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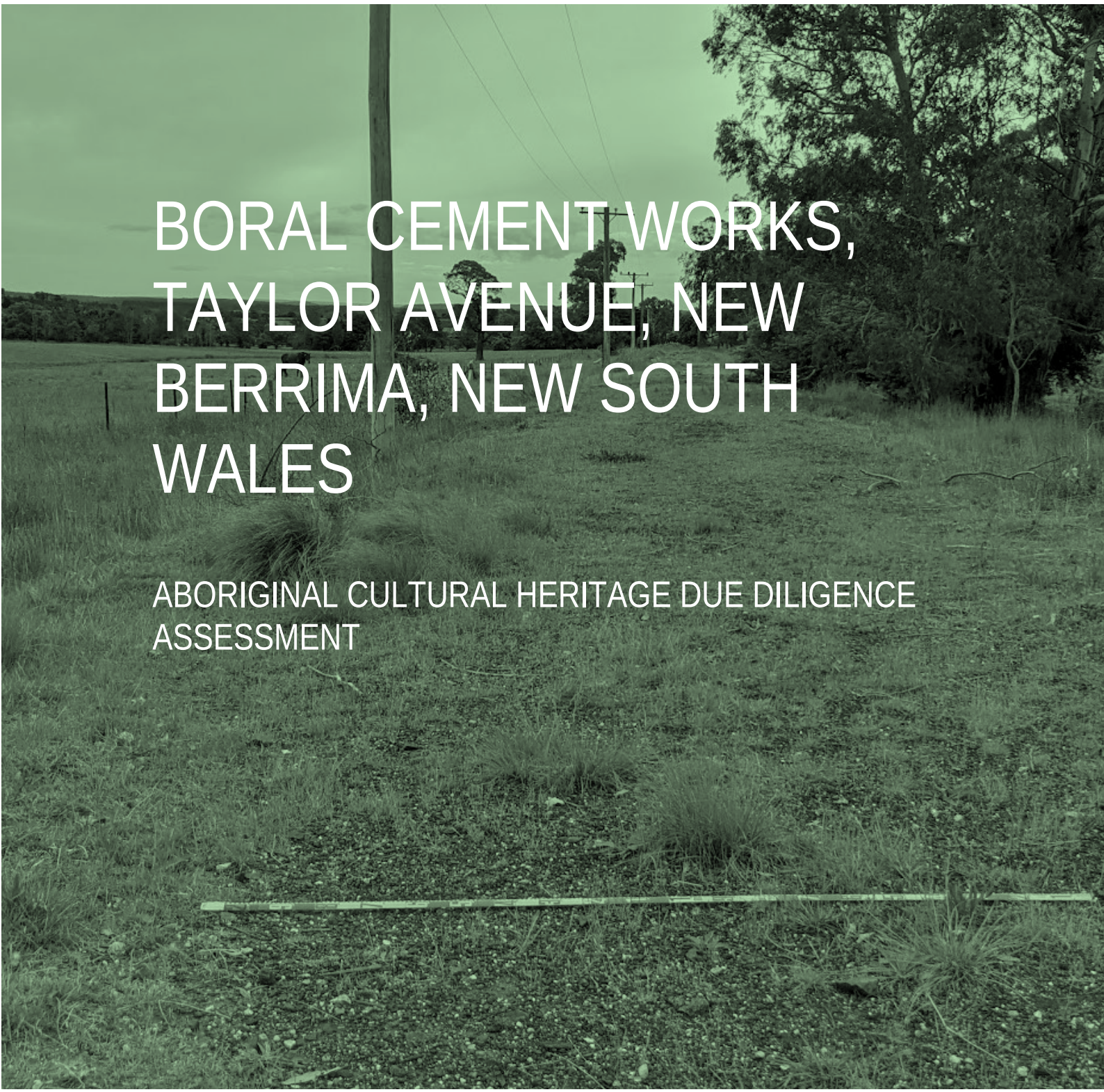

# BORAL CEMENT WORKS, TAYLOR AVENUE, NEW BERRIMA, NEW SOUTH WALES

## ABORIGINAL CULTURAL HERITAGE DUE DILIGENCE ASSESSMENT

FINAL REPORT

BORAL LAND & PROPERTY GROUP

24 November 2021

## DOCUMENT INFORMATION

| | |
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| **Project:** | Boral Cement Works, Taylor Avenue, New Berrima, |
| **Services required:** | ACHDDA |
| **Client:** | Boral Land & Property Group |
| **Prepared by:** | Dominique Bezzina and Alexander Beben |
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# EXECUTIVE SUMMARY

This report has been prepared for SLR Consulting Australia Pty Ltd (SLR) on behalf of Boral Land and Property Group (Boral) and details the Aboriginal Cultural Heritage Due Diligence Assessment (ACHDDA) of an alternative haulage access road, expansion to the current storage and handling facilities and kiln feeding infrastructure at Boral Cement Works, Taylors Avenue, New Berrima, New South Wales (NSW) [the study area]. The study area is located within the Wingecarribee Shire Local Government Area (LGA) and the boundaries of the Illawarra Local Aboriginal Land Council (ILALC).

This ACHDDA has been undertaken to assess the archaeological potential for Aboriginal material to be impacted as part of the proposed project. Austral understands that the project is being completed as a Modification (Number 14) to a Part3A (now State Significant Development [SSD]) approval (# DA-401-11-2002).

Whilst the Secretary Environmental Assessment Requirements (SEARs) [dated 6 August 2021] have requested that an Aboriginal Cultural Heritage Assessment (ACHA) be prepared, SLR and Boral Cement Limited have engaged Austral to prepare an ACHDDA due to the highly disturbed nature of the study area and corresponding low potential for Aboriginal objects to be present. The ACHDDA has been undertaken in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (Department of Environment Climate Change and Water NSW 2010) [the Code].

New Berrima and its associated landscapes have been observed to have the potential to contain Aboriginal heritage objects and sites. The wider Wingecarribee locality has been subject to a wide array of surveys and assessments which have had varying success in detecting such sites. Aboriginal sites, primarily artefacts, have been observed near the study area, particularly in proximity to the Wingecarribee River, Stoney Creek and Oldbury Creek.

The proximity of the study area to the Boral Cement Works, the former alignment of the Berrima Coal Company tram line (c.1881) and landform units present within the study area indicate that the study area has been highly disturbed. Where lower disturbance levels have been observed, the identified landforms have been determined to be unlikely to contain *insitu* Aboriginal objects. As a result, the project has been assessed as being unlikely to impact Aboriginal objects and therefore the works can proceed with caution.

It is recommended that:

1. The SSD modification is exempt from the provisions of the NPW Act. As such, if any Aboriginal objects are identified during the project, these will need to be managed through an Unexpected Finds Protocol. Should 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 Heritage NSW and Aboriginal stakeholders.
2. 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:
    - immediately cease all work at that location and not further move or disturb the remains
    - notify the NSW Police and Heritage NSW's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
    - not recommence work at that location unless authorised in writing by OEH.

# CONTENTS

# 1 INTRODUCTION

Austral Archaeology Pty Ltd (Austral) has been engaged by SLR Consulting Australia Pty Ltd (SLR) on behalf of Boral Land and Property Group (Boral) to provide Aboriginal Cultural Heritage Due Diligence Advice (ACHDDA) for the proposed access road within Boral Cement Works, Taylor Avenue, New Berrima, New South Wales (NSW) [the study area]. The study area is located within the Wingecarribee Shire Local Government Area (LGA) and the boundaries of the Illawarra Local Aboriginal Land Council (ILALC).

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The proposed works are positioned both within the Boral Cement Works and extend eastward outside of the plant as indicated in Figure 1.3. At the eastern extent of the cement works, Boral has proposed the development of an alternative haulage access road, expansion to the current storage and handling facilities and kiln feeding infrastructure. These works will require levelling and bulk earthworks that may impact Aboriginal objects if present.

## 1.1 ASSESSMENT OBJECTIVES

This assessment has been prepared to address the likelihood that Aboriginal objects may be harmed as part of the proposed project. Whilst the project is progressing as part of an SSD, it is necessary to consider the provisions of the *National Parks and Wildlife Act 1974* and its associated guidelines.

Section 87 of the NPW Act makes it a strict liability offence to knowingly or unknowingly harm Aboriginal objects or declared Aboriginal places without an Aboriginal Heritage Impact Permit (AHIP). Harm is defined under the NPW Act as "*any act or omission that destroys, defaces or damages the object or place or in relation to an object, moves the object from the land on which it had been situated*".

The NPW Act allows for a person or organisation to exercise due diligence in determining whether their actions will or are likely to impact upon Aboriginal objects or places. Any person or organisation who can demonstrate that they have exercised due diligence has a defence against prosecution under the strict liability provisions of the NPW Act. Where an activity is likely to harm Aboriginal objects or places, consent in the form of an AHIP is required.

The *National Parks and Wildlife Regulation 2009* adopted the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010) [the Code] as guidance on reasonable and practicable steps which individuals and organisations need to take to:

- *Identify whether Aboriginal objects are, or are likely to be, present within the study area.*
- *If Aboriginal objects are, or are likely to be present, determine whether their activities are likely to cause harm.*
- *Determine whether further assessment or an AHIP application is required for the activity to proceed.*

This advice has been formulated to provide a robust assessment that will identify whether Aboriginal objects or places are present or are likely to be present within the study area. This has been achieved through the completion of a desktop review and pedestrian survey of the study area.

The Code provides a series of questions that clarify whether it applies to a proposed project. These questions are addressed in Section 2.

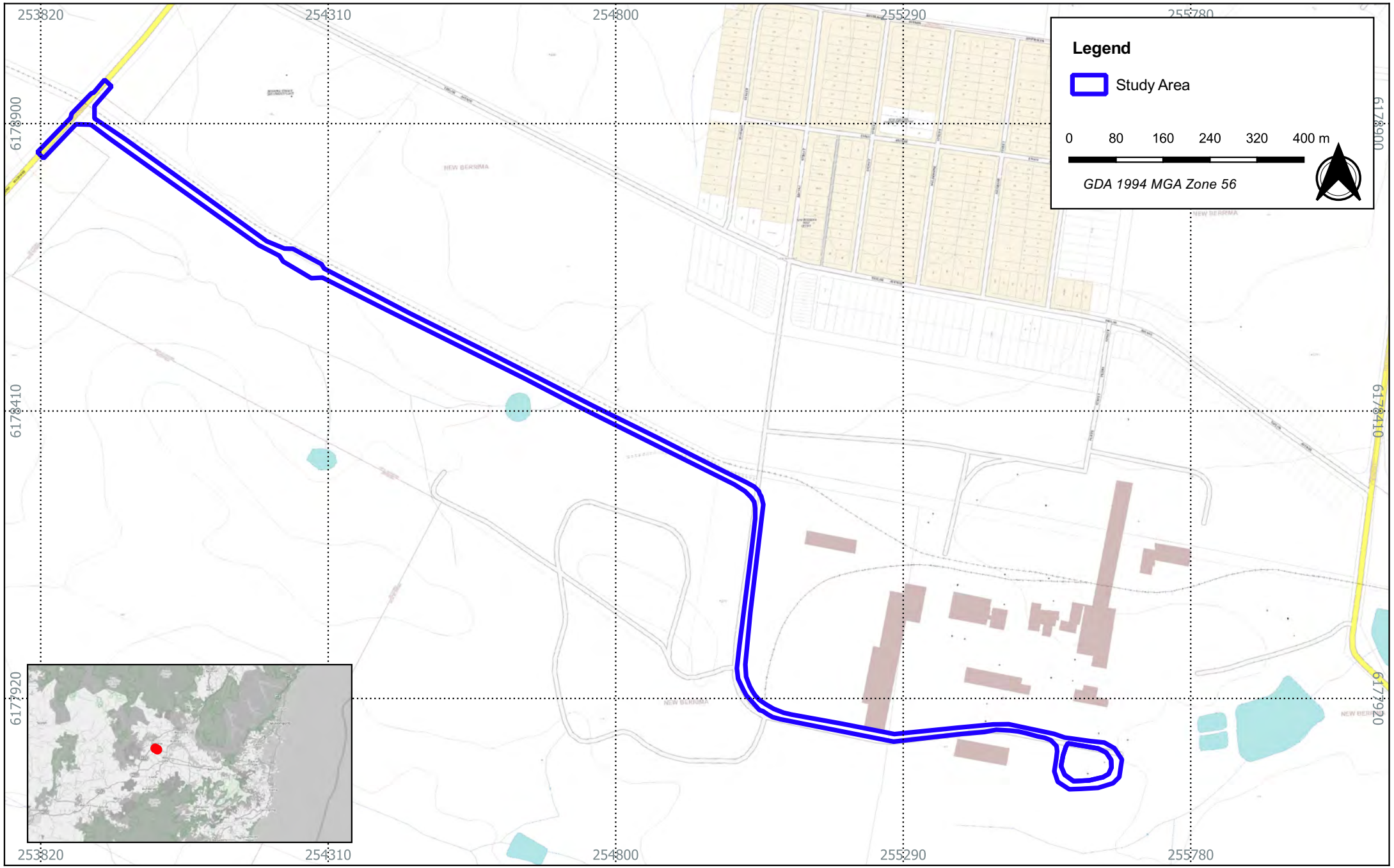


**Figure 1.1 - Location of the study area**

21147 - Boral Cement Works, Taylor Avenue, New Berrima - ACHDDA

*Source: NSW LPI Basemap*

*Drawn by: ARH Date: 2021-11-03*

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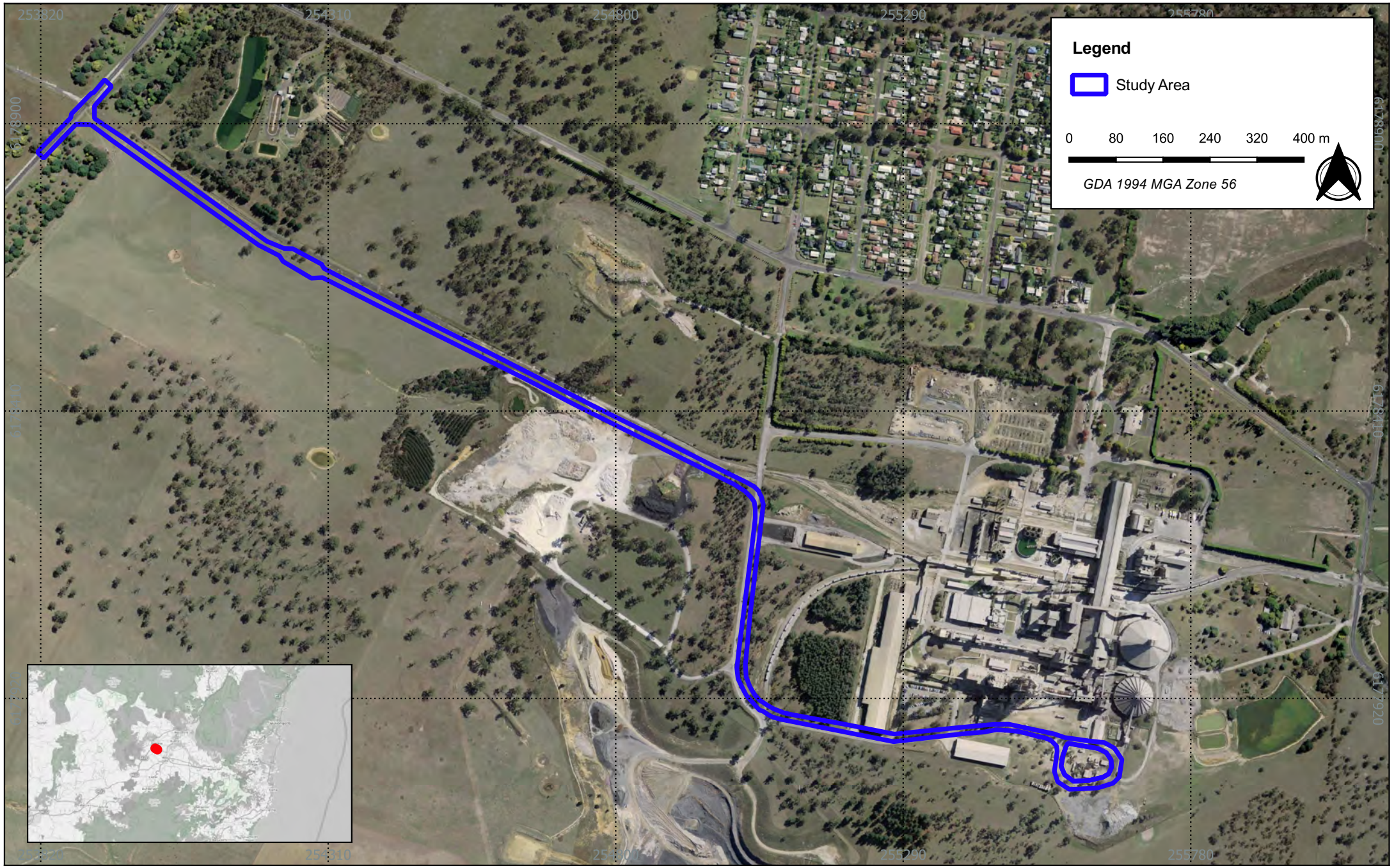


**Figure 1.2 - Detailed aerial of the study area**

21147 - Boral Cement Works, Taylor Avenue, New Berrima - ACHDDA

*Source: NSW LPI Aerial*

*Drawn by: ARH Date: 2021-11-03*

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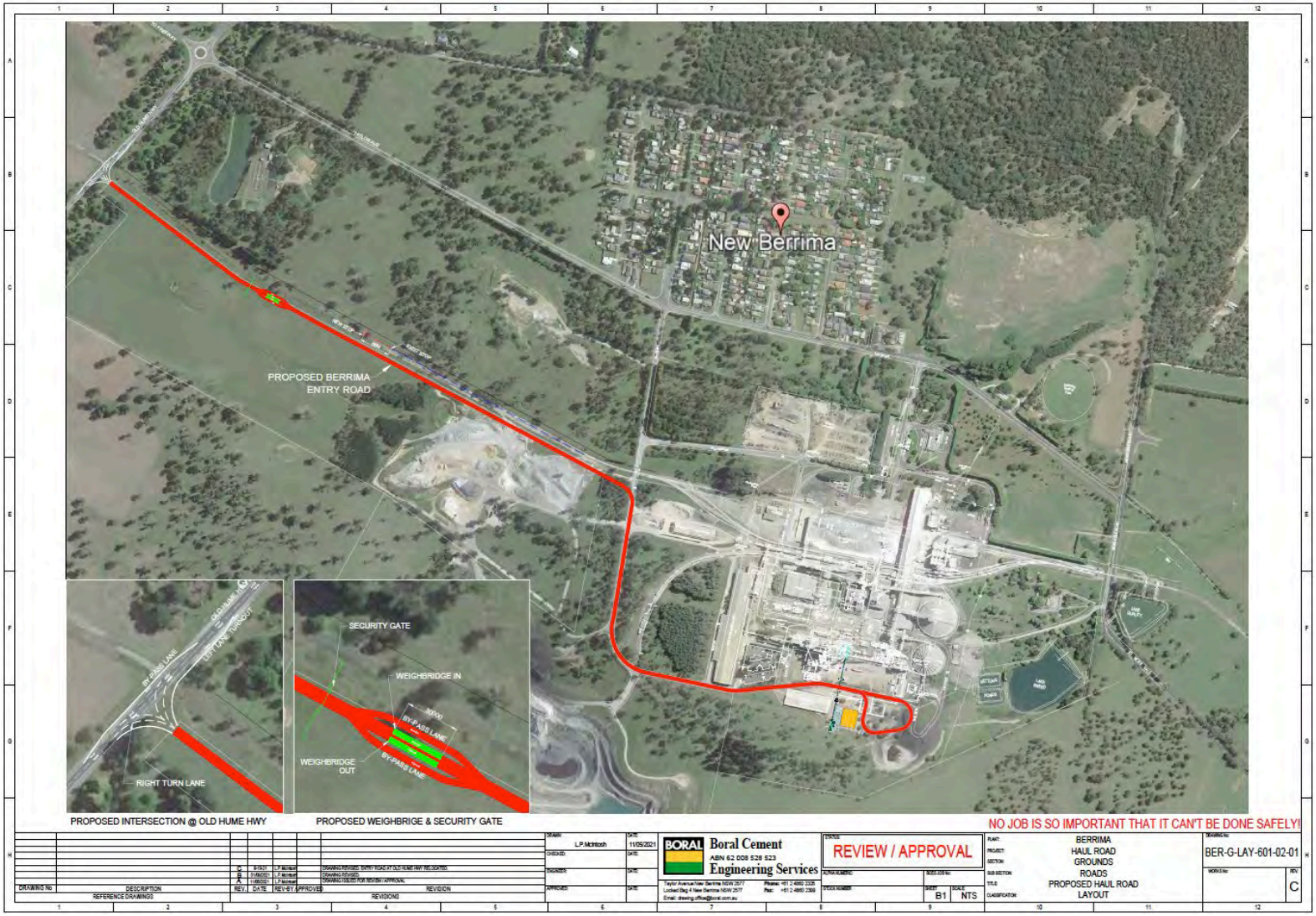


**Figure 1.3 Proposed works**

## 1.2 PROJECT TEAM AND QUALIFICATIONS

The following personnel have been involved in the preparation of this ACHDDA:

| Person | Title | Experience | Role |
|---|---|---|---|
| **Alexander Beben** | Director | 16 years | Technical lead, field inspection, quality assurance review |
| **Dominique Bezzina** | Archaeologist | 1 year | Background research, report preparation and field assessment. |
| **Adam Hansford** | GIS Operator | 2 years | GIS Mapping |

## 1.3 ABBREVIATIONS

The following are common abbreviations that are used within this report:

| | |
|---|---|
| ACHA | Aboriginal Cultural Heritage Assessment |
| ACHDDA | Aboriginal Cultural Heritage Due Diligence Assessment |
| AHIMS | Aboriginal Heritage Information Management System |
| AHIP | Aboriginal Heritage Impact Permit |
| Austral | Austral Archaeology Pty Ltd |
| The Code | *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW 2010)* |
| ILALC | Illawarra Local Aboriginal Land Council |
| LGA | Local Government Area |
| NPW Act | *National Parks and Wildlife Act 1974* |
| NSW | New South Wales |
| PAD | Potential Archaeological Deposit |
| The Proponent / Boral | Boral Land and Property Group |
| SEARS | Secretary Environmental Assessment Requirements |
| SLR | SLR Consulting Australia Pty Ltd |
| SSD | State Significant Development |
| Study area | Boral Cement Works, Taylor Avenue, New Berrima |
| W**LEP** | *Wingecarribee Local Environmental Plan 2010* |

# 2 DUE DILIGENCE ASSESSMENT

As noted in Section 1, The Code provides a series of questions that clarify whether it applies to a proposed project. These questions are addressed in Table 2.1 below.

**Table 2.1 Applicability of the Code to the proposed activity**

| Question | Response |
|---|---|
| Is the activity a declared project under Part 3A of the EP&A Act?<br>***Note: This question is included as it forms part of the Code. As Part 3A approvals have been repealed, this question is now interpreted to refer to state significant projects (under Part 4 and Part 5 of the EP&A Act).*** | Yes |
| Is the activity an exempt activity listed in the NPW Act or other legislation? | No |
| Will the activity involve harm that is trivial or negligible? | No |
| Is the activity in an Aboriginal place or are you already aware of Aboriginal objects on the land? | No |
| Is the activity a low impact activity for which there is a defence in the NPW Regulation? | No |
| Do you want to use an industry-specific code of practice? | No |
| Do you wish to follow your own procedure? | No |

The project is proceeding under an SSD (formerly Part3A), however, SLR and Boral have elected to undertake an ACHDDA and utilise the process under the Code as a means of determining whether Aboriginal objects are likely to be harmed as part of the project.

The Code consists of a series of 5 steps outlined below.

## 2.1 STEP 1: WILL THE ACTIVITY DISTURB THE GROUND SURFACE OR ANY CULTURALLY MODIFIED TREES?

The proposed works involve the construction of a road extending 2.5 km northwest of the site which will act as a new access point into the works. The works associated with the construction of this road will require the disruption of the ground surface via levelling and excavation within proximity of the study area. All mature trees within the study area were inspected for cultural modifications during the site inspection, no evidence of cultural modifications were identified (this is detailed further in Section 2.5).

As the activity will disturb the ground surface, should they be present, consideration of steps 2a and 2b of the Code is required.

## 2.2 STEP 2A: SEARCH THE ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS) DATABASE AND USE ANY OTHER SOURCES OF INFORMATION OF WHICH YOU ARE ALREADY AWARE

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was conducted on 2 November 2021 (Client service ID: 635320). A 3-kilometre search radius was applied about the study area and located 108 Aboriginal sites (Eastings: 250903.0 - 258916.0, Northings: 6174242.0 - 6182246.0).

None of the registered sites are located within the construction impact area, although some sites are present within 200 metres of the proposed works locations.

Spatial information for this report is displayed using the GDA94 Datum. Where AHIMS site records were provided on a different datum, they were converted using standard functions in QGIS software.

**Table 2.2 AHIMS sites identified within 3 kilometres of the study area.**

| Site type | Occurrence |
|---|---|
| Artefact, Grinding Groove | 1 |
| Artefact, Grinding Groove, Potential Archaeological Deposit (PAD) | 1 |
| Modified Tree | 3 |
| Grinding Groove | 4 |
| Artefact, PAD | 8 |
| PAD | 11 |
| Artefact | 80 |
| **Total** | **108** |

In NSW, there is a strong correlation between proximity to water and the presence of Aboriginal sites, a trend that is observable in Figure 1.2. Data in Table 2.2 shows a variety of site types associated with the area surrounding the Boral Cement Works, with the most common site type being artefacts focused along third and fourth-order tributaries associated with the Wingecarribee River, Stoney Creek, and Oldbury Creek. Other registered sites within this radius include in order of frequency, potential archaeological deposits, grinding grooves and modified trees.

The AHIMS search identified that B3 (Berrima) [AHIMS # 52-4-0058] is located approximately 180 metres to the north of the study area. This site was identified and likely destroyed as part of the construction of a waste treatment centre. This site is located on a broad, flat crest upon which the town of New Berrima has been constructed. The study area is associated with a mid-slope associated with this crest as it transitions into a narrow alluvial flat associated with a 2nd order tributary of Olbury Creek.

A review of the reports held on the AHIMS database identified several archaeological studies undertaken in the locality of the study area. These are summarised in Table 2.3. Austral has also undertaken a review of information to identify whether the activity is located within landscape features likely to contain Aboriginal objects. This includes an assessment of ethnographic information, soils, geology, landform, disturbance, and resource information pertinent to the study area. The outcome of this review is outlined in the remainder of this section.

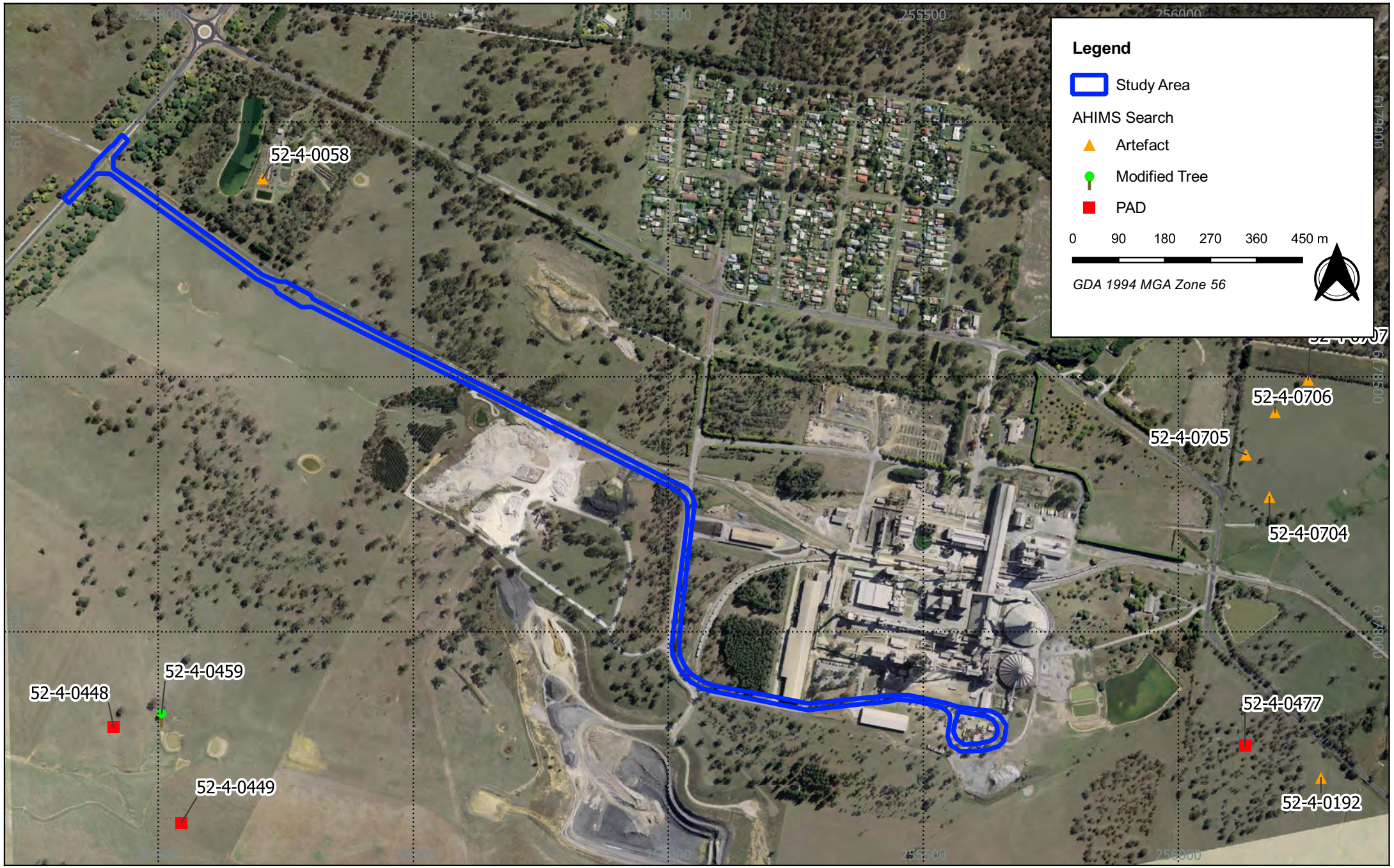


**Figure 2.1 AHIMS sites within close proximity to the study area**

21147 - Boral Cement Works, Taylor Avenue, New Berrima - ACHDDA

*Source: NSW LPI Aerial* *Drawn by: ARH Date: 2021-11-03*

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## LOCAL ARCHAEOLOGICAL CONTEXT

Archaeological investigations of the Southern Highlands region, particular in the vicinity of Berrima and New Berrima, have been conducted in response to the development of residential areas and continued agricultural usage, and within the framework of academic enquiries. The limited ethnographic accounts of early settlers and explorers were once considered the primary source for archaeological enquiry.

The major studies which have contributed to our understanding of the Southern Highlands, and those with direct relevance to the study area, are outlined in Table 2.3. Reference is made to the main trends garnered from these investigations which serve to provide a broad framework on which to base the current study.

**Table 2.3 Summary of past reports within the vicinity of the study area.**

| Reference | Study area | Results | Site distribution |
|---|---|---|---|
| Koettig (1981) | Hume Highway, Berrima and Mittagong. | The survey recorded 24 sites, these included grinding grooves, scar trees, artefact scatter, rockshelters with PAD, rockshelters with art and a quarry site. The raw materials utilised were primarily silcrete and quartrz, however, quartzite and chert were present in lower percentages. Grinding grooves were confined to sandstone outcrops and rockshelters were located were only present in areas of Hawkesbury Sandstone. | Stone artefact scatters were generally located on the banks of watercourses or the confluences of watercourses where flat elevated ground existed. Level areas of low spurs or ridgelines also contained artefact scatters. Scar trees only existed where old-growth vegetation was present. |
| Koettig (1985) | Hume Highway, Berrima and Mittagong excavations. | These excavations recovered numerable silcrete and quartz artefacts and revealed three dense concentrations of stone artefacts considered as knapping floors. The dating of a hearth from this site gave a date of 1780 +/- 60BP and was associated with the knapping floor. | The site was adjacent to a second-order stream on a lower portion of a hill slope. |
| Koettig (1987) | Berrima Sewerage Scheme test excavations. | There were 13 boreholes 2 metres by 0.5 metres excavated and 19 test excavations 1 metre by 0.2 metres and two 0.5 metres by 0.5-metre squares were excavated next to one of the test pits. A total of 67 stone artefacts were recovered, the material used included quartz, silcrete, indurated mudstone, chert and an unidentified fine-grained material. | Koettig recommended that because of the number of recovered artefacts that a salvage be undertaken even though they were of a low density. Koettig suggested that the alluvial floodplains and tributaries to major rivers will be archaeologically sensitive. |
| Kelton (2002) | Berrima Colliery survey. | This survey recorded two rock shelters and one artefact scatter. The artefact scatter was located on a low hill slope overlooking an unnamed stream that fed into the Wingecarribee River. | The site predictive model established for this survey suggested sensitive areas will be located where undisturbed creek lines, terraces, low ridgelines or outcrops of sandstone occur. |
| Total Earth Care (2006) | An archaeological survey for Wingecarribee Shire Enterprise Zone encompassing the study area. | There was one artefact scatter and 5 isolated finds recorded. The artefact scatter was located on an elevated level ridgeline. Several areas of sensitivity were identified on elevated areas overlooking Oldbury and Stoney Creeks. None of these sites correspond with the current study area. | The artefact scatter was interpreted to be an assemblage that had accumulated over a long period of time rather than a single event. This follows all other models in the region. |

| Reference | Study area | Results | Site distribution |
|---|---|---|---|
| Archaeological Surveys and Reports (2010) | An archaeological survey as part of the Environmental Assessment Statement for Berrima Colliery. | This survey recorded no archaeological material. | The study area had no reliable water and no rock outcrops or overhangs present and therefore the predictive model suggests the only sites likely to be present are isolated artefacts, low-density artefact scatters or scar trees. |
| OzArk (2011) | An archaeological survey as part of the Environmental Assessment Statement for Berrima Colliery. | One small artefact scatter was recorded on a spur near an ephemeral watercourse during the survey. | The predictive model formulated for this study suggested that in relation to watercourses first-order streams are likely to have little more than background scatter. The second-order may have one-off camping or knapping sites. The third order may see more frequent occupation episodes. The fourth-order may have evidence of more permanent occupation and this would be evidenced by diverse stone tool assemblages. |
| EMM (2017) | Undertook an ACHAR as part of an Environmental Impact Statement for Hume Coal. | There were 181 sites recorded for this project, with 53 per cent of those being stone artefacts other site types included PADs, rockshelters with PADs, scar trees and grinding grooves. | The predictive model suggested that sites will be present as open stone artefact scatters and isolated finds close to watercourses on suitable landforms, that grinding grooves may be present adjacent to streambeds where suitable sandstone outcroppings are present and scar trees may be present where mature trees exist. |
| Associates Archaeology and Heritage (2017) | Produced an ACHA for Opus International Consultants for the Berrima Road Upgrade, New Berrima. | The small field survey was undertaken over a discrete area of exposed ground. No artefactual material was recorded, however, as the area was sensitive subsurface excavations were undertaken. A total of eight 500 millimetre by 500-millimetre pits were excavated. With no artefacts recovered. | The results of this survey and subsurface testing accorded with the predictive modelling undertaken by Brown (2017) which stated that any artefactual material in this general area will be present in low densities. |
| Biosis (2019) | Produced an ACHA for Brickworks Ltd. | The survey and test excavations were undertaken over 57 hectares 250 metres north of the current study area. A total of 156 test pits measuring 500 millimetres by 500 millimetres were excavated across all landforms and recovered 427 stone artefacts. Of these 319 were located on the mid-slope landform type and predominately in the northeast corner of the study area. On the lower slope adjacent to Stoney Creek 22 artefacts from 11 test pits were recovered | Biosis predicted there is a very high potential for stone artefacts to be present on alluvial flats. The presence of axe-grinding grooves within the study area suggested there may be more present in areas with low ground visibility. |

## ETHNOHISTORY

The study area was once primarily populated by the Gundungurra people who historically occupied Burragorang, Katoomba, Picton, Berrima, Taralga, and Goulburn. It was also noted by Elizabeth Rich that the Wodi Wodi people are likely to have used the study area and its surrounds for passage through the Illawarra Escarpment and are considered to have inhabited the landscape alongside the Gundungurra people. European ethnographers were not well equipped to understand the complexities of Aboriginal culture and so records from this time are not entirely accurate. (Austral Archaeology Pty Ltd 2020, EMM Consulting Pty Ltd 2016)).

In comparison to coastal communities, where the climate is more favourable and plant and animal resources are greater and more varied, the population of the Gundungurra would have been smaller. It was observed that these groups generally moved through the landscape as familial groups or clans and only gathered with the wider populations for special occasions. Both larger language groups and individual clans would have intermingled and interacted, such as for communication or exchange of resources, rather than restricting their movements to strict borders which were applied to them by later ethnographers and cartographers (Austral Archaeology Pty Ltd 2020, EMM Consulting Pty Ltd 2016).

According to (Koettig 1981) the earliest recorded observation of Aboriginal people in and about the study area was in 1798 during an expedition led by ex-convict John Wilson. He observed them wearing animal skin cloaks. This was again observed in 1836, but by this time the local communities had also begun incorporating European clothing and blankets into their lifestyles (Koettig 1981).

The Gundungurra and Wodi Wodi people, as with others of the Greater Sydney region, were massively impacted by the arrival of Europeans in the new South Wales. Smallpox has been observed as a leading cause of widespread disruption and devastation to local communities, predicted to have killed over half the original inhabitants residing within Sydney and thousands further afield before Europeans had arrived within the study area (Austral Archaeology Pty Ltd 2020)).

Smallpox scars were noted to be present on the Gundungurra people by Dr George Bennet which indicated the disease had reached the Southern Highlands alongside other locations with devastating effects (Associates Archaeology & Heritage Pty Ltd 2017)). Further disruptions to Aboriginal lifestyles were inevitable as the European population increased in the area and began depleting the resources which were once available in abundance and enforcing their ways of life in a manner that caused a separation of the local communities from their culture (Associates Archaeology & Heritage Pty Ltd 2017).

## TOPOGRAPHY AND HYDROLOGY

The highlands landscape is described by Mitchell (2002) as consisting of rolling hills and rounded peaks with a general elevation of 700-850 metres. The study area is positioned amongst three waterways all of which have second and third-order tributaries in proximity. These are Wingecarribee River (north), Stoney Creek (southeast), and Oldbury Creek (southwest). These waterways are likely to have provided freshwater resources for the Gundungurra and Wodi Wodi people of the area.

The Wingecarribee River is more like to have attracted larger populations due to its size and, therefore, increased availability of local flora and flora, and fresh flowing water. All of these waterways are located 250 metres or more from the study area, a first and second order watercourse present within 150 metres of the study area.

The majority of AHIMS sites within the region occur within flat, undisturbed landforms within 200 metres of third and fourth-order alignments and tributaries of Oldbury Creek (to the south of the study area) and Stoney Creek (to the east of the study area). The study area is closest to a first and second-order tributary of Oldbury Creek, located 150 metres south of the access track alignment (see Figure 2.2).

Distance to water is an important factor in the distribution of Aboriginal sites, within the local area the average distance of sites to perennial water sources is 136.7 metres and 75.9 metres to ephemeral water sources (Biosis Pty Ltd 2019, p.27).

## GEOLOGY AND SOILS

As can be viewed in Figure 2.2, the study area is largely positioned atop residual deposits, anthropogenic deposits, and alluvial flood plain deposits. Of note are the anthropogenic deposits which were observed along the path of the proposed road during the pedestrian survey to be significant mounds of imported materials. Their presence greatly hampered the ability to observe the landscape for potential evidence of Aboriginal objects or sites.

Also, present, though covering smaller portions of the study area, are the Ashfield Shale and Bringelly Shale geological units, both part of the Wianamatta Shale Group. The Ashfield Shale consists of alternating black to light grey shale and laminite, while the Bringelly Shales are largely described as finely bedded laminite, shale and siltstone (Austral Archaeology Pty Ltd 2020, Geoscience Australia 2019). Raw materials from both units would not have had the integrity to be used for the manufacturing of Aboriginal tools or weaponry.

The study area is located within the Moss Vale Highlands soil landscape (Figure 2.2), which is characterised by rolling hills and rounded peaks with deeply incised channels. The soils within this landscape are characterised by yellow and grey texture-contract soils, deep yellow earth on friable sandstone often with concretionary ironstone and accumulations of clan quarry sand in valleys (Mitchell 2002, p.117). The greatest density of sites within the local area occurs within the Moss Vale Highlands soil landscape, accounting for 73.9% of all sites identified (Biosis Pty Ltd 2019, p.25). Sites most commonly found within this landscape consist of artefacts, PADs, grinding grooves, and modified trees.

## LANDFORMS

The study area is situated within the Moss Vale Highlands landform, described by Mitchell (2002) as being dominated by rolling hills and rounded creeks, with deep channel incisions. Most of the study area is associated with crests, steep to gentle slopes, depressions, and flats characteristic of a landscape likely to contain archaeological deposits and artefacts in proximity to available resources.

Due to the extensive disturbance that has been inflicted on the study area and its surroundings, the majority of areas where sites may have occurred are unlikely to be intact. It should be noted that most of the study area, especially the access road and associated infrastructure are heavily developed.

The only area subject to redevelopment is the access road alignment in the west, which is associated with steep to moderately inclined slopes that are generally not associated with Aboriginals sites.

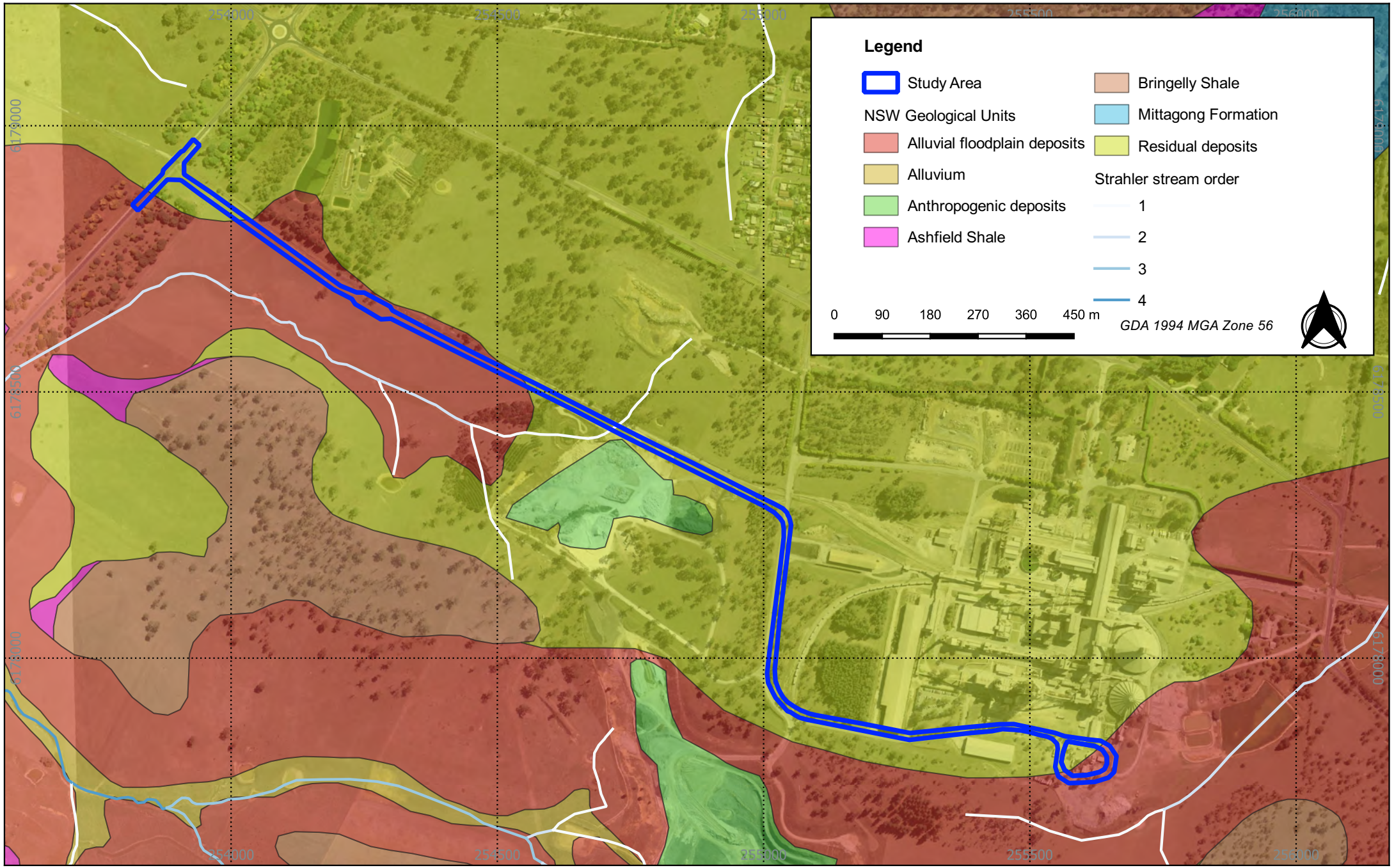


**Figure 2.2 Geology and Hydrology of the study area**

21147 - Boral Cement Works, Taylor Avenue, New Berrima - ACHDDA

*Source: NSW LPI Aerial*

*Drawn by: ARH Date: 2021-11-03*

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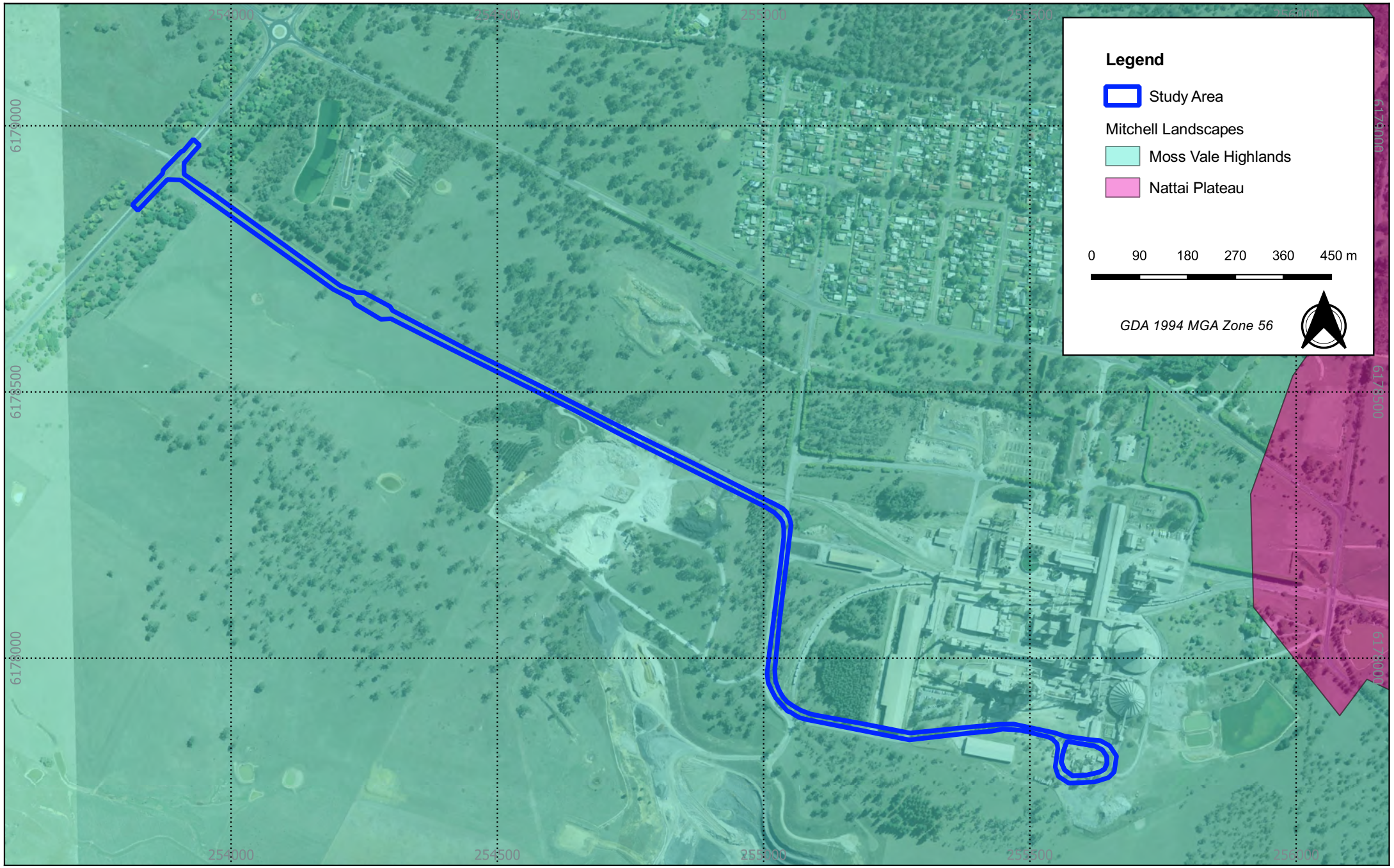


**Figure 2.3 Mitchell Soil Landscapes associated with the study area**

21147 - Boral Cement Works, Taylor Avenue, New Berrima - ACHDDA

*Source: NSW LPI Aerial*

*Drawn by: ARH Date: 2021-11-03*

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## LANDSCAPE RESOURCES

Observations from 1826 by James Atkinson, who resided within the County of Argyle, indicate grassland, open forest, and woodland was not dense and is likely to have been regularly cleared either naturally or by Aboriginal people via bush fires. This brought grazing animals to the area which in turn facilitated hunting activities (EMM Consulting Pty Ltd 2016).

Native trees were used to make wooden tools such as torches and traps for fishing, and bark was utilized to create vessels for food. Weapons such as boomerangs, spears and spear throwers were also made from wood (EMM Consulting Pty Ltd 2016). Material from trees was also observed to have been incorporated in shelters.

For example, bark sheets were set against trees to act as sleeping shelters for individuals and boughs covered in bark and branches acted as shelters for family groups (Koettig 1981). Plantlife also played an important role as roots, stems, flowers and leaves were a varied source of medicine for the local people (Austral Archaeology Pty Ltd 2020).

Food was supplied by both the local flora and fauna residing in the Southern Highlands. Animals such as kangaroos, possums, wombats, wild dogs, wallabies, gliders, bandicoots, quolls, fruit bats, echidnas, native rats and mice, emus, ducks, tortoises, snakes and goannas were available throughout the landscape (Austral Archaeology Pty Ltd 2020). Skins, bones, and teeth from these animals were also used as adornment and clothing such as for headpieces, belts, necklaces and cloaks as observed by Europeans in the early 1800s (EMM Consulting Pty Ltd 2016).

Major waterways such as the Wingecarribee River and Stoney Creek would have provided fish and eels which were incorporated into the diets of the local people. Bivalves were also collected as a food source, though their shells additionally appeared to be an appropriate tool such as for the use of sharpening spears (EMM Consulting Pty Ltd 2016).

## PAST LAND-USE PRACTICES

The majority of the study area has been subject to disturbance through the modification of the landscape as part of historical colonisation. The study area forms part of a 2,000-acre grant promised to John Atkinson in 1823 by Governor Lachlan Macquarie. He named his grant “Mereworth” and constructed a residence approximately two kilometres southwest of the study area. Much of his original land grant remains and is encapsulated in the “Mereweather house and garden” heritage listing on Schedule 5 of the *Wingecarribee Local Environmental Plan 2010* (WLEP 2010) [Item # I351].

In 1881 the Berrima Coal Mining and Railway Company opened a coal mine in the gorge of the Wingecarribee River and constructed a standard gauge rail line to transport the coal seven miles from the mine to Main Southern Railway (Matthews 1959; *Illawarra Mercury* 28 February 1882, p.3).

The former alignment of this railway borders the northern alignment of the access road. Motive power on the railway was provided by a locomotive hired from the NSW Government Railways and operated by a company driver (Matthews 1959). The Berrima Coal Mining and Railway Company went into liquidation in 1889 and the line was abandoned (Matthews 1959). The alignment of the rail line in relation to the study area is identified in Figure 2.4.

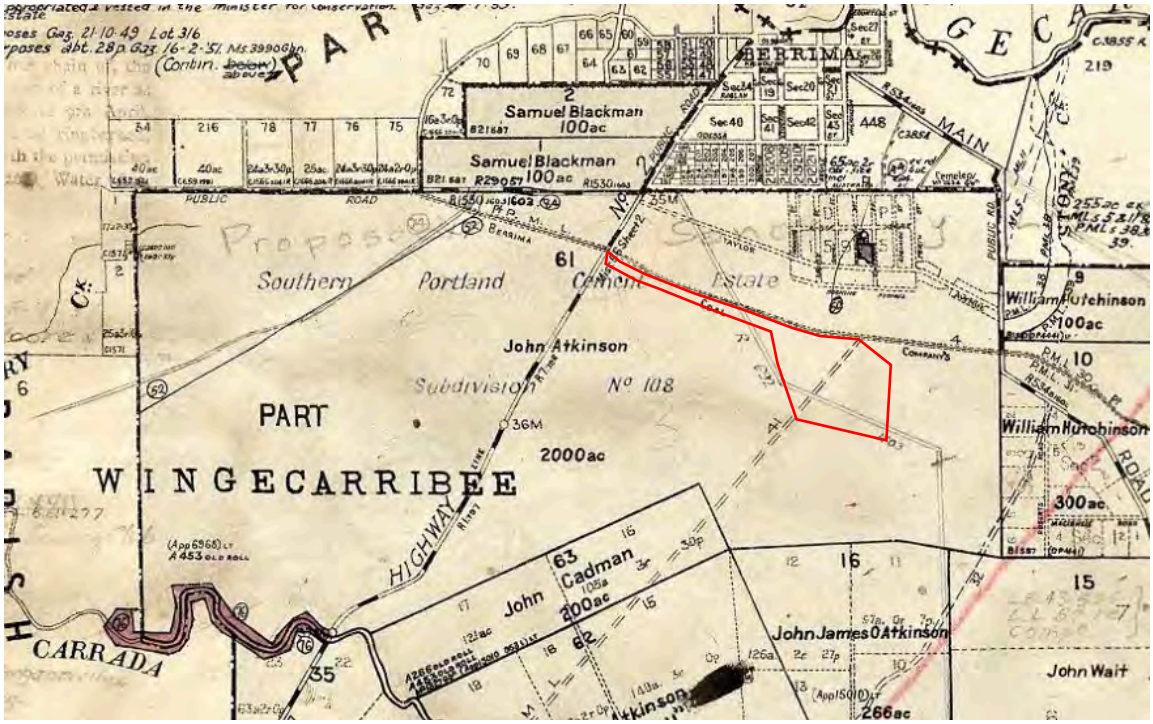


**Figure 2.4 Parish map showing rail alignment and location of the study area.**

*The study area is shown in red, this is an approximation only. Figure orientated north.*

In 1925 the right-of-way for the old Berrima Colliery line was purchased by the Medway Colliery and Railway Company the railway line was proposed to be re-established to the Main Southern Railway (*Robertson Mail*, 30 May 1924, p.2; *Construction and Local Government Journal*, 16 July 1924, p. 18). In 1925, the Medway Colliery Co. now known as the Southern Portland Cement and Coal Co. Ltd proposed to construct a cement works at Berrima for £500,000 (*The Sydney Morning Herald*, 28 September 1925, p.10). This described the construction of a "private railway, to be known as the Medway line, will run from the collieries to the works at Medway, and then on another three miles to the junction with the main southern line a couple of miles on the Sydney side of Moss Vale.

The earthworks of this line already have been constructed; it is only a question of laying the track' (*Robertson Mail*, 25 June 1926, p2). This statement appears to indicate that the 1881 tracks were pulled up following the liquidation of the Berrmina Coal Mining and Railway Company in 1889, but that the alignment was later reused in 1926 when Southern Portland Cement Limited re-activated the Medway Colliery and constructed the Berrima Cement Works.

In 1928, the Southern Portland Cement and Coal Co. Ltd merged with Hoskins' Iron and Steel Company and became Australian Iron and Steel Limited (*The Age*, 18 May 1928, p.9). the Berrima Cement Works commenced operations in May 1929 (*Evening News*, 25 May 1929, p.2). The use of trains between the colliery and the cement works reduced during the mid-1970s in favour of road transport and no trains operated between the colliery and cement works after June 1978, the rails remained in situ for another 10 years and an opening for the line was constructed in the Hume motorway during the late 1980s.

The line remains open from the junction to the cement works but the rails between the colliery had been pulled up by the 1990s with only the embankment remaining (Matthews 1959). The construction of the cement works and associated railway line is likely to have heavily displaced any Aboriginal objects and/or sites that may have been present within the impact areas.

Adjacent to the study area is the locally significant Berrima Remembrance Grove (WLEP Item # I485) which is located on the Old Hume Highway, near the roundabout intersection with Medway Road and Taylor Avenue. It encompasses 11 separate groves covering 34 acres of roadside tree plantings that form part of the Remembrance Driveway, which was established by Queen Elizabeth II in 1954 as a living memorial between Sydney to Canberra to those who served in the Second

World War. The Berrima Remembrance Grove was planted under the direction of Sir Cecil Hoskins between 1956 and 1965 on behalf of the Steel Industry of Australia (Webb & Webb 2021).

## PREDICTIVE STATEMENTS

In general, an archaeological predictive statement for any study area draws on surrounding environmental data, previous archaeological research, and predictive models for Aboriginal occupation. Another essential aspect to predicting the archaeological integrity of a site and something that must be considered is previous land uses of the study area and degree of disturbance.

The main trends broadly seen within the Southern Highlands are that:

- Archaeological sites occur on most landforms.
- Site frequency and density are dependent on their location in the landscape.
- Artefact scatters are commonly located near permanent water sources along creek banks, alluvial flats and low slopes. More complex sites are usually located close to major water sources. Due to the antiquity of Aboriginal heritage in the Southern Highlands, paleo-channels and past waterways should be also considered as having archaeological potential.
- The dominant raw material used in artefact manufacture is silcrete and fine-grained siliceous material with smaller quantities of chert, quartz and volcanic stone seen.
- Artefact assemblages usually comprise a proportion of formal tool types with most assemblages dominated by flakes and debitage.
- While surface artefact scatters may indicate the presence of subsurface archaeological deposits, surface artefact distribution and density may not accurately reflect those of subsurface archaeological deposits.
- Aboriginal scarred trees may be present in areas where remnant old-growth vegetation exists.

While these statements provide an adaptable framework for applying a predictive model to the study area, some additional predictions can be made regarding the Boral Berrima study area and its potential based on general studies of the Southern Highlands region, the specific investigations surrounding the study area and the search of the AHIMS database.

Based upon the results of these background studies, Austral has been able to develop a series of predictive statements relating to the type and character of Aboriginal cultural heritage sites that are likely to exist in the study area and where they are more likely to be located. These predictive statements indicate that:

- Studies within the region indicate that the most likely sites to occur are artefact scatters, grinding grooves (on available sandstone) and Aboriginal scar trees (where mature vegetation is present).
- Stone artefact sites have been previously recorded in the region across a wide range of landforms and have a high potential to occur in the highly disturbed portions of the study area.
- Sites would most commonly be found on terraces near creeks and on high ground near water, as well as along ridgelines and spurs with flat or gently sloping crests.
- Stone artefact sites may be present on flat terrain adjacent to creeks, however, disturbances including land clearance or flooding events may relocate these objects. Stone artefacts are likely to occur in smaller assemblages. Silcrete, chert and quartz will be most likely be the dominant raw material.
- Burials are unlikely to be present, due to the lack of deep sandy locations suitable for burial.
- Shell middens are unlikely to be present due to their rarity in the general vicinity

- Disturbance including land clearance, building construction, farming, and limiting factors including grass coverage and areas of dense vegetation that may impact visibility and the potential to identify artefacts. Some of these may also impact the integrity of the surface and sub-surface deposits.

## 2.3 STEP 2B: ACTIVITIES IN AREAS WHERE LANDSCAPE FEATURES INDICATE THE PRESENCE OF ABORIGINAL OBJECTS

**Table 2.4 Landscape features that indicate the likelihood of Aboriginal objects**

| Question | Response |
|---|---|
| Is the activity within 200 metres of 'waters'? | Yes |
| Is the activity within a sand dune system? | No |
| Is the activity located on a ridge top, ridgeline or headland? | No |
| Is the activity located within 200 metres below or above a cliff face? | No |
| Is the activity within 20 metres of or in a cave, rock shelter or cave mouth? | No |
| Is the activity (or any part of it) on land that is disturbed? | Yes |
| Do the predictive statements of 2A indicate Aboriginal Objects or places are likely to occur on any of the topographic elements of the activity area? | Yes |

The proposed works are being undertaken within the Boral Cement Works, an area which when noting the AHIMS map in Figure 2.1 is not considered to be of high archaeological potential. When considering the proximity to Wingecarribee River, Stoney Creek, and Oldbury Creek and associated tributaries, the likelihood of locating previously unidentified Aboriginal sites and objects might increase.

As the study area is located within extremely disturbed terrain, however, this proximity can't be considered an indicative factor as it is more likely that the sites once present have already been destroyed.

While sites along the waterways may still be intact, they exist outside of the perimeter of the proposed works. The site inspection outlined in section 2.5 gives further indication that this is the case for the study area.

## 2.4 STEP 3: CAN YOU AVOID HARM TO THE OBJECT OR DISTURBANCE OF THE LANDSCAPE FEATURE?

It is not possible to avoid harm further harm to the landscape given the proposed works require levelling of the observed landforms and earthworks to install the new access road. As the landscape has already been largely disturbed the assessment focused predominantly on the proposed access road.

This identified that it is likely that the access road has limited potential to contain Aboriginal objects due to the sloping landform it occupies and through disturbance caused through the construction of the 1881 railway line (now removed).

As a result, the study area has been assessed as being unlikely to contain insitu Aboriginal objects.

## 2.5 STEP 4: DESKTOP ASSESSMENT AND VISUAL INSPECTION

The desktop assessment indicates that while local Aboriginal people frequently used the wider study area for passage, hunting, and residence, evidence of this usage is likely to be hampered due to the extensive alteration that has been inflicted upon the landscape via agricultural practices and construction activities. Alterations have occurred to the point where Aboriginal sites and objects would be destroyed.

A visual inspection of the study area was undertaken by Alexander Beben (Director, Austral) and Dominique Bezzina (Graduate Archaeologist, Austral) on Monday 1 November 2021. The visual inspection consisted of a survey along the path of the proposed access track and associated infrastructure to identify and record any Aboriginal archaeological sites visible on the surface or areas of Aboriginal archaeological potential and cultural sensitivity.

The archaeological survey was conducted on foot. The methods used during the visual inspection conformed to requirements 5 to 8 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b).

Overall, it was noted that the site was extensively disturbed and had low surface visibility due to vegetation coverage and imported fill materials. In particular, the portions of the study area such as the existing siding, roads and buildings associated with the Berrima Cement Works were noted to be entirely overlaid with surfaces consisting of consolidated fill, concrete and bitumen (Figure 2.5 and Figure 2.6).

**Figure 2.5 Northeast facing photo of existing siding with imported fill.**

**Figure 2.6 East facing photo of disturbed terrain within existing Cement Works.**

Where the new road is to be installed, there is dense grassland, with areas of exposure limited to isolated areas of erosion and cattle grazing. These portions of the study area were characterised by steep to moderately inclined mid-slopes associated with a ridgeline to the north of the study area (Figure 2.7 and Figure 2.8).

All stone outcrops were inspected for any evidence of grinding grooves and all mature trees within and close to the alignment were assessed for any evidence of cultural modification. This portion of the study area that appears to have been subject to a lower level of disturbance is steep to moderately inclined slope that is adjacent to a defunct alignment of the private Berrima railway line that was built by the Berrima Coal Mining and Railway Company in 1881 (Matthews 1959).

The construction of this rail line has created a noticeable embankment that would have required levelling and earthworks that are likely to extend beyond its present easement. This is likely to have impacted the integrity of deposits within the study area.

Given the nature of the terrain and likely levels of disturbance associated with the former rail line, there this portion of the study area is considered to have a low potential to contain Aboriginal objects. The archaeological potential of the study area is outlined in Figure 2.9.

**Figure 2.7 Northwest facing photo of moderate slope with animal disturbance.**

**Figure 2.8 Southwest facing photo of rock outcrop overlooking 2nd order creek.**


**Figure 2.9 Archaeological potential of the study area**

21147 - Boral Cement Works, Taylor Avenue, New Berrima - ACHDDA

*Source: NSW LPI Aerial*

*Drawn by: ARH Date: 2021-11-03*

AUSTRAL ARCHAEOLOGY

## 2.6 STEP 5: FURTHER INVESTIGATIONS AND IMPACT ASSESSMENT

Based upon the outcome of Steps 1 to 4 of the code, no further assessment is warranted.

It is recommended that:

1. The SSD modification is exempt from the provisions of the NPW Act. As such, if any Aboriginal objects are identified during the project, these will need to be managed through an Unexpected Finds Protocol. Should 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 Heritage NSW and Aboriginal stakeholders.
2. 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:
    - immediately cease all work at that location and not further move or disturb the remains
    - notify the NSW Police and Heritage NSW's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
    - not recommence work at that location unless authorised in writing by OEH.

# 3 REFERENCES

Archaeological Surveys & Reports Pty Ltd 2010, New Berrima Clay/Shale Quarry Cultural Heritage Assessment as part of the Environmental Assessment for the New Berrima Quarry Modification. Report for Austral Bricks.

Associates Archaeology & Heritage Pty Ltd 2017, 'Aboriginal Cultural Heritage Assessment, Berrima Road Upgrade, New Berrima NSW Prepared for Opus International Consultants (Australia) Pty Ltd'.

Austral Archaeology Pty Ltd 2020, 'Berrima Road Deviation, Berrima, NSW'.

Biosis Pty Ltd 2019, Chelsey Park Masonry Plant (Stage 1) 416 Berrima Road, New Berrima NSW: Aboriginal Cultural Heritage Assessment Report. Prepared for Brickworks Ltd.

DECCW 2010, 'Due diligence code of practice for the protection of Aboriginal objects in New South Wales'.

EMM Consulting 2017, Hume Coal Project Prepared for Hume Coal Pty Limited, NSW.

EMM Consulting Pty Ltd 2016, 'Aboriginal Cultural Heritage Assessment to support an AHIP application for continued farming activities on Hume Coal and its affiliated companies' land'.

Geoscience Australia 2019, Stratigraphic Unit Detail: Wianamatta Group, Australian Stratigraphic Units Database.

Kelton, J 2002, A summary Report on the Aboriginal Archaeological Study of the Proposed Extraction Area, Berrima Colliery, near Berrima. Report Prepared for International Environment Consultants.

Koettig, M 1981, Hoddles Crossing to Alpine: Archaeological Survey of the Proposed F5 Extension. Report to the Department of Main Roads, NSW, NSW.

Koettig, M 1985, 'Archaeological Investigations of sites HCA13 and HCA14, near Berrima Southern Tablelands NSW. Report prepared for the Department of Main Roads NSW.'

Koettig, M 1987, 'Berrima Sewerage Scheme: Test Excavations at the location of the proposed Treatment Works. Report to the Public Works Department, Wollongong'.

Matthews, HH 1959, 'The Railways of Berrima', Australian Railway Historical Society Bulletin, pp. 22–24.

Mitchell, P 2002,'Descriptions for NSW (Mitchell) Landscapes Version 2 (2002)', in, Department of Environment and Climate Change.

OzArk Environmental and Heritage Management P/L 2011, 'Berrima Colliery, Continued operations Environmental Assessment – Volume 1. Report to Boral Cement Limited.'

Webb, Charlotte & Webb, Chris 2021, Berrima Remembrance Groves NSW Inventory.