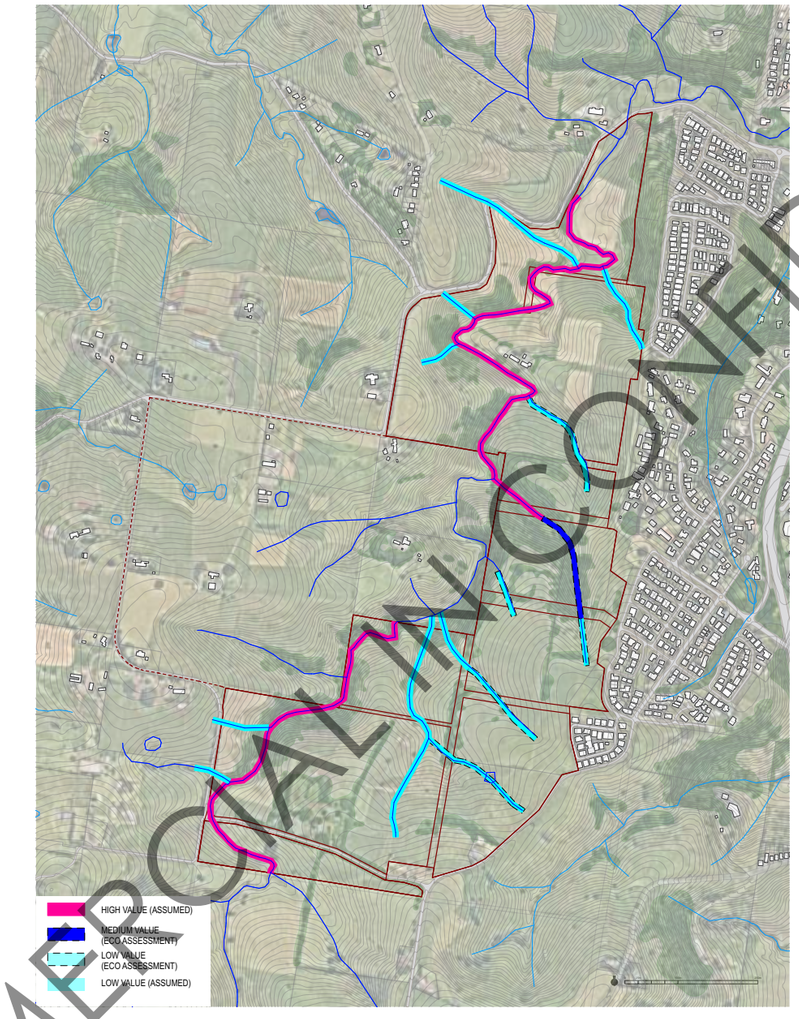
Slope

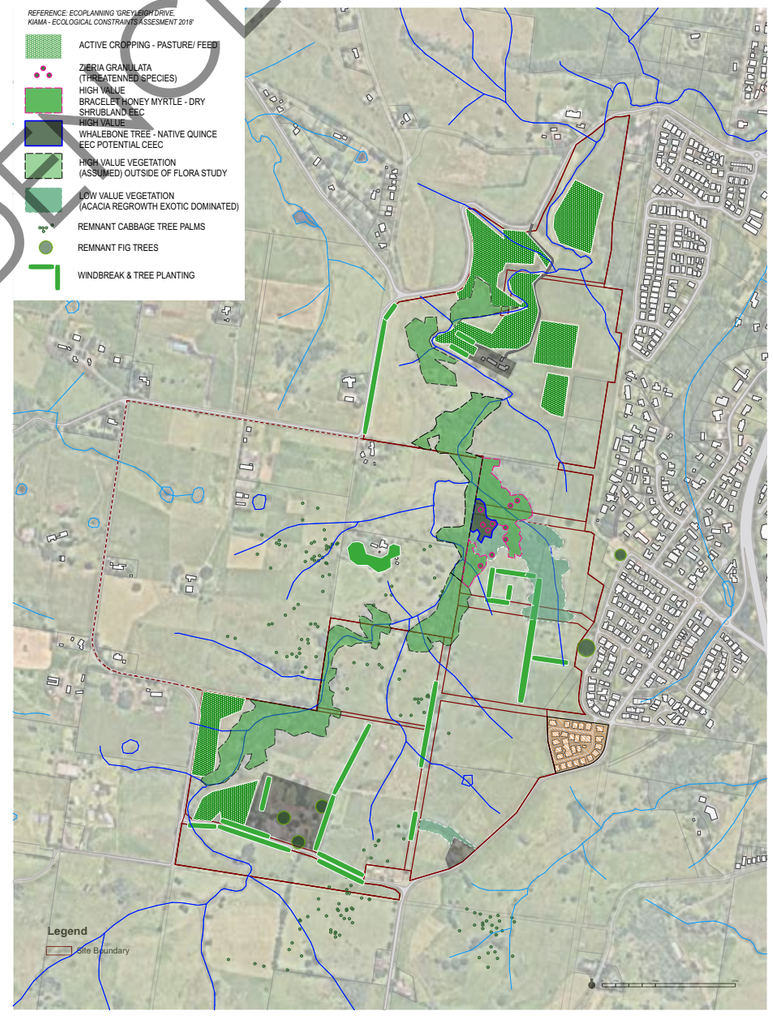


Landform Direction

Site + Landscape Analysis







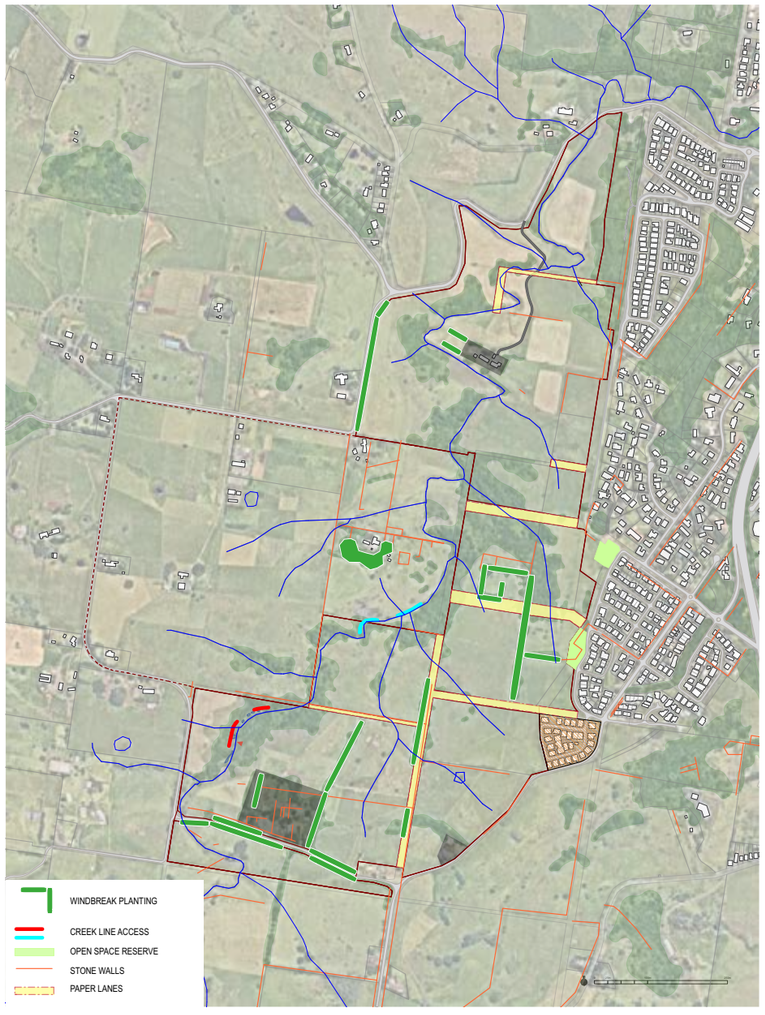
Hydrology

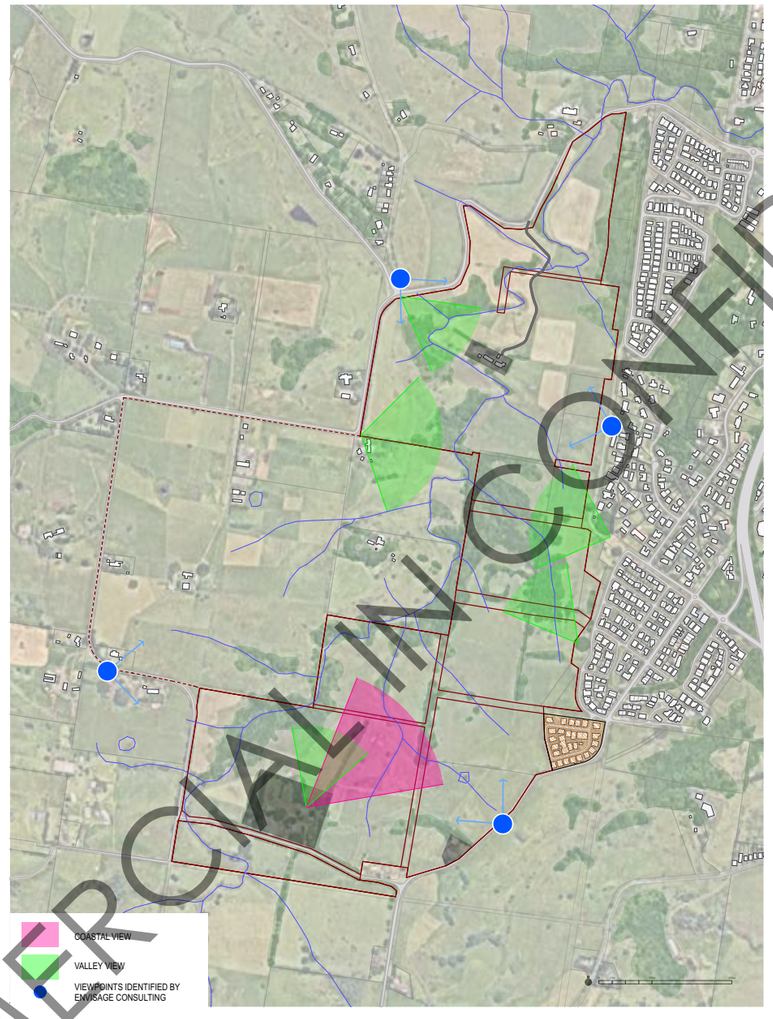
- Quality of Spring Creek
- Hierarchy of water courses
- Relationship with remnant Dry Rain Forest vegetation

Vegetation

- Remnant Dry Rain Forest vegetation
- Hedgerows and windbreaks

Site + Landscape Analysis

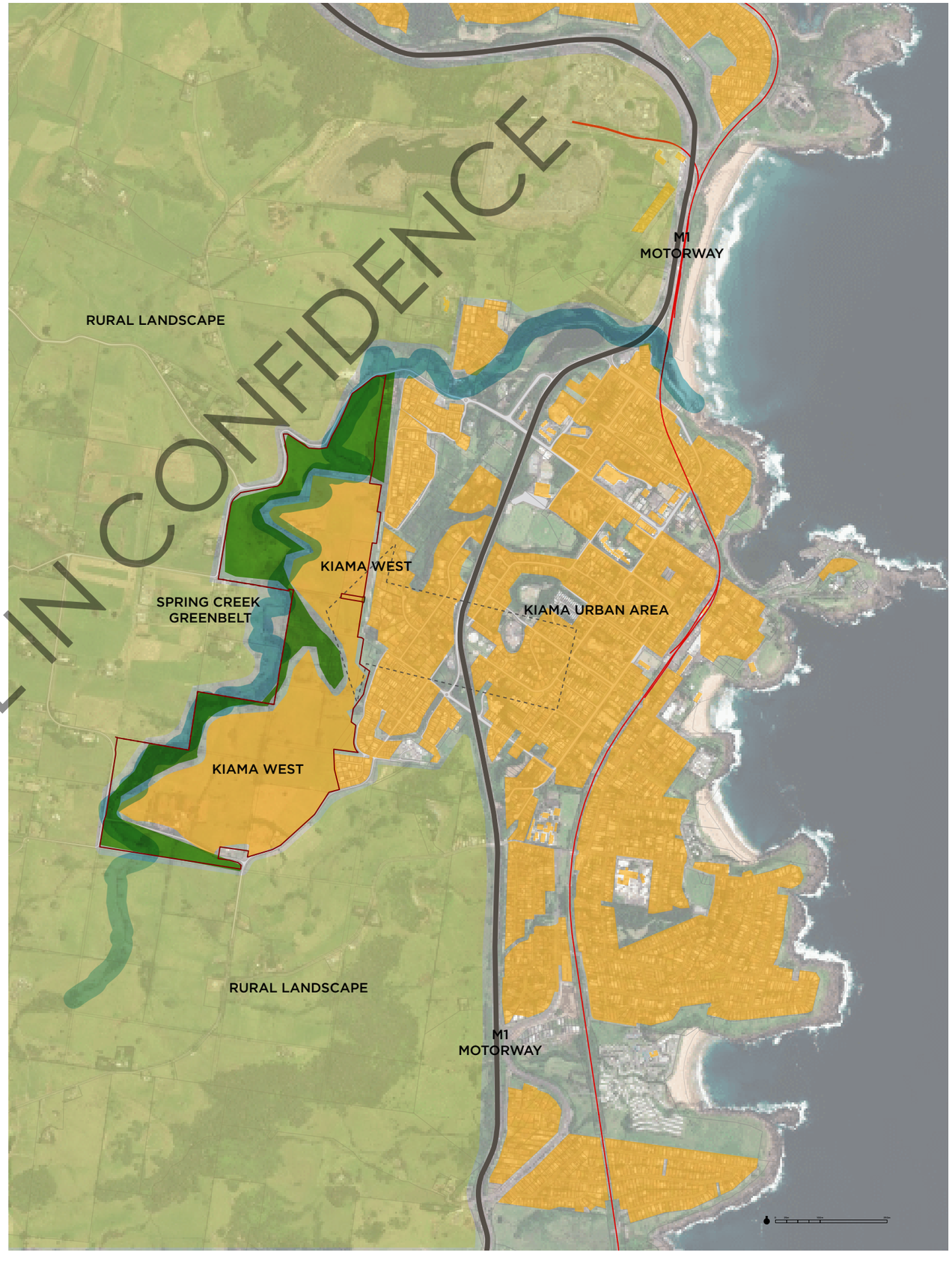




Cultural Landscape (Post 1788)

- Subdivision
- Dry-stone walls
- Creek access

Strategic Framing of Growth



Place Values

Access to open space, local shops and services

Coastal and rural lifestyle

Promote tourism, visitation and pride in our region

Healthy natural environment

Respectful of existing natural systems

Transitional - urban to hinterland

Connected to country

Diverse character, uniqueness and, pride in place

Respectful of the heritage that surrounds us

Housing choice, diversity and, affordability

Authentic and honest

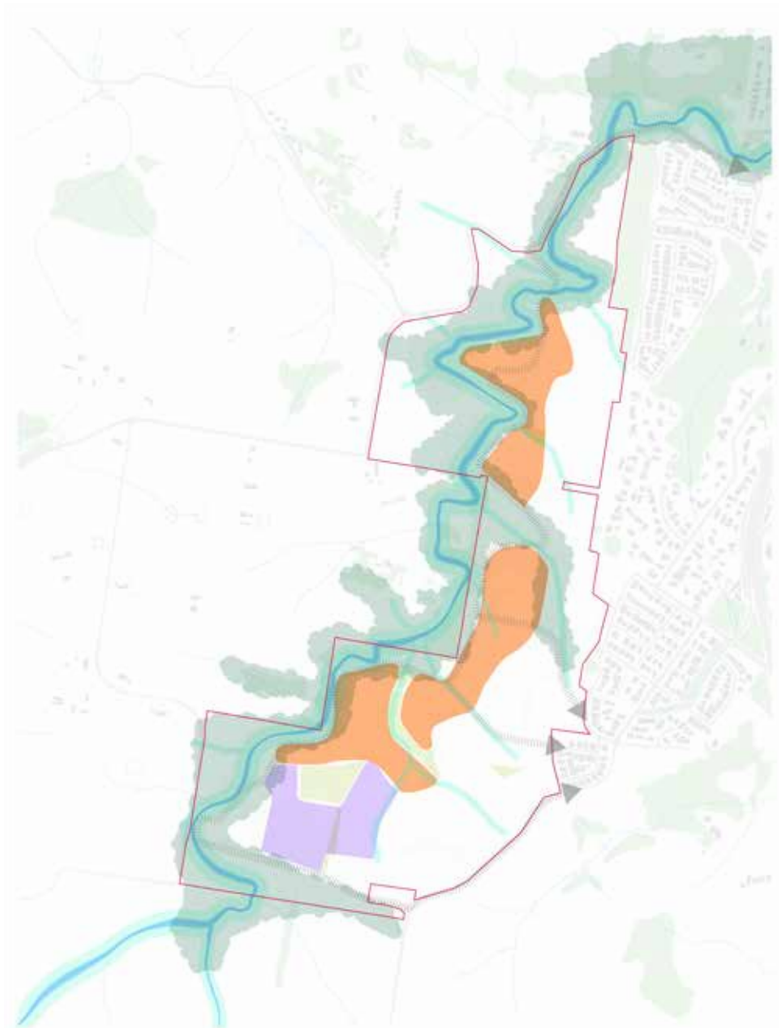
Place Structure

Spring Creek

Greenbelt

Structuring Element

New Roads and connections are created to link into the existing settlement of Kiama. Internal circulation is focused along Spring Creek.



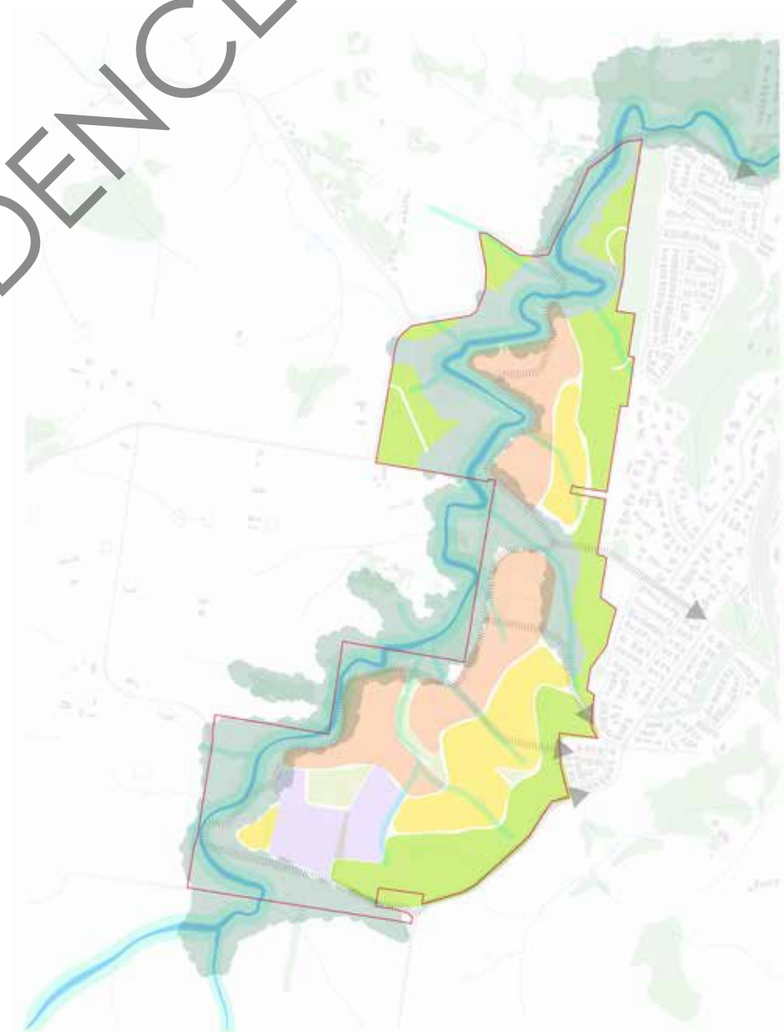
Activation

Higher intensity uses are located along Spring Creek, Close to amenity along the valley floor where there is less visual impact.

Opportunities for p[lace activation include, small scale retail, food and beverage with a focus on local produce, hotel and glamping and the potential for a Agricultural College or School.

Edges and Interfaces

Due to the topography of the Site, the edges and interface are visually highly sensitive. Our strategy is to make these areas as open as possible and respond to the particular situation with an appropriate response, be that large lots, open space or other uses that complement the immediate locality, view or vista.

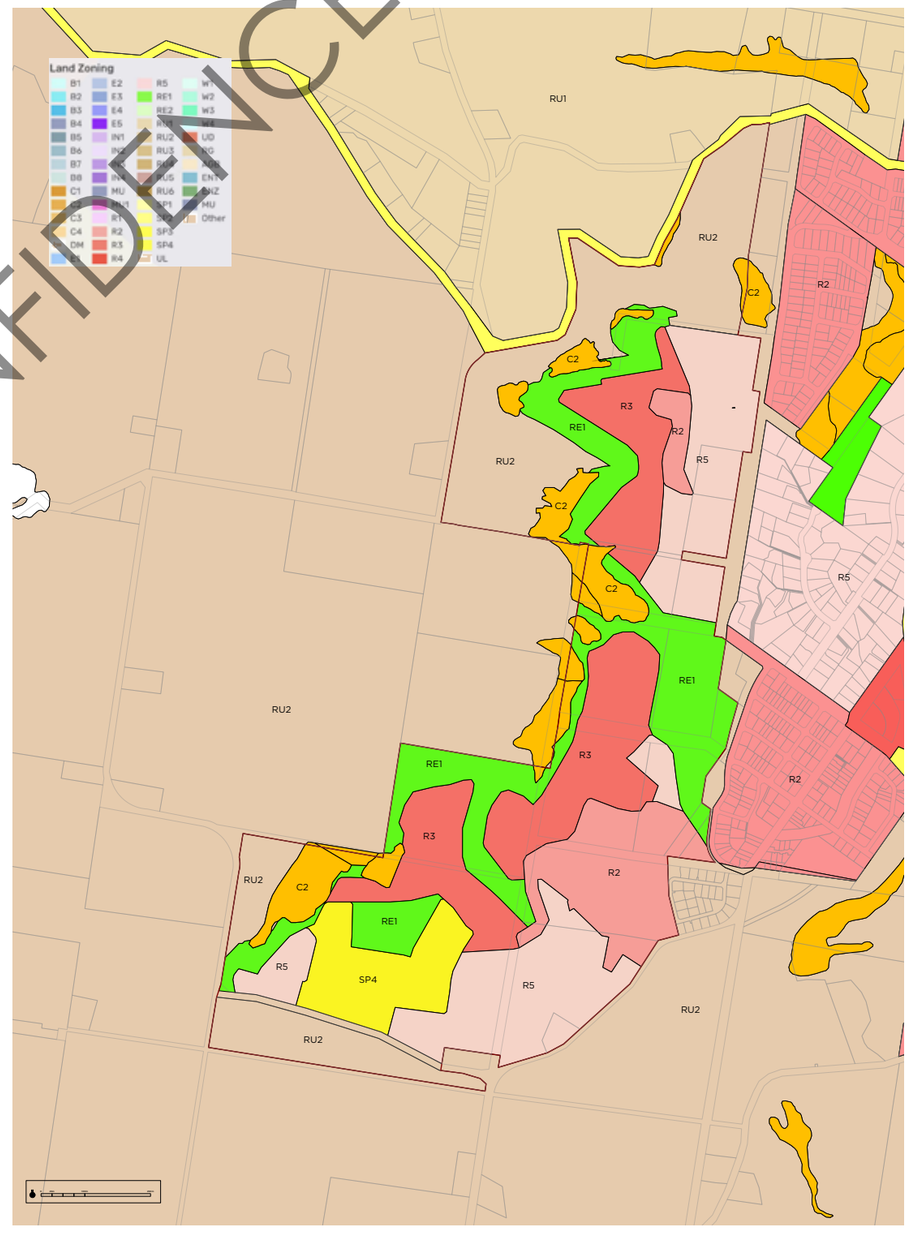


Slopes

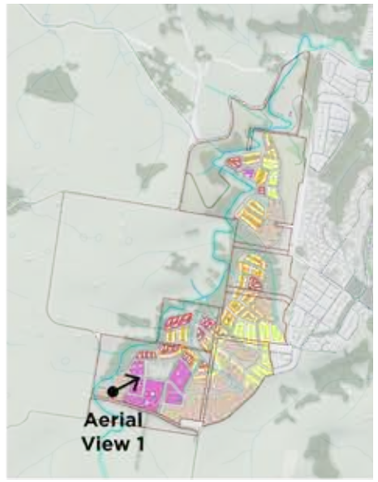
The slopes form the transition between the higher intensity uses along Spring Creek and the interface on the Site edges.

The form of the transition zones varies according to the local topography, location of key links and the desire to create nodal points at intersections.

Preferred Approach



Preferred Approach



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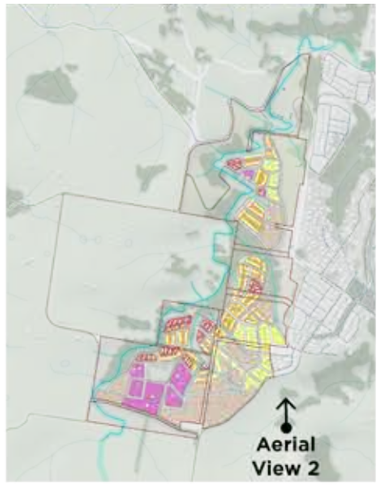
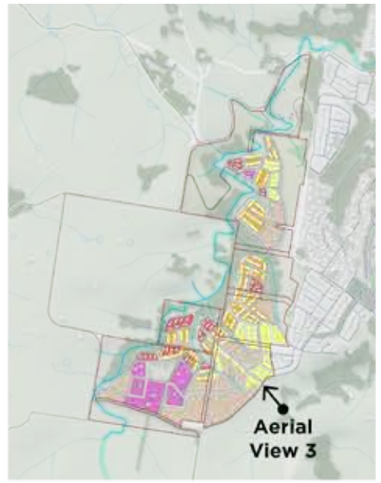
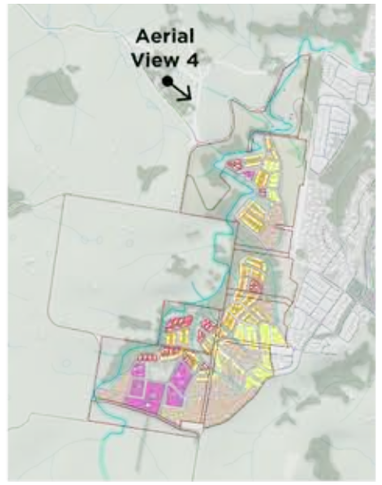


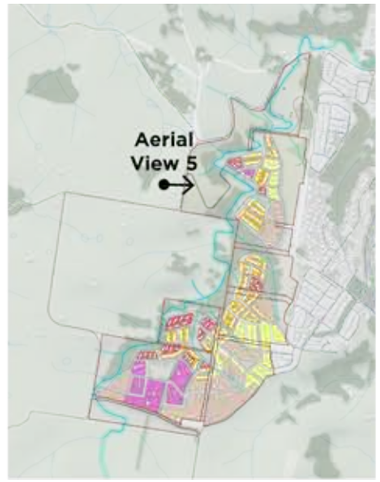
Preferred Approach



Preferred Approach



Preferred Approach



EDUCATION

HORTICULTURE & AGRICULTURE COLLEGE OR INSTITUTE

PROMOTE HORTICULTURE & REGENERATIVE AG INDUSTRIES
ACCOMMODATION ON SITE
RETAIL OUTLETS INCLUDED (PLANT NURSERY, CONFERENCE VENUE & FOOD OUTLETS).

REGENERATIVE AGRICULTURE COLLEGE

HORTICULTURAL COLLEGE & COMMERCIAL FACILITY

COMMERCIAL RETAIL OUTLET

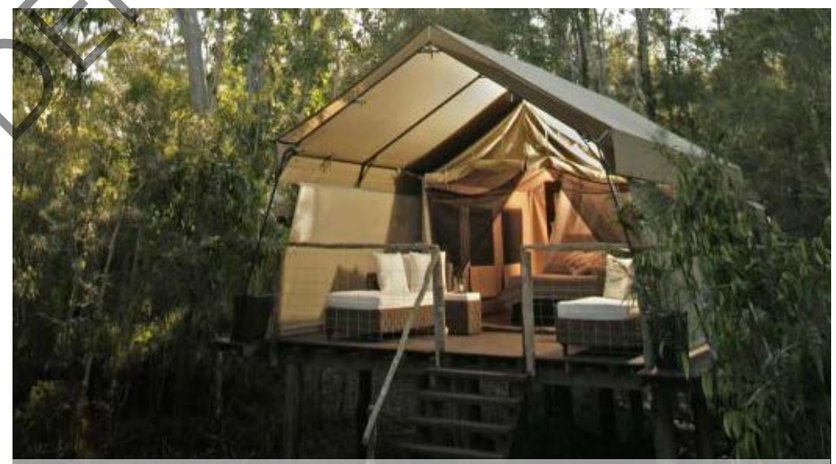
MURESK INSTITUTE WA

TOURISM

ECO TOURISM (LOW IMPACT)

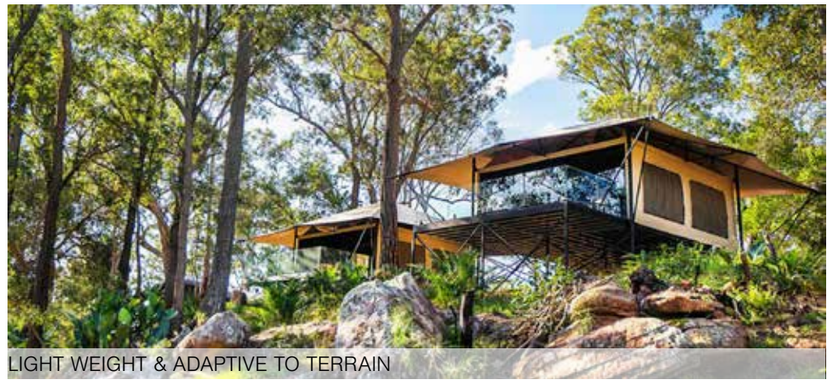
WOLGAN VALLEY LODGE

FOOD OFFERINGS UTILISE HORTICULTURAL MARKET GARDENS



GLAMPING PAPERBARK CAMP

DAY WALKING



LIGHT WEIGHT & ADAPTIVE TO TERRAIN

RETAIL NODES

LOCAL SERVICES

LOCAL SCALE SHOPS RESPONDING TO VERNACULAR WITH SUPPORTING OPEN SPACE - KANGAROO VALLEY

SMALL SCALE, STRONG ACTIVE TRANSPORT CONNECTIONS (COLLINS ST, KIAMA)

APPROPRIATELY SCALED AND STRONG LOCAL CHARACTER

RESIDENTIAL

LARGE LOTS

LOCATED ALONG TOP OF VALLEY
DESIGNED TO RESPOND TO SLOPING TERRAIN
ORIENTED FOR PRIVACY AND VIEWS
LOW IMPACT WITH AMPLE PRIVATE OPEN SPACE.

JAMBEROO HOUSE BY CASEY BROWN ARCHITECTURE ARCHITECTURE

HOMESTEAD THEMED HOME ON LARGE RURAL LOT

PROJECT HOME ON LARGE RURAL LOT

CRACKENBACK HOUSE BY CASEY BROWN ARCHITECTURE

RESPOND TO SLOPING TERRAIN

RESIDENTIAL

AFFORDABLE HOUSING ON SMALL LOTS

LOCATED DOWN SLOPE TO PRESERVE VALLEY VIEWS
DESIGNED TO RESPOND TO SLOPING TOPOGRAPHY
ORIENTED FOR PRIVACY AND VIEWS
VISUALLY PERMEABLE OPEN SPACES.

ORIENTED FOR PRIVACY & RESPONDING TO VIEWS

SLOPE HOUSING EXAMPLE

ROSE SEIDLER HOUSE - PARKING UNDER TO REDUCE FOOTPRINT

RESIDENTIAL

LOW DENSITY

LOCATED TO PRESERVE PROMINENT RIDGES AND VIEWS
PLUG ONTO EDGE OF EXISTING DEVELOPMENT
EXTEND ACTIVE TRANSPORT LINKS AND UTILISE EXISTING AND NEW OPEN SPACE RESERVES.

ADJACENT DEVELOPMENT: PROJECT HOMES WITH ROCK WALLS (ASSUMED RELOCATED) - GOOGLE MAPS

ADJACENT DEVELOPMENT: STREET RESPONDS TO TOPOGRAPHY, INCLUDES SHARE PATH - GOOGLE MAPS

ADJACENT DEVELOPMENT: STREET RESPONDS TO ESTABLISHED PALM TREES, INCLUDES SHARE PATH - GOOGLE MAPS