EMM
creating opportunities

APPENDIX L – Environmental Impact Statement

Aboriginal cultural heritage assessment

Prepared for Lake Lyell Project Pty Ltd



Lake Lyell Pumped Hydro Energy Storage Project

Aboriginal cultural heritage assessment

Lake Lyell Project Pty Ltd

E221111 RP1

November 2025

Version	Date	Prepared by	Reviewed by	Comments
1	11 July 2024	Nicolas Riley and Megan Sheppard Brennand	Alan Williams	Draft
2	25 July 2024	Megan Sheppard Brennand	Alan Williams	Final Draft
3	6 August 2024	Megan Sheppard Brennand	Alan Williams	Client comments
4	29 August 2025	Megan Sheppard Brennand	Alan Williams	Project area update Draft
5	22 September 2025	Megan Sheppard Brennand	Alan Williams	Client comments
6	2 October 2025	Megan Sheppard Brennand	Alan Williams	Draft for RAP consultation
7	26 November 2025	Megan Sheppard Brennand	Alan Williams	Final

Approved by



Dr Alan Williams FSA FRSA FRSN MAACAI MEIANZ MAIATSIS
Technical Lead, Aboriginal heritage
26 November 2025

Level 10 201 Pacific Highway
St Leonards NSW 2065
ABN: 28 141 736 558

This report has been prepared in accordance with the brief provided by Lake Lyell Project Pty Ltd and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Lake Lyell Project Pty Ltd's use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the Copyright Act 1968 (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Lake Lyell Project Pty Ltd (and subject to the terms of EMM's agreement with Lake Lyell Project Pty Ltd).

© EMM Consulting Pty Ltd, Level 10 201 Pacific Highway, St Leonards NSW 2065. 2025.
ABN: 28 141 736 558

Content warning

Aboriginal and Torres Strait Islander peoples are advised that the following report contains reference to, and images of, people who have died.

Executive Summary

ES1 Project background

EnergyAustralia Portfolio Holdings Pty Ltd (EnergyAustralia) in partnership with EDF power solutions Australia (EDFA), referred to as Lake Lyell Project Pty Ltd (LLP) as trustee, is developing the Lake Lyell Pumped Hydro Energy Storage (PHES) Project (the project). The project will have the capacity to store up to 3,080 megawatt hours (MWh) of energy and generate at 385 megawatts (MW) for 8 hours or generate up to around 440 MW for a shorter period. At a basic level, it will consist of upper and lower water reservoirs, a pipeline connecting them, and a hydro-electric power station connected to the national energy grid that is capable of generating or consuming electricity.

This Aboriginal cultural heritage assessment (ACHA) report forms part of the environmental impact statement (EIS) being developed to inform government decisions on whether the project should be allowed to proceed. It documents the assessment methods, results and the initiatives built into the project design to avoid and minimise Aboriginal cultural heritage impacts, and the additional mitigation and management measures proposed to address residual impacts which cannot be avoided.

ES2 Aboriginal consultation

The assessment adopted the processes and methods outlined in Heritage NSW's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010), as well as additional project-specific communication strategies to promote transparent and frequent two-way dialogue between the Aboriginal community and the project. The consultation process initially identified 35 Aboriginal stakeholder organisations who may have had an interest in the project. Following notification of these organisations, 22 responded as requesting to be consulted upon the project. Of these, 21 sought to be formally registered as an Aboriginal party for the project. These included a number of local Wiradjuri traditional owners based in Lithgow, Mudgee, Dubbo, Bathurst, and/or Wellington, as well as Aboriginal communities from the broader region interested in cultural heritage management. A further Aboriginal individual, Adrian Williams, was consulted and provided inputs into the report, but preferred not to be documented as a registered Aboriginal party (RAP).

Opportunity for Aboriginal involvement in consultation for the project was provided throughout the ACHA, including: attendance at four face-to-face and/or online meetings during key phases of the project; participation in micro-siting of geotechnical investigations across the project; participation in a two-week field survey of the project area in October and November 2023; participation in a four-week archaeological test excavation of the project area in February and March 2024, participation in a further field survey to include the additional investigation area in August 2025; and participation for Elders and key knowledge-holders to undertake interviews with a highly experienced anthropologist to discuss cultural values.

Ultimately, over 400 interactions have been undertaken with the RAPs across these opportunities. These included representatives of seven organisations and individuals, including the Warrabinga Native Title Claimants Aboriginal Corporation, Mingaan Lithgow Aboriginal Corporation, Wingarra Wilay Aboriginal Corporation, North East Wiradjuri Corporation, Girragirra Murun Aboriginal Corporation, Thomas Dahlstrom, Gallanggabang Aboriginal Corporation. Bathurst Local Aboriginal Land Council were consulted and invited but could not attend any of these opportunities. Discussions with the RAPs have been extensive and wide-ranging over the 20-month assessment process. Feedback from the RAPs was less supportive of the project, with ongoing concerns over the impacts of the project on intangible cultural values and specific flora and fauna. As consultation with the RAPs has progressed, increasing support (with a few exceptions) has been vocalised towards the end of the assessment process as a result of ongoing efforts in impact avoidance, proposed mitigation measures and broader opportunities for the Aboriginal community.

A cultural values mitigation strategy around these issues has formed a focus of discussions, and opportunity for ongoing on-Country access and management of Country and resources have been of interest to Aboriginal participants. Who speaks for Country and who participated in the field work has also formed ongoing robust discussions throughout the assessment.

ES3 Results and findings

The assessment undertook archaeological field survey and test excavations to explore and document the Aboriginal objects, sites and places within the project area, and to align them within the regional context. Overall, the findings have revealed that the project is situated within a rich cultural landscape with evidence of extensive but disparate past human activity along Farmers Creek (typically within 100 metres (m))– elements of which remain extant above the existing Lake Lyell reservoir (formerly part of Coxs River). Large flat ridgelines and spurs on the flanks of Mount Walker also contain evidence of past use and activity.

The cultural values mapping (refer to Annexure F) identified two contemporary cultural values, only one of which is in the project area. Specifically, the peak of Mount Walker situated immediately northeast of the construction envelope was identified by numerous participants for a range of activities (AHIMS #45-1-2997), while a Platypus Dreaming story associated with Coxs River was also documented. This latter value has been linked directly to the platypus (*Ornithorhynchus anatinus*), which is documented to be within Lake Lyell and Farmers Creek (and therefore has not been identified as a discrete place for the purposes of the report).

Previous investigations across the region and the multiple activities (e.g. field survey, test excavations, on-Country meetings) for the project identified a large number of Aboriginal and cultural sites and places within or near the project area. Following a ratification process applying administrative (e.g. removal of destroyed recordings, removal of duplicate recordings, etc.) and analytical (e.g. aggregation of closely located site recordings, further consideration of field activity findings, and amalgamation of isolated stone artefacts and low density artefact scatters into a broader background scatter) methods to provide an overall archaeological resource for the project, some 21 discrete Aboriginal objects and sites amongst the discontinuous background distribution of surface and shallowly buried artefacts are located within the project area. Of these, five are located within the construction envelope. These can be broken down as follows:

- Within project area (outside construction envelope and not impacted by the project):
    - nine sites (LL IF1 [AHIMS #45-1-2974], LD1 [AHIMS #45-4-0208], LD2 [AHIMS #45-4-0207], LD5 [AHIMS #45-4-0211], LD6 [AHIMS #45-4-0212], LD7 [AHIMS #45-4-0213], LD12 (AHIMS #45-4-0214), LD15 [AHIMS #45-1-0248], and LD16 [AHIMS #45-1-0249]) characterised by low densities of stone artefacts that reflect transient use of the project area. It should be noted that many of these sites could be re-classified into the background artefact scatter considered to reflect ongoing but ephemeral use of the region over millennia and which is found across NSW. However, since many of these sites were not inspected as part of this assessment they have not been redefined
    - three sites (LD3 [AHIMS #45-4-0209], LD4 [AHIMS #45-4-0210], LD8 AHIMS [#45-4-0214]) characterised by high densities of highly significant artefacts that represent areas of past foci. However, since many of these sites were not inspected as part of this assessment they have not been redefined
    - two potential culturally modified trees (LL ST1, LL ST2) were recorded on hillslopes. Neither of these sites are located within the construction envelope therefore no further analysis of them was undertaken for this assessment
    - two sites recorded as rock shelters with archaeological deposit (Lyell's Crossing [AHIMS #45-4-0006] and LD9 [AHIMS #45-4-0219]) that are low density artefact scatters at the base of granite boulders located ~300 m from the original Coxs River (now on the banks of Lake Lyell)

- Level terrain (e.g. alluvial terraces, ridgelines, etc.) along tributaries within 400 m either side of former Coxs River and 200 m of the former Farmers Creek within which higher densities of stone artefacts and/or other areas of past foci may be expected to be present.

- Within the construction envelope:

  - four areas of past foci of activity which range in area from ~4,000 to ~13,000 metres squared (m^2). These include sites where sub-surface artefact densities were >20 artefacts/m^2 (LD13 [AHIMS #45-4-0916], LL AS3 [AHIMS #45-1-2976] and LL AS4 [AHIMS #45-1-2978]); and one area where combined surface and sub-surface artefact counts were >200 (LD14 [AHIMS #45-4-0915])

  - a stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which intermittent low to moderate artefact densities of 1 to 21/m^2 may be expected intermixed with culturally sterile zones. This includes many of the previously recorded sites (n=5) currently documented across the project area and outlined in subsequent sections

  - a zone of 200 m either side of former Farmers Creek within which higher densities of stone artefacts and/or other areas of past foci may be expected to be present. Such cultural materials and deposits may extend beneath the current surface of Lake Lyell based on field observations.

ES4 Significance summary

This assessment identified 21 discrete Aboriginal sites and places located within the project area, as well as one cultural place. In addition to discrete sites and places, the entire construction envelope was characterised by a low-density background artefact scatter interspersed with occasional areas of denser material associated with past foci and/or repeat occupation. There was one further Aboriginal site, as well as one cultural place located just outside the project area that were also assessed.

All of the identified Aboriginal sites and places (both inside and outside the project area) were assessed against four significance criteria, including scientific, historical, aesthetic and cultural. Some nine of these sites and places were considered of high archaeological and/or cultural significance, two of moderate significance, and seventeen of low significance. Various landforms of archaeological interest were also identified and assigned moderate significance. The highly significant sites and places, which were also identified as of importance by the Aboriginal participants, included the peak of Mount Walker, a Platypus Dreaming story associated with Coxs River and several of the high-density stone artefact sites along Farmers Creek (refer to Chapter 8).

ES5 Potential impacts

The project would consist of the construction of an upper and lower reservoir, a pipeline connecting them, and a hydro-electric power station connected to the national energy grid that is capable of generating or consuming electricity and associated ancillary activities. The works would result in the impact of some 146 hectares (ha). While the broader Lake Lyell is incorporated into the project to reflect probable lake level changes during construction, no direct impacts are considered to extend beyond the construction envelope.

Throughout the project, LLP has undertaken design refinements and discussions with the RAPs, which has resulted in the avoidance or partial avoidance of two significant sites, LD 8 (AHIMS #45-4-0214) and LL AS3 (AHIMS #45-1-2976). The proposed upper reservoir and associated activities were also moved off the peak ridgeline of Mount Walker in part as a result of its contemporary cultural values identified in this report.

Of the 21 discrete Aboriginal sites/places within the project area, five would be subject to direct impacts, including LD 13 (AHIMS #45-4-0916), LD 14 (AHIMS #45-4-0915), LL AS4 (AHIMS #45-1-2978), LL AS3 (part) (AHIMS #45-1-2976), and the background scatter (part) (LL background scatter). Depending on the eventual identification and management of platypus (*Ornithorhynchus anatinus*) species within the construction envelope, some impacts to a Platypus Dreaming story associated with Coxs River may also be adversely affected. Indirect impacts would be limited to the peak of Mount Walker. This place has been identified by the local Aboriginal community as having contemporary values, and while specific activities on the peak would remain unaffected, visual and aesthetic values would be adversely affected by the project; and by extension social values assigned to the locale. Several remaining cultural materials around the broader project area would remain unaffected by the project.

The potential impacts would result in cumulative impacts to some components of the regional cultural assemblage, notably to the two places of cultural value. However, the opportunity for avoidance given the nature of the project is limited. Archaeological mitigation, especially of subsurface cultural materials to further inform our understanding of the past, is proposed to mitigate some of these impacts; and discussions have been undertaken with Elders and knowledge-holders to explore suitable non-archaeological mitigation in relation to impacts to contemporary cultural values.

ES6 Management and mitigation measures

Based on the findings of this ACHA, a series of management measures are proposed to protect cultural heritage values. These measures are outlined in detail in Table 11.1 and should be read in conjunction with guiding principles in Annexure G. They include the development of an Aboriginal cultural heritage management plan (ACHMP) to provide a framework for such activities, as well as direction on its content; development of a cultural values mitigation strategy in discussion with Elders and knowledge-holders to offset adverse impacts to cultural places and values; and the development of an interpretation strategy and plan to provide acknowledgement and other visual / educational opportunities for the Aboriginal and broader local community.

TABLE OF CONTENTS

Executive Summary **ES.1**

1 Introduction **1**

1.1 Background 1

1.2 Assessment guidelines and requirements 1

1.3 Limitations and assumptions 4

2 Project description **7**

3 Aboriginal community consultation **9**

3.1 Key findings 9

3.2 The process 10

3.3 This project 11

3.4 Aboriginal stakeholders feedback and outcomes 14

4 Environmental context **18**

4.1 Key findings 18

4.2 General 18

4.3 Landscape overview 19

4.4 Land use and disturbance 26

4.5 Geotechnical Assessment 26

5 Ethnography **33**

5.1 Key findings 33

5.2 Documentary ethnography 33

5.3 Cultural values mapping 45

5.4 Information provided by RAPs 47

6 Archaeological context **48**

6.1 Key findings 48

6.2 Regional context 49

6.3 Local context 50

6.4 Previous studies 54

6.5 AHIMS data 62

6.6 Predictive model 68

7 Field investigations **70**

7.1 Key findings 70

7.2 Archaeological survey 71

7.3 Test excavations 92
8 The archaeological and cultural resource 106
8.1 Key findings 106
8.2 Results and synthesis 107
9 Significance assessment 114
9.1 General 114
9.2 Statement of significance 115
10 Impact assessment 122
10.1 Key findings 122
10.2 Avoidance and minimisation of impacts through design refinements 122
10.3 Potential impacts 123
10.4 Aboriginal heritage impact 123
10.5 Intergenerational loss/equity 125
11 Management strategy and recommendations 130
11.1 Key findings 130
11.2 Management strategy 130
11.3 Recommendations 133
References 136
Abbreviations 140
Glossary 142

Annexures

Annexure A Legislative context A.1
Annexure B Aboriginal community consultation B.1
Annexure C Historical aerials C.1
Annexure D Archaeological background D.1
Annexure E Field investigation E.1
Annexure F Cultural values mapping F.1
Annexure G Aboriginal cultural heritage management plan guiding principles G.1

Tables

Table 1.1 Commonwealth and State legislation relevant to the project 2
Table 1.2 ACHA related SEARs 4
Table 3.1 Summary of Aboriginal consultation undertaken for the project 13
Table 3.2 List of registered Aboriginal parties for the project 13
Table 4.1 Soil landscapes of the project area 21
Table 5.1 Cultural places within, or near the project area 47

Table 6.1	AHIMS search results	64
Table 6.2	Registered AHIMS sites within the project area	64
Table 7.1	Registered Aboriginal Party representatives present during the survey	72
Table 7.2	Survey summary	80
Table 7.3	Registered Aboriginal party representatives present during the excavation	93
Table 7.4	Summary of OSL ages recovered from the test excavations	98
Table 7.5	Summary of OSL ages by depth below surface, and only presenting the preferred modelled ages from Table 6.5	99
Table 9.1	A summary of criteria used to assess the cultural significance (OEH 2011, 8–10)	114
Table 9.2	Significance of Aboriginal objects and/or sites identified within the project area	118
Table 10.1	Summary of potential impacts to Aboriginal objects and/or sites by the project	126
Table 11.1	Management and mitigation measures for Aboriginal cultural heritage	134
Table D.1	Site definitions and recordings	D.1

Figures

Figure 1.1	Regional setting	5
Figure 1.2	Local setting	6
Figure 2.1	Project overview	8
Figure 4.1	Geology	27
Figure 4.2	Soil landscapes	28
Figure 4.3	Topography and hydrology	29
Figure 4.4	Slope analysis	30
Figure 4.5	Bathymetry	31
Figure 4.6	Vegetation	32
Figure 6.1	AHIMS sites	67
Figure 7.1	Survey results	91
Figure 7.2	Proposed test excavation	104
Figure 7.3	Test excavation results	105
Figure 8.1	All Aboriginal sites and places identified within the project area	112
Figure 8.2	Archaeological and cultural resource within the construction envelope – areas of past foci	113
Figure 10.1	Potential cultural heritage impacts by the Proposal	129

Plates

Plate 5.1	The AIATSIS (1996) *Map of Indigenous Australia*. The project area is located immediately west of Lithgow in this plate	34
Plate 5.2	"A native chief of Baturst [Bathurst]" engraving of original drawing by JW Lewin (1820)	37
Plate 5.3	Burial Place of the Last of the Native Kings at Wallerawang	40

Plate 5.4	Historical parish map, 1841. Note the label Mount Walker to give an indication of the project area	42
Plate 5.5	Historical parish map, 1897. Note the label Mount Walker to give an indication of the project area	42
Plate 5.6	Historical parish map, 1905. Note Mount Walker in the small red square to give an indication of the project area	43
Plate 6.1	Cross-section of the valley containing rock shelters associated with Blackfellows Hand Shelter	52
Plate 6.2	Example of quartz, mudstone and volcanic artefacts from Long Swamp 1 (left) and Long Swamp 2 (right), eroding from access tracks (Source: Rich et al 1985, pp.21-22)	53
Plate 6.3	Areas surveyed for Pacific Power proposed upgrade of Lyell Dam	55
Plate 6.4	Location of sites and isolated finds	55
Plate 6.5	Location of sites around Lyell Dam after McDonald and Barton (1995), including LD3, LD4, LD8 and LD12	57
Plate 6.6	Location of sites LD13 and LD14 in relation to the current and proposed deviation of the fire trail	59
Plate 6.7	LD13 site plan	59
Plate 6.8	LD14 site plan	60
Plate 7.1	Mount Walker steep slope - view north in mid far eastern portion of the construction envelope	74
Plate 7.2	View west over slopes of Mount Walker towards Farmers Creek and Lake Lyell	74
Plate 7.3	View south across western terrace of Farmers Creek	75
Plate 7.4	View east along vehicle track on ridgeline of Mount Walker	75
Plate 7.5	Proposed accommodation area, flooded - view west to Lake Lyell	75
Plate 7.6	Proposed accommodation area, ridge flat above original Coxs River - view west to Lake Lyell	75
Plate 7.7	LD8 alluvial terrace landform - view north to Farmers Creek	76
Plate 7.8	LD8 artefacts	76
Plate 7.9	LD14 landform – ridge flat/spur - view west	76
Plate 7.10	LD13 alluvial terrace landform - view north-west	76
Plate 7.11	Sir Thomas Mitchell Drive, disturbed on side of road - view south	76
Plate 7.12	Sir Thomas Mitchell drive rock outcrops and steep onto private property - view west	76
Plate 7.13	Lake Lyell dam crossing and carpark - view north in southern portion of the construction envelope	78
Plate 7.14	Magpie Hollow Road near the Lake Lyell accommodation camp option – view east	78
Plate 7.15	Introduced fill on the side of Magpie Hollow Road demonstrating that the roadside has been cleared and filled – view south-west	78
Plate 7.16	View east from the north-west corner of Pottery Estate, located at the foot slope of the hills and ridgelines of Hassans Walls on the central southern edge of Lithgow	78
Plate 7.17	Waterlogging creating a dam in the south west corner of Pottery Estate – view south	79

Plate 7.18	Piles of debris and old building material and cleared soil across the property – view west	79
Plate 7.19	Vehicle tracks have been created to access properties adjacent to the area in the west – view west	79
Plate 7.20	Pottery estates has been entirely cleared of any remnant vegetation and is majority grass across the area – view north	79
Plate 7.21	Slopes and rock outcrops along either side of Magpie Hollow Road at the ridgeline east of South Bathurst Road. Immediately adjacent to road with >10 m to fenceline - view east	80
Plate 7.22	Disturbed exposure on southern side of Magpie Hollow Road at the ridgeline east of South Bathurst Road - view south	80
Plate 7.23	View north-east to Farmers Creek, across LL AS1	82
Plate 7.24	Artefacts in LL AS1	82
Plate 7.25	Artefacts on edge of Farmers Creek	82
Plate 7.26	Artefacts from LL AS2	82
Plate 7.27	View northeast along terrace and vehicle track	83
Plate 7.28	View northeast along bank of Farmers Creek - artefacts identified in bank and creek bed (under water)	83
Plate 7.29	Broken chert blade in LL AS3	83
Plate 7.30	Quartz artefacts in LL AS3	83
Plate 7.31	Location of potential hearth - view west across terrace	84
Plate 7.32	Potential hearth with artefacts eroding out of the surface	84
Plate 7.33	View east across ridge flat from vehicle track	84
Plate 7.34	View south across ridge flat showing grass cover and limited exposures	84
Plate 7.35	View south-west across area of PAD to Farmers Creek. This area has been cleared for water monitoring	85
Plate 7.36	View west across area of PAD to Farmers Creek, showing vegetation coverage and limited visibility	85
Plate 7.37	View north-west towards Lake Lyell along vehicle track	86
Plate 7.38	Quartz artefacts in LL AS6	86
Plate 7.39	Quartz artefact	86
Plate 7.40	View south-east down slope of Mount Walker	86
Plate 7.41	Scar on tree from potential cultural modification (scar on western side of tree)	87
Plate 7.42	View south-east down slope of Mount Walker	87
Plate 7.43	Scar on eucalypt tree from potential cultural modification (scar on northern side of tree)	88
Plate 7.44	View north from tree towards Farmers Creek	88
Plate 7.45	View east from site exposure along Farmers Creek	88
Plate 7.46	Broken chert blade in site assemblage	88
Plate 7.47	View north towards Farmers Creek and slopes of Mount Walker	89
Plate 7.48	View south-west across ridge flat and spur showing thick ground cover and limited exposures	89

Plate 7.49	View west towards Farmers Creek - terrace covered in blackberries, no visibility or exposures	90
Plate 7.50	View north along terrace	90
Plate 7.51	Ridge flat/spur – TP 101 north section	96
Plate 7.52	Ridge flat/spur – TP 7 east section	96
Plate 7.53	Terrace – TP 73 north section	97
Plate 7.54	Terrace – TP 51 north section	97
Plate 7.55	Slopes – TP 81 north section	97
Plate 7.56	Slopes – TP 105 north section	97
Plate 7.57	Photographs of each test pit from which samples were collected for OSL dating	100
Plate 7.58	A composite figure of the cultural assemblage showing the main raw material and tool types by depth. OSL ages presented in Section 6.3.2ii are also presented	102
Plate 7.59	Examples of ridge-straightening flakes and blades in the assemblage (scale=1 cm)	103
Plate 7.60	Examples of complete and broken Bondi points (scale 1 cm)	103
Plate 7.61	Examples of broken and complete geometric microliths in the assemblage (scale 1 cm)	103

1 Introduction

1.1 Background

EnergyAustralia Portfolio Holdings Pty Ltd (EnergyAustralia) in partnership with EDF power solutions Australia (EDFA), referred to as Lake Lyell Project Pty Ltd (LLP) as trustee, is developing the Lake Lyell Pumped Hydro Energy Storage (PHES) Project (the project). The project will have the capacity to store up to 3,080 megawatt hours (MWh) of energy and generate at 385 megawatts (MW) for 8 hours or generate up to around 440 MW for a shorter period. At a basic level, it will consist of upper and lower water reservoirs, a pipeline connecting them, and a hydro-electric power station connected to the national energy grid that is capable of generating or consuming electricity.

The project is located approximately 5 kilometres (km) west of Lithgow and 110 km west of the Sydney central business district, shown in Figure 1.1 and Figure 1.2. The project takes advantage of existing infrastructure (i.e. Lake Lyell) associated with Mt Piper power station which will be decommissioned in the coming decades and allows Lake Lyell to continue to serve a specific purpose in electricity generation (consistent with its existing use).

In June 2024, the Minister for Planning and Public Spaces declared the project to be critical State significant infrastructure (CSSI). Accordingly, approval for the project is required under Part 5, Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This requires the preparation of an environmental impact statement (EIS) for the project in accordance with Secretary's environmental assessment requirements (SEARs) and the approval of the Minister. EMM Consulting Pty Limited (EMM) has been engaged by LLP to prepare the EIS. Updated SEARs were issued on 17 November 2025 and remain unchanged for Aboriginal heritage.

This Aboriginal cultural heritage assessment (ACHA) is an appendix to the project's EIS and should be read in conjunction with it. The ACHA addresses the SEARs issued for the project.

1.2 Assessment guidelines and requirements

EMM has been engaged to undertake an ACHA to address the SEARs, which includes consultation with the local Aboriginal community, investigation and characterisation of cultural materials, and providing management and mitigation measures where the project may adversely affect them. Specifically, the principal objectives of the ACHA were to:

- liaise and consult with key Aboriginal community members and knowledge holders to identify areas and places of cultural value within or in the vicinity of the project area
- compile a review of existing environmental, historical and archaeological information for the project area, by identifying and summarising known and previously recorded Aboriginal heritage places, cultural values areas and landforms of archaeological interest in its immediate surrounds
- determine if any Aboriginal objects, places, cultural values areas, or areas of archaeological potential are present (or are likely to be present) within the project area, as well as areas of existing disturbance, through ground-truthing
- identify the type, nature, and extent of any Aboriginal sites, objects, archaeological deposits, potential archaeological deposits, and cultural values areas within the project area
- map the locations of known and potential Aboriginal sites, objects and deposits and cultural values areas identified
- assess the archaeological and cultural significance of the project area

- assess and identify heritage constraints and opportunities and the potential impacts of the project
- identify and recommend measures to mitigate any heritage impacts and risks to the project.

This report documents the actions and findings of the ACHA over the period June 2023 to September 2025 inclusive.

This ACHA has been prepared with reference to relevant guidelines, policies and industry requirements, and following consultation with stakeholders, including relevant government agencies and the community. Guidelines and policies referenced are as follows:

- *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code) (DECCW 2010a)
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011)
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010b).

There are several Commonwealth and State Acts (and associated regulations) that manage and protect Aboriginal cultural heritage. These are summarised in Table 1.1.

Table 1.1 Commonwealth and State legislation relevant to the project

Legislation	Description	Relevant to the project?	Details
Commonwealth			
Environment Protection and Biodiversity Conservation Act 1999	Recognises sites with universal value on the World Heritage List (WHL). Protects Indigenous heritage places with outstanding heritage value to the nation on the National Heritage List (NHL), and significant heritage value on the Commonwealth Heritage List (CHL).	No	There are no Indigenous heritage places within the project area that are listed on the WHL, NHL, or the CHL.
Native Title Act 1993	Administers rights and interests over lands and waters by Aboriginal people. Provides for negotiation and registration of Indigenous Land Use Agreements (ILUAs). Often used in NSW to identify relevant stakeholders for consultation.	Yes	There is one active (accepted for registration) claim that includes the project area – Warrabinga-Wiradjuri #7 (NC2018/002). Representatives of this organisation were consulted as part of the ACHA.
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	Preserves and protects areas and objects of particular significance to Aboriginal people that are under threat from injury or desecration.	No	There are no areas or objects within the project area subject to a Declaration under the Act.

Legislation	Description	Relevant to the project?	Details
State			
Environmental Planning and Assessment Act 1979	Requires environmental impacts, including to Aboriginal heritage, to be considered in land use planning. Provides for the development of environmental planning instruments, including State Environmental Planning Policies and Local Environmental Plans.	Yes	The proposed development is being assessed as a CSSI project under Part 5, Division 5.2 of the EP&A Act, and is subject to project-specific environmental assessment and reporting requirements (refer to Chapter 1).These requirements (SEARs) stipulate that Aboriginal cultural heritage assessment is required (in accordance with standard Heritage NSW procedures and guidelines) to assess whether the project has the potential to impact on Aboriginal objects, sites, or places of Aboriginal heritage significance.
National Parks and Wildlife Act 1974	Provides blanket protection for all Aboriginal objects and declared Aboriginal places. Includes processes and mechanisms for development where Aboriginal objects are present, or where Aboriginal Places are proposed for harm.	Yes	While elements of this Act do not apply to CSSI projects, the potential impact on Aboriginal objects still requires consideration as a part of the assessment of such projects.
Aboriginal Land Rights Act 1983	Establishes Local Aboriginal Land Councils (LALCs). Allows transfer of ownership of vacant crown land to a LALC. The Office of the Registrar, *Aboriginal Land Rights Act 1983* (ORALRA), registers Aboriginal land claims and maintains the Register of Aboriginal Owners. Often used in NSW to identify relevant stakeholders for consultation.	No	A request to search the Register of Aboriginal Owners was made to the ORALRA on 23 May 2024 and another on 19 August 2025. The project area does not appear to have Registered Aboriginal Owners pursuant to Division 3 of the Act. The relevant LALC has been consulted extensively on the project.

1.2.1 SEARs

This ACHA has been prepared in accordance with the requirements of the NSW Department of Planning, Housing and Infrastructure (DPHI) and relevant agencies, which are set out in the SEARs for the project, issued on 25 July 2025. Updated SEARs were issued on 17 November 2025 which remain unchanged for Aboriginal heritage. The SEARs identify matters which must be addressed in the EIS. Individual requirements relevant to this ACHA and where they are addressed in this report are listed in Table 1.2.

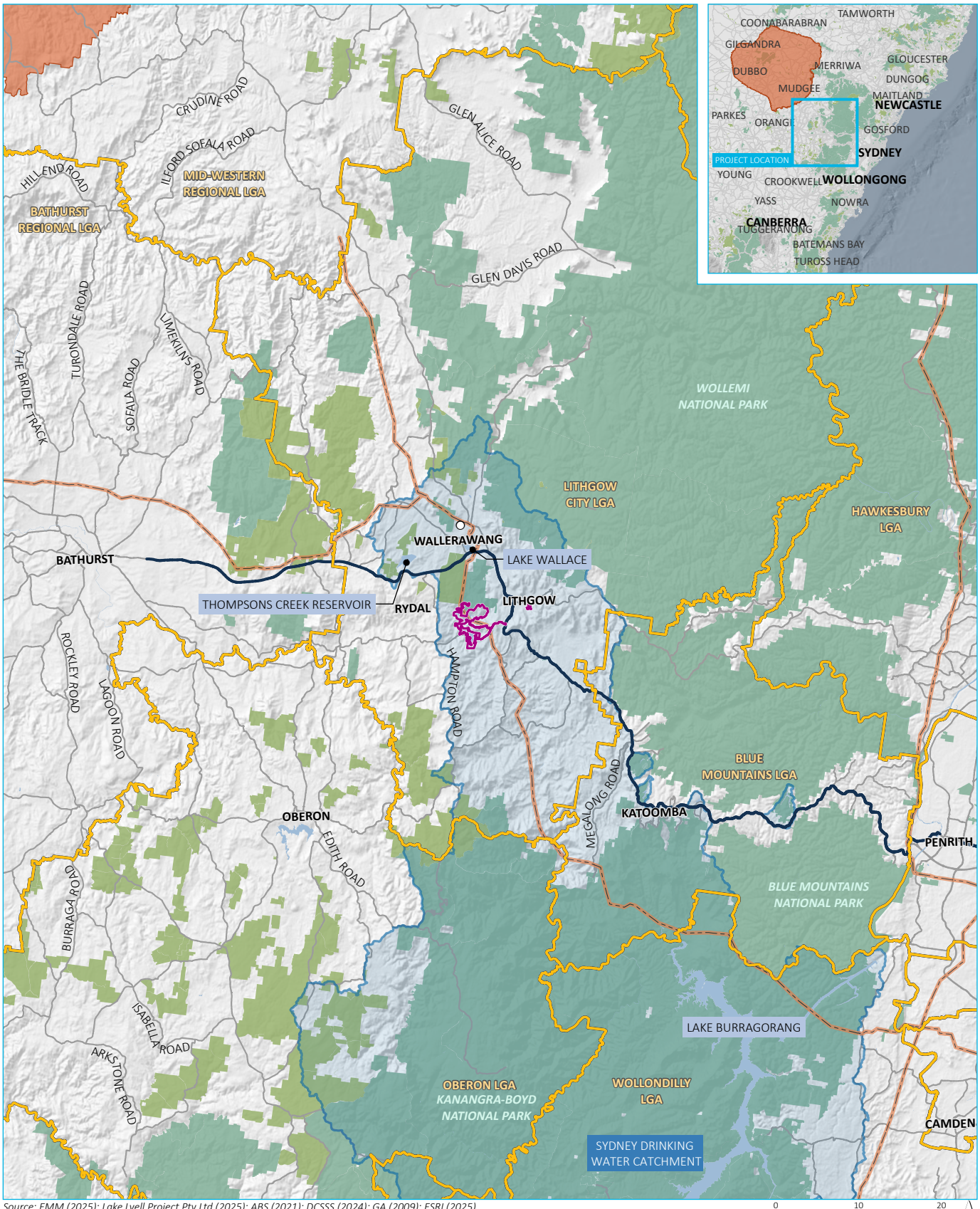
Table 1.2 ACHA related SEARs

Requirements	Section addressed
Heritage - including	
• An assessment of the impact to Aboriginal cultural heritage items (archaeological and cultural) in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011) and the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010) including results of archaeological test excavations (if required).	This report
• Provide evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures), having regard to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010).	Chapter 3 and Annexure B

1.3 Limitations and assumptions

This report is based on existing and publicly available environmental and archaeological information (including Aboriginal Heritage Information Management System (AHIMS) data) and reports about the project area. The background research did not include any independent verification of the results and interpretations of externally sourced existing reports (except where ground-truthing was undertaken). The report further makes archaeological predictions based on these existing data and targeted ground-truthing, and which may contain errors depending on the accuracy of these third-party studies and the extent of ground-truthing investigations.

This report does not consider historical and/or built heritage unless specifically related to Aboriginal heritage values. Such heritage items are addressed in the Statement of Heritage Impact (SOHI) appended to the EIS.



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); ABS (2021); DCSSS (2024); GA (2009); ESRI (2025)

0 10 20 km

GDA2020 MGA Zone 56

N

\\emm.local\vxdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA005_RegionalSetting\ACHA005_RegionalSetting_20250804_05.aprx 7/10/2025

KEY

- Project area

Existing environment

- Mt Piper Power Station
- Major road
- Great Western Highway
- 330 kV transmission line
- Named waterbody
- NPWS reserve
- State forest
- Local government area
- Sydney Drinking Water Catchment
- Central West Orana Renewable Energy Zone

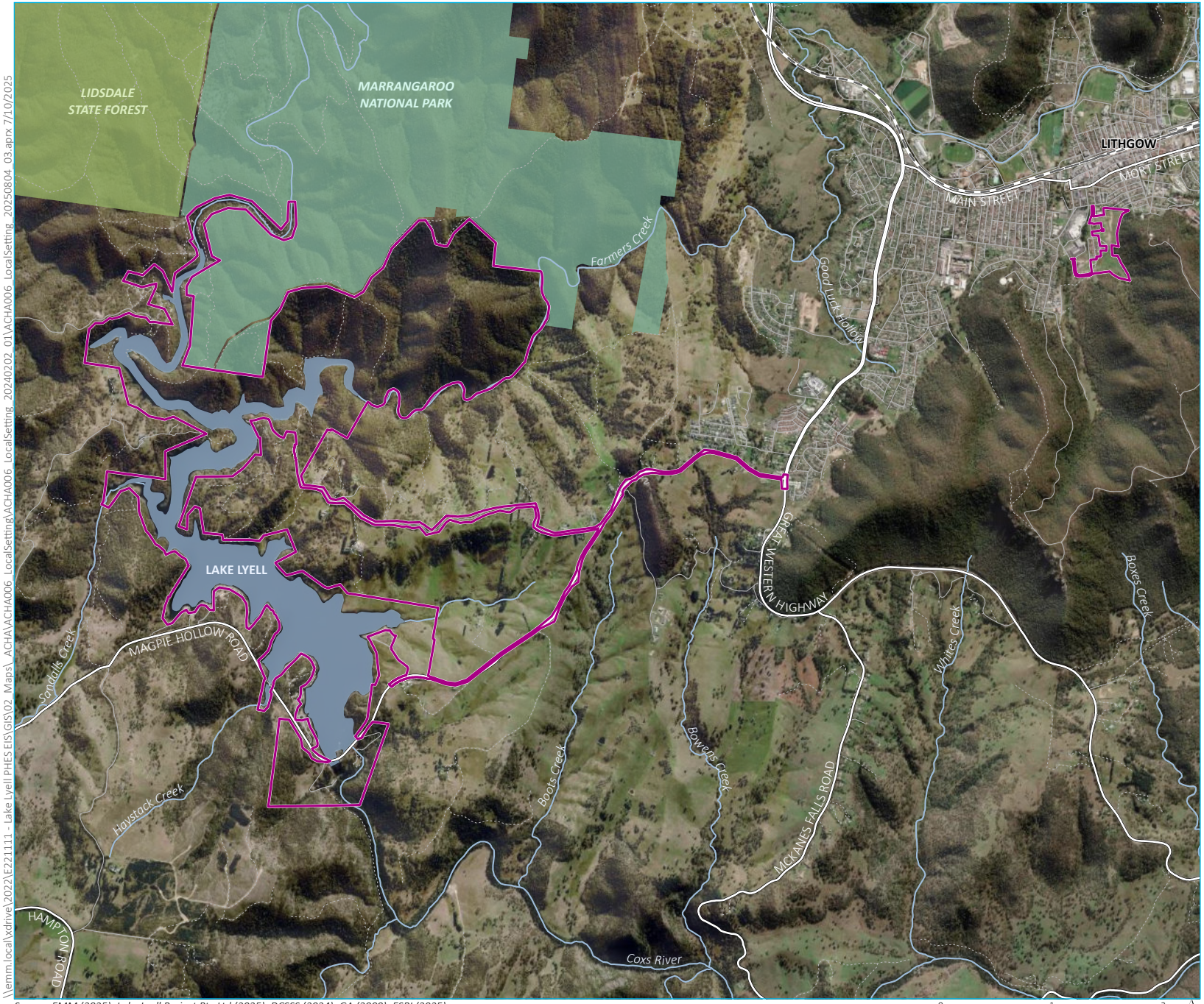
INSET KEY

- Major road
- NPWS reserve
- State forest
- Central West Orana Renewable Energy Zone

Regional context

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 1.1

EMM
creating opportunities



KEY

- Project area

Existing environment

- Rail line
- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); ESRI (2025)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA006_LocalSetting\ACHA006_LocalSetting_20240202_01\ACHA006_LocalSetting_20250804_03.aprx 7/10/2025

Local context

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 1.2

EMM
creating opportunities

2 Project description

A detailed description of the project, including an overview of its design, construction and operation is provided in the project's EIS. The EIS (specifically Chapter 3 and Appendix B) should be read in conjunction with this report. A summary of the project's key elements is provided below.

The project design, as shown in Figure 2.1, can be broadly categorised into:

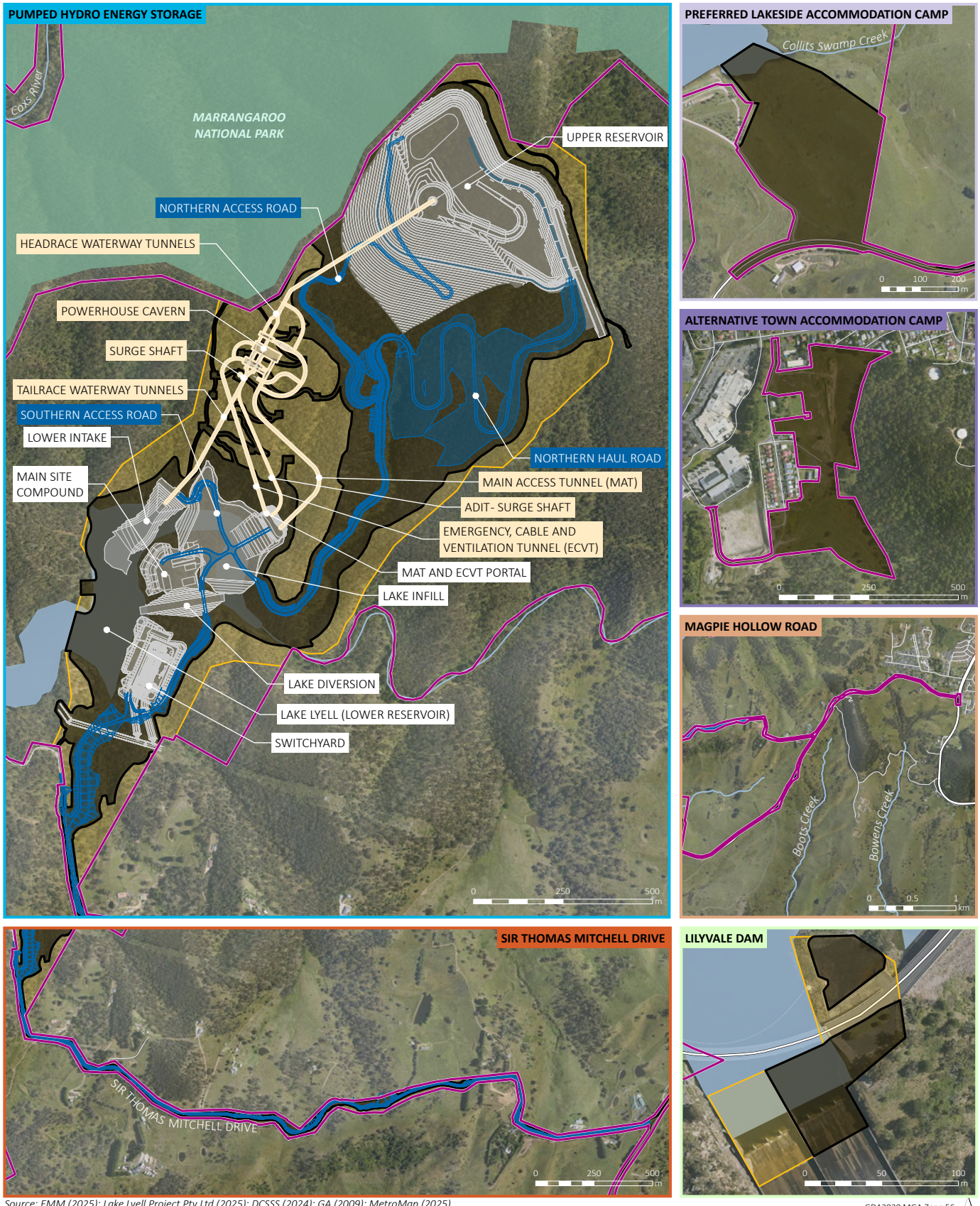
- pumped hydro generation components – including a 5.3 gigalitre (GL) upper reservoir to be constructed behind the southern ridge of Mount Walker, a 33.5 GL lower reservoir (existing Lake Lyell), inlet/outlet structures, and an underground powerhouse, surge shaft and waterway tunnels
- transmission connection components – including a new high voltage switchyard and connection to the existing 330 kilovolt (kV) transmission line that runs through the site
- site access and ancillary facilities – including upgrade of existing and construction of new access roads and bridges, a diversion and infill of a section of Lake Lyell, administration and utilities
- other construction components or works – including geotechnical investigations, temporary workforce accommodation, site work pads, laydown areas and facilities, and spoil management.

Construction will be completed in stages (refer to Figure 2.1), including:

- pre-construction / enabling works – consisting of initial access works (internal and external roads), geotechnical investigations, site establishment and preparation of the worker's accommodation camp
- main works – consisting of all other construction activities needed to enable operation of the project.

During operation, the project will act as an electrical energy storage system through the conversion of electrical to kinetic energy to gravitational energy and back via water as it is transferred from the elevated upper reservoir to a lower reservoir. The project will provide services to the wholesale 'spot' market on the National Electricity Market (NEM), and support ancillary services used to manage the power system reliably.

After the 80 to 100-year design life of the project, the asset may remain viable for a plant refurbishment and extension of life as has been seen for other older assets globally. Following the plants final refurbishment or once it has reached the end of its serviceable life then the project would look to return the site to a more natural state and encourage community beneficial use.

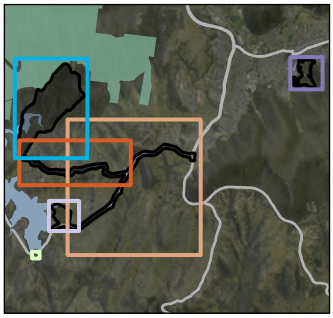


Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA007_ProjectLayout\ACHA007_ProjectLayout_20251118_06.aprx 19/11/2025



KEY

- Project area
- Permanent road
- Above ground design
- Underground design
- Construction envelope
- Disturbance footprint

Existing environment

- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve

Project overview

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 2.1

EMM
creating opportunities

3 Aboriginal community consultation

3.1 Key findings

- The project assessment adopted the processes and methods outlined in Heritage NSW's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010), as well as additional project specific communication strategies to promote transparent and frequent two-way dialogue between the Aboriginal community and the project team. These latter activities included several Aboriginal focus group meetings (face-to-face) throughout the assessment process, other meetings as requested by the local Aboriginal community, and a cultural values mapping investigation with Elders and key knowledge holders.

- As required by Heritage NSW guidelines, consultation included provision of information to registered Aboriginal parties (RAPs), and notification of the various field survey and excavation activities associated with the project. Discussions with Heritage NSW were also undertaken primarily in relation to Aboriginal consultation and concerns identified by RAPs and management of recovered cultural materials from the investigations.

- The consultation process initially identified 35 Aboriginal stakeholder organisations who may have had an interest in the project. Following notification of these organisations, 22 responded as requesting to be consulted on the project (and of these, 21 sought to be formally registered as an Aboriginal party for the project). These included a number of local Wiradjuri traditional owners based in Lithgow, Mudgee, Dubbo, Bathurst, and/or Wellington, as well as Aboriginal communities from the broader region interested in cultural heritage management. A further Aboriginal individual, Mr. Adrian Williams, was consulted and provided inputs into the report, but preferred not to be documented as a RAP.

- Opportunity for Aboriginal involvement in consultation for the project was provided throughout the ACHA, including:

    - attendance at three face-to-face and/or online meetings during key phases of the project

    - participation in micro-siting of geotechnical investigations across the project

    - participation in a two-week field survey of the project area in October and November 2023, and additional activities in August 2025

    - participation in a four-week archaeological test excavation of the project area in February and March 2024

    - participation for Elders and key knowledge-holders to undertake interviews with a highly experienced anthropologist to discuss cultural values.

- Ultimately, over 400 interactions have been undertaken with the RAPs across these opportunities. These included representatives of eight organisations, including the Warrabinga Native Title Claimants Aboriginal Corporation, Mingaan Lithgow Aboriginal Corporation, Wingarra Wilay Aboriginal Corporation, North East Wiradjuri Corporation, Girragirra Murun Aboriginal Corporation, Thomas Dahlstrom, Gallanggabang Aboriginal Corporation and Barrinang Aboriginal Corporation. Bathurst LALC were consulted and invited but could not attend any of these opportunities.

- Discussions with the RAPs have been extensive and wide-ranging over the 20-month assessment process. Feedback from the RAPs was less supportive of the project, with ongoing concerns over the impacts of the project on intangible cultural values and specific flora and fauna. Mitigation measures around these issues have formed a focus of discussions, and opportunity for ongoing on-Country access and management of Country and resources have been of interest to Aboriginal participants to off-site perceived impacts. Who speaks for Country and who participated in the field work has also formed ongoing robust discussions throughout the assessment. More recently, the views of several Aboriginal participants have seen increasing support following ongoing efforts of impact avoidance, involvement in the development of these mitigation measures, and broader opportunities for the Aboriginal community.

A summary of the consultation process is provided below, and full documentation of the consultation process is provided in Annexure B.1.

3.2 The process

Two parallel and overlapping consultation processes were undertaken as part of the ACHA. As a requirement of the SEARs, consultation was undertaken in accordance with Heritage NSW guidelines (refer to Section 3.2.1). In addition, due to the size, complexity and fluidity of the project, numerous other communication strategies were employed to improve and maintain dialogue with the local Aboriginal community (refer to Section 3.2.2).

3.2.1 Heritage NSW guidelines

Aboriginal consultation for this project has been undertaken in accordance with procedures set out in the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010). These guidelines identify a five-stage process.

1. Pre-notification – identification of the Aboriginal individuals and/or communities relevant to the project area by contacting several state government agencies.

2. Notification – contacting all Aboriginal individuals and/or communities identified in Stage 1 to determine their interest in being consulted during the project. This includes direct communication and the placement of advertisements in local media seeking further expressions of interest from Aboriginal individuals and/or communities that may have been missed through Stage 1. Those Aboriginal individuals and/or communities that wish to be consulted become a 'registered' Aboriginal party (RAP).

3. Presentation of project information/assessment methodology – briefing RAPs about the project and scope of any Aboriginal heritage assessment and investigations. This is usually undertaken through written correspondence, but can include meetings, and may undergo several iterations through the project as the nature of the assessment changes (e.g. surface ground-truthing may lead to a requirement for test excavations).

4. Impacts and mitigation strategies – discussion of potential impacts to cultural materials and mitigation options with the RAPs prior to developing the ACHA. This is often undertaken either onsite at the end of any field program and/or as part of Stage 4.

5. Report review – the RAPs are provided an opportunity to review and comment upon the draft ACHA, to contribute input into the overall findings, significance and management of cultural heritage.

The consultation process for this project had two aims:

- to comply with the mandated consultation procedures to obtain input on the ACHA process

- to identify cultural places and intangible values that may be affected by the project.

3.2.2 Other communication strategies

In addition to the required steps outlined in Section 3.2.1, the project team implemented a range of other strategies to promote transparent and frequent two-way dialogue between the Aboriginal community and the project.

Specifically, the strategy included the following additional activities:

- Face-to-face meetings – Aboriginal focus group (AFG) meetings were held to promote two-way dialogue, allow project flexibility and to maintain regular interaction with the RAPs. These were held during the initial stages of the project, and during report finalisation, at a location within the project area and/or nearby venue, with options for online and/or phone meetings as required.

- Benefit Sharing – meetings were held with three organisations sought by LLP – Mingaan Aboriginal Corporation, Barrinang and One Mob in February 2024 as part of the project's benefit sharing discussions (refer Chapter 5 of the EIS).

- Regular catch ups and a local base of operations – LLP has a locally based Community Liaison Officer who routinely liaises with locally based Aboriginal individuals and organisations as part of broader operations, and increasingly for this project. This enables ongoing consultation that has extended over years and enables regular liaison and discussion to be undertaken.

- Field investigation participation – locally based RAPs were offered the opportunity to attend a range of field survey and test excavations activities carried out across the project area.

- Cultural values mapping – a dedicated investigation of intangible and cultural places, stories and values by an experienced anthropologist in consultation with several Elders and/or knowledge-holders across the Lithgow, Mudgee and Bathurst region. This enabled a broader range of the local Aboriginal community that would otherwise have been unable to provide input to the project.

3.3 This project

3.3.1 Liaising with Heritage NSW

As part of the ACHA, various interactions with Heritage NSW have been undertaken:

- provision of information of the registered Aboriginal stakeholders involved in the project following the notification process (refer to Table 3.1) – 14 June 2023 (Annexure B.1 and Annexure B.4)

- notification of the initiation of archaeological test excavations for the project as required by the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* guidelines – 14 February 2024 (Annexure B.1)

- discussions over concerns raised by an Aboriginal party over their level of involvement in the project – 27 March 2024

- discussions over concerns raised by an Aboriginal party over the guidelines and process that EMM are following and the change of temporary storage location of the artefacts from the EMM Sydney office to Mt Piper – February to April 2025

3.3.2 Liaising with the RAPs

Aboriginal consultation for this project has been undertaken in accordance with procedures set out in Section 3.2 and included over 400 interactions with the RAPs between June 2023 and August 2025 (Table 3.1); and over 100 person days of on-site participation.

Initial stages of the consultation process identified 35 Aboriginal individuals and/or organisations in the region (Annexure B.2). Following notification, 18 organisations and/or individuals registered an interest in the early stages of the project (Table 3.2, Annexure B.3). The RAPs include local Wiradjuri Aboriginal organisations and/or individuals based in Lithgow, Mudgee, Wellington, Bathurst and/or immediate surrounds, as well as a smaller proportion that are based in the wider region and have interest in cultural heritage management. The project has registered any Aboriginal organisation and/or individual throughout the project regardless of when they have become known or identified their interest. A further three Aboriginal individuals and/or organisations registered throughout the project as activities identified their interest, including Wiradyuri Traditional Owners Central West Aboriginal Corporation (October 2023), Bill Allen (October 2023) and Barrinang (April 2024). Adrian Williams was also integrated into the cultural values components of the project in early 2024 but opted not to formally register for the project. Where involvement has occurred late in the project, on-Country opportunities have been offered, but are more limited than those that became involved in the beginning of the ACHA process. Ultimately, this has resulted in some 21 Aboriginal individuals and/or organisations being registered as RAPs for the project.

Table 3.1 provides a summary of the main steps undertaken to conform with Heritage NSW guidelines.

A summary of the additional activities outlined in Section 3.2.2 included:

- Aboriginal focus group meeting 1: introduction to project and assessment aims and methods - October 2023
- Cultural values mapping study - 28 September 2023 to 12 June 2024. This included six in-person meeting with Elders and key knowledge holders to initially discuss the project, and then potential impacts and mitigation measures (Annexure B.1 and Annexure F)
- field survey of project area with the participation of six RAPs - 30 October to 9 November 2023
- Aboriginal focus group meeting 2: project update - February 2024
- test excavations of the project area with the participation of seven RAPs - 26 February to 27 March 2024.
- Aboriginal focus group meeting 3: presentation of the report, its findings and proposed future management measures - September 2024
- consultation and subsequent relocation of artefacts from their temporary storage location at the EMM Sydney office to a new temporary storage location on-Country at Mt Piper Energy Expo - February to March 2025
- field survey of additions to the project area - 5 August 2025.
- Aboriginal focus group meeting 4: presentation of the updated project area that includes the proposed expansion of Magpie Hollow Road and the addition of a second accommodation town camp option in Lithgow - 11 August 2025.

Table 3.1 Summary of Aboriginal consultation undertaken for the project

Consultation Stage	Description	Date Initiated	Date Completed	Notes
1	Government Agency Pre-Notification	9 June 2023	14 June 2023	Additional details provided in Annexure B.4
	Advertisement in *The Lithgow Mercury*	23 June 2023	7 July 2023	A tear sheet is provided in Annexure B.4
	Notification and registration of potential Aboriginal stakeholders	22 June 2023	6 July 2023	Additional details are provided in Annexure B.4
	Advising Heritage NSW and Bathurst LALC of RAPs	27 July 2023	-	Additional details are provided in Annexure B.4
2/3	Presentation of information about the proposed project; and gathering information about cultural significance	1 September 2023	28 September 2023	Additional details are provided in Annexure B.5
	Field survey	6 October 2024	9 November 2024	Additional details are provided in Section 7
	Cultural values mapping	27 July 2023	12 June 2024	Additional details are provided in Section 5 and Annexure F
	Distribution of a supplementary test excavation methodology for review and comment	11 January 2024	8 February 2024	Additional details are provided in Annexure B.5
	Test excavations	1 February 2024	27 March 2024	Additional details are provided in Section 7
	Field survey of additions to study area	5 August 2025	5 August 2025	Additional details are provided in Section 7
4	Review of draft ACHA report	26 August 2024	23 September 2024	Additional details are provided in Annexure B.6
	Review of the updated draft ACHA with the revised project area	8 October 2025	8 December 2025	Additional details are provided in Annexure B.6.

Table 3.2 List of registered Aboriginal parties for the project

Organisation	Contact	Location	Date of registration
Didge Ngunawal Aboriginal Corporation	Lillie Carroll	Sydney	22 June 2023
Kamilaroi Yankuntjatjara Working Group	Phil Khan	Emu Plains	23 June 2023
Wingarra Wilay Aboriginal Corporation	Raymond Moon	Dubbo	23 June 2023
North East Wiradjuri Corporation	Virginia Doig	Kandos	23 June 2023
[redacted]	[redacted]	Rouse Hill	25 June 2023
Konanggo Aboriginal Cultural Heritage Services	Robert Young	Windsor	26 June 2023
Girragirra Murun Aboriginal Corporation	Diana Astin	Wellington	26 June 2023
Gallanggabang Aboriginal Corporation	Melissa Chown	Orange	26 June 2023

Organisation	Contact	Location	Date of registration
Booral Maliyan	Bradley R Bliss	Orange	26 June 2023
Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC)	Bradley R Bliss	Orange	26 June 2023
Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Kandos	26 June 2023
Yurwang Gundana Consultancy Cultural Heritage Services	Merekai Bell	Windsor	28 June 2023
Thomas Dahlstrom Cultural Heritage Consult	Thomas Dahlstrom	Glebe	28 June 2023
-	Tim Stubbs	Blaxland	3 July 2023
Yulay Cultural Services	Arika Jalomaki	Campbelltown	4 July 2023
Mingaan Aboriginal Corporation	Helen Riley	Lithgow	6 July 2023
Bathurst Local Aboriginal Land Council	Tonilee Scott	Bathurst	6 July 2023
Murrabidgee Mullangari	Darleen Johnson	Carlingford	10 July 2023
Wiradyuri Traditional Owners Central West Aboriginal Corporation	Jade Flynn	Bathurst	27 October 2023
-	Bill Allen	Bathurst	27 October 2023
Barrinang	Rick Slaven	Lithgow	2 April 2024

Note: Mr Adrian Williams was also consulted upon the project but sought not be formally registered; and is therefore not included here.

3.4 Aboriginal stakeholders feedback and outcomes

Aboriginal consultation has been extensive between June 2023 and December 2025, and included over 400 interactions, including four discrete meetings with RAPs in groups or one-on-one meetings (refer to Annexure B), and some 100 days of on-site activity. As such, discussions have been wide-ranging, including focussing on who is relevant to the project area, the methods and approach to field investigation, the potential impacts to cultural values of the project area, and finally into the management of identified cultural sites and values. Where captured, minutes of the meetings are presented Annexure B.6 and Annexure F.

In summary, the main discussion topics have included the following:

- Impacts to cultural and intangible values – as outlined in Chapter 5 and Annexure F, ongoing concern has been raised by a number of Aboriginal participants over the potential impact to Mount Walker and/or specific flora and fauna (notably platypus, powerful owl and wedge-tail eagles) by the project. While there was not generally a consensus on these values, many felt the impacts would result in cultural harm; and as such many were generally unsupportive of the project, including Adrian Williams, Bill Allen, Barrinang and Wiradyuri Traditional Owners Central West Aboriginal Corporation. Despite extensive conversations and increasing agreement on potential mitigation measures for these impacts, the level of support for the project has not significantly altered amongst these specific participants; although more support is being observed from other RAPs as the project has progressed. Mitigation measures are discussed further in Chapters 10 and 11 but include the need for ongoing opportunities to access Country, and to support ranger programs or equivalent for the ongoing management, monitoring and support of impacted fauna.

- Who speaks for Country – early and ongoing discussions were focussed on how the consultation process worked and who would speak for Country and participate in the project. A strong preference from the local Wiradjuri traditional owner organisations was to ensure that broader Aboriginal communities that become involved through the Heritage NSW guideline process be limited. The exclusion of RAPs was not feasible under current Heritage NSW guidelines, however LLP provided commitment to limit on-site activities to the local Aboriginal community, and this was maintained throughout the assessment process. Within the Wiradjuri traditional owners involved, there has also been disagreement on who holds cultural authority over the project area, although consensus is typically towards Auntie Helen Riley and/or Sharon Riley (Mingaan Aboriginal Corporation). Regardless of this, all views from the RAPs have been captured through the various studies and in Annexure B.

- Fieldwork participation – similar to the issue above, there has been ongoing concern from some Aboriginal parties on their level of involvement in the field program. Several of these have been a result of participants registering late in the project once many of the field activities have been completed. In these instances, meetings and subsequent briefings have been attempted to address this.

- Removal of cultural materials – following the archaeological test excavations, there was some confusion about the management of recovered stone artefacts and their removal from Country authorised under Heritage NSW guidelines and advised in the information package issued in January 2024. Subsequent communications and discussions were undertaken to further explain the processes, and seek to return the cultural materials back to Country as soon as feasible and within the permissible limits of the assessment process. This ultimately resulted in the temporary return of the cultural materials to Mt Piper as the nearest established repository in Wiradjuri Country, and where they remain until a long-term repository can be fully determined. This temporary location was agreed on by the majority of the RAPs.

- Field survey and excavations findings – the nature of cultural materials found within the project area, and how they may be further investigated, managed and/or protected into the future.

- Draft report, contents and mitigation measures – numerous meetings and opportunities to comment on the draft report was provided to the RAPs. Following refinement of the project in early 2025, a further opportunity to comment and provide inputs to these was provided to ensure the views of the RAPs remained unchanged.

- Accommodation camp – initial on-Country discussions undertaken in August 2025 in relation to the proposed location for additional accommodation for the project was undertaken. Various RAPs felt that the Pottery Estate (Town camp) was a better option from a cultural heritage impact perspective.

The outcomes of these discussions have been considered in the development and content of the ACHA. While not necessarily individually mentioned throughout the report, they have nonetheless been considered throughout the formulation of the ACHA.

3.4.1 Review of draft report

A copy of the ACHA has been provided to the RAPs (refer to Table 3.2). A draft was provided on 16 August 2024 for a period of 28 days. Any comments from this process are provided in Annexure B.7 and summarised below:

- Sharon Riley (Mingaan Wiradjuri Aboriginal Corporation) concurred with the findings and recommendations of the ACHA. Additional concerns raised included:

    - that tourism opportunities associated with the project be considered, including cleaning waterways and sharing Platypus stories

- that Aboriginal site cultural awareness training be provided for all workers and contractors before works are undertaken on-Country

- that monitoring of all construction work by RAPs be considered to ensure best practice.

- Jack Pennell (Warrabinga Native Title Claimants Aboriginal Corporation) indicated that the ACHA was well-written, and concurred with its findings and recommendations.

- Bradley Bliss (WVWAC and Booral Maliyan) agreed with the findings and recommendations of the ACHA. However, he emphasised that any artefacts or other cultural materials removed during the study must be returned to Country and reburied close to where they were obtained in a mutually agreed manner and outside of any development impacts.

- Rick Slaven (Barrinang) expressed concerns that the ACHA contains a surplus of irrelevant information and excludes matters important to cultural stakeholders. Specific matters of concern included:

  - his view that findings on artefacts and other archaeological materials are inaccurate, and obscure culturally important and sensitive aspects of the project area

  - high levels of dissatisfaction with the ACHA process and the project itself

  - strong concerns that artefacts were removed from the project area, including them not being reburied on site and are being kept in a storage facility by LLP; concerns that the artefacts can be visited by anyone and that they will go missing; that the temporary relocation of the artefacts was supported by all other RAPs who responded; and there were mixed views from the RAPs around the eventual long term storage of the artefacts following the completion of the project.

Several of the above concerns had previously been documented and/or addressed (see Section 3.4), while many would be further explored as the project progresses and subsequent guidance documentation should it be approved. For example the long-term management of cultural materials will be developed as part of the recommendations Aboriginal cultural heritage management plan (ACHMP) since the activities within this document would result in the recovery of further cultural materials for management. Similarly, inductions and the scale of mitigation measures such as monitoring would also be further developed in the ACHMP.

A copy of the updated ACHA has been provided to the RAPs (refer to Table 3.2). A draft was provided on 8 October 2025 for a period of 28 days. Any comments from this process are provided in Annexure B.7 and summarised below:

- Merikai Bell (Yurwang Gundana Consultancy Cultural Heritage Services) emphasised the importance of Aboriginal-led practice, cultural protection protocols, and maintaining Aboriginal custodianship and confidentiality throughout the process. Also recommended a "Cultural Closure Ceremony" and "On-Country Custodianship", with artefacts returned to Country and decisions regarding their long-term storage to be made collectively by the RAPs.

- Kylie Manson (Warrabinga Native Title Claimants Aboriginal Corporation) acknowledged receipt of the report and appreciate the thoroughness of the assessment and ongoing engagement with the community. Warrabinga support the proposed development of key mitigation and management strategies—including the ACHMP, the cultural values impact strategy (CVIS), and the interpretation strategy and plan (ISP)—they feel it is important to highlight that the assessment does not fully address the intangible impacts or the deep spiritual connection to Country. They urge that future assessments and management plans give greater consideration to these intangible and spiritual values, and that the voices of Elders and knowledge-holders continue to be central in all decision-making processes.

- Brad Bliss (Booral Maliyan) endorses the recommendations of the ACHA.
- Brad Bliss (Wellington Valley Wiradjuri Aboriginal Corporation) do not have any objections or additional comments on the updated draft ACHA.
- Darleen Johnson (Murrabidgee mullangari) endorses the recommendations of the ACHA.
- Rick Slaven (Barrinang) continued to outline concerns and issues with the project. Expressed ongoing concerns with the management of current cultural materials. Rick sought to include statements around the payment of Aboriginal participants in the report in contrast to Barrinang's involvement to date. Rick stated there was evidence for frontier violence within or near the project area. This is further explored in Section 5.2.5, with no documented events within the project area although several are documented in the general vicinity.
- Lillie Carroll (Didge Ngunawal Aboriginal Corporation) supports the ACHA.
- Sharon Riley (Mingaan Wiradjuri Aboriginal Corporation) asks that the artefacts not be reburied but instead stored at the keeping place at Mingaan offices on display.

4 Environmental context

4.1 Key findings

- The project area is characterised by Mount Walker's steep to very steep hills of Lambie Group metasediments and encompasses the flanks and upper slopes of Mount Walker. Most of the project area is extremely steep, highly eroding above 15 degrees (refer to Figure 4.3). As such most of the cultural material would be at the base of these slopes, closer to Farmers Creek.

- To the south moving away from Mount Walker, the topography is lower and flatter and the less steep and dominated by landform elements are more varied with undulating hills with broad rounded crests and slopes descending down to Lake Lyell and the Farmers Creek arm of Lake Lyell.

- The majority of the soil landscapes across the project area are characterised by shallow duplex soils, which consist of an upper soil A1 horizon and underlying B2 horizon. Cultural materials are typically found in the A1 horizon, although this unit is commonly affected by recent natural and development activities (e.g. vegetation clearance, etc).

- The project area is located within the upper section of the Coxs River catchment, which sits within the broader Hawkesbury-Nepean catchment. The Coxs River (6th order) which feeds into Lake Lyell, is the highest-order stream in the area. This river would have formed the focus for Aboriginal people in the area as it could furnish reliable drinking water and attendant natural resources. Of relevance to the project area, is the former Farmers Creek, a 4th order creek that feeds into Coxs River and runs through the centre of the project area.

- Dry sclerophyll forests and grassy woodlands occur over most of the project area with smaller areas of wet sclerophyll forest in some more protected gullies in more elevated areas. Apart from localised impacts, such as some clearance of vegetation and access tracks, the project area is largely undisturbed.

- The primary disturbance within the project area has been the flooding of portions of Coxs River and Farmers Creek to create Lake Lyell in the 1980s. This has resulted in inundation of the original river corridors, which would have likely formed a focus of past Aboriginal activity.

4.2 General

Understanding environmental context assists with predictions of archaeological potential, such as the likelihood of archaeological material being present in the landscape, its spatial distribution and its preservation. Landscape features were an important factor for the choice of camping and transitory and ceremonial areas used by Aboriginal people. Similarly, these landscape features and historical land-use plays a role in the level of preservation and the integrity of archaeological sites.

A landscape consisting of suitable topography, hydrology, geology and soils has strong links with natural resources that would have been available to, and sought after, by Aboriginal people. Flora and fauna would have provided food, tools and ceremony (culturally modified trees); proximity to fresh water was necessary for life and growing crops, as well as gathering fish and eels. Landscape features, such as sandstone overhangs, were useful for shelter; stone artefacts were manufactured from raw stone material that was collected from quarry sites; and stone arrangements relied on the landscape.

4.3 Landscape overview

Bioregions are relatively large land areas characterised by broad, landscape-scale natural features and environmental processes that capture large-scale geophysical patterns at an ecosystem scale. Sub-regions delineate significant geomorphic patterns within a bioregion, and are based on finer differences in geology, vegetation and biophysical attributes.

The project area is within the South Eastern Highlands bioregion, inland from the coastal bioregion of Sydney Basin. It covers the dissected ranges and plateau of the Great Dividing Range. The project area lies within two subregions, Hill End and Bathurst. Hill End, which encompasses the northern portion of the project area, is characterised by hilly to mountainous plateaus becoming deeply entrenched into channels of the Turon and Macquarie River. The geology of the subregion consists of slates, sandstones and volcanic rock with numerous quartz veins running throughout. The Hill End subregion is considered of ecological significance due to its location as a break in the Great Dividing Range. This gap provides a link between coastal and inland NSW including an overlap between tropical and temperate climate zones (Macfarlane *et al.*, 2017). The Bathurst subregion is characterised by a granite basin with rounded hills bounded by steep slopes. The geology of the subregion is primarily carboniferous granite with pockets of Tertiary basalt caps and Quaternary sands along the Macquarie River (Macfarlane et al., 2017).

The existing environment heavily influences the potential types of cultural material that may be present within the project area. For example, geological formations, notably rock outcrops, are essential for rock shelters and associated features (such as art), while exposures of smooth geology observed along creeks and rivers may also be suitable for sites such as grinding grooves. Artefact sites are more commonly identified in open site contexts along watercourses and ephemeral drainage lines, either on the ground surface or buried within deep alluvium. It should be noted; however, these watercourses can be subject to significant flooding and scouring. As such, evidence of past occupation may be more likely to survive on elevated areas (e.g. terraces) above these water courses, despite the likelihood that these riverbanks are likely to have been heavily used in the past. Culturally modified trees may be prevalent in areas of uncleared native vegetation; however, are unlikely to be retained in areas that have been cleared and levelled.

4.3.1 Geology

The project area is situated within the Coxs River valley. The valley was formed in the Permian period, when marine volcanic sediments were deposited, and rich Illawarra Coal Measure deposits formed. These coal deposits also contain shale, sandstone, conglomerate and chert, as well as torbanite seams. Pockets of Quaternary-age alluvium occur along watercourses. These consist of gravel, sand, silt and clay.

The South Eastern Highlands Bioregion, within which the project area is located, is part of the Lachlan fold belt that runs through the eastern states as a complex series of metamorphosed Ordovician to Devonian sandstones, shales and volcanic rocks intruded by granite bodies and altered by folding, faulting and uplift. The project area typically comprises deep incised gorges with sandstone bedrock, with steep sided cliffs and narrow incised valleys with spring fed creek lines and inter-bedded sandstone conglomerate rocks (refer to Figure 4.1).

The dominant geology of the project area is Lambie Group metasediments: massive white quartzites, shales, siltstones, sandstone, impure limestones, clay stones and conglomerates deposited in the late Devonian (refer to Figure 4.1). The prevalence of sandstone geology and the steep hills suggests rock outcrops and overhangs are common throughout the region. These landform elements are known to have been used by past Aboriginal people for shelter and to produce pigment and engraved art. The project area has the potential to feature sandstone platforms and outcrops.

4.3.2 Soil landscape

Soil landscape classifications and their boundaries provide pre-defined areas that are classified by several geographic features, and which are informative for the archaeological investigation. They provide localised information about landform patterns, soils, geology, rock outcrop percentage, land use and vegetation. This information provides another layer to categorise the landscape for building a predictive model, in addition to what a topographic description can provide. Soil landscape information helps to establish knowledge of the underlying geology, can describe the depths of residual and colluvial soils and identify areas characterised by erosion or skeletal soils. It can also provide additional information on exposed bedrock versus areas that may contain a deeper soil profile. This information is used to understand and predict where different types of cultural material may be expected to be found.

The predominant soil landscape within the project area, as mapped on the NSW Soil and Land Information (SALIS) System 'eSPADE' Soil Profile Database (Version 2.2, DPIE 2022) is Mount Walker (wm). Also represented are Marrangaroo (mr), Ganbenang (gb) and Round Mount (rm), and Lithgow as shown on Figure 4.2 and summarised in Table 4.1.

Mount Walker soils, found in the majority of the project area, generally feature shallow (up to 30 centimetres (cm)) of gravelly brown loam topsoil (A horizon) overlying sandstone bedrock or reddish-brown silty clay loam subsoil (B2 horizon) on crests and upper slopes. Lower slopes usually exhibit less than 30 cm of gravelly brown loam (A1 horizon) overlying up to 30 cm of yellow orange fine sandy loam topsoils (A2 horizon), with subsoil consisting of yellow brown clay (B2 horizon).

Colluvial soil landscapes form from the mass movement of material by either rain wash, sheetwash, slow continuous downslope creep, or a variable combination of these processes. Colluvial soil landscapes occur in association with alcoves, cliffs, cliff foot slopes and scarps, and those present in the project area include the Round Mount and Mount Walker soil landscapes that are associated with the Coxs River drainage channel. Round Mount soils, to the east and west of Lake Lyell, are shallow (less than 35 cm deep), rapidly draining Silicious Sands, associated with rock outcrop on the steep to very steep hills that surround Lake Lyell. On slopes with negligible rock outcrop, the soils and deeper (up to 110 cm) rapidly drained Siliceous Sands and Earthy Sands. On the lower slopes and along drainage depressions, soils are moderately well drained, Yellow Podzolic Soils. The topsoil is brownish black loamy sand, directly overlying granite on the upper slopes. On the lower slopes the topsoil overlays dull brown sand (A2 horizon) and bright brown clayey sand (B horizon).

Erosional soil landscapes are those which have been formed by the erosive action of running water and are associated with steep to undulating hillslopes, benches, areas of rock outcrop and generally shallow soils (King 1993). Marrangaroo soil landscapes are found in the south-east of the project area where the landscape gives way to rolling hills and narrow flat to rounded crests. Soils tend to be rapidly drained and moderately shallow (up to 80 cm deep) on the crests and moderately inclined side slopes, becoming deeper (up to 140 cm), imperfectly drained Solodic and Yellow Podzolic Soils on the lower slopes near drainage lines. Gritty brown loamy sand topsoil overlays yellowish brown clayey sand (A2 horizon) and strongly weathered granite (B1 horizon). On the lower slopes a mottled bright yellowish-brown clay forms a B2 horizon.

Residual soil landscapes are associated with summit surfaces and terrace plains and are susceptible to localised water erosion and high run off. The Lithgow soil landscape is residual and is characterised by up to 65 cm of sandy loam or clay loam topsoils (the upper 20 to 35 cm of which comprises dull yellowish brown (10YR 5/4) to brownish black (10YR 2/2) or dark reddish brown (5YR 3/3) to greyish yellow brown (10YR 4/2) sandy clay loam, and the lower ~30 cm of which comprises dull yellow orange (10YR 6/3) to yellowish brown (10YR 5/6) to bright reddish brown (5YR5/6) hard setting fine sandy clay loam), that overlies medium clay subsoil. Topsoil in this soil landscape, which encompasses both A1 and A2 horizon soils, can reach a depth of up to 65 cm.

It is not anticipated that cultural materials will be present in subsoil layers. Therefore, potential archaeological deposits, if present, are likely to be limited to the topsoil or A1 units of these various soil landscapes.

Table 4.1 Soil landscapes of the project area

Soil landscape and type	Landform pattern	Landform elements	Location in project area	Slope and relief	Geology	Soil summary	Implications for archaeology
Round Mount	Steep to very steep hills and mountains	Steep hills	South and west of Lake Lyell Dam	Steep to very steep slope gradients of >35% Local relief <400 m	Carboniferous granite and occasional adamellite. Small areas of Devonian Lambie Group sediments (principally quartzite) are also found. Granite rock outcrop (tors) is commonplace. Small rocky cliffs on some slopes.	Shallow, rapidly drained Siliceous Sands associated with rock outcrop. On crests and slopes with negligible rock outcrop, brownish black loamy sand (15 cm) over dull brown coarse sand with abundant fine granite granules (30 cm) is underlain by bright brown clayey sand (up to 100 cm).	Low-moderate potential for grinding groove sites in the stream channels.
Mount Walker	Steep to very steep hills and mountains	Narrow rounded crests	Northern end of Lake Lyell Dam	Slopes >25% Local relief 40–200 m	Upper Devonian Lambie Group of metasediments consisting of massive white quartzites, shales, siltstones, sandstones, impure limestones, clay stones and conglomerates.	On crests shallow, well-drained stoney Lithosoil and yellow earths. On steep side slopes moderately deep to deep, moderately well-drained red earths, yellow earths and occasional yellow podzolic soils, leached loams and red podzolic soils. On lower slopes near drainage lines moderately deep to deep imperfectly drained soloths/yellow podzolic soils.	Typically, Aboriginal cultural material (primarily stone artefacts) is constrained to the topsoil units (i.e. A1 and A2 horizon). Mount Walker Soil Landscape topsoils are moderately to highly susceptible to sheet erosion. Given the moderate slopes within the project area, there is the potential for remnant topsoils and artefacts.
Marrangaroo	Rolling hills with gentle to moderately inclined side slopes	Narrow flat to rounded convex crests Small swampy drainage depressions on lower slopes	Centre ridge of heritage focus area South east of Lake Lyell Dam	Slopes <30% Local relief is to 90 m	Formed on the Kanimbla Batholith. Lithology is dominantly coarse-grained pink, porphyritic granites and adamellites. Extensive large granite tors on the shoulders of some hills and steeper slopes.	On the crests and hillslopes, up to 20 cm of gritty brown loamy sand overlies yellowish brown clayey sand (<30 cm) which overlies bedrock or strongly weathered granite. On the lower slopes, up to 25 cm gritty brown loamy sand overlies bright yellowish brown clayey sand (<50 cm) underlain by mottled bright yellowish-brown clay.	Moderate to severe sheet erosion on slopes and gully erosion on steeper drainage lines. Potential for culturally modified trees where areas of uncleared vegetation remain.

Soil landscape and type	Landform pattern	Landform elements	Location in project area	Slope and relief	Geology	Soil summary	Implications for archaeology
Ganbenang	Swampy drainage depressions along drainage lines	Seasonally waterlogged swamps	South west of Lake Lyell Dam	Slopes generally <10% Local relief is up to 50 m	Formed upon Carboniferous Kanimbla Batholith. Lithology is dominantly coarse-grained pink granites and adamellites with subdominant granodiorites. Deeply weathered saprolite several metres deep are typical. Occasional aplite veins and dykes have been intruded within or alongside parts of the pluton.	On moderately inclined drainage depressions on upper and midslopes, up to 20 cm of brownish black massive sandy loam overlies up to 60 cm of bright yellowish brown pedal sandy clay which overlies weathered granite or <50 cm of brownish grey clayey sand. On gently inclined drainage depressions on lower slopes, up to 60 cm of brownish black sandy clay overlies up to 50 cm of weathered granite or <50 cm of brownish grey clayey sand which overlies up to 60 cm bright yellowish brown pedal sandy clay. On actively eroding drainage lines, considerable mixing of soils is expected. In general, up <20 cm brownish black sandy loam overlies up to 70 cm of brownish grey clayey sand which overlies bright yellowish brown pedal sandy clay.	Low potential for stone artefact that have eroded into soil landscape from surrounding less waterlogged environments.
Cullen Bullen	Rolling low hills and rises	Broad rolling low hills and rises	Pottery Estate	Slopes generally <10–25% Local relief is up to <50 m	Formed upon Illawarra Coal Measures and the Berry Formation. Illawarra Coal Measures—shale and sandstone in addition to conglomerate, limestone, dolomite, claystone, mudstone, coal and torbanite. Contains grey siltstone with thin beds of limestone and sandstone.	Shallow to moderately deep soils (100 cm) on crests, moderately deep soils (<100 cm) on upper and mid slopes and moderately deep to deep soils (50–150 cm) on lower slopes and along narrow drainage line (<20 m). Hard setting topsoils and high water erosion hazard with localised mine subsidence.	Low potential for stone artefact that have eroded into soil landscape from surrounding less waterlogged environments.

Soil landscape and type	Landform pattern	Landform elements	Location in project area	Slope and relief	Geology	Soil summary	Implications for archaeology
Lithgow	Flat to undulating rises and broad valley floors	Flat to gently inclined rises on broad valley floors away from major drainage lines	Pottery Estate	Slopes generally <10% Local relief is up to <25 m	The main rock types are buried shale, sandstone, siltstone, mudstone, claystone, limestone, coal, torbanite and conglomerate.	Extensively cleared flat to undulating rises and broad valley. Moderately deep (<120 cm) Podzolic Soils and Yellow Podzolic Soils and Yellow Leached Earths on upper slopes and well drained areas. Moderately deeps soils (>170 cm) on lower slopes. Hard setting topsoils and high run off	Low potential for stone artefact that have eroded into soil landscape from surrounding less waterlogged environments.

4.3.3 Topography

The topographical context is important to identify potential factors relating to past Aboriginal land use patterns. For example, steep, high relief areas are highly likely to contain escarpment or cliff landforms that may contain rock shelters or overhangs conducive to Aboriginal occupation and use. At the same time, these slope values are highly conducive to soil profile erosion, and, as such, limits the potential for retention of surface and/or shallow buried cultural materials if present – these would more likely have eroded into the deposits at the base of the valley.

In the northern part of the project area (north of Farmers Creek), are the extremely steep slopes of Mount Walker, highly eroding above 15 degrees, and its associated ridge lines intersected by narrow valleys and drainage lines are the main landform elements (refer to Figure 4.3 and Figure 4.4). Slope gradients are generally greater than 35% and crests tend to be narrow and convex with isolated granite tors and tor fields. However, more generally, there are few actual vertical or near vertical slopes within which rock shelters may be present across the project area. However, there are localised small rocky cliffs present on some slopes, and these formed a focus of field investigations.

There are gentler slopes in ridgetop areas and foot-slopes around the banks of Farmers Creek and Lake Lyell. It ranges in altitude from approximately 780 m to around 1,140 m above sea level. While most of the project area is covered in native woodland and forest, small areas, predominantly restricted to the fringes of Lake Lyell, have been cleared previously for agricultural and other purposes.

South of Farmers Creek, the topography is lower, and flatter and the landform elements are more varied with broad rounded crests and slopes descending down to Lake Lyell and the former Farmers Creek. As such most of the cultural material would be at the base of these slopes, closer to Farmers Creek and Lake Lyell.

Pottery Estate is located on the flat to gently inclined rises on the valley floor below Hassans Walls. It slopes down from the east and is highly eroded across the area. Slope gradients are generally 10%. The area has been extensively cleared and there is no potential for rock shelters to be present.

4.3.4 Hydrology

Hydrological features are the most likely indicator of archaeological potential within the project area. Access to water, and the natural resources associated with it, would have influenced the distribution of habitation throughout the area. The Strahler stream order is a hierarchical system that ranks watercourses and maps watersheds, based on the connectivity and hierarchy of contributing tributaries, and is a useful measure for archaeological potential. In general, higher Strahler watercourses are usually more permanent and established, and a foci of abundant resources due to reliable access to water; while lower order watercourses are more ephemeral, and likely only hold water during or shortly after periods of rain. For purposes of considering Aboriginal cultural heritage, higher densities of material evidence for past occupation are more likely to be identified within proximity of higher order, permanent watercourses due to the more abundant available resources.

The project area is located within the upper section of the Coxs River catchment, which sits within the broader Hawkesbury-Nepean catchment. Lake Lyell is the largest body of water in the area and was created by damming Coxs River in the early 1980s (refer to Figure 4.3 and Figure 4.5). As such it does not represent a natural body of water that was present prior to European Contact. The Coxs River (6th order) which feeds into Lake Lyell, is the highest-order stream in the region. This river would have formed the focus for Aboriginal people in the area as it could furnish reliable drinking water and attendant natural resources.

Feeding into the dam from the east is the Farmers Creek (a 4th order Strahler stream) and Collits Swamp Creek (4th order), while Sandalls Creek (4th order) and Haystack Creek (2nd order) feed in from the west (refer to Figure 4.3). All of these have been subject to various levels of inundation by the establishment of Lake Lyell. See Figure 4.5 for the original alignment of Farmers Creek and Coxs River. The dark blue within Lake Lyell is the original Coxs River and the green to yellow is the original Farmers Creek.

4.3.5 Flora and fauna

Dry sclerophyll forests and grassy woodlands occur over most of the project area with smaller areas of wet sclerophyll forest in some more protected gullies in more elevated areas. The presence of remnant vegetation is an important consideration for Aboriginal archaeological assessments, as areas with remnant bush may contain culturally modified trees and bush tucker and are generally less disturbed than other areas.

The project area is bordered by patches of intact native forest to the north and south; however, historical clearing has fragmented the landscape to the west and particularly east of Lake Lyell (refer to Figure 4.6). Around the construction envelope area and upper reaches of the Coxs River, native forest is largely intact and contiguous with Marangaroo National Park. To the south, the project area is connected to a heavily vegetated riparian corridor along the Coxs River. Alongside the lake itself, canopy cover is variable or absent owing to prior clearing, most likely for agriculture, recreation reserves and dam-related infrastructure. More distant to the east and west of the site, patchy forest transitions into a heavily cleared agricultural landscape.

The vegetation within the project area reflects past agricultural activity (livestock grazing) and other disturbances such as road construction and damage by feral animals, particularly pigs.

Most of the vegetation within the project area comprises mid-height open eucalypt forests and woodlands with scattered shrubs and a mixed ground layer of grasses and herbs (refer to Figure 4.6). Areas of taller forest in more protected areas with deeper soil and higher soil moisture contain a sparse to dense sub-canopy layer of *Acacia falciformis* (Broad-leaved Hickory) with soft-leaved herbs dominating the ground layer. In more exposed areas the ground layer is dominated by grasses, graminoid herbs, hard-leaved forbs and subshrubs. In one location, a dense sub-canopy of *Allocasuarina littoralis* (Black Sheoak) is present.

Vegetation in the lower elevations to the south of Farmers Creek primality consists of open forest to woodland dominated by a mix of *Eucalyptus bridgesiana*, *E. rubida*, *E. melliodora* and *E. dives*, with *E. pauciflora* and *E. viminalis* also occurring in more protected gullies and lower slopes.

Vegetation to the north-east of Farmers Creek varies with aspect, sun exposure and elevation. In some drier, more exposed areas with shallower soil, particularly ridgetops and west-facing slopes, *E. rossii* is dominant, with a variety of other eucalypts occurring at lower density. In similar but slightly less exposed areas in the north of the project area, vegetation that is similar in composition but dominated by *E. sieberi* occurs.

The deeper gullies of the site contain a tall forest, dominated by *E. viminalis* with *E. pauciflora*, *E. dives* and *E. dalrympleana* and a sub-canopy of *Acacia falciformis*. In the far north of the project area, a tall to very tall forest occurs, which is dominated by *E. fastigata* with occasional *E. viminalis*, *E. dalrympleana* and *E. dives*.

On hillsides that are neither very exposed nor in protected gullies, a mid-heigh forest of *E. dives*, *E. rubida* and *E. bridgesiana* dominates.

Much of the drier vegetation of project area remains intact with minimal weed disturbance. However, roadsides, moister areas and areas with higher soil fertility contain a variety of exotic forbs and grasses that make up a large proportion of the ground layer in some instances. There are also fairly extensive areas with a sense understorey of *Rubus fruticosus* (Blackberry) in gullies and adjacent slopes to the south of Farmers Creek.

The proposed lakeside accommodation area is cleared, highly modified and dominated by exotic grassland with only small patches of low condition native vegetation present there.

4.4 Land use and disturbance

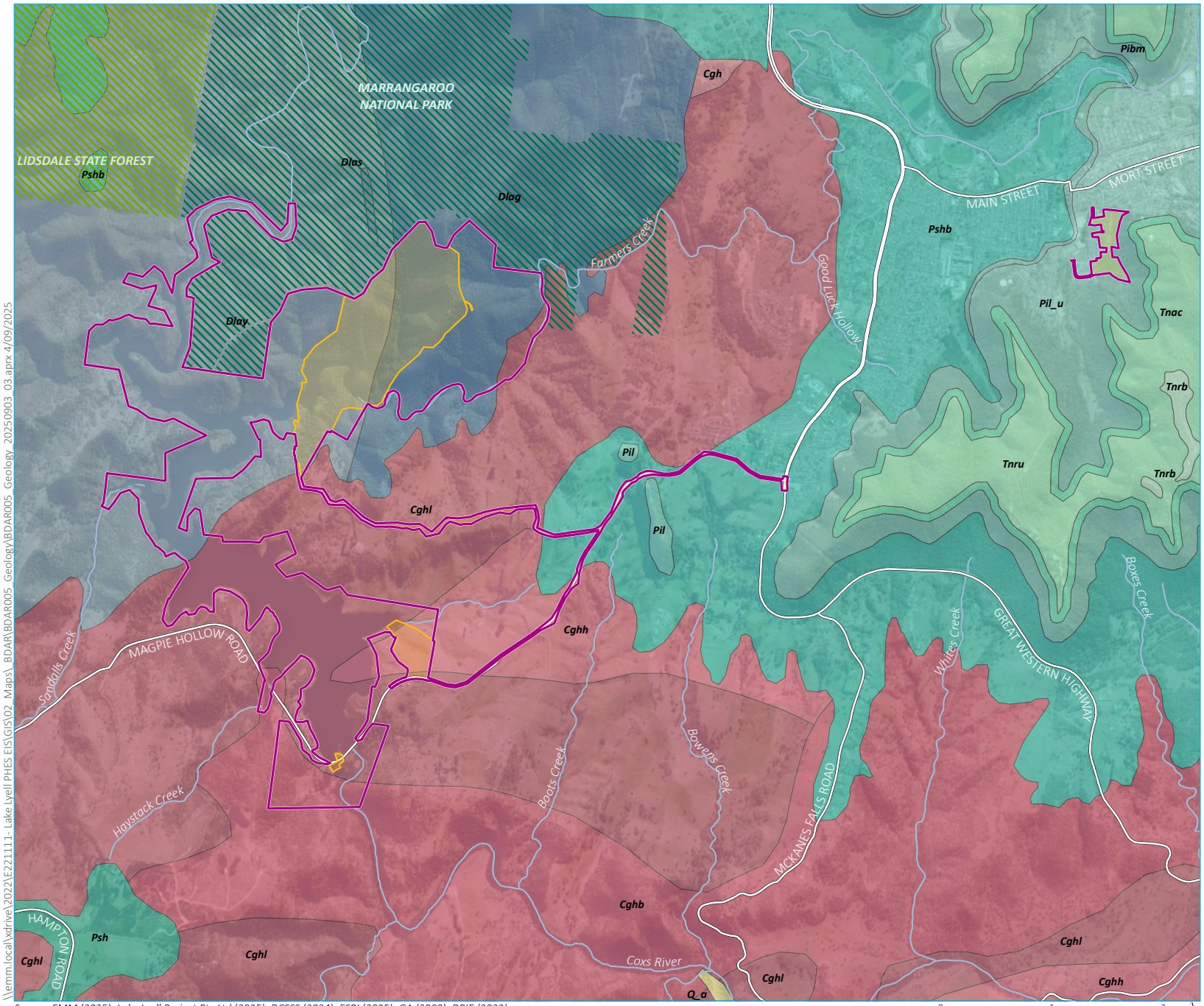
Previous land disturbance has a significant impact to the survivability of cultural materials if present. While there are natural processes that can disturb and/or destroy cultural material, more frequently it is increasing land clearance and development over the last 200 years that has resulted in the most significant impacts.

A series of historical aerial images centred on the project area are provided in Annexure C. The earliest aerial photograph, from 1958 shows that the project area had not been subject to any major disturbances, with almost all remnant vegetation present at this time. Further photographs from 1984 onwards confirm that the primary disturbance has been the flooding of Coxs River and Farmers Creek to create Lake Lyell, as well as some clearance of vegetation. The former would have submerged and/or eroded (in some conditions) any extant Aboriginal objects, and the latter has the potential to remove or lead to the erosion of the upper soil profile, in which archaeological material is typically constrained. Pottery Estate has been extensively disturbed with clearing, mining, farming occurring from at least 1931. Buildings and extensive cuts in the landscape are obvious in the 1961 and 1968 aerials across the majority of the area demonstrating deep excavation. These areas have been infilled by the early 2000s. The areas from 2002 to 2025 show that Pottery Estate has continued to be cleared and revegetated throughout this period, with less extensive but still significant ongoing disturbance.

With the exception of Pottery Estate, the majority of the project area has not been extensively disturbed by past activities. Localised impacts, notably access tracks, that are relevant to the program are evident and may have adversely affected cultural materials in these locations if present.

4.5 Geotechnical Assessment

A series of three bore holes were taken from the shoulders of Mount Walker as part of a geotechnical assessment. The boreholes revealed silty clay up to 30 cm deep overlaying fine-grained meta sandstone up to 1.6 m overlaying fine grained quartzites that extended to depths of 134 m below the surface (GHD 2024).



KEY

- Project area
- Construction envelope

Seamless geology

Cenozoic Sedimentary Province

- Q_a | Alluvium

Permo-Triassic Basins

- Pil | Illawarra Coal Measures
- Pil_u | Cullen Bullen Subgroup
- Pibm | Marrangaroo Formation
- Psh | Shoalhaven Group
- Pshb | Berry Siltstone
- Tnrb | Banks Wall Sandstone
- Tnru | Burra-Moko Head Sandstone
- Tnac | Caley Formation

Lachlan Orogen

- Cgh | Hartley Suite
- Cghh | Hartley Granodiorite
- Cghl | Lett Granite
- Cghb | Blaxland Granite
- Dlag | Gibbons Creek Sandstone
- Dlas | Slowmans Creek Conglomerate
- Dlay | Rydal Formation

Existing environment

- Major road
- Named watercourse
- NPWS reserve
- State forest

\\emm.local\xdrive\2022\E221111- Lake Lyell PHES EIS\GIS\02_Maps_BDAR\BDAR005_Geology\BDAR005_Geology_20250903_03.aprx 4/09/2025

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); ESRI (2025); GA (2009); DPIE (2023)

0 1 2 km

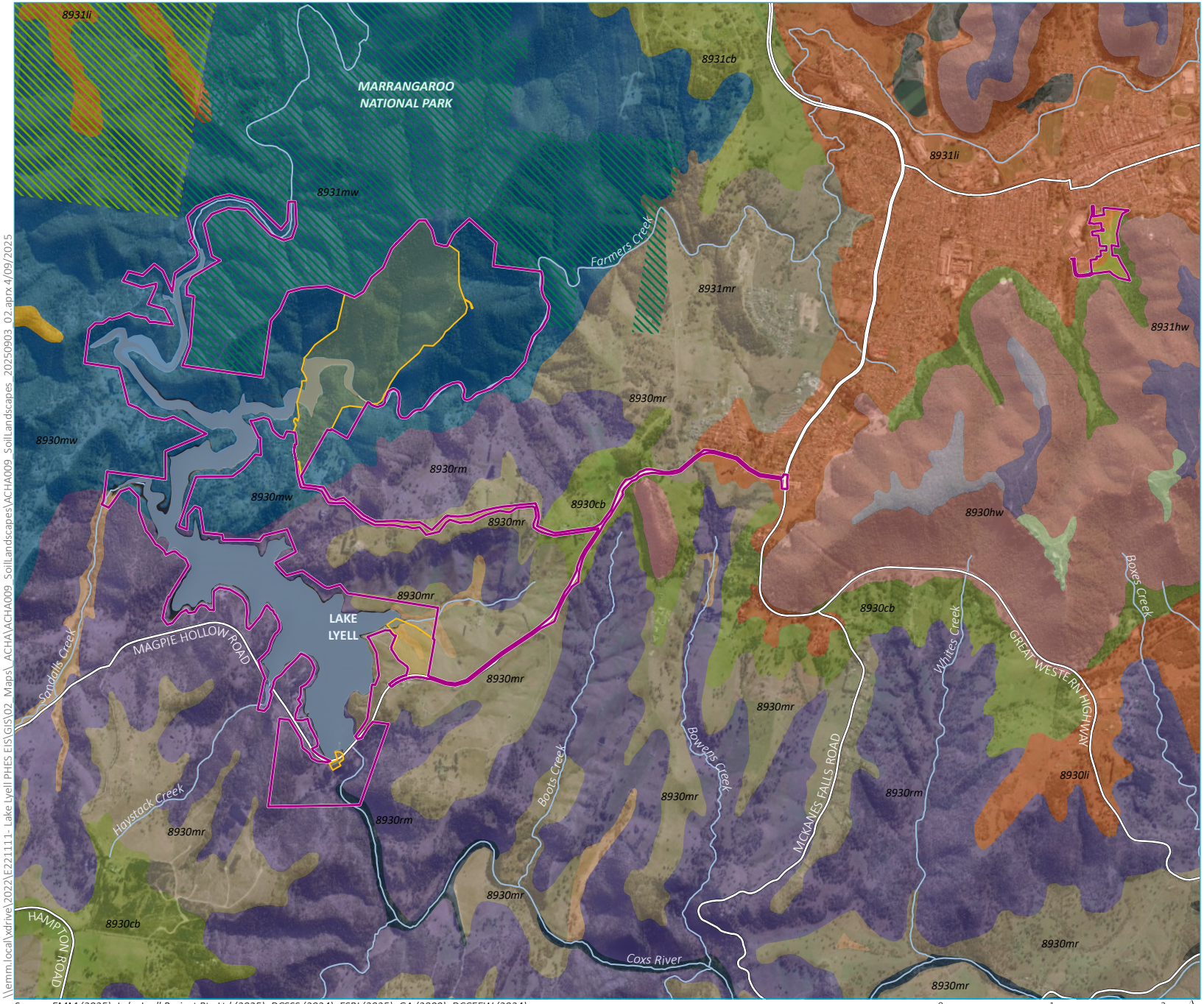
GDA2020 MGA Zone 56

N

Geology

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 4.1

EMM
creating opportunities



KEY

- Project area
- Construction envelope

Existing environment

- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

Soil landscape

- Coxs River (8930cx)
- Cullen Bullen (8930cb, 8931cb)
- Disturbed Terrain(8930xx, 8931xx)
- Ganbenang (8930gb)
- Hassans Walls (8930hw, 8931hw)
- Lithgow (8930li, 8931li)
- Marrangaroo (8930mr, 8931mr)
- Medlow Bath (8930mb, 8931mb)
- Mount Sinai (8930ms)
- Mount Walker 8930mw, 8931mw)
- Round Mount (8930rm)
- Rydal (8931ry)
- Wollangambe (8931wo, 8931wo)

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); ESRI (2025); GA (2009); DCCEEW (2024)

0 1 2 km

GDA2020 MGA Zone 56

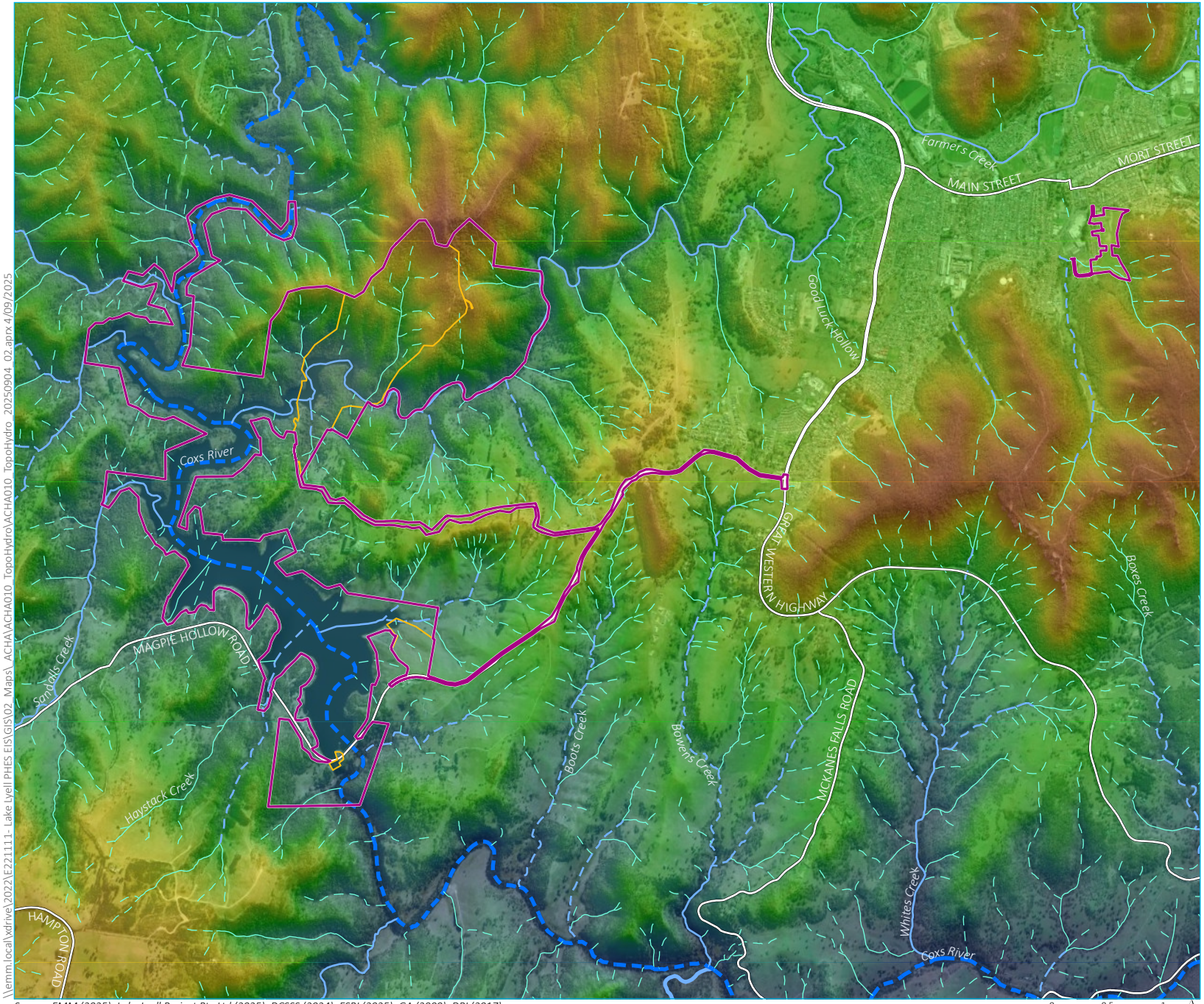
N

\\emm.local\xdrive\2022\E221111- Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA009_SoilLandscapes\ACHA009_SoilLandscapes_20250903_02.aprx 4/09/2025

Soil landscapes

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 4.2

EMM
creating opportunities



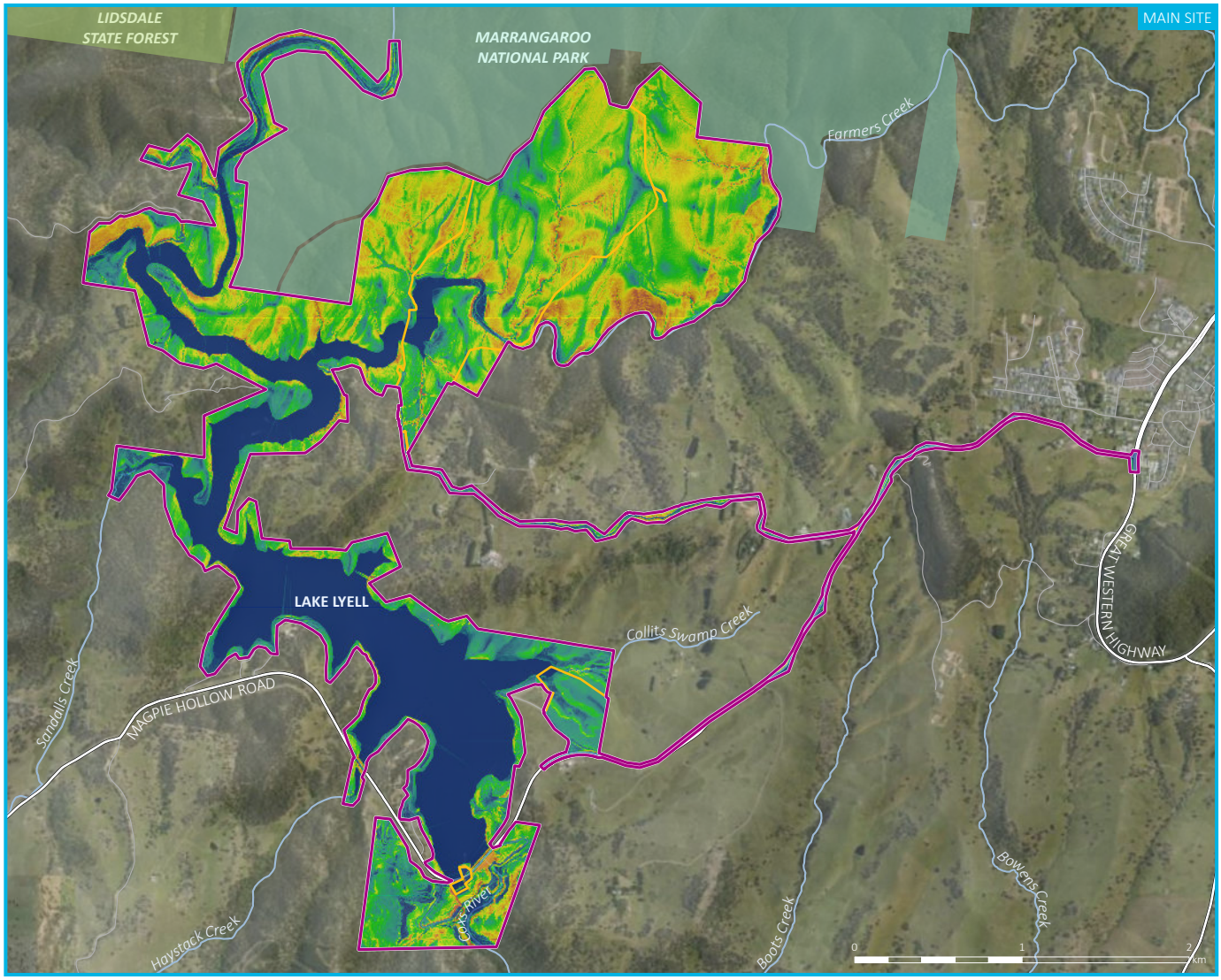
\\emm.local\xdrive\2022\E221111- Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA010_TopoHydro\ACHA010_TopoHydro_20250904_02.aprx 4/09/2025

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); ESRI (2025); GA (2009); DPI (2017)

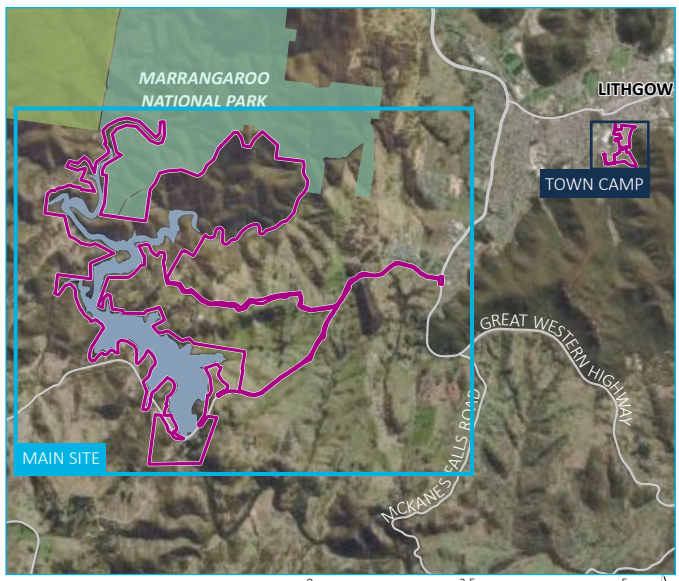
Topography and hydrology

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 4.3

EMM
creating opportunities







Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2025); GA (2009); OEH (2025)

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA013_SlopeAnalysis_20250903_02.aprx 4/09/2025

KEY

Project area

Construction envelope

Slope (degree)

81

0

Existing environment

Major road

Minor road

Named watercourse

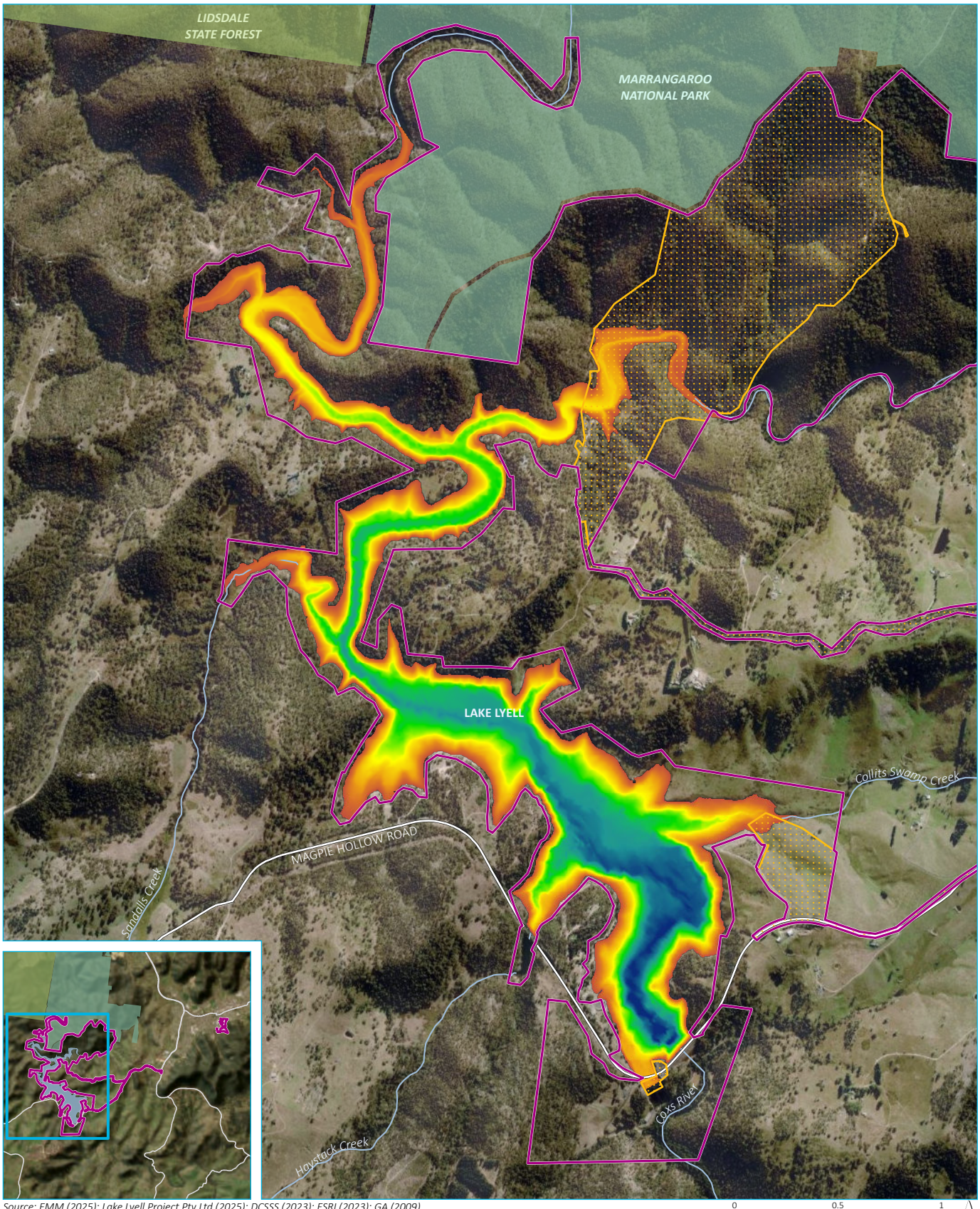
NPWS reserve

State forest

Slope analysis

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 4.4

EMM
creating opportunities



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2023); GA (2009)

0 0.5 1 km
GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA015_Bathymetry\ACHA015_Bathymetry_20250903_03.aprx 3/09/2025

KEY

- Project area
- Construction envelope

Bathymetry

790 m

747 m

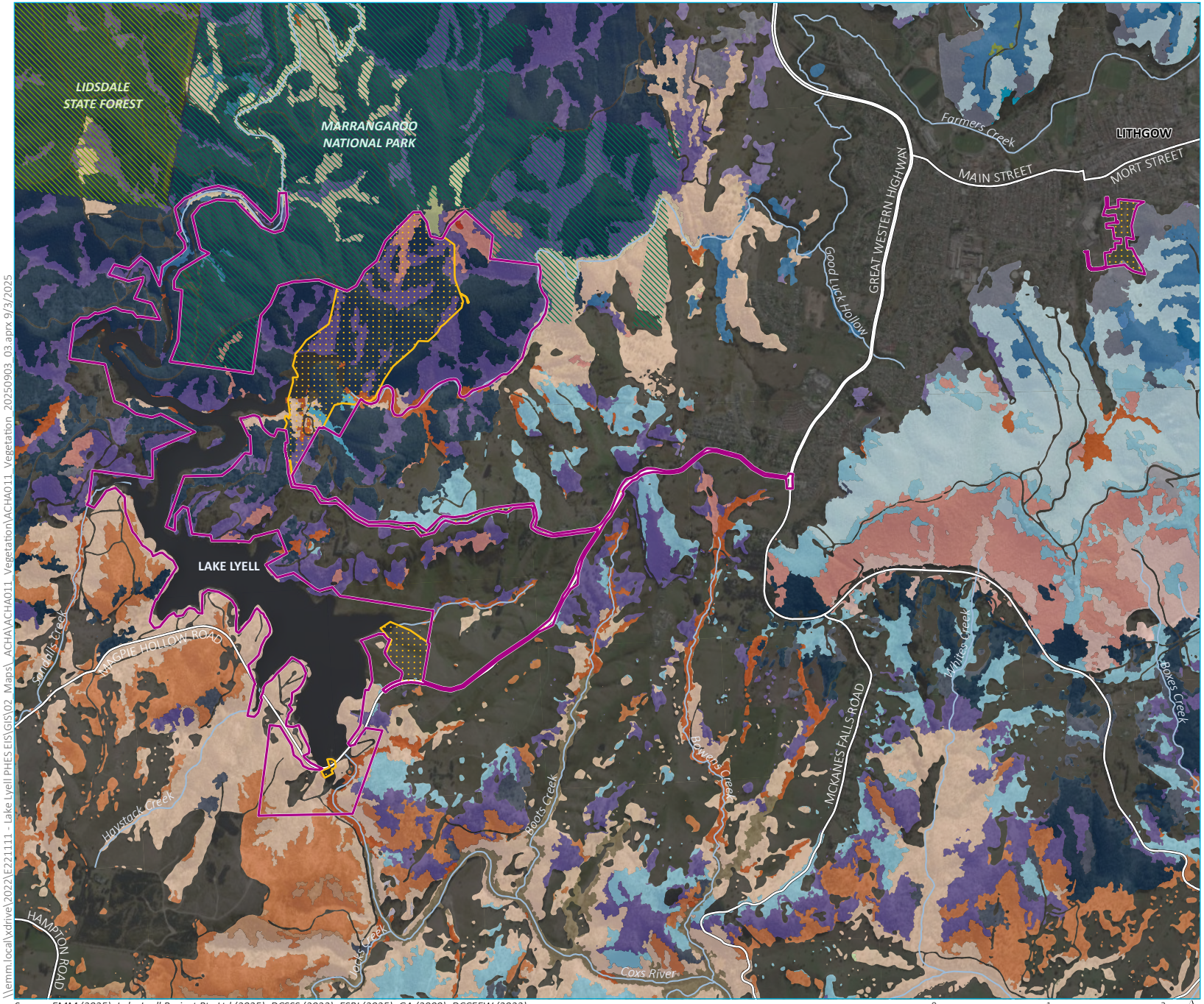
Existing environment

- Major road
- Named watercourse
- NPWS reserve
- State forest

Bathymetry

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 4.5

EMM
creating opportunities



KEY

- Project area
- Construction envelope

Existing environment

- Major road
- Named watercourse
- NPWS reserve
- State forest

Plant community type ID

- 0
- 3211
- 3226
- 3227
- 3303
- 3347
- 3348
- 3366
- 3367
- 3369
- 3376
- 3385
- 3483
- 3510
- 3534
- 3650
- 3687
- 3688
- 3694
- 3695
- 3696
- 3735
- 3738
- 3747
- 3862
- 3865
- 3946
- 3948
- 4063
- 4064

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA011_Vegetation\ACHA011_Vegetation_20250903_03.aprx 9/3/2025

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2025); GA (2009); DCCEEW (2023)

0 1 2 km

GDA2020 MGA Zone 56

N

Vegetation

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 4.6

EMM
creating opportunities

5 Ethnography

5.1 Key findings

- Traditionally, the country in which the project area is located was occupied by people known collectively as the Wiradjuri, who all spoke a related language and shared many cultural attributes, and their descendants are still based in central NSW today. The Wiradjuri linguistic and cultural group represents the largest Aboriginal territory in NSW. Neighbouring groups include the Dharug and Gundungurra, although the documented boundaries are all some distance from the project area, but there is some suggestion the project is within a shared zone.

- The main mythologies of the Wiradjuri people during this time involved supreme beings, such as Baiame, Daramulan and Muni Burrebean, with totemic ancestors being of lesser importance. Numerous creation stories and spiritual sites are documented within the region.

- The ethnohistorical record provides several observations in relation to the early 19th century Aboriginal society, although it is quite limited on matters of traditional and ceremonial life within local Aboriginal groups.

- Cultural mapping was undertaken by a highly experienced anthropologist and key knowledge-holders for the project area. The study identified two items of cultural value within, or near the project area. These include the peak of Mount Walker and a portion of a Platypus Dreaming story, which is manifested in the platypus species itself. These are both identified as having contemporary value to the local Aboriginal community, with limited evidence of a deeper time or traditional origin of these places. Other places and values have also been documented some distance from the project area, and are presented further in Annexure D.

- Mitigation measures and activities that may address perceived harm to cultural places and values identified as part of the cultural values mapping study were explored and are outlined. They include ongoing opportunities for access to Country, ongoing support for managing identified culturally important flora and fauna and maintaining key view-lines. These are further explored in subsequent sections of the report.

5.2 Documentary ethnography

This section provides a summary of the Aboriginal ethnohistorical record of Aboriginal life on the land prior to, at first contact, and during the contact period when their land was invaded and occupied by European colonists. Understandings of more recent contemporary connections to this landscape, despite 200 years of dispossession and loss, will be presented.

5.2.1 Regional information

Information about the socio-cultural structure of Aboriginal society prior to European contact largely comes from ethno-historical accounts made by colonial settlers. These accounts and observations were often made after significant social disruption due to disease and displacement. As a result, this information is often contentious, particularly in relation to language group boundaries. Therefore, it is likely that language group boundaries were far more diffuse than the arbitrary demarcations drawn by colonial observers.

The project area falls within the traditional country of the Wiradjuri linguistic and cultural group. In geographic terms, this group is the largest in NSW, extending from the Blue Mountains in the east to Hay in the west, and from Nyngan in the north to Albury in the south. Although detailed, current information is lacking, the Wiradjuri population at contact has been estimated at 3,000 (Read 1986). The name 'Wiradjuri' means 'people of the three rivers', named for the main rivers in Wiradjuri country: the Murrumbidgee (Murrumbidjeri), Lachlan (Kalari) and Macquarie-Wambuul rivers (NPWS 2003:121). The project area is in a region that has been the subject of debate regarding language delineations. Anthropologist Norman Tindale (1974, p.201) attributed the Lithgow region as forming part of the eastern limits of Wiradjuri Country. However, as a result of its location on the western edge of the Blue Mountains, the Coxs River Valley is believed to be a "natural" zone for travel and interaction between the Wiradjuri, the Darug and the Gundungurra language groups (Umwelt, 2016, p.15) (refer to Plate 5.1).

As with groups elsewhere in NSW, documentary evidence suggests the Wiradjuri cultural-linguistic group comprised several smaller sub-groupings. Surveyor and early anthropologist Robert Hamilton Mathews (1841 to 1918) wrote that the Wiradjuri nation was a 'vast confederation' made up of several smaller groups each with 'recognised hunting grounds'. In turn, these economic groups comprised smaller extended family groups (or 'clans') who were caretakers of a certain area by virtue of birthright (Mathews 1906, pp.941–192). Local waterways and catchment areas delineated the boundaries of these smaller kinship groups (Pearson 1984). Pearson's research also suggests that seasonality influenced social organisation, with people breaking into smaller groups during lean times. Conversely, feasts and ceremonial activities occurred in established meeting places between large groups of people during resource-rich periods. There is evidence to suggest that intra-group differences were sufficient that information relating to Wiradjuri country 'should not be taken to show much more than the areas where the Wiradjuri language was principally spoken' (Read 1988, p.14). These patterns of social organisation mirror those recorded by early colonists in the Sydney region (e.g. see Attenbrow 2010, pp.28–29).

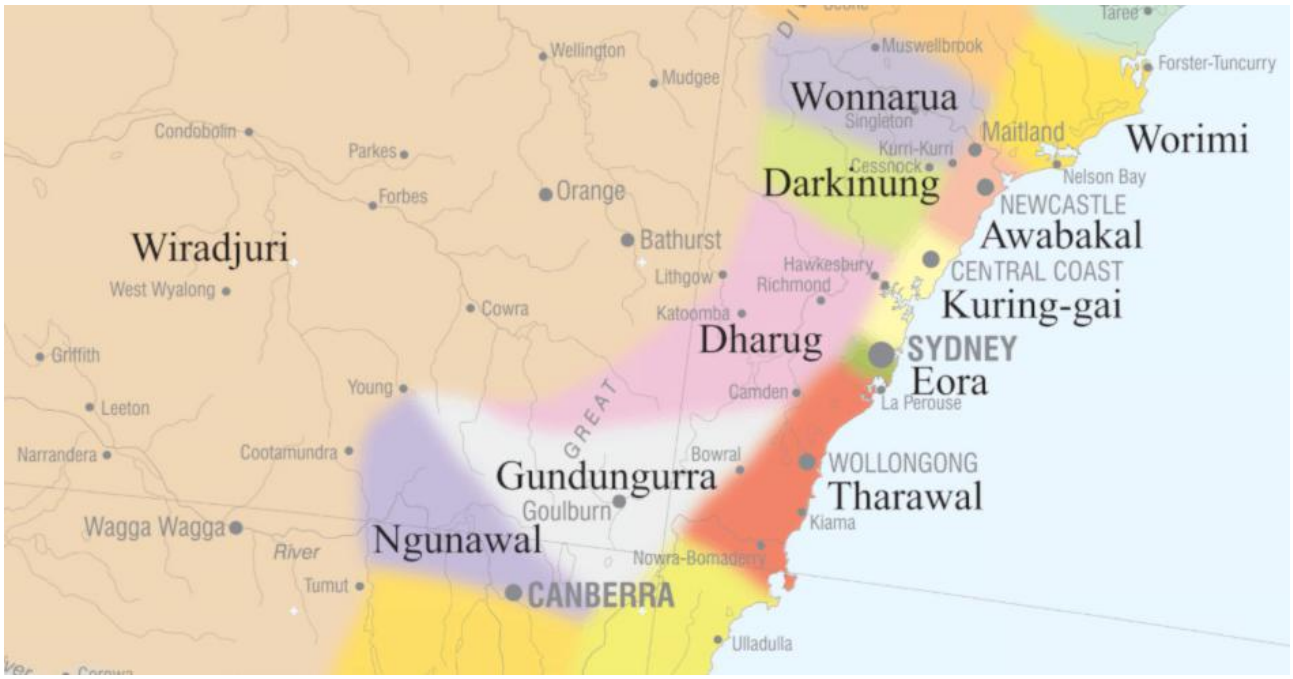


Plate 5.1 **The AIATSIS (1996) *Map of Indigenous Australia*. The project area is located immediately west of Lithgow in this plate**

5.2.2 Population size and local use

The project area sits broadly at the intersection of three Aboriginal language groups, on the fluid edges of Wiradjuri, Darug and Gundungurra Country. Tindale (1974, p.201) records Wiradjuri custodianship covered an area of 97,100 square kilometres (km^2) extending from the Murray River in the south, the edge of the grasslands at Hay in the west, and the Blue Mountains ridge in the east. Darug Country was divided into freshwater (inland) and saltwater (coastal) country, and custodianship covered an area of approximately 6,000 km^2 from Parramatta in the east through to the Blue Mountains and from the Hawkesbury River in the north to Appin in the south (Tindale, 1974, p.193). Gundungurra Country covered approximately 10,700 km^2 around the catchments of the Wollondilly and Coxs rivers, Goulburn, Berrima and Camden, and some territory west of the Great Dividing Range (Tindale, 1974, p.193).

It has been suggested that Aboriginal people did not usually identify themselves by the name of the language that they spoke because they spoke several languages. Instead, Aboriginal people identified by their clan within which they lived. Archaeologist Jim Kohen (1993, pp.20–21) recorded two local clan names for the area – the Thurrabulat, who resided in the Kanimbla and Megalong valleys and north toward Wallerawang, and Wywandy of Upper Coxs River, who were also recorded residing at Wallerawang in the 1820s (Parry, 2008). It is likely that many other local clans cared for the project area, but their names have not been recorded in available published literature. More broadly, each clan comprised between 50 to 250 men, women and children, and often these were organised into hearth groups of no fewer than 15 people, who shared a cooking fire (Greenwood, 2013, p. 12).

Movement of people occurred throughout the landscape, in order to exploit hunting grounds and other food and animal resources, to escape the winter cold, to fulfil cultural ceremonial responsibilities and kinship responsibilities, and to allow country to regenerate (Go Green Services, 2002, pp. 57–58; Greenwood, 2013, pp. 3, 12). People followed watercourse valleys, and also created and maintained tracks by burning forest and scrub, which promoted contact between local tribes and more distant groups, and to facilitate exchange, marriage, initiation and armed conflicts, share news, organise events and discuss traditional lore and law (Go Green Services, 2002; Greenwood, 2013). Ridgelines were also important movement corridors and enabled good vantages of the surrounding landscape. But, Aboriginal people knew there were few viable ridgetop routes through the Blue Mountains from the Hawkesbury-Nepean valley or Southern Highlands, and therefore the 1813 passage over the Blue Mountains from Penrith to Mount York and later colonial passage from the Sydney Basin to Bathurst, likely followed an earlier Aboriginal trackway (Jack, 2000, p.1) (Comber Consultants, 2009, p.15).

The rivers, creeks, lakes, and lagoons of the Blue Mountains region were a focus for Aboriginal occupation, but the seasonal availability of foods encouraged year-round movement of people (Greenwood, 2013, p.7). Aboriginal people of the region enjoyed a rich economy based on abundant and diverse food and fibre sources. The types of traditional foods consumed and the methods for their procurement are described in contemporary ethnographic sources and the later oral testimony of traditional Wiradjuri, Darug and Gundungurra traditional custodians. For example, tracker Billy Lynch, born in Kanimbla Valley c.1830s, recounts the rich array of Flora and fauna available in the region and the impact of white settlement on these resources:

> Lynch remembers when ducks, kangaroos, and shags were in large numbers, and when the rivers and ponds were full of black fish, perch, sprats, mullet, and eels, especially in the Cox. On the other side of the dividing range were bream and cod. Lowries, king parrots, rosellas, and the cockatoo parrots made the bush gay with their plumage, and the lyre bird was in numbers. Now all is changed. The old animals, birds, and fruits have gone (*The Sydney Mail and New South Wales Advertiser*, 12 December 1896, p. 1250).

The density of occupation and art sites between Hartley Vale and Capertree indicates the region likely sustained a sizable population prior to European contact (Jack, 2000, p.11). Plant and animal resources in the valley would have been at their best in the winter months, when the carbohydrate load of swamp plants was at its maximum and prey species such as the swamp rat and wombat had their breeding season (Gollan, 1987, pp.27–28). Summers may have been spent on the eastern slopes or in the Hawkesbury estuary (Gollan, 1987, pp.27–28).

5.2.3 Tools, weapons, and apparel

Local clans used a variety of methods to capture prey for consumption. Animal and bird traps were observed across the landscape. The cone-like ground traps were constructed of reeds or small branches and covered in dirt. Small animals would wander into or be driven towards the large opening of the trap and pass through the body, only to be blocked at the tapered end by a grate of sticks where it was killed (Hunter, 1793, pp.449–450). During an 1815 trip to Bathurst with Governor Macquarie, Aide-de-camp Major Antill noted that the Wiradjuri "domesticated the 'native dogs' and made use of them in hunting game such as kangaroo and emu" (Antill, 1914). Simple covered hole traps were also dug near water sources to capture ground dwelling animals and birds (Hunter, 1793, p.450). The rivers and creeks of the region offered local Wiradjuri, Darug and Gundungurra people abundant aquatic resources. John Oxley noted in 1817 that the inland people did not use a hook and line for fishing, while Louisa Meredith in 1839-40 observed that the spear was used for this purpose (Meredith, 1973, p.105). Natural rock formations and sand banks were used to trap fish and eels in tidal creeks when the tide went out. Tubers, bulbs, roots and rhizomes were critical to the diet in the colder months (Umwelt, 2016, p.15). Often, complex food processing techniques were required before some species of yam (e.g. *Dioscorea bulbifera*) and seeds (e.g. *Macrozamia* spp.) could be consumed. Aboriginal people also collected and used plants for medicinal purposes. Clans managed not only the plants that they preferred, but also those that the animals they ate relied upon, providing food and shelter for them.

The first Australians were known to European settlers as 'fire makers' for their use of fire for a wide variety of activities. Fire was used to maintain and create paths, to rejuvenate the land by clearing weeds and germinating hard seeds and legumes, and to create open grassy meadows to attract kangaroo and other game. They also used fire to keep warm at night and carry as a torch the next day, treat wood, melt resin and crack stone for tools – hence, fire was a constant presence in the Blue Mountains region (Gorecki, 1982; Jack, 2000, p.6). Patchwork landscapes of grasslands, open forest, dense scrub and rainforest enabled efficient travel through the landscape in search of food whilst limiting potential for wildfires and out of control burn offs that had a devastating impact on food sources and resulted in death of humans and animals.

Grace Karsken's (2020) work with Darug traditional knowledge holders has identified hundreds of occupation sites with rock art and grinding grooves along the Hawkesbury-Nepean River, known as Dyarubbin in local language. The scarps of the greater Blue Mountains area also contain hundreds of occupation sites with rock art (Jack, 2000, p.6). A long line of rock shelters containing rock art and evidence of occupation are located on the north side of Pipers Flat Creek, north of the project area (Jack, 2000, p.6). The art includes charcoal and ochre paintings, with spirit, animal, fish, bird and human motifs as well as tracks and hand stencils. Stencils were made by blowing a slurry of wet ochre over the hand, and occasionally beeswax or honey was used to fix the paint, along with birds' eggs or fish oil. Highly valued ochre produced the colours of red, yellow, brown, orange and bluey-grey, but the most popular colours were red, black and white. Charcoal and coal were readily available for producing black pigment. Gypsum and kaolin clay gave a clear white colour that was most commonly worn for mourning.

European observers made note that unlike the Aboriginal communities of the Sydney area, those west of the mountains were equipped with rugs and cloaks made of skins to protect themselves from the colder weather (Go Green Services, 2002, p.58; Umwelt, 2016, p.15). Men and women also wore decorative objects and headwear (refer to Plate 5.2) (Umwelt, 2016, p.15). In 1802, Francis Barrallier described the women of the Burragorang Valley as having head dresses made of bands on which kangaroo teeth were strung. The men wore necklaces of reeds wound round their neck a number of times with a length hanging down their backs. They wore cloaks made from the hide of various animals stitched together with sinew (Johnson, 2007, p.25).

In the 1890s, Annabella Boswell described the methods of processing possum skins that she observed in Bathurst:

> Each skin was pegged out tightly on a sheet of bark with the raw side facing out. They were placed near the fire and occasionally rubbed with fine wood ash until they had dried. The edges of the skins were trimmed and then marked with ornamental patterns to make them soft and pliable. The patterns were made by doubling the skin and scraping with glass or flint. The skins were then rubbed with grease and sewn together by piercing the pelt with a finely pointed bone and threading through the hole a thread of lint, or opossum wool (Boswell, 1890, pp. 6–7).



Source: National Library of Australia, Call: PIC Drawer 20 #U2168 NK4978, https://nla.gov.au/nla.obj-135691441/view).

Plate 5.2 "A native chief of Baturst [Bathurst]" engraving of original drawing by JW Lewin (1820)

Recorded material culture indicates use of a wide range of plant and animal resources for fashioning weapons, ornaments, and utensils (Greenwood, 2013). Early nineteenth-century European accounts include references to spears, woomeras, shields, clubs and boomerangs. Louisa Meredith (1973, pp. 105–107) made a distinction between the hunting and a fighting spear, with the latter being shorter (about seven or eight feet long) and thicker. The spear was barbed with fish bones or worked stone flints or notched at a distance from the point. Other fighting weapons included the 'nullah-nullah', of hardwood, with a round handle widening towards the end into a broad knob, well sharpened on the lower side. Shields were made of a long, solid piece of 'diamond shape' timber of about two feet in length that was hollowed on the inner face, into which was fixed a loop or handle (Meredith, 1973, pp. 105–107).

The passage from childhood to adulthood was marked by traditional ceremonies that brought about greater spiritual awareness, knowledge and responsibility for men and women (Greenwood, 2013, pp. 7–9). The ethnographic record, however, offers only glimpses into the ceremonial life of these Aboriginal communities. Accounts focus on male initiation and "men's business", such as the Wiradjuri burbong ceremony (Go Green Services, 2002, p. 61). Further, due to the secrecy surrounding ceremonial events, even the most richly described accounts only contain limited information about these ceremonies.

For ethnographic accounts and traditional knowledge, it is known initiates were put through a series of ordeals or trials, and received instruction from initiated Elders regarding medicine, the healing arts, spiritual beliefs, traditional customs, and totemic responsibilities. People specialised in the knowledge appropriate to their totem, and while all people had responsibility for preserving, enhancing and transmitting some knowledge, there were different levels of knowledge that were accessed through initiations. Members of the opposite sex, and other uninitiated individuals were strictly forbidden from attending these ceremonies. Initiates had their bodies marked with cuts and filled with ash to create raised scars, had their noses pierced or teeth removed (Go Green Services, 2002, p. 41). Initiation rites varied among different language groups although it is thought that the knocking out of a front tooth was universally practiced in the area west of the Blue Mountains, extending to the central west of NSW (Meredith, 1973, p. 96; Comber Consultants, 2009, p. 27). Records of post contact ceremony in the Lithgow region include a corrobboree performed by 20 men and women at Collitt's Inn, Hartley Vale, for Governor Bourke in 1832, and male initiation ceremonies near Wallerawang into the 1840s (Jack, 2000, pp. 7–8).

Other early documentary evidence is relatively scarce for this part of NSW, however a local resident of Lidsdale, Fay Hasler, recorded her observations of local Aboriginal people. Hasler noted that Pipers Flat (in the vicinity of Lidsdale and Wallerawang) formed part of the territory of a large Aboriginal group, and that there was a burial ground at Lidsdale. She also wrote that the Aboriginal people living around Pipers Flat would regularly travel to Richmond to engage in combat and arrange marriages with the Aboriginal people living there. As was the case with many Aboriginal groups elsewhere, Hasler recorded that the people living in the valleys throughout the area were decimated by diseases, including measles and smallpox, introduced by European invaders.

5.2.4 Local beliefs and ceremonial practices

The Central Tablelands region has a high number of ceremonial sites including Bora rings, carved trees, rock art and burial sites. The Wiradjuri and neighbouring groups held common belief in the central importance of Baiamai (also Baiame, Bayme) as the supreme creator of past, present and future (Go Green Services 2002:13). The landscape was transformed, life forms created, and laws and custodianship of the land were given over during *Ballanda,* the creation period (Go Green Services 2002:13; Greenwod 2013:6). Ceremonies connected people to the land and members of their community (Go Green Services 2002:16).

There are gaps in knowledge regarding ceremonies because Aboriginal people were often unwilling to have Europeans present at the ceremonies, therefore, records of the events tend to be disjointed.

Water spirits were prominent in Wiradjuri culture, compared with the 'bunyip' that was widely associated with wetlands, recognised in a 1920 newspaper excerpt from naturalist/explorer, Archibald Meston:

> The bunyip story runs through all Australian history. Back in the convict period of New South Wales some remarkable and mysterious animal was reported in various deep lagoons, and in 1834 a strange animal like a seal was seen in Lake Cowal and Lake George (Holden & Holden 2001, p.84-99).

Ceremonial life involved myths and stories explaining right and wrong forms of behaviours. Religious ceremonies often involved sky gods (Clayton 1985). For the Wiradjuri, Baiame is an important male supreme ancestor, known for transforming two brothers, who had fought all day, into Ivy Rock, located far to the east between Dunedoo and Singleton. Daramulun and Muni Burrebean are two further significant Wiradjuri ancestors akin in status to Baiame. Significant ceremony included the Burbung ceremony, which was associated with male initiation. This ceremony is described in detail by Matthews (1896; 1901) with further detail in Howitt (1904). Aspects of Mathews' (1896) description provide insight into elements of the wider Wiradjuri demography. Mathews relates that the Burbung ceremony involved numerous members of various Wiradjuri tribes. Gathering for the ceremony commenced with the headmen from three tribes deciding to hold the ceremony. Five messengers were dispatched (carrying sacred emblems) to invite neighbouring tribes to participate in the ceremony; these messengers were dispatched in five different directions.

The need to dispatch so many messengers suggest the size of the ceremony and the extensive nature of Wiradjuri territory:

> These messengers generally arrived at the camp to which they were dispatched a little before sundown, because at that time of the day all the men have generally returned from hunting, and are to be found in their own quarters (Mathews 1896: 303).

This indicates that tribes were possibly extended family units, each occupying a distinct area, as the messenger knew where to go to find the tribe:

> The next day, or it might be in a few days' time, the message was sent forward to the next tribe, or section of the tribe, either by the headman dispatching one of his own people bearing the sacred emblems, or by the same messenger who had brought the invitation to the camp. In this way the message was sent from tribe to tribe, or to sections of a tribe, until the farthest-off camp of natives was reached (Mathews 1896: 304).

The journey to the appointed place was undertaken by men, women and children in easy stages. Given the descriptions of tribes involved in the Burbung recorded by Mathews, the participating tribes travelled up to 200 km to attend the ceremony. Travelling this distance would have taken at least two weeks and shows that the Wiradjuri had sufficient knowledge of resources to move large numbers of people through their territory.

Mathews (1896: 296) reports that the ceremony commenced at the "end of May" and "the final ceremonies were not concluded till the beginning of July". Two months of ceremony during the late autumn and winter months indicate the ability to procure and provide food and sufficient water for several hundred people.

Art was important as a means of bringing spirit power or influence over everyday activities. Body painting and decoration were used in corroborees and battles (Clayton 1985). Ceremonies involved constructing large elaborate earthen features, decorated with earth carvings; and also constructing 'images' of Dharamoolan (Mathews 1901: 340) and Baiamai (Mathews 1896: 300) from mud, clay and sticks.

Wiradjuri people observed elaborate burial practices. A description of a burial from the Wellington area has been described by Hood (1843, p.211):

> …I saw a native grave today. It was heaped up with earth over a deep pit; was of a circular form, and covered with trees; a hollow space was scooped out round it, from whence the soil had been taken; and to the south were two semi-circles trodden hard in the earth, which, with the figures cut on two adjoining trees, are supposed by these poor people to keep off the debbil debbil, or evil spirit. I understand they will not pass a grave at night, and never mention the name of a person after his decease.

This information is mirrored in accounts from Oxley (1820) and Mitchell (1839). They wrote that graves comprised a large, raised central tomb enclosed on top by a bark and timber hut, with tombs frequently surrounded by several raised earthen mounds or ridges. They also wrote that relatives of the deceased person would often keep vigil at the tomb for a period of time.

The Thurrabulat and Wywandy buried their dead and marked burial locations with carved trees and mounds (Jack, 2000, p. 8). Three cemeteries are known to be located in the Lithgow region, which were used into the 19th century (Jack, 2000, p. 8).The first was the burial place of 'King' Myles located near Piper's Flat Creek (Plate 5.3), another was at the Hassans Walls, behind the European cemetery on Monte Vista at Forty Bends, and the third on Tinkers Hill in the Kanimbla Valley (Jack, 2000, p. 8). A potential pre-contact burial site was also found at Londonderry Bridge in 1957 (Jack, 2000, p. 8).



Source: *Illustrated Sydney News and New South Wales Agriculturalist and Grazier*, 30 October 1880, p.5, http://nla.gov.au/nla.news-article64973876).

Plate 5.3 Burial Place of the Last of the Native Kings at Wallerawang

5.2.5 Early interactions and frontier conflict

The first major contact between Europeans and clans of the Wiradjuri, Darug and Gundungurra who frequented the Lithgow Region came with the crossing of the Blue Mountains in 1813 (Parry, 2008). On May 31, Gregory Blaxland, William Lawson, and William Wentworth observed a very recently abandoned Aboriginal camp at the junction of the River Lett and Coxs River, north of Hartley (Parry, 2008). Following the expedition, Governor Macquarie dispatched William Cox to construct a cart road from Emu Plains to Bathurst Plains, which was completed in early 1815 (Edward Higginbotham & Associates, 2013, p. 10). To assist in road construction and settlement in the districts west of the Blue Mountains, a government provision depot was built on the Coxs River at Hartley. No official records have been located that indicate conflict between Aboriginal people and European expeditions and travellers occurred prior to this date, but in 1816 it was reported that the Coxs River Provision Depot was 'attacked and plundered' by an unidentified 'body of natives' (Comber Consultants, 2009, p. 28). A military detachment directed to the area was given orders that should armed Natives approach they were not to permit them closer than sixty yards to the post; that they be fired on if they refused to retreat; and that if they did not 'retire' they were to be taken prisoner and escorted to Parramatta. No other skirmishes were reported at the depot (State Records of NSW, Colonial Secretaries Reel 6065 4/1798).

Disease and warfare, most notably the massacres between 1824 and 1826 known as the Bathurst War, rapidly depleted Wiradjuri numbers (Former Mudgee Shire Heritage Committee 2004:69; Gapps 2022; Niche Environment and Heritage Pty Ltd 2015:21). Settler/Aboriginal violence, however, was not contained to Bathurst. In early September 1824, William Cox's overseer, two stockmen and an Aboriginal guide killed 16 Aboriginal men at Mudgee, approximately 120 km north of the project area (Ryan et al. 2022). Another massacre was documented at Turon River, some 99 km north-west of the project area, in which many Aboriginal people were driven into a swamp and killed, with references that 45 skulls were recovered and sent to England (Connor, 2002).

There are unsubstantiated reports of acts of violence occurring in the region including a massacre of the Aboriginal people of Hartley at Capertee Valley by Government soldiers following the declaration of martial law in 1824, and poisoning of the water supply on Andrew Brown's property *Cooerwul* c.1830s (Jack, 2000, p. 7; Parry, 2008). Displays of resistance, retaliations attacks and raids were so fierce in the region that Governor Brisbane imposed martial law in the western districts, permitting troops and Magistrates to administer summary justice without recourse to a formal trial or the usual procedures of the Court (Extent Heritage Advisors, 2017, p. 29).

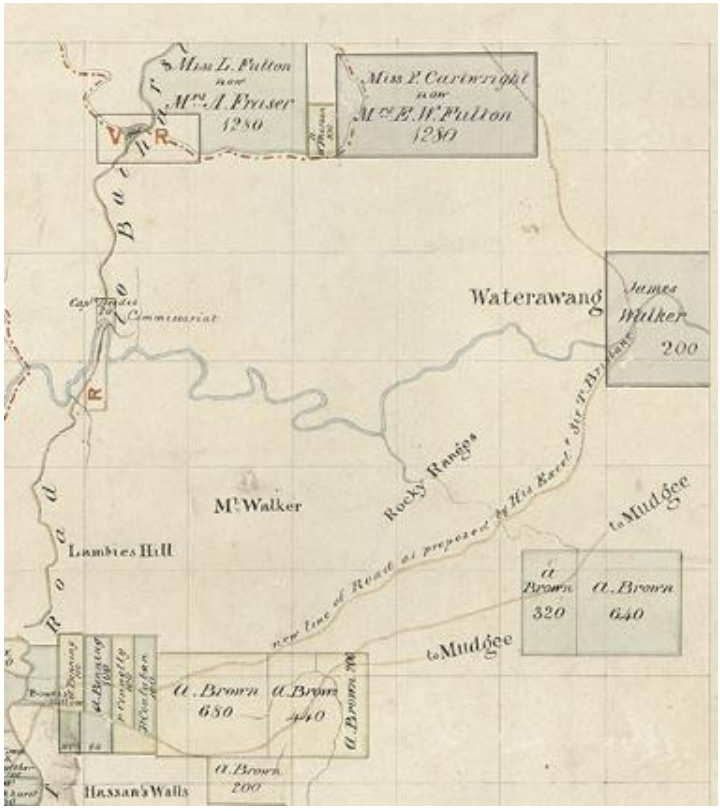
From 1822, land grants were released around the Lithgow valley and European settlers moved into the region (Wilson, 1917, p. 550). Historical maps and plans, however do not indicate the project area was part of the initial land grants and the land was not classified for settlement until 1905 (refer to Plate 5.4 to Plate 5.6). Nevertheless, settlement of the region resulted in the dispossession of traditional occupation and resource-gathering lands from Aboriginal people.

An Aboriginal Mission Station was established within the decommissioned Wellington convict settlement by the Church Missionary Society in 1831 (Kass 2001:6). Missionaries William Watson and James Gunther, who later established a competing Mission at Nanima Reserve, attempted to convert Wellington Wiradjuri to Christianity focusing on divorcing children from the influence of their parents and elders (Kass 2001:6). Many Wiradjuri exploited the mission for food and tobacco but continued to practice traditional lifeways as long as they were able (Kass 2001:6).

Intensification of settlement throughout the project area over the 1830s and 1840s further pushed Wiradjuri from their traditional lands restricting access to traditional water and food sources, leading to a reliance on European handouts for survival (Kass 2001:6; 2003:10). By the 1840s, many Wiradjuri family groups and communities had attached themselves to "friendly" stations offering a reliable pool of workers in return for access to Country, which in turn allowed the continuation of traditional lifeways within the European world (Monitor Heritage Consultants 2019:20). In 1869, a correspondent noted the prevalence of Aboriginal workers near Dubbo:

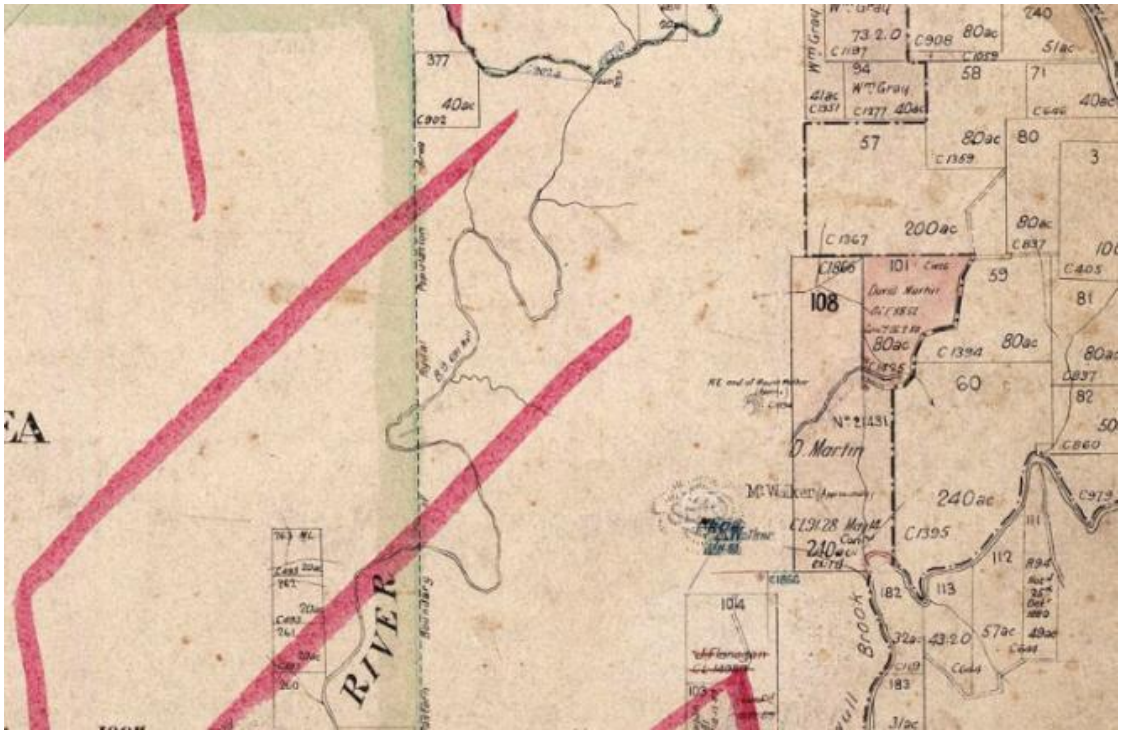
> On the stations to which I am alluding, there is no European—no white man—either as shepherd or stockman. The blacks are employed even at sheep washing. Their food consists only of about two ozs. of tea, a little sugar, and about six lbs of flour weekly. They find their own beef somehow (Empire 1869:2).

The subdivision of large stations and influx of selectors in the 1870s eradicated these camps (Kass 2001:6). From 1883, Wiradjuri camps were broken up by the Aborigines Protection Board and people were forcibly removed from their country to reserves in Eugowra (AR 9386, from 1889, ~200 km west of the project area), Forbes (AR 43462/3, 1909-1915, ~235 km west of the project area), Wellington (AR 45426/7 and AR 87975, from 1910; ~218 km north-west of the project area), or Spring Flat (AR 80144, 1957-1964, ~120 km north of the project area) (Extent Heritage Advisors 2017:30). These reserves were segregated on the outskirts of townships (Kass 2003:11).



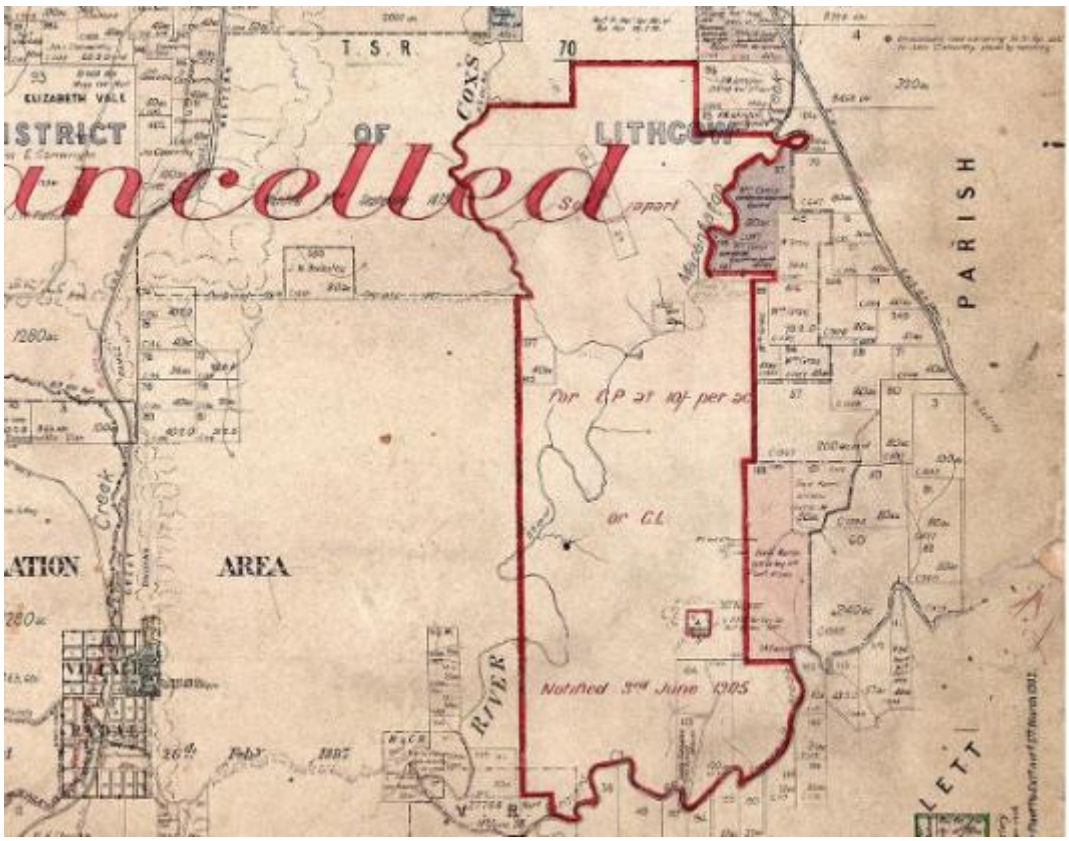
Source: State Library of New South Wales, Call Z/M3 812.26/1841/1

Plate 5.4 Historical parish map, 1841. Note the label Mount Walker to give an indication of the project area



Source: HLRV

Plate 5.5 Historical parish map, 1897. Note the label Mount Walker to give an indication of the project area



Source: HLRV

Plate 5.6 Historical parish map, 1905. Note Mount Walker in the small red square to give an indication of the project area

5.2.6 Surviving dispossession and loss in a European-dominated society

Despite Government attempts to influence Aboriginal people to relinquish their traditional practices, engagement with European society continued to be negotiated alongside traditional ways of life. Traditional skills were valued by the European settlers and individuals served as guides and trackers well into the twentieth century. In 1818, local explorer John Jamison, who lived at Regentville on the Hawkesbury River, employed Gilderoy, Millot and Nagga – three local Darug men – as guides on an expedition to trace the Coxs River near Hartley. James Backhouse brought Simeon, a South Creek man, along on an expedition from Parramatta to the Blue Mountains, in 1835 (Backhouse, 1843).

In addition, in the Lithgow region, it appears at least some Aboriginal people regarded local pastoral stations as part of 'the exploitable environment' settling there with the permission of station holders whose custom it was to allow 'native families belonging to the nearest tribe to remain about the grounds or premises as much as their wandering will admit of, to keep off strange blacks who might otherwise make dangerous incursions' (Saturday Magazine, 25 June 1836, p. 242). Aboriginal camps were recorded within c.500 m of the homesteads on James Walker's *Wallerawang* grant on the Marrangaroo Loop of the Cox River, north of the project area, and Andrew Brown's *Cooerwul* at Farmers Creek, north-east of the project area (Jack, 2000, pp. 9–10; Umwelt, 2016, p. 16). The camps provided local groups with a safe haven and access to rations and handouts (Jack, 2000, pp. 9–10; Umwelt, 2016, p. 16). Moreover, Aboriginal people were employed as farm labourers on these properties into the 1880s (Jack, 2000, pp. 9–10). The negotiation of traditional and European culture is also visible in the histories of the properties. The Walkers are said to have 'raised' a black girl from infancy assimilating her into European culture, yet she had a 'long period away' with her people before later returning to *Wallerawang* to work as a shepherd, following her marriage to an Aboriginal man (Jack, 2000, pp. 9–10). Further, Andrew Brown became highly knowledgeable in local languages (Jack, 2000, pp. 9–10).

As seen elsewhere in NSW, Aboriginal people were encouraged to seek official gifts in the form of blankets and clothing, iron hatchets, bread, flour, sugar, tea, tobacco and alcohol. Census records from blanket returns give an indication of the population of the region in the 19th century. Census records from 1833 listed 60 Aboriginal people living in the Lithgow region, including 14 from the Bathurst tribe, seven from the Mudgee tribe, nine from the Patricks Plains tribe, two from the Capertee tribe and one from the Dabee tribe (SRNSW, Colonial Secretary's Special Bundles, Reel 3706 4/2219.1). The 1846 blanket returns recorded 20 individuals in the district and between 1858 and 1861 only six to twelve blankets were claimed per year (Jack, 2000, p. 8). Accounts from the 1880s recall that the Aboriginal people:

> …would come up from Hartley and trek along the road through Bowenfels and about 20 of them would set up their temporary camp [on Andrew Brown's estate] about where Radio Station 2LT stands today [1957]. They gradually reduced to a community of about seven led by their chief King Billy ... Generally they made the round trip to Lidsdale and wintered back in the Hartley Valley, but they finally disappeared' *(Lithgow Mercury*, 31 May 1957 in Jack, 2000, p. 8).

In 1892, c.15 Aboriginal people were living in the Hartley area (Jack, 2000, p. 8). By the early 1900s, many reports from European observers noted the population of the Wiradjuri had been greatly reduced and traditional activities were no longer practiced (OzArk Environmental & Heritage Management 2007:32; Kass 2003:10; Mudgee Guardian and North-Western Representative 1904:22). Through the early to mid-20th century, Wiradjuri children were removed from their families and residents of reserves were under constant government surveillance (Kass 2003:11). After the abandonment of segregationist polices in the 1970s and 1980s, Wiradjuri communities have fuelled a cultural renaissance built on the legacies of the past (Kass 2003:10–11).

5.2.7 Contemporary connections

In a context of colonial occupation that has endured for two centuries, contemporary Aboriginal communities local to the region maintain connections to pre-colonial traditions, customs and beliefs. Anthropologist Gaynor MacDonald asserts that:

> ontological, epistemological and social understandings, although no longer encapsulated within a sacred ideology, still inform understandings of personhood and sociality. This is evident in, for instance, an emphasis on experiential knowledge, the importance of understanding oneself in terms of kin-based rights and obligations, demand sharing practices, and the high value placed on personal and local group autonomy (2011:213).

In particular, MacDonald notes that "an emphasis on experiential knowledge" of culture and tradition, and "the way in which specific places shape individual identities" are important components of contemporary Wiradjuri social identity and personhood (ibid.). Although Aboriginal societies in this region have been radically impacted by the colonial occupation, MacDonald observes "a process of secularisation" rather than total cultural loss, with spiritual connections with Country and ancestors increasingly drawn on to express aspects of Aboriginal identity and responsibility. The responsibility to care for ancestral Country is thus understood as a cornerstone of contemporary Wiradjuri law (MacDonald 2011:316). Although a "systemic cosmological system" (2011:312) is not currently observed among local Aboriginal societies, Elders and knowledge holders refer to such responsibilities in the context of development proposals. These are often referred to in terms of totemic relationships with native species; spiritual connections with particular sites or areas of cultural significance; belief in Creation or Dreaming narratives as well as experiences with mythological entities; and the need to preserve or otherwise care for sites of archaeological and cultural significance.

5.3 Cultural values mapping

5.3.1 Rationale and Methods

Cultural mapping is described more fully as cultural resource mapping or cultural landscape mapping, and it refers to an eclectic range of research techniques and scholarly tools that are employed to 'map' the tangible and intangible cultural assets of people within the local landscape. It involves the application of a wide variety of techniques and activities, from community-based participatory data collection and management to the use of sophisticated mapping based on Geographic Information Systems (GIS), to come to terms with cultural resources for communities and places. Proponents of cultural mapping as cultural inquiry have claimed that:

> From this perspective, cultural mapping is regarded as a systematic tool to involve communities in the identification and recording of local cultural assets, with the implication that this knowledge will then be used to inform collective strategies, planning processes, or other initiatives. These assets are both tangible, or quantitative (e.g., physical spaces, cultural organizations, public forms of promotion and self-representation, public art, cultural industries, natural and cultural heritage, architecture, people, artifacts, and other material resources) and intangible, or qualitative (e.g., values and norms, beliefs and philosophies, language, community narratives, histories and memories, relationships, rituals, traditions, identities, and shared sense of place). Together, these assets help define communities (and help communities define themselves) in terms of cultural identity, vitality, sense of place, and quality of life (Duxbury et al. 2015, 2).

To apply these concepts and further understand traditional and contemporary cultural values associated with the project area, cultural mapping was undertaken by Dr Patrick Horton, a highly experienced anthropologist, with the participation of key knowledge holders and/or elders. Elders and/or key knowledge-holders were identified through discussions with the RAPs, and included [redacted], [redacted] (Mingaan Aboriginal Corporation), [redacted], [redacted] (Barrinang), [redacted], [redacted] (Warrabinga Native Title Claimants Aboriginal Corporation), and [redacted] (Wiradyuri Traditional Owners Central West Aboriginal Corporation). The interviews and fieldwork for this activity was undertaken in October 2023 and January, May and June 2024.

A detailed report of the cultural mapping is included in Annexure F. The report includes a review of desktop ethnographic information with a focus on Dreaming places and stories, as well as historical and contemporary values where described. It uses this information combined with commentary from the Aboriginal participants to reach conclusions on cultural/intangible places and values within or near the project area. The method undertaken in the current cultural mapping exercise was to record all places that the Aboriginal participants have declared to have some significance to them, and to determine whether there exists any sense of spatial boundaries. Through documenting the proposed sites an attempt would be made to determine the extent to which the stated importance is based on existing experience and knowledge of the Aboriginal informant, and to ascertain whether this is likely to be a shared opinion with other Aboriginal participants.

The report is confidential, being in large part oral history of the participants, and as such only those components that have been approved by participants for broader presentation are included. For unredacted versions of the report or further information, LLP should be contacted directly, and we would explore such requests with the participants before implementation.

To assist in the ACHA process, the high-level findings of the cultural values mapping report are presented in subsequent sections. These components of the report have been approved for distribution by the participants involved in the study.

5.3.2 Summary of findings

The desktop research found several items of potential cultural value relevant to the project area. Historical records identified an Aboriginal toponym, *Gilligaramballa* or *Gillingarambilly*, as being associated with either Mount Walker or the nearby Mount Kirkley (outside the project area) (Table 5.1). Recent independent research indicates that neither landmark can be conclusively identified with the toponym. Further archival records suggest that Mount Walker may have been subject to traditional taboo/avoidance restrictions around the turn of the 20th century.

Oral history from the Aboriginal participants identified a range of values across, and near the project area. In the case of Mount Walker, it is difficult to reconcile the varied interpretations of its significance. [redacted] However, these are genuine and sincere beliefs provided by the participants, and as such are not disputed. Rather, such views can be considered to reflect *contemporary cultural values* of the mountain as held by members of the regional Aboriginal community.

This statement recognises that although such perspectives on the project area may not align with an anthropological or ethnohistorical understanding, they are manifestly valid according to the social realities of the participating Elders and knowledge-holders today. Subsequently statements to the effect that the proposed works of this project would have the effect of causing harm (emotional, spiritual, physical) are a testament to that social reality. These values also emerge from a live rather than static cultural context, and one which is undergoing active projects of cultural maintenance and revitalisation.

In addition to Mount Walker was the description of a Platypus Dreaming story associated with Coxs River and its tributaries. Again, there is limited ethnohistorical record of this story, but more broadly aligns with anthropological knowledge of these types of narrative. The story was also known by various participants, all of whom articulated the general composition of the gender-restricted (female) narrative. The values of this story appear to reside with the platypus species itself, rather than a specific place or location, and as such it is the impact and management of this species that would be considered of most relevance to the Aboriginal community. The importance of other flora and fauna were also articulated (e.g. koalas [*Phascolarctos cinereus*], macropods [various], wedge-tail eagles [*Aquila audax*], powerful owls [*Ninox strenua*], she-oak trees [*Casuarina* sp.]) by various participants, but as part of more general concern of the cultural landscape, rather than specific project area values.

Other sites and place of value are presented in Annexure D but are outside of the project area and would be unaffected. Given the confidential nature of this information, it is not replicated further in this report.

Table 5.1 Cultural places within, or near the project area

Site	AHIMS #	Description	Value
Mount Walker (peak)	-	[redacted]	Traditional
Mount Walker (broader)	-	[redacted]	Contemporary
Platypus Dreaming story	-	[redacted]	Contemporary

Notes: Values classifications include 'traditional', 'historical' and/or 'contemporary'. These reflect a value associated with pre-colonial activities; values associated with activities in the early Contact period, nominally between 1788-1950CE; and values associated with recent views of the local Aboriginal community, respectively. A site or place may hold one, several or all of these values.

5.3.3 Mitigation measures

Following the identification of the values outlined in Section 5.3.2, additional discussions were held with identified Elders and knowledge-holders to discuss potential impacts (further detailed in Chapter 10) and what mitigation measures to address any perceived harm might be composed of. Feedback from these discussions, which are integrated in the mitigation measures in Chapter 11 where relevant, included:

- there are no mitigation measures feasible for such impacts
- ongoing access to Country within and near the project area to maintain cultural practise, including hunting, fishing and educational opportunities, is established
- support to a ranger program or equivalent and provide a portion of Country to facilitate ongoing management of populations of identified culturally important flora and fauna (including koalas [*Phascolarctos cinereus*], macropods [various], wedge-tail eagles [*Aquila audax*], powerful owls [*Ninox strenua*], she-oak trees [*Casuarina* sp.], and platypus [*Ornithorhynchus anatinus*]). This should initially include consideration of relocating such flora and fauna from the project area to this piece of Country prior to development proceeding (see the BDAR [EMM 2025] and the Aquatic ecology report [Austral Research and Consulting 2025] associated with the EIS)
- view-lines from Mount Walker towards the north-west should be maintained and (where possible) any development activities suitably screened or hidden to avoid impacts to them.

5.4 Information provided by RAPs

There has been no additional information on cultural values or places provided by RAPs that has not been captured elsewhere in this section or other sections of this report.

6 Archaeological context

6.1 Key findings

- Regional studies of the broader Blue Mountains area suggest that Aboriginal people had inhabited the area by ~12,000 years ago (12 ka). Some dated rock shelter sites in the area suggest that Aboriginal occupation extended as far back as 14 ka, and potentially as early as 22 ka.

- Archaeological studies of the local area have focused on the identification of Aboriginal occupation sites in two distinct environmental zones – closed rock shelter sites on pagodas (the name for sandstone rock formations in the Blue Mountains region) and terraces of the sandstone plateau, and open artefact sites and culturally modified trees in valley floors and plains.

- The majority of Aboriginal sites identified date to the Holocene period (10,000 years to present day). On the basis of stone tool technology, the majority of stone artefact assemblages in the area has been relatively dated to the mid to late-Holocene period with the move to smaller tools in what was previously known as the Small Tool Tradition. Subsurface deposit is predominantly confined to the A-Horizon or topsoil which is generally 10 to 30 cm in depth. Although limited radiocarbon and geomorphology evidence has been obtained, it has been suggested that artefacts found in B-horizon subsoils may have been deposited between 10,000 and 13,000 years ago (early Holocene/terminal Pleistocene).

- With the exception of academic studies of rock shelters, previous studies of the region have almost exclusively been undertaken in relation to environmental assessments for proposed or ongoing developments. Notably, this includes as part of the proposed Lake Lyell dam upgrade for Pacific Power in the 1990s. These investigations documented a large number of sites within the project area, with two located in the construction envelope (LD14 [AHIMS #45-4-0915] and LD13 [AHIMS #45-4-0916]). These were composed of high-density artefact scatters of high significance, although required further characterisation (refer to Chapter 7). They were recorded in a relatively undisturbed area on the southern side of Farmers Creek and were recommended for conservation. A number of other sites are also documented dominated by various densities of stone artefact sites, but also including two rock shelters (Lyell's Crossing [AHIMS #45-4-0006], and LD9 [AHIMS #45-4-0219]). Two other significant sites are also documented in the project area including LD3 (AHIMS #45-4-0209) and LD8 (AHIMS #45-4-0214). The former has already been archaeological mitigated, while the latter has now been avoided by the project as a result of re-design (refer to Section 10.2). Larger sites appear to be closer to Coxs River and its tributaries (namely Farmers Creek), which means high density sites are likely to be located within a buffer of approximately 400 m from the original location of these water courses.

- Along the terrace of Farmers Creek that was investigated in the 1990s, wherever visibility exceeded 50% artefacts were observed and the artefacts were located at least within 100 m from original Farmers Creek, prior to flooding.

- Local studies demonstrate the importance of the Coxs River and its immediate tributaries as a focus for past Aboriginal visitation and occupation. A number of sites found on the banks of the current Lake Lyell were shown to contain several thousand stone artefacts and exotic materials (e.g. crystalline quartz). This is in contrast to the broader regional cultural assemblage, both indicating the rarity and significance of the sites typically found within 100 m of the edge of the former river system prior to inundation.

- A review of Heritage NSW's AHIMS database identified 103 previously documented sites in the search area. These were dominated by sites of varying densities of stone artefacts (~60%), with rock shelters making up a large proportion (~21%) of the remaining site types. Occasional rarer site types such as burials, ceremonial sites and culturally modified trees are also present. Fifteen sites were identified within or on the periphery of the project area, primarily associated with the Pacific Power studies in the 1990s and include two rock shelters with deposit and various densities of stone artefact sites.

6.2 Regional context

The first peopling of Australia occurred approximately 50,000 years ago (50 ka), and likely consisted of reasonably large groups of technologically advanced hunter-gatherers (Bradshaw et al. 2019, O'Connell et al. 2018). The peopling of the continent was rapid, with sites such as Devil's Lair (WA), Warratyi (SA), and Lake Mungo (NSW) all occupied within a few thousand years of arrival (Bowler et al. 2003, Hamm et al. 2016, Turney et al. 2001). Genomic research has shown that following these initial explorations of the continent, regional populations or nomadic sedentism, was established by ~40 ka (Tobler et al. 2017). These small populations were highly mobile, but remained within a broad spatial geographic area, dictated in general by the nature of resources and water availability. In the case of some of the arid parts of the continent, mobility encompassed thousands of square kms (Gould 1977), while major riverine corridors had near permanent settlements (Pardoe 1995).

In NSW, the earliest evidence of Aboriginal people are human remains recovered from the lunette in Lake Mungo and dating to ~42 ka (Bowler et al. 2003, O'Connell et al. 2018). The presence of red ochre covering the remains represents a society with significant cultural and symbolic complexity (Langley et al. 2011). Near the coastal edge, the earliest populations were found at Cranebrook Terrace, near Penrith (western Sydney). Here a handful of rudimentary stone tools were found in an alluvial unit, some 8 m below the current surface, and which were dated to ~40 to 45 ka (Williams et al. 2017). However, it is not until ~35 ka, that regional populations appear to have become established in the Sydney Basin, and which appeared to consist of small bands of people focussed mainly along major river systems, including the Hawkesbury-Nepean River, Georges River, and Hunter River (AAJV 2020, Hughes et al. 2014, Williams et al. 2012, 2014). These rivers formed key ecological refuges that hunter-gatherer groups used to survive major climatic events such as the Last Glacial Maximum (21±3 ka) – a cool and arid climatic period. Well-established archaeological models suggest populations experienced a major reduction in size (by as much as 60%), and settlement contraction and abandonment across much of the continent during this time (Veth 1993, Williams 2013), although recent research suggests that the story may be more complex than this (e.g. Tobler et al. 2017).

The terminal Pleistocene and early Holocene (~18 to 8 ka) was characterised by significant environmental change, notably the rapid inundation of much of the coastal shelf, resulting in the reduction of the continent by ~21% (~2 million km^2) (Williams et al. 2018), in tandem with improving climatic conditions – the Holocene climatic optimum (Williams et al. 2015a, Williams et al. 2015b). More broadly, these conditions resulted in increasing population growth, expansion of ranging territories, increasing sedentism (longer patch residence time) and the beginnings of low-level food production (e.g. aquaculture), and ultimately the initiation of social and cultural groupings observed in the late Holocene (Williams et al. 2015b). We see a much broader range of archaeological site types occurring, such as the Roonka Flat burial ground on the banks of the Murray River within which some 147 individuals were interred through the Holocene (Pate 1998), and the increasing use of marine resources. Many of the previous refuges were subject to abandonment or a re-structuring of land use (Dortch 1979, Fitzsimmons et al. 2019). These activities suggest the ability to undertake large-scale movements to mitigate environmental distress was becoming increasingly difficult and was addressed through diversification of hunter-gathering behaviours and, at least in part, technological advances, and investment (Williams *et al.* 2015b).

The late Holocene saw significant population increase, with hunter-gatherers reaching their zenith of ~1.2 million at 0.5 ka, a tenfold increase on Pleistocene levels (Williams 2013). Data suggests that the highest populations during this time were in the south-east of Australia. Williams et al. (2015b) suggest that this increase was likely a result of intensification of earlier technological advancements, including hafting-technology, plant and seed processing, and localised landscape management (using fire), allowing climatic downturns to be successfully weathered. These included strong arid El Nino Southern Oscillation (ENSO) conditions between 4 to 2 ka, and increasingly turbulent climatic conditions during the Medieval Climatic Anomaly (1.3 to 1 ka) (generally wetter) and Little Ice Age (0.3 to 0.5 ka) (generally drier) (Williams et al. 2015b). A result of these denser populations was the decreased freedom of movement and the formation of strong classificatory kinship systems, complex cultural and symbolic landscapes based on geographic totemism (the 'Dreaming'), distinctive graphic art systems, land rights in the form of ritual property, and formalized exchange networks (Williams et al. 2015b).

Archaeological studies throughout the locality of the project area have almost exclusively been undertaken in relation to environmental assessments for proposed or ongoing developments required under the NPW Act and the EP&A Act. Previous archaeological assessments relevant to the project area are summarised in Section 6.4. Given the limited development undertaken in the region and the large areas of land reserved for environmental conservation (such as Marangaroo National Park) there is likely a considerable under-representation of the archaeological sites in the region. As such, there is limited inferences on Aboriginal land use of the area that can be made. From the available material, it appears that the availability of water (and the associated faunal and floral resources) was a considerable factor influencing patterns of past Aboriginal land use. This assertion is supported by quantity of Aboriginal sites recorded in proximity to the River Lett, Coxs River, Lake Lyell, Lake Wallace, and Farmers Creek fringes.

6.3 Local context

The local area has been subject to extensive archaeological investigation since the 1980s, first as the basis for academic research and more recently for development-focussed compliance-based cultural heritage management (CHM) projects. We provide a summary of the relevant studies below.

Though there have been no systematic archaeological or cultural studies of the broader Blue Mountains area, owing to its inaccessibility and vast size (NSW National Parks and Wildlife Service 1998), an extensive record of Aboriginal occupation has been established for the region through independent studies that have been undertaken. For example, more than 1,000 sites have been identified in the AHIMS database as being located within the adjacent GBMWHA (Greater Blue Mountains World Heritage Area) (Mackay 2015, p.83), and a similar pattern of occupation has been recorded in the neighbouring Lithgow Valley, Newnes Plateau, and Hartley region. This is largely the result of pioneering archaeological excavations of rock shelter sites since the 1960s, at Shaws Creek, Springwood Creek, Kings Table, Lyre Bird Dell, Walls Cave, Blackfellows Hand shelter, Capertee 1 to 5, Emu Plains Shelter and Lapstone Creek (McCarthy 1964; Stockton 1970; 1973; Johnson 1979; Kohen et al. 1981; Kohen 1984; Gaul 1984). Dated rock shelter sites in the area suggest that Aboriginal occupation extended as far back as 14 ka, and potentially as early as 22 ka (Stockton 1973; Stockton and Holland 1974).

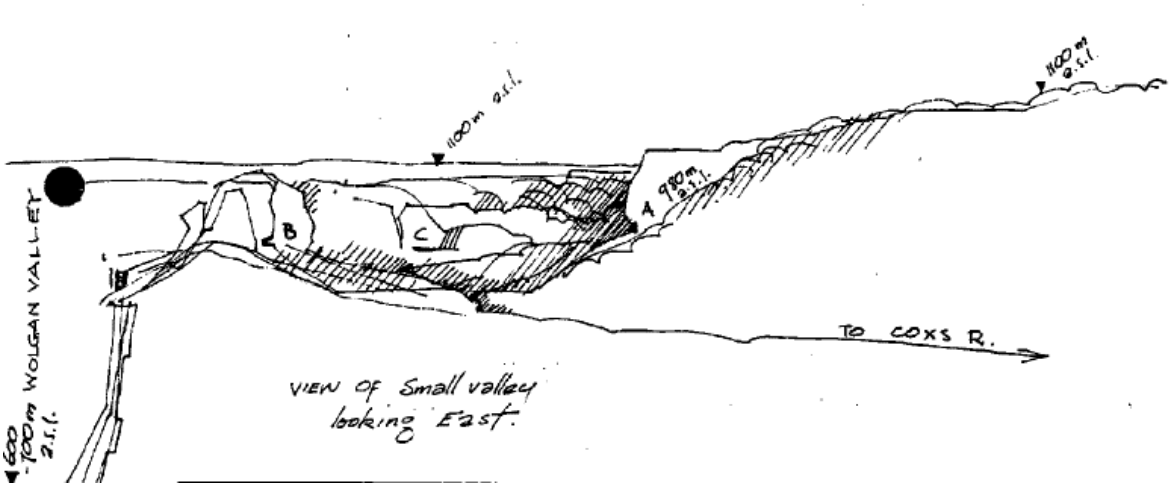
Since then, archaeological studies of the local area have focussed on the identification of Aboriginal occupation sites in two distinct environmental zones – rock shelters on sandstone pagodas and terraces of the sandstone plateau, and open artefact sites and culturally modified trees in valley floors and plains. In a seminal study completed in 1979, Ian Johnson summarised the state of knowledge at that time for the Aboriginal occupation of the high plateau of the Blue Mountains (incorporating the project area) as follows:

> The richness of the lithic assemblages… is closely related to topographic situation. Large rock shelters on the margin of the plateau… have a rich suite… of parietal art and very poor lithic assemblages, suggesting their use for ritual purposes or brief encampments rather than occupation for significant periods by family groups. The first detectable occupation of the plateau area appears to have occurred at least 12,000 years ago… There appears to be a progressive increase in intensity of use of the plateau area through time. Contact period accounts of the Blue Mountains and surrounding areas point to very low intensity occupation of the plateau area. It is not possible to say whether there was a permanent very low-density population or sporadic visits from surrounding areas, but the latter seems the more likely (Johnson 1979, pp.37-9).

Gorecki (1983, pp.3-4; 9-10) elaborated further on the nature of sites in the locality, noting that the:

> Greatest numbers of sites will be found in sandstone shelters above the escarpments, particularly if there is a swamp below. The sunny escarpments would provide a single base camp with access to all micro-environments (swamps, creek, valley, floor, hill, escarpment and plateau). The range of site types would include rock shelters and overhangs with archaeological deposit, paintings, and engravings and perhaps burials.
>
> …It appears that despite the presence of numerous swamps, rivers and permanent waterholes, an extremely limited number of open sites have been found so far. This may reflect a real prehistoric pattern, or it could be the result of taphonomic and cultural processes such as those derived directly and indirectly from various European activities (e.g. grazing, farming, logging, mining).

In 1939, Frederick McCarthy excavated four test trenches within a floor deposit at the base of Blackfellow's Hand Shelter. He described the deposit as being "sterile for the first 6 inches, with Bondaian material for 6 to 18 inches, underlain by a couple of feet of sterile deposit" (McCarthy 1939). He recovered nine backed implements and two fabricators from 2 m^2 of excavation (equating to an average artefact density of 5.5 artefacts /m^2), which was comparable to other low-density sites at Capertee 2, 4 and 5, Noola, and other sites on the Blue Mountains Plateau. In 1984, Greg Gaul completed a systematic recording of the art from Blackfellow's Hand Shelter and from two associated rock shelters nearby. The largest comprised an open shelter some 60 m in length and contained an occupation floor deposit with a small number of chert flakes, as well as various stencilled art motifs. These included 29 white, one red and three yellow hands, one white and one yellow arm, three yellow feet, a white kangaroo forearm, two white boomerangs, two white axes and a white doll-shaped stencil. A watercourse was noted as being 100 m downslope of the shelter. The second rock shelter was 700 m north-east of the first, approximately 40 m long and contained only red hand stencils, including at least one "infant" stencil (being 10 cm wide). The third shelter was 300 m east of the second shelter, approximately 30 m in length and contained approximately 50 white hand stencils, the majority of which comprised fingers only and were heavily faded (Gaul 1984, pp.12-21).



Source: Gaul (1994, p.18)

Plate 6.1 Cross-section of the valley containing rock shelters associated with Blackfellows Hand Shelter

More recent archaeological studies in the local area have been conducted in association with development projects including mining activities and associated infrastructure development and State Forest works. These studies are primarily based on desktop assessment and survey (ERM 2006; RPS 2010; 2012; 2014), though some localised open site and rock shelter excavations have also been undertaken (McIntyre 1990). The results of these survey-based studies demonstrate the presence of a considerable number of rock shelter sites with art and/or deposit, almost exclusively located on sandstone outcrops with cliff scarps and sandstone pagodas, and elevated areas including saddles and spurs, and at the base of cliffs in steep sided narrow gullies. There seemed to be a preference for the occupation of rock shelter sites that had good access to (<100 to 250 m), or good views of, running water (e.g. RPS 2010, p.51), but these rock shelter sites did not necessarily face a particular aspect – with 65% of known rock shelter sites reportedly having southern, south-eastern or eastern aspects (McIntyre 1990, p.22). Other Aboriginal sites present in the project area include low-density scatters (usually containing only small numbers of artefacts and/or isolated finds) close to minor drainage lines on low-gradient landforms, grinding grooves, as well as a scarred tree.

Where carried out, excavation of rock shelter sites within the local area revealed relatively shallow deposits of loamy sands and clayey sands to depths of 10 to 55 cm, where low densities of cultural material were recovered. Typically, the raw material sources for these buried artefacts comprised quartz, chert, mudstone and basalt. Radiocarbon samples were processed from a rock shelter near Sawyers Swamp Creek in the Newnes State Forest (AHIMS ID# 45-1-0147) that contained artefacts at depths of 15 cm below the ground surface, and this yielded an occupation date for the shelter of 3,240 ± 80 BP (before present). A radiocarbon date of 13,940 ± 90 BP was obtained from a second rock shelter nearby (#45-1-0148), but it was acknowledged that this sample was taken from a spit below the cultural deposit, in a unit that might have been culturally sterile (McIntyre 1990, Appendix 22). A hearth feature was recovered during test excavations of a rock shelter along a tributary of Sawyers Swamp Creek (#45-1-0159), and yielded a radiocarbon date of 9,490 ± 110 BP.

A second focus for archaeological studies in the local area was on the identification of open artefact scatter sites and culturally modified trees in areas of open, gentle topography – being in areas on small, flat ridge tops and spurs, or on creek flats a few metres above swampy intermittent streams. This is of greater relevance to the project area, since the landform characteristics that are present on site would suggest the dominance of open artefact sites and culturally modified trees as opposed to closed rock shelter sites in sandstone country. In 1985, Elizabeth Rich, Shelley Greer and Susan McIntyre (Rich et al. 1985) identified two artefact scatter sites adjacent to Long Swamp, near the Coxs River. Both sites, Long Swamp 1 and 2, contained low numbers of artefacts that were eroding from road cuttings, on two separate spurs between 50 m and 400 m from Long Swamp. The artefacts were likely to extend beyond their visible surface extent, and comprised milky quartz, cream mudstone and brown volcanics (refer to Plate 6.2).



Plate 6.2 **Example of quartz, mudstone and volcanic artefacts from Long Swamp 1 (left) and Long Swamp 2 (right), eroding from access tracks (Source: Rich et al 1985, pp.21-22)**

Similarly, archaeological survey for the proposed Springvale Colliery and related facilities by Elizabeth Rich and Alice Gorman (Gorman and Rich 1992) identified 11 artefact scatters, an isolated find, two possible site locations and three shelters with potential archaeological deposit (PAD). The artefact scatters were generally located on well exposed areas containing several artefacts with dominant raw materials of quartz, quartzite and mudstone. Shelters were predominantly composed of sandstone pagodas which are typical for the regional landscape and commonly located along tributary lines. Two of the shelters contained evidence of rock art.

From her work in the local area, McIntyre formed a tentative pattern of site location for the valley encompassing the project area:

> …major site complexes were located at the head of open gullies where there was relatively easy access from ridge tops to the resources provided by major creeks and rivers. Such complexes could also be found on the plateau at locations where vantage points were combined with localised resources. Large sites were also located along the western flank of the plateau where streams entered the Coxs River valley. Smaller sites representing sporadic visits were found at the end of long ridges. Ephemeral sites representing limited 'one-off' visits could be found almost anywhere below cliff lines (McIntyre 1990, pp.25-26).

Recent archaeological survey at the Angus Place Colliery has confirmed earlier regional models of archaeological site distribution across the various environmental zones (EMM, in prep.). A total of 18 new Aboriginal sites were identified as part of the investigation. The highest frequency of sites was identified on the upper sandstone scarps (78%), including all but one of the rock shelter sites and both grinding groove sites. Artefact sites and scar trees were predominantly found on the lower hillslopes, within 10 to 180 m of second and third order watercourses. Notably, two artefact scatters were identified as part of the survey, both in areas that had experienced moderate to high levels of disturbance. One was a low-density scatter on partially cleared land that were revealed on scald exposures by a wombat burrow within 10 to 20 m of an unnamed second order creek, while the other was a low-density artefact scatter in a highly disturbed rubbish dump area, visible in exposures where the soil had been disturbed by earth works and on a vehicle track. Favoured raw material types were typically quartz, mudstone and chert.

6.4 Previous studies

A series of archaeological assessments were undertaken for Pacific Power, overlapping the project area, in response to proposed upgrades of Lake Lyell (Bell 1992; McDonald and Barton 1995; McDonald 1995 – see Plate 6.3 to Plate 6.8). These reports found that open artefact sites were commonly found in low densities in the vicinity of Coxs River and its tributaries, such as Farmers Creek. Interestingly, McDonald (1995) suggests a variation in the utilisation of sites adjacent to Coxs River compared to those adjacent to Farmers Creek; the former posited to be characterised by short-term expedient stone-tool production for task-specific utilisation with the latter presenting evidence for a more concentrated occupation.

The identified sites adjacent to Farmers Creek (AHIMS #45-4-0915 and AHIMS #45-4-0916), which are located within the construction envelope, and LD3 (AHIMS #45-4-0209) adjacent to the former Coxs River represent the only open sites demonstrating a high density of surface artefacts within the wider region. Site LD8 (AHIMS #45-4-0214) is also determined to be highly significant in the region due to the range of raw materials; and this site has been avoided through project re-design.

6.4.1 Bell (1992) Aboriginal Sites Survey – Proposed Upgrade of Lyell Dam by Pacific Power

Pacific Power proposed to upgrade Lyell Dam, including inundating 40 ha of land due to an increase in height of the dam spillway to pre-empt forecasted flooding levels. An EIS was prepared, which included a field survey around the foreshore of the dam, including Lake Lyell, Coxs River and Farmers Creek (Bell, 1992).

The expectations of this assessment were that:

- the majority of sites in this area would be low density open artefact scatters, >50 artefacts, predominantly quartz, associated with watercourses, along Farmers Creek or Coxs River or mostly flat ground on ridges or spurs
- rock shelters or overhangs with artefact scatters would occur around the granite geology in the southern end of the study area
- scarred trees would be present along Coxs River, in areas of remnant vegetation.

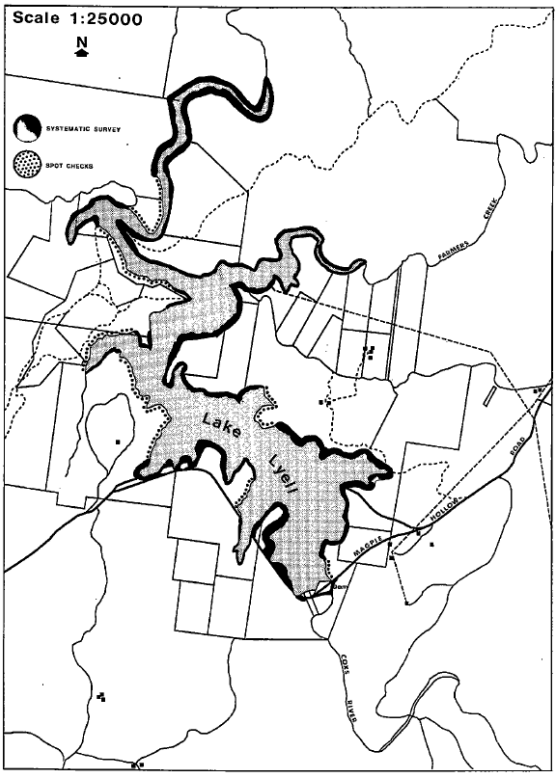
Nine sites were recorded, eight open artefact scatters and one rock shelter (although this recording encompasses two sites). There were a further five isolated finds identified in the vicinity of the recorded sites, however these are only mentioned, not recorded as sites. All of the artefact scatters were recorded as low-density sites with areas of PAD, including the rock shelters. All of the sites were recorded within 400 m of the former Coxs River.

Two rock shelters were recorded as part of an assessment of the area in the 1970s for the Wallerawang Power Station Unit No.8 (ECNSW, 1976). Bell records these rock shelters as one site and states that both of these rock shelters were recorded under the one AHIMS site #45-4-0098 (which is now AHIMS #45-4-0219) however they were originally recorded in the 1970s as Lyell's Crossing AHIMS #45-4-0006. These sites will now be referred to in this section as LD9 (AHIMS #45-4-0219) and Lyell's Crossing (AHIMS #45-4-0006) and should be updated in AHIMS as such, which encompasses the two identified rock shelters as these sites are located in the same vicinity on the eastern side of Lake Lyell. While they have been recorded as rock shelters they are not within caves or overhangs, rather recorded near granite boulders. Bell found that one of the boulders had been cracked, likely by explosives, and covered the area originally recorded as an artefact scatter. No artefacts were identified beside either boulder, though each boulder had a sandy loam deposit at its base that was identified as an area of PAD.

Artefacts scatters LD1 to LD8 were all recorded with <35 artefacts and within 400 m of the former Coxs River (refer to Plate 6.3). All of these sites were recorded with sheet erosion and disturbance from recreation (camping and 4WD). These sites were located on spurs or hillslopes overlooking the Coxs River and were made up of quartz and chert artefacts. With the exception of LD1, Bell identified areas of PAD (30 to 40 cm thick) for all these sites that extend beyond where the artefacts were located.

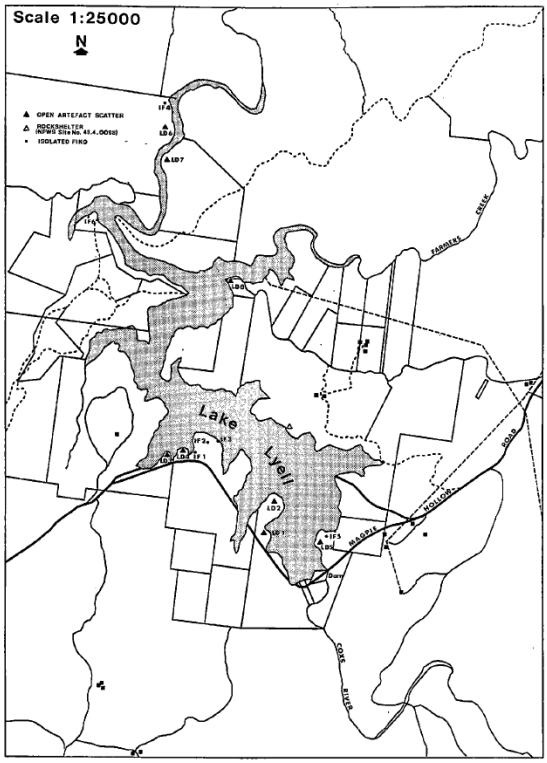
All artefact sites were located in exposed areas along watercourse edges, and up to 0.5 km from them on ridge flats or spurs overlooking the river. This was interpreted as a baseline for the entire archaeological resource of the surveyed area. A variety of raw materials were identified, including quartz, quartzite, jasper, indurated mudstone/tuff/chert (IMTC). Eight open artefact scatters were identified during this assessment and one rock shelter was reinvestigated. Quartz would have been easily accessible as cobbles and veins in the local sediments. All sites occurred where erosion had removed vegetation and slope was 10% or less.

This assessment concluded that this meant it was very likely for uneroded areas of similar topographical relationship to watercourses to contain artefacts. Individually the sites are not that scientifically significant but if the sites were looked at together, they could inform on the use of the region. LD8 (AHIMS #45-4-0214) contains a diversity of artefact material and type that is uncommon for the region. All of these sites were found to be of contemporary significance to local Aboriginal people. The assessment recommended that management of Aboriginal sites around Lyell Dam should be incorporated into environmental control measures and that further investigation of LD3 and LD4 should be carried out in the form of test excavations. Overall, the recommendations of the assessment were that a foreshore management plan be developed to implement ongoing mitigation measures for the protection of the Aboriginal sites in this area.



Source: Bell (1992)

Plate 6.3 **Areas surveyed for Pacific Power proposed upgrade of Lyell Dam**



Source: Bell (1992)

Plate 6.4 **Location of sites and isolated finds**

6.4.2 McDonald and Barton (1995) Archaeological investigation of sites affected by augmentation works at Lyell Dam - Salvage and Test Excavation Report

Following on from the findings of Bell (1992), additional archaeological mitigation activities were undertaken. These included test excavation of artefact scatters LD3, LD4 a newly identified artefact scatter LD12, and rock shelters associated with LD9 along with extensive surface collection salvage of observed cultural materials below the inundation level of the proposed works and reassessment of all sites identified by Bell in 1992 (refer to Plate 6.5); and the test excavations of rock shelters, LD9 (AHIMS #45-4-0219), Lyell's Crossing (#45-4-0006). None of these works involved salvage of the entirety of any sites and recommendations were made for those portions of the sites above the level of inundation. These recommendations were to be incorporated into a Mt Piper Land Management Plan.

Members of the Windradyne Local Aboriginal Land Council (WLALC) and the Greater Lithgow Aboriginal and Torres Strait Islander Corporation (GLATSIC) were consulted with for this assessment. No one from WLALC was available to participate in the fieldwork however it was agreed that the excavations could proceed and the WLALC should be informed of the outcomes. Members of GLATSIC were able to participate in the fieldwork. Test excavation was undertaken on sites LD3, LD4 and LD12 and surface collection both above and below the inundation line. The aim was to understand the extent of the sites to determine the impacts from inundation and recreation. A significantly high artefact scatter, both surface and subsurface, was recovered at site LD3 with ~3 to 4,000 artefacts/m² and continuous background scatter around the other sites. LD3 was found to be of high archaeological significance and protection recommended due to this site being the first time a "block fracture" quartz reduction and tool production event has been recorded in the Blue Mountains area. This site was also found to be significant due to (McDonald and Barton, 1995:35):

> The relatively high number of retouched tools from this square suggests that this was a multi-purpose stone knapping event: artefacts were being made for use in this location. The sheer quantity of artefactual material (>80,000 pieces are estimated for the entire event), implies that people were using this area repeatedly for the same task. The amount of debitage present, suggests that it is possible that the area was used in this fashion in order to limit the spread of freshly fractured quartz over the other living or working areas of the site. …this was not a localised vein knapped in this location: the material was transported from elsewhere.

It was recommended that LD3 was protected through burial and revegetation of the feature. It was also recommended that vehicle access be blocked off from this area, including LD4 which contained a high-density artefact scatter, and a range of raw materials. LD12 was assessed as a low-density artefact scatter with low scientific value and required no further mitigation measures.

LD9 (AHIMS #45-4-0219) and Lyell's Crossing (AHIMS#45-4-0006) are two rock shelters that test excavation was undertaken at and are located beside granite boulders on the eastern side of Lake Lyell. Although Bell (1992) had identified potential for a significant deposit in this area, only a low-density surface artefact scatter was identified, and the area appeared disturbed from vegetation clearance and grazing. Six artefacts were recovered from a single test pit excavated beside the boulder, made up of quartz and mudstone. Due to disturbance of the shallow soil profile, little else could be determined from these findings other than as evidence of occupation associated with granite boulders. No further management recommendations were made for the rock shelters.

The remainder of the sites re-investigated through survey but not through test excavation (LD1, LD2, LD5, LD6, LD7) were considered of low archaeological significance, and no further archaeological work was recommended. The exception to this was LD8 that was assessed as having high archaeological significance and high archaeological potential and was noted as likely to be heavily impacted by further recreational use of the area. It was recommended that camping facilities were improved, and specific vehicle access tracks were maintained in order to prevent disturbances across the area.

Soil erosion was found to pose the greatest threat to archaeological sites around the Lake Lyell Dam. It was recommended that sites of high and moderate archaeological significance were proposed for avoidance, given appropriate protection, and public use of these sites should be restricted. This included LD3, LD4, and LD8. Overall, the recommendations of the assessment were that a foreshore management plan was developed to implement ongoing mitigation measures for the protection of the Aboriginal sites associated with Coxs River and its tributaries.

McDonald and Barton examined these results in relation to the differences between the open artefact scatters excavated for this assessment and the results from rock shelters in the broader region. McDonald and Barton appear to disregard the findings from the rock shelters in this assessment and refer to them as open scatters. There is significant difference in the raw material used between these two site types and the ways in which these materials are used. In shelter sites chert is the most used material, which correlates with the production of backed artefacts, opposed to majority quartz and limited backed artefacts in open sites. These open sites are located closer to this source material, of reef quartz and cobbles, which has resulted in a different type of technology to that found in shelters. While these raw materials are found in early layers of rock shelters, the counts are very low. This could suggest that these open sites are relatively early. However, the clear identification of different uses of open sites in this area suggest occupation of the area was intermittent, as continuous occupation of a site would result in blurred boundaries between activities. McDonald and Barton suggest that there are "clear technological and perhaps therefore functional differences between open sites and shelter locations" (McDonald and Barton 1995 p.71)

Figure 2: Location of known sites around Lyell Dam.

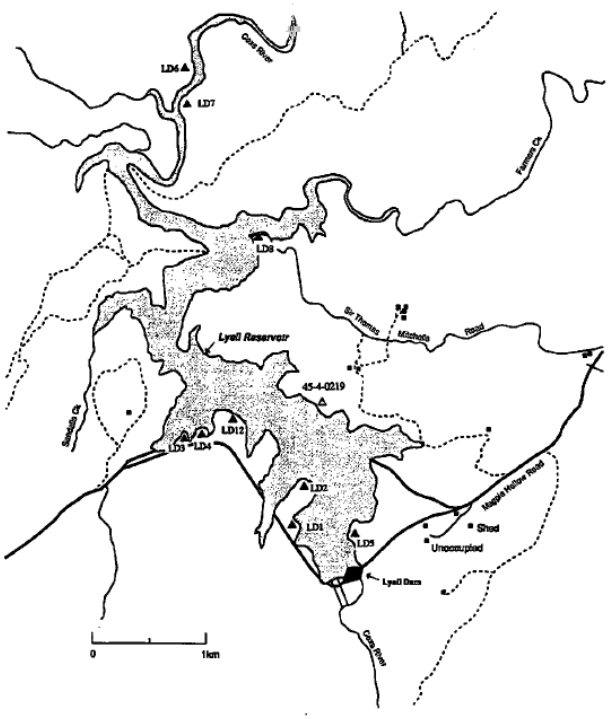


Plate 6.5 **Location of sites around Lyell Dam after McDonald and Barton (1995), including LD3, LD4, LD8 and LD12**

6.4.3 McDonald (1995) Archaeological survey of proposed works on a fire trail near Lyell Dam

This report builds on the previous work undertaken for Pacific Power, and assessed realignment works on a fire trail located within the current construction envelope on the southern side of Farmers Creek. The proposed works were to move the fire trail 5 m upslope in order to avoid the new high-water level. This assessment recorded two new sites on the fire trail, LD13 and LD14 (refer to Plate 6.6). These consisted of:

- LD13 – A high density artefact scatter of quartz and indurate mudstone/tuff/chert (IMTC) artefacts located along the fire trail bordering Farmers Creek and, on the slope, adjacent to the east (refer to Plate 6.7). No detailed recording of artefacts was undertaken; however, 94 artefacts were counted on the fire trail, around an ant's nest and eroding out of the edge of Farmers Creek. Artefacts were also observed in the erosion scar around the current waterline. Wherever visibility exceeded 50% artefacts were observed and the artefacts located at least ~100 m from original Farmers Creek, prior to flooding. An area of PAD was defined by lack of visibility and based on elevation, lack of slope, and the apparent absence of major sub-soil disturbance (refer to Plate 6.7). The existing fire trail cuts through this area of PAD. A number of areas of high density (20 artefacts/m^2) quartz artefacts were noted, which were interpreted as knapping features. The quartz observed was crystalline, demonstrating that it is high quality, and the knapping observed was unlike the block fracture technique of LD3 (using natural flaws in the material) rather using focalised platforms as at LD12.

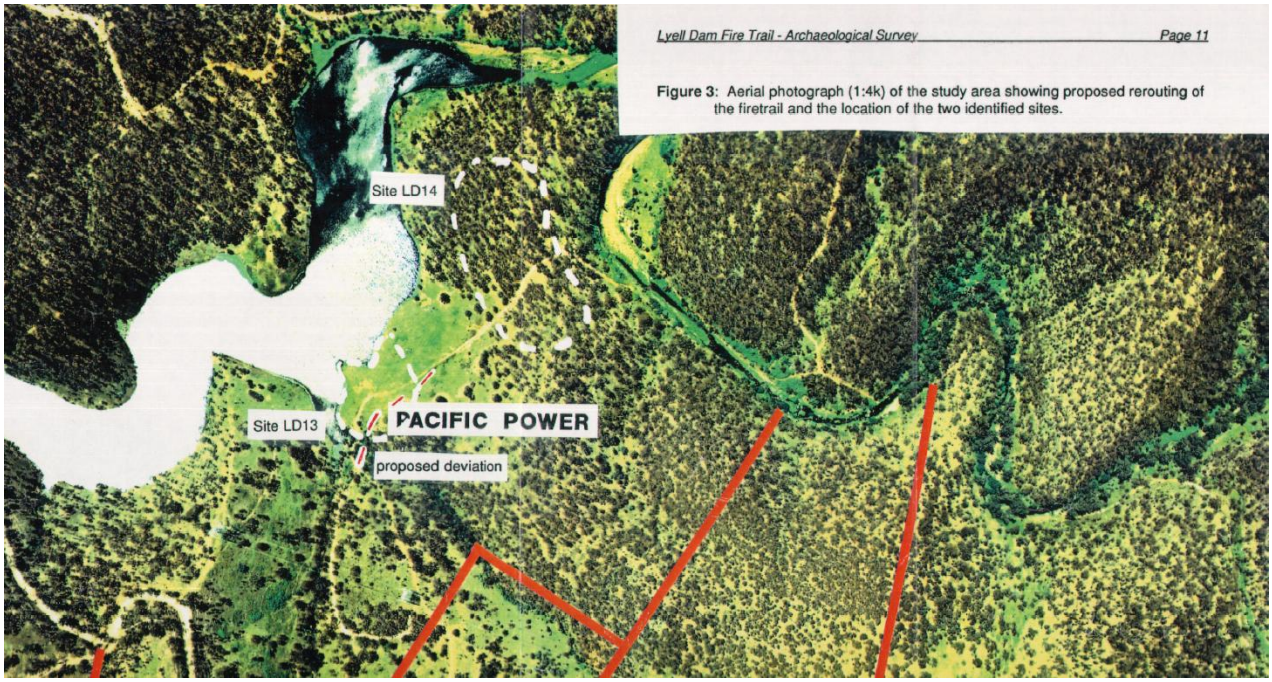
- LD14 – A high density artefact scatter of ~200 stone artefacts with a maximum density of 11 artefacts/m^2, however visibility was low. This site was located on the fire trail, dispersed across the ridgeline (refer to Plate 6.8), with artefacts recorded on, and either side of, a saddle. It was observed that artefacts had been moved down the slope likely by flooding events. Six chert blades were recorded, some with retouch and "one quartz blade with retouch, in exceptionally crystalline material…" (McDonald, 1995, p.15) were recorded.

Both LD13 and LD14 are located on a different geology to the sites recorded for the previous power station works. The raw material used is different from the bedrock and has been brought into this locale. Unlike other sites the quality of the quartz at LD13 and LD14 was extremely high, demonstrating a possible similarity to the use of this material to the use of IMTC on previously recorded sites. Compared to other surface artefact scatters recorded in the region, these sites were extensive and relatively high in density. Due to the inaccessibility of this area, these sites were, and remain, relatively undisturbed.

This report notes that previous works undertaken in the Blue Mountains region presents a consistent picture of occupation in the type of artefact scatter recorded, which are low in density, dominated by quartz, and most often located on elevated areas overlooking waterways. Diagnostic tools, such as Bondi points, are not commonly found in these sites and the average density of artefacts is <10 to 30/m^2. "Sites with larger recorded surface assemblages are extremely rare" (McDonald, 1995, p.5), and demonstrates that LD13 and LD14 have the potential to be highly significant sites in the region. However, McDonald notes that sub-surface investigation would need to be undertaken to determine the scientific significance. These sites offer good research potential as they contain high quality material and a different type of reduction technique to that documented on the other sites in the region located on granite geology. They offer new and unique opportunities to answer questions "…about occupation patterns, raw material procurement and reduction strategies in this area of the Blue Mountains" (McDonald, 1995, p.18).

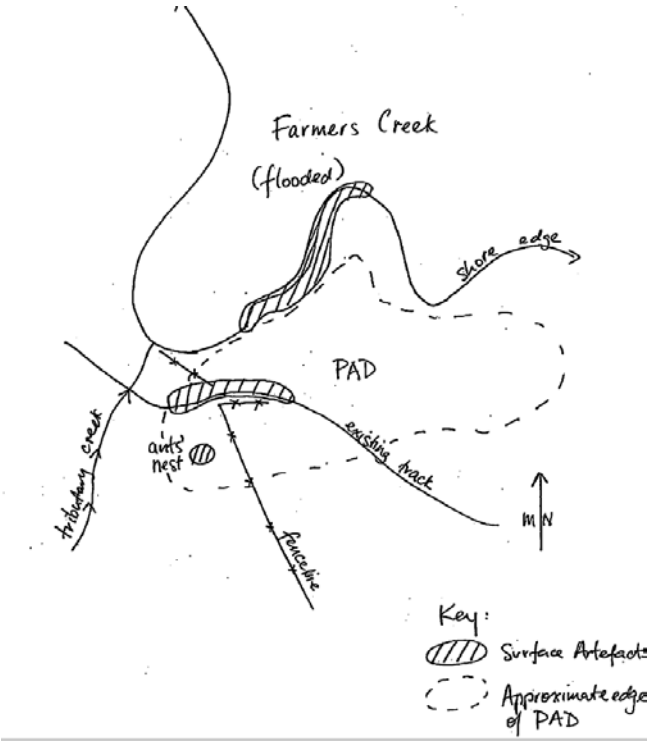
It was recommended that test excavation was undertaken for site LD13, and not for LD14 as it was outside of the inundation level. Any future proposed works in this area was recommended to undertake further assessment of LD14. If these sites were proven to be of high archaeological significance, it was recommended that they should be protected and avoided. No further assessment of either of these sites has occurred prior to the current ACHA.

Overall, the recommendations of the assessment mirrored those undertaken previously for Pacific Power, that a foreshore management plan was developed to implement ongoing mitigation measures for the protection of the Aboriginal sites in this area.



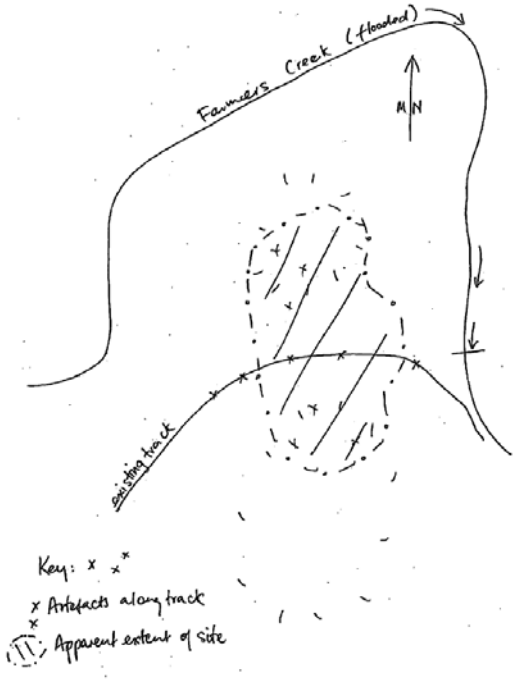
Source: McDonald (1995)

Plate 6.6 Location of sites LD13 and LD14 in relation to the current and proposed deviation of the fire trail



Source: McDonal (1995)

Plate 6.7 LD13 site plan



Source: McDonald (1995)

Plate 6.8 LD14 site plan

6.4.4 Rich (1985a; 1985b) Investigations associated with Mt Piper

Archaeological investigations were performed by Rich (1985a; 1985b) associated with infrastructure expansions for the Mount Piper power station (i.e. coal conveyor and water pipeline). The findings of the investigations included artefact scatters observed eroding out of lower topsoil units, artefacts on and along tracks, and within proximity of swamps and creek lines. Although the survey route crossed sandstone escarpments, no rock shelters with deposit, grinding grooves or art sites were encountered. The absence of rock shelters with deposit or art sites from the survey route was not analysed beyond noting that it contradicted the predictive model. Mt Piper power station is located ~15 km north of the current project area.

6.4.5 Rosen and Pearson (1997) The No.2 Stockade Cox's River - Its Life and Times an Historical and Archaeological Investigation

To improve transport routes west, various roads were constructed from Mount Victoria over the 1820s and 1830s. Sections of the road east of Lithgow had been completed by 1832 and in March 1832, 120 convicts and military regiments were transported from Wisemen's Ferry to the Cox's River to continue the route through the Lithgow Valley (Sue Rosen Pty Ltd 1994:14). Assistant Surveyor John Lambie oversaw the construction of a stockade on the Coxs River to house the convict gangs and overseeing regiments working on the road, which was completed in 1835 (Sue Rosen Pty Ltd 1994:14). Cox's Stockade No.2 was built on the west bank of Coxs River in the vicinity of present-day Lot 11 DP 751651 and Lot 5 DP 1181411 (Sue Rosen Pty Ltd 1994) and is in the project area. The stockade complex included the primary stockade on Lot 11 DP 751651 and Lot 5 DP 1181411, Captain Deedes' 1834 grant and cottage, and a burial/potential cemetery site on Lot 27 DP 751651.

Archaeological investigations by Sue Rosen and others in the 1990s found surface and sub surface evidence of the stockade (Rosen and Pearson 1997). Investigations also revealed the subsurface archaeological resources were generally at a 0 to 30 cm depth and as a result the stockade site had been impacted by the construction and demolition of a 1950s survey station cottage, domestic and heavy vehicles, use as a recreation place, inundation, and other unidentified post-convict activities.

Aboriginal archaeological material was also identified during these investigations, recorded as sites LD15 (AHIMS #45-1-0248) and LD16 (AHIMS #45-1-0249). Both of these sites were found in disturbed historical site contexts on adjacent sides of Coxs River and consist of:

- LD15 was recorded as an open artefact scatter of some 31 artefacts, including a chert Bondi point, a retouched chert flake, a number of chert and chalcedony flakes. This site is located on the opposite bank to LD16 also on a spur bounded on three sides by Coxs River. Three flaked bottle bases and three flaked glass flakes, one retouched were also identified. Due to the disturbance from a vehicle track and bulldozer movement, the identification of the glass flakes remains problematic. A low-density artefact scatter, including quartz and chert flakes, extends several hundred metres up the ridge.

- LD16 was recorded as an open artefact scatter of >5 flakes (quartz and basalt), on a spur bound to the north, west and south by the original Coxs River (~100 m). A larger artefact scatter exists 100 m upslope from the Convict Stockade site.

The stockade was partially inundated with the flooding of Lake Lyell in 1982 (Sue Rosen Pty Ltd 1992:23). Sue Rosen and others completed historical and archaeological investigations of the stockade site and areas around the dam as part of the Lake Lyell catchment expansion works in the 1990s (Rosen and Pearson 1997; Sue Rosen Pty Ltd 1992, 1994). For further information on this site see EMM 2024, Statement of Heritage Impact (SoHI).

6.4.6 Central West Archaeological and Heritage Services [CWAHS] (2000) Aboriginal Archaeological Study of the Marrangaroo Department of Defence Site

The predominance of rock shelter sites was acknowledged to be a result of the underlying sandstone geology of the area, which is a prerequisite for the existence of this site type. All rock shelters lacking art were located on mid to upper slopes in elevated, remote areas that were difficult to access. Conversely, the two rock shelters featuring art were located at the base of a low hillslope. All artefact scatters were located in disturbed contexts along the fringes of permanent waterways. Several areas were classified of moderate to high archaeological sensitivity based on the presence of certain landform elements, including exposed sandstone cliffs and outcrops, and alluvial and colluvial terraces along Marangaroo Creek. The Marrangaroo Department of Defence site is located ~8 km north-east of the current project area.

6.4.7 Comber Consultants (2009) Great Western Highway Upgrade, Mt Victoria to Lithgow – Preliminary Environmental Investigation Phase 2: Corridor Area Investigation

The predictive model identified three levels of archaeological sensitivity: Low sensitivity – includes towns and villages; Medium sensitivity – includes foot slopes and steep slopes; High sensitivity – includes ridge crests, spur crests, saddles, alluvial terraces and channels, and creek lines. These sensitivity classifications largely originate from archaeological site patterning, which is in turn influenced by underlying geological patterns. The area assessed by Comber Consultants was dominated by sandstone geology and features incised valleys, steep to precipitous slopes, and frequent overhanging and outcropping sandstone. Site types such as rock art, grinding grooves and occupational rock shelters all depend on this kind of geology. This report found these sites to be largely constrained to crests and ridgelines, although some had been registered in lower topographical contexts such as alluvial terraces and channels. Conversely, almost all artefact scatters had been registered in alluvial terraces or channels, on foot slopes and around creek lines. This area is located east of the current project area.

6.4.8 OzArk (2011) Wallerawang Quarry Extension project: Aboriginal and Historic Cultural Heritage Assessment Report

A ground-truthing study located approximately 12 km north of the current project area. The study included identification of stone artefacts, with many artefacts considered removed by erosional activity. This ground truthing program also targeted areas closer to Coxs River, although no further sites were identified. This was considered to be a result of sheetwash erosion across the area, which had been exacerbated by previous vegetation clearance. This finding is of importance to the current assessment, as many landforms in the project areas are prone to water erosion, and the southern portion of the project area has been subject to partial vegetation clearance.

6.4.9 OzArk (2021) Wallerawang Quarry Modification 3: Aboriginal Cultural Heritage Salvage Report

OzArk identified a light brown silty loam overlying bedrock across all test pits. This is an important finding, as AHIMS #45-1-2802 was located in the same soil landscape as the current project areas (i.e. Mount Walker). Only two artefacts were recovered, both quartz flakes without any diagnostic features. The quarry is location ~7 km north of the current project area.

6.4.10 EMM (2021) Angus Place West – Aboriginal Cultural Heritage Assessment

Some 23 Aboriginal sites were identified through survey. The majority of these were rock shelters (variously with and without art, artefacts, PAD, ochre resources, and combinations of these), with four artefactual sites also recorded. Fourteen of the 15 rock shelters were identified on upper scarp landforms, with the remaining shelter located on a middle scarp landform. Conversely, the majority of artefact sites were identified on lower hillslopes with only a single isolated find encountered on an upper scarp. These findings were considered to be consistent with broader archaeological patterns across NSW. This assessment is located ~16 km north of the current project area.

6.4.11 EMM (2021) Lake Lyell geotechnical program, Aboriginal due diligence assessment

As part of a due diligence assessment, areas to the south of Mount Walker within the current project area were inspected. No Aboriginal sites were identified although visibility was generally poor. However, both the Bathurst LALC and Mingaan Wiradjuri Aboriginal Corporation representatives highlighted the potential for intangible places, stories and values within the project area; and the need for these to be suitably investigated in subsequent project stages.

6.5 AHIMS data

The Aboriginal Heritage Information Management System (AHIMS) database is managed by Heritage NSW and includes a location and description of Aboriginal objects and sites recorded through academic research and cultural heritage management (see Annexure D.1 for a further explanation of Aboriginal site features). EMM conducted an original 19 x 21 km search of the AHIMS register on 6 December 2021 (ID: 645213), centring on the project area. which was updated on 7 February 2023 (ID: 748800), again on 15 May 2024 (ID: 892677) and again on 31 July 2025 (ID: 1029180) with the search results discussed below. The results are summarised below, illustrated in Table 6.1 and provided in full in Annexure D.

When excluding those sites that were registered as part of this project, some 103 recorded Aboriginal sites are documented in the search. Four of these have a site status of “not a site”. Therefore, this discussion will relate to the remaining 99 sites, of which two, both undefined open artefact scatters, have been destroyed (#45-1-2802 and #45-4-1225).

The most common and widely distributed site types within the search area are open campsites, comprised of stone artefact sites, such as artefact scatters and isolated finds. They are also frequently found in association with other site types. There are 21 rock shelter sites within the search area. Rock shelters featuring pigment art, or stone artefacts are also common in the region. This is a reflection of the prominent sandstone geology across the Blue Mountains region and is also evident in the surrounding archaeological studies. Sites such as rock shelters and rock art (both pigment and engraved) are dependent upon the presence of this geology, as they require outcropping sandstone and steep relief where caves and overhangs form.

Three burials—a relatively rare site type across NSW – have been recorded within the AHIMS search area but >5 km away from the project area. At least one of these (AHIMS #45-1-2545) is recorded as associated with the massacre of Aboriginal people during the war between Wiradjuri leader *Windradyne* and colonial forces during the 1820s, known as the Bathurst War (refer to Section 5.2.5). This site is located ~7 km north of the project area, and the remaining two burials are likewise situated a >5 km to the south-east of the project area.

The low frequency of culturally modified trees is both a reflection of the relative rarity of these sites as well as of an absence of archaeological assessments in rugged, uncleared areas where they may still be located. This is also the case for Aboriginal Ceremony and Dreaming sites, which are at once rare and often difficult to detect archaeologically, as they are not always associated with tangible archaeological signatures. For this reason, they may go undetected by compliance-based archaeological assessments.

With respect to site distribution, the registered sites in the region cluster along the River Lett, Coxs River, Lake Lyell, Lake Wallace, and Farmers Creek fringes, with relatively few sites located away from these watercourses. This is likely a reflection of the tendency of Aboriginal people to camp near water, as well as a bias caused by the location of compliance-based assessments. Some sites cluster around infrastructure and towns, with many sites in the current search area being situated within the Lithgow Correctional Centre and Marrangaroo Training Centre footprints, as well as along the edges of the Great Western Highway. Rather than being an accurate reflection of past Aboriginal land use patterns, this is considered to be an indication of a recording bias towards contemporary development activities. However, development in the region is sparse, with much of the land use in the area still primarily uncleared and used for environmental conservation (e.g. Newnes State Forest, Marrangaroo National Park). Therefore, it is likely that the number of registered sites reflects only a portion of actual sites in the region. There are a large number of sites along the plateau to the east and within the project area, which is a reflection of the works undertaken by National Parks for Pacific Power for example. This is discussed further below and in the preceding sections.

Fourteen sites are located within the project area, with two located within the construction envelope (refer to Table 6.2; Figure 6.1). Three of these sites are currently located in the wrong location on the AHIMS database: LD3 (AHIMS #45-4-0209, LD4 (AHIMS #45-4-0210) and LD12 (AHIMS #45-4-0914) (currently with coordinates approximately 1 km west of their actual location). Further, LD3 (AHIMS #45-4-0209) and LD4 (AHIMS #45-4-0210) are currently both spatially shown under the location of LD3 (AHIMS #45-4-0209), despite being two different locations (refer to Section 5.4). The remaining sites consist of two rock shelters with deposit (currently recorded as three separate sites, Lyell's Crossing [AHIMS #45-4-0006] and LD9 [AHIMS #45-4-0219, AHIMS #45-4-0098]) and open artefact scatters of varying densities.[1]

The two sites, LD13 (AHIMS #45-4-0916) and LD14 (AHIMS #45-4-0915), located within the construction envelope are comprised of high-density artefact scatters, demonstrating prolonged or repeated use of the locale, and include exotic raw materials (high quality crystalline quartz). They are considered of high scientific significance (refer to Section 6.4). These sites are further discussed in subsequent sections.

[1] These errors and inaccuracies have been resolved as part of this assessment.

Table 6.1 AHIMS search results

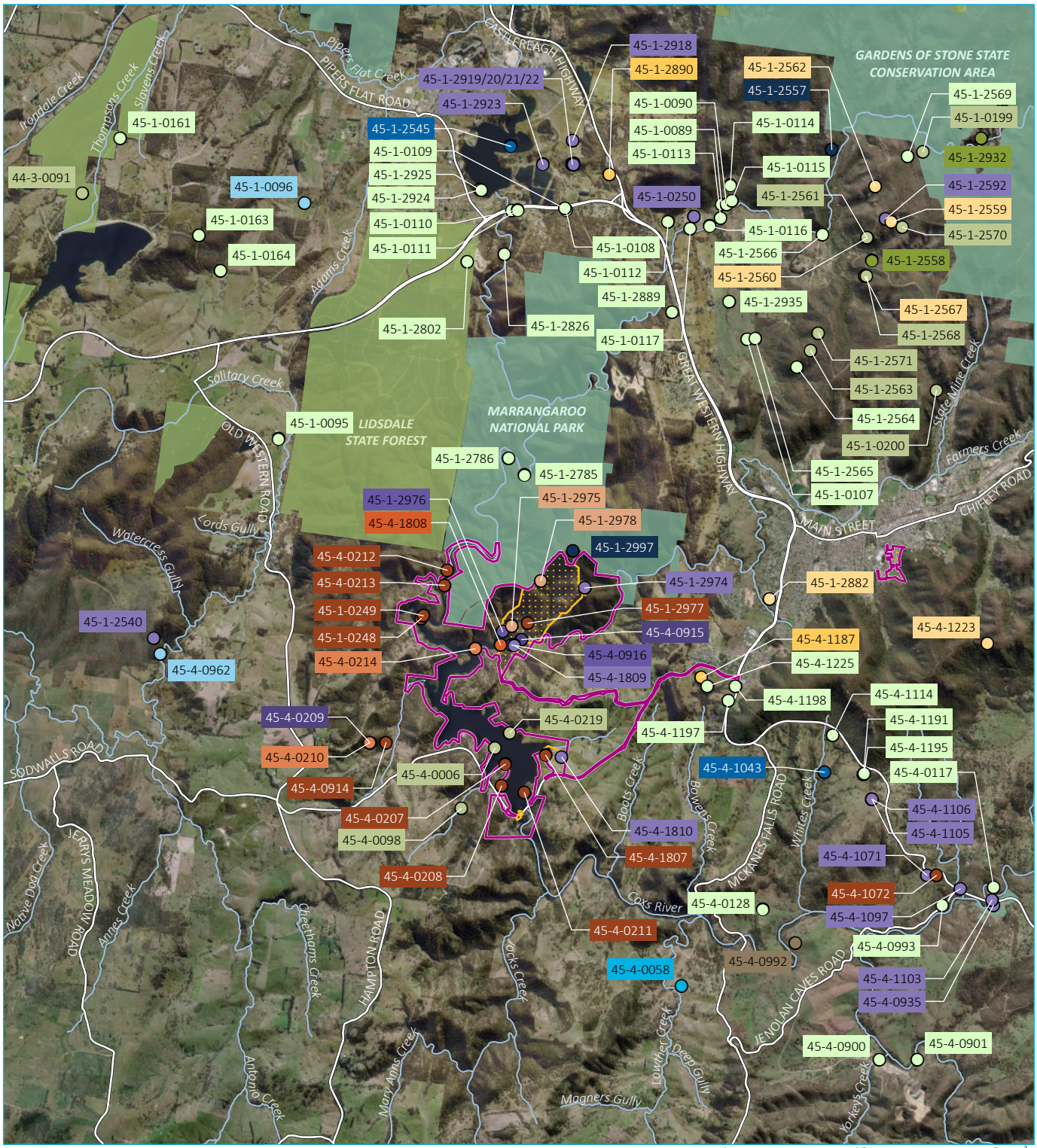
Site type	Number of sites	Representation (%)
Undefined artefact scatter	60	60.61
Rock shelter with deposit	11	11.11
Isolated find	9	9.09
Rock shelter with art	7	7.07
Rock shelter with art, artefacts	3	3.03
Culturally modified tree	2	2.02
Burial	2	2.02
Burial, artefact scatter	1	1.01
Aboriginal ceremony and Dreaming	1	1.01
PAD	1	1.01
Undefined artefact scatter, PAD	1	1.01
Undefined artefact scatter, water hole	1	1.01
Total	**99**	**100**

Table 6.2 Registered AHIMS sites within the project area

AHIMS ID	Site name	Site type	Location	Description
45-1-0248	LD 15; Lyell Dam 15	Moderate density artefact scatter	[redacted]	Moderate density artefact scatter partially salvaged on Coxs River. Site included 31 artefacts, including chert and quartz flakes. Potential Contact site with possible glass flakes present. Recovered from disturbed context from the Convict Stockade Site (see EMM 2024, SoHI). A low-density artefact scatter extends several hundred metres up a ridge, which was not salvaged. Refer to Section 6.4.5.
45-1-0249	LD16; Lyell Dam 16	Low density artefact scatter	[redacted]	Low density artefact scatter partially salvaged on Coxs River of four artefacts, with three potential quartz flakes. There is another artefact scatter 100 m up slope from this site. Recovered from disturbed context from the Convict Stockade Site (see EMM, 2024, SoHI). Refer to Section 6.4.5.
45-4-0006	Lyell's Crossing; Andy's Stack's Hill	Rock shelter with deposit	[redacted]	Low density artefact scatter of quartz and jasper partially salvaged from under an overhang of granite boulders on eastern bank of Lake Lyell. This site is associated with LD9. Correct location co-ordinates are [redacted]. Refer to Section 6.4.1.
45-4-0207	Lyell Dam 2	Low density artefact scatter	[redacted]	Low density artefact scatter (n=<10) on original banks of Coxs River. The site is located on a precipitous slope, extending up to a nearby ridgeline. Refer to Section 6.4.1.

AHIMS ID	Site name	Site type	Location	Description
45-4-0208	Lyell Dam 1	Low density artefact scatter	[redacted]	Low density artefact scatter (n= >50), 300 m from the former Coxs River. The site has been disturbed from erosion as a result of flooding of Lake Lyell. Refer to Section 6.4.1.
45-4-0209	Lyell Dam 3	High density artefact scatter	[redacted]	High density artefact scatter (~3 to 4,000 artefacts/m² and continuous background scatter 400 m from former Coxs River. This site has had both partial surface salvage and sub surface test excavation, and a block fracture knapping floor was located at this site. Please note these presented AHIMS coordinates here are ~1 km west of actual site location. Correct location co-ordinates are [redacted]. Refer to Section 6.4.1.
45-4-0210	Lyell Dam 4	Moderate density artefact scatter	[redacted]	Moderate density artefact scatter (>14 artefacts) located on north facing spur of a ridge 400 m from former Coxs River. It is likely that in situ archaeological deposits extend upslope. The site is in poor condition from erosion and sheet wash. This site is located within the broader curtilage of LD3. Please note these presented AHIMS coordinates here are ~1 km west of actual site location. Correct location co-ordinates are [redacted]. Refer to Section 6.4.1.
45-4-0211	Lyell Dam 5	Low density artefact scatter	[redacted]	Low density artefact scatter >10, on a vehicle track, 250 m from the former Coxs River. See Section 6.4.1.
45-4-0212	Lyell Dam 6	Low density artefact scatter	[redacted]	Low density artefact scatter located on spur leading to former Coxs River (70 to 100 m). Deposit likely continues across the top of the spur. Refer to Section 6.4.1.
45-4-0213	Lyell Dam 7	Low density artefact scatter	[redacted]	Low density artefact scatter of seven artefacts located 50 to 100 m from Coxs River. Likely shallow deposit continues across the top of the spur. Refer to Section 6.4.1.
45-4-0219	Lyell Dam 9	Rock shelter with deposit	[redacted]	Low density artefact scatter at the base of two granite boulders, each deposit about 2 m x 3 m in size. The site is some 300 to 400 m from the former Coxs River. Disturbed likely from explosives used on boulders as part of the dam establishment. Refer to Section 6.4.1.
45-4-0214	Lyell Dam 8	Moderate density artefact scatter	[redacted]	A moderate density artefact scatter featuring at least 30 artefacts. The artefacts are largely located on a vehicle track on a small knoll at the base of a ridge disturbed from sheet wash, ~150 m from former Farmers Creek and at the confluence with Coxs River. This artefact scatter is of high significance due to the range of raw material and tool types. Refer to Section 6.4.1.
45-4-0914	LD 12	Low density artefact scatter	[redacted]	A low-density artefact scatter related to LD3 and LD4. It is located on a spur jutting into the Lake Lyell, northeast of LD4. A knapping scatter of crystalline quartz in gully erosion developed around as vehicle track, with dispersed artefacts of other material types of upslopes and along the lake front. This site was partially salvaged in 1995, with the bedrock reached at a depth of 1 to 5 cm. Please note these presented AHIMS coordinates here are ~1 km west of actual site location. Correct location co-ordinates are [redacted]. Refer to Section 6.4.1.

AHIMS ID	Site name	Site type	Location	Description
45-4-0916	LD 13	High density artefact scatter with PAD	[redacted]	High density artefact scatter of 94 quartz and IMTC artefacts located along the fire trail bordering Lake Lyell and, on the slope, adjacent to the east. Artefacts were also observed in the erosion scar around the current waterline. Wherever visibility exceeded 50%, artefacts were observed. Artefacts located at least ~100 m from former Farmers Creek, prior to flooding. An area of PAD was defined as a result of a lack of visibility and based on elevation, lack of slope, and the apparent absence of major disturbance. The existing fire trail cuts through this area of PAD. Refer to Section 6.4.3.
45-4-0915	LD 14	High density artefact scatter with PAD	[redacted]	This site was located where the existing firetrail transects the ridgeline to the east of site LD13. The track crosses a saddle, and artefacts were observed both on the track, and in relatively undisturbed conditions both north and south of the saddle. Visibility on the track was average (c.50%) given the cover of gravels and leaf litter and poor light (late in the day). In the bush on either side for the track, visibility was between 0 to 35% due to low grasses and leaf litter. Several hundred crystalline quartz artefacts were observed at the site, over an area of about 70 m (along the ridge) and 50 m along the track (i.e. perpendicular to the ridge). The lower artefacts in the latter context are thought to have been mobilised down the steep slope by water action/gravity down the track. The maximum density of artefacts noted was 11 artefacts/m^2. Amongst the artefacts were six chert blades, two of which had evidence of retouch. One quartz blade with retouch, in exceptionally crystalline material was also noted. Refer to Section 6.4.3.



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2025); GA (2009); OEH (2025)

0 2.5 5 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA012_AHIMS\ACHA012_AHIMS_20250904_06.aprx 9/4/2025

KEY

- Project area
- Construction envelope

AHIMS (by site type)

- Aboriginal ceremony and dreaming
- Burial
- Burial, undefined artefact scatter
- Culturally modified tree
- High density artefact scatter
- High density artefact scatter, PAD
- Isolated find
- Low density artefact scatter
- Low density artefact scatter, PAD
- Medium density artefact scatter
- Medium density artefact scatter, PAD
- Potential Archaeological Deposit (PAD)
- Rockshelter with art
- Rockshelter with art, artefacts
- Rockshelter with deposit
- Undefined artefact scatter
- Undefined artefact scatter, water hole

Existing environment

- Major road
- Named watercourse
- NPWS reserve
- State forest

AHIMS

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 6.1

EMM creating opportunities

6.6 Predictive model

A predictive model of Aboriginal site location has been devised based on the data presented in the preceding sections. In summary, the model has been formed by an analysis of:

- landscape features in the project area and surrounds
- pre-colonial period ecological conditions
- advice from Aboriginal knowledge holders including RAPs
- ethno-historical information about Aboriginal life and material culture
- the type and distribution of Aboriginal sites described in previous reports and AHIMS data.

The model enabled the following predictions to be made about the location of Aboriginal sites within the project area which has guided the archaeological survey and test excavations performed as part of this ACHA. On the basis of the archaeological sites registered in the region, a review of previous archaeological studies and the environmental context, the following conclusions can be drawn regarding the potential presence and location of Aboriginal sites within the project area:

- Open artefact scatters are the most common site types within the region and can occur across most landforms, even in disturbed contexts. Open artefact sites are usually found close to waterways but above flood level on elevated, level to gently inclined landforms such as hill crests and hill spur crests and alluvial terraces. Based on the regional review, proximity to Coxs River or its major tributaries seems to be a driving factor in the presence of large-scale and/or significance cultural deposits of this type. The most common site type is likely to be surface and/or subsurface stone artefactual material reflective of past visitation and/or occupation.
- Isolated finds are also a relatively common site type in the region and may be indicative of random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or subsurface artefact scatter.
- Rock shelters are a highly significant site type that appears frequently in the region relative to NSW. Rock shelters in the region occur primarily where sandstone or granite outcrops and overhangs are present. A review of AHIMS data suggest that two such sites are present within the project area, although these are found amongst large broken granitic boulders. The steep slopes of Mount Walker and other comparable granite outcrops may similarly identify the presence of such sites.
- Culturally modified trees, including scarred and carved trees, may occur where native vegetation has been preserved. No culturally modified trees were located on the AHIMS records, however due to the limited studies undertaken in the region and the large areas of remnant vegetation located in the project area, there remains a high potential for these site types to occur in the project area. Carved trees may occur in association with burials, ceremonial sites or as indicators of ‘dreaming’ tracks and pathways. As such, they may occur only where native vegetation has been preserved, but their location within the landscape is difficult to predict without the aid of cultural knowledge.
- Grinding grooves and quarry / stone procurement sites have the potential to occur should suitable rock outcroppings be available. No grinding grooves have been previously recorded within the project area and surrounds, and the geology and topography of the area is typically considered unsuitable for this site type in many areas. However, the presence of dense cultural deposits indicative of intense occupation is present and would indicate such activities (e.g. tool sharpening) are probable in the general locale.

- Middens of bone, charcoal, stone and freshwater shells may occur along extensive and reliable river systems. However, none are recorded in the regional landscape, and are unlikely to occur within the project area. If present, they are most likely to occur in association with open camp sites on waterways.

- Burials can occur anywhere in the landscape but are notably more likely on watercourses or under rock ledges; their identification in the landscape is rare. Generally, they would be identified by mounds of earth, carved trees or stone markers. Evidence of burials is generally rare because human bodies are susceptible to the acidic Australian environments and other taphonomic processes. Where sub-surface burial is not performed, human bodies can have limited preservation in the archaeological record. Such sites and their component parts are also more susceptible to the impacts of low-level development (such as farming) than other sites.

7 Field investigations

7.1 Key findings

- On-site validation consisted of field surveys and test excavations undertaken by EMM archaeologists and representatives of the RAPs. The field investigations focussed on the initial construction envelope for the project, with test excavations targeted to key locales within the construction envelope. The field survey encompassed a two-week period in October and November 2023 and in August 2025, while the test excavations consisted of a four-week program in February and March 2024. The field activities completed ultimately totalled over 50 days of investigation on-site.

- The field survey encompassed some 129 km (or some 292 ha) of linear pedestrian transects across the project area and included 330 individual points of observation and documentation. Visibility and coverage were relatively poor (~1.32%) due to dense vegetation. Despite this, some eight Aboriginal objects, sites and/or places were documented, and two previously documented sites reidentified. These were primarily found within Farmers Creek alluvial terraces, and included: five artefact scatters, one isolated find, and two potential culturally modified trees - the latter being identified by Aboriginal participants. Two further areas of PAD were also identified within the construction envelope. Four of these sites were considered to have high value, artefact scatters and areas of PAD, LL AS3 (AHIMS #45-1-2976), LD8 (#45-4-0214), and LD13 (AHIMS #45-5-0915) and LD14 (AHIMS #45-4-0915).

- Test excavations consisted of sixty-seven 0.25 to 1 m^2 manually dug test pits in a systematic grid focussing on the identified sites with potential for subsurface cultural deposits, alluvial terrace and large ridge-line landforms. Overall, some 1,344 artefacts were recovered primarily between 10 to 40 cm below surface, with the majority recovered from three discrete locations associated with LL AS3 (AHIMS #45-1-2976), LL AS4 (AHIMS #45-1-2978), and LD13 (AHIMS #45-5-0916). The results indicate that a background scatter of ~8 to 11 artefacts/m^2 may be expected across the project area, with densities of >70/m^2 more indicative of specific visitation and/or occupation. The assemblage was dominated by milky quartz, with lesser portions of IMTC. A smaller amount of cryptocrystalline quartz considered to be exotic in origin was also encountered. Along with the OSL chronology, the cultural assemblage is predominantly considered to reflect a range of transient, but repeated visitation, over the last 1,500 years. The assemblage from one site may hint at an earlier visitation between ~4 to 8 ka (thousand years ago).

- The findings of the field investigation align closely with the previous investigations outlined in Section 6.4. These all demonstrate that the most significant cultural deposits appear to primarily be found on the banks of the major creek corridors, and specifically Farmers Creek. However, a high density of cultural materials was encountered on one of the few large flat ridgelines near the peak of Mount Walker, which contrasts with established models; and which may reflect a hunting camp making use of good view-lines of the region or a series of ridgelines between Coxs River and Farmers Creek in this location.

7.2 Archaeological survey

7.2.1 Approach and methods

EMM conducted an archaeological field survey of the construction envelope with the assistance of Aboriginal representatives from the RAPs over a two-week period (30 October to 9 November 2023). The survey was directed by Megan Sheppard Brennand (EMM Senior archaeologist), with the archaeological team consisting of Nicolas Reilly (EMM archaeologist). A further one day of survey was undertaken in 2025 to investigate additions as a result of project refinement (5 August 2025), directed by Megan Sheppard Brennand (EMM Senior archaeologist), with the archaeological team consisting of Amber Morgan (EMM archaeologist). A number of RAPs were represented (~4 to 5 sites officers per day, each representing a single organisations and/or individuals) throughout the course of the program (refer to Section 3.3.2); a list of individuals and groups present during the survey is presented in Table 7.1.

The primary aims of the survey were to:

- identify Aboriginal archaeological sites and/or Aboriginal places within the survey area and assess their significance with the assistance of RAP representatives
- identify any previously registered AHIMS archaeological sites and/or Aboriginal places within the survey area and assess their significance with the assistance of RAP representatives
- characterise the landscape to aid predictions of archaeological potential
- identify sites or areas that would require further investigation if planned for development as part of the Project
- identify sites or areas to be avoided by development, where possible
- identify areas with minor or negligible Aboriginal cultural heritage values that are most suitable for development.

The archaeological survey and data collection methods followed section 2.2 of the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010). To ensure full coverage of the proposed areas of (potential) impact were suitably surveyed, the survey targeted the construction envelope generally; and each transect aligned with discrete landforms where feasible. Each survey participant was spaced approximately 10 to 20 m apart for each transect. Ultimately this allowed for survey of areas ~100 m in width. Due to poor visibility across the entire construction envelope the assessment calculations assume that each participant could identify and inspect exposures within 5 to 10 m either side of them. Notwithstanding, this calculation does not account for more obtrusive site types such as rock shelters and culturally modified trees which are observable from a much greater distance.

The survey team targeted ground exposures along transects, outcropping bedrock, and other features where cultural material were predicted to occur. It must, however, be noted that archaeological surveys are inherently limited by ground surface visibility conditions and therefore are considered to only *sample* the landscape. The archaeological survey did not aim to cover the entire ground surface within the construction envelope, but rather to characterise the archaeological landscape through accessible portions of the area.

The effectiveness of the survey is determined through recording and analysing survey coverage data. It is evaluated for its effectiveness in identifying the distribution of Aboriginal objects across the landscape and considering the potential for archaeological deposits. The percentage of the ground surface exposed in each landform and the visible ground surface within exposures (as ground exposures are often obscured by vegetation, gravels, etc.) influences the survey results. For example, an archaeologically sensitive landform surface that is highly exposed by erosion is likely to reveal Aboriginal objects, whereas a similar landform that is thickly grassed will obscure surface artefacts if they are present. Overall, calculation of effective survey coverage is used to estimate not only how much area was physically surveyed, but also how favourable the survey conditions were for the identification of Aboriginal sites.

Site recording was completed in accordance with the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010). Site locations and their details were recorded with mobile phones using site recording forms created by EMM on the Survey123 application for ArcGIS (Esri© software). The mobile phones had a location accuracy of up to ±3 m which is similar to hand-held non-differential GPS units (~5 m). The Survey123 forms allowed for a site's location, details and representative photographs to be linked together, which avoided potential post-fieldwork issues around data integrity.

Survey transects were recorded as tracks on GPS units and detailed information about each transect recorded on a separate Survey123 form created by EMM. The Survey123 form allowed for survey transects starting points, details and representative photographs to be recorded. The course of survey transects were recorded as tracks on hand-held non-differential GPS units which were linked to the Survey123 forms.

Table 7.1 Registered Aboriginal Party representatives present during the survey

Organisation	Representatives
Girragirra Murun Aboriginal Corporation	Max Kennedy Chris Reid
North East Wiradjuri Corporation	Coral Williams Kelsey Williams Fawcett Brooke Williams
Gallanggabang Aboriginal Corporation	Greg Kennedy
Mingaan Aboriginal Corporation	Sharon Riley Jason Zormz Yamandirra Patsy Wolfindin John Brasher
Warrabinga Native Title Claimants Aboriginal Corporation	Damien Manson Tyler Flick
Wingarra Wilay Aboriginal Corporation	Greg Kennedy Zak Flick

7.2.2 Results

This section provides a summary of the field survey, the survey comprised 17 discrete transects, extending over ~129 km and encompassing ~292 ha of observation across the project area (refer to Figure 7.1; Table 7.2). The transects were on average ~4 km in length, ranging between ~580 m up to ~14 km. Transects were unable to be differentiated by landform due to the steep and rugged terrain within the project area. All parts of the surveyed area were investigated, with the exception of areas that were considered too steep to safely traverse. Some areas to the south of Farmers Creek were also inaccessible due to heavy overgrowth of blackberry bushes. Across the project area exposure averaged ~14.12% (reflecting the high proportion of vegetation cover), visibility averaged ~15% and effective coverage ~70%. A summary of each transect is provided in Table 7.2 and a full photographic catalogue is provided in Annexure E.2.

Topographically, the project area is dominated by mountain slopes and saddles dotted with granite outcrops and grassy terraces adjacent creeks with relatively dense vegetation along waterways, notably Farmers Creek. The terrain was mostly steep mountain slopes (refer to Plate 7.1 and Plate 7.2) that undulated at drainage lines with the channels eventually emptying into Farmers Creek. The current banks of Farmers Creek represent alluvial terrace landforms prior to the inundation of Lake Lyell and the increased water levels (refer to Plate 7.3). Inundation only resulted in some 50 m of change (either side of the Creek) in the upper reaches, and as such these areas were likely part of the original alluvial plains and lower slopes adjacent the creek prior to the formation of Lake Lyell.

Disturbance was primarily observed in the development of tracks and roads across the project area. To the north of Farmers Creek, tracks have been created primarily on mountain saddle and ridgeline landform which is likely to have displaced Aboriginal cultural heritage that may have been present prior to the installation of the respective tracks (refer to Plate 7.4). The flooding of Lake Lyell is also likely to have significantly affected Aboriginal cultural material in the area, both by submerging sites but also by eroding sites that would not have been subject to wave action following the increase in water levels. Other discrete pockets of disturbance were observed, primarily caused by the popularity of the area among campers and off-road drivers.

The remnant vegetation of the project area is visible to the north of Farmers Creek and is largely characterised by open eucalyptus forest. Large eucalyptus species dominate the canopy with native grasses and shrubs common in the understorey. The primary difference was observed on southeastern facing mountain slopes where dense ferns were observed. Where remnant vegetation had been cleared, dense native grasses dominated the ground cover. An exception to this was observed in the discrete portion of the construction envelope to the southeast of Lake Lyell, which was located on a grazed paddock. This area also varies from the majority of the construction envelope as a large portion of this area is within a drainage line of Lake Lyell (Colletts Swamp, refer to Plate 7.5), which would periodically inundate and erode the soil profile. The steep slopes and gully across the majority of this area provide little potential for the retention of cultural materials (if present) and have largely been stripped of remnant soils through colluvial processes. There is a small portion in the south east that is located on the lower part of a ridge flat that has potential to contain remnant soils (refer to Plate 7.6).

As identified in Section 6, rock shelters are a common site type in the region. All steep relief and any significant outcrops were targeted and investigated as part of the field survey. No rock shelters or features such as caves or overhangs were observed. It must be highlighted that while the slopes of Mount Walker are steep, few of them reached elevations of >80° in which caves or overhangs may be expected to occur.

The field investigation identified eight previously undocumented Aboriginal objects and/or sites and re-identified one previously documented site, LD8 (AHIMS #45-4-0214) (refer to Section 7.2.3; Table 7.2). Efforts were made to re-identify LD14 (AHIMS #45-4-0915), LD13 and (AHIMS #45-4-0916), while no artefacts were able to be identified due to dense blackberry bushes and tall grass the area of PAD at LD13 (AHIMS #45-4-0916) was observed; and the landforms at both sites appeared relatively unchanged from the descriptions in 1995. Apart from overgrown vegetation no further disturbance to either of these sites was observed (refer to Plate 7.7 to Plate 7.10). In addition, there were observations of artefacts along the edges of Farmers Creek and in the creek bed (visible from the banks), namely around LD13 (AHIMS #45-4-0916) and newly identified site LL AS3 (AHIMS #45-1-2976) (refer to Section 7.2.3 below). This demonstrates the likelihood of artefacts being buried within the current creek bed (formerly the banks) of Farmers Creek.

In addition to the documented cultural materials, several areas exhibited landforms and/or deposits where sub-surface cultural material may be present. These were dominated by the flats, terraces and lower slopes along the banks of Farmers Creek. Other localised areas on ridgelines and saddles were also noted, and typically still within close proximity to Farmers Creek and/or the broader Lake Lyell edge.

Very low archaeological potential was observed along Sir Thomas Mitchell Drive, due to vegetation clearance and soil disturbance up to 10 m either side of the road which then adjoined with private properties (refer to Plate 7.11). There was also steep slope and rock outcrops along much of the southwestern side of the road, which was inspected for cultural materials (refer to Plate 7.12). No archaeological sites or potential was identified in this portion of the construction envelope.



Plate 7.1 **Mount Walker steep slope - view north in mid far eastern portion of the construction envelope**



Plate 7.2 **View west over slopes of Mount Walker towards Farmers Creek and Lake Lyell**



Plate 7.3 View south across western terrace of Farmers Creek

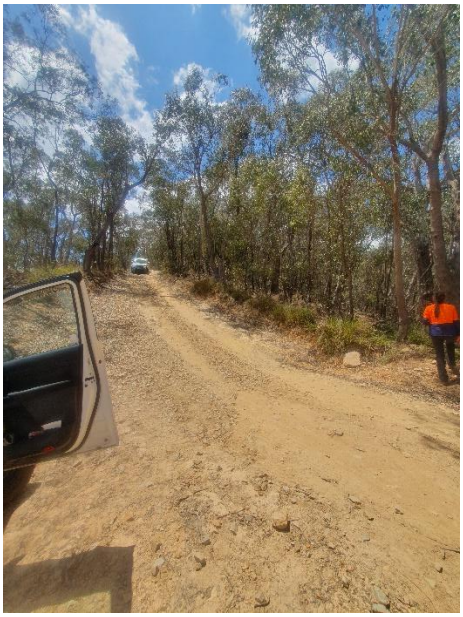


Plate 7.4 View east along vehicle track on ridgeline of Mount Walker



Plate 7.5 Proposed accommodation area, flooded - view west to Lake Lyell



Plate 7.6 Proposed accommodation area, ridge flat above original Coxs River - view west to Lake Lyell



Plate 7.7 LD8 alluvial terrace landform - view north to Farmers Creek



Plate 7.8 LD8 artefacts



Plate 7.9 LD14 landform – ridge flat/spur - view west



Plate 7.10 LD13 alluvial terrace landform - view north-west



Plate 7.11 Sir Thomas Mitchell Drive, disturbed on side of road - view south



Plate 7.12 Sir Thomas Mitchell drive rock outcrops and steep onto private property - view west

7.2.3 Additional survey – Magpie Hollow Road, dam crossing and Pottery Estate

Recent updates to the project area provided by LLP now include the widening of Magpie Hollow Road (from the Lake Lyell accommodation area option to the Great Western Highway), the Lake Lyell Dam crossing and carpark and Pottery Estate as an additional town camp accommodation area option. These areas were surveyed by EMM on 5 August 2025 along with RAP site officers. Figure 7.1 presents the survey transects logged by GPS but represents only where the two archaeologists walked during field survey (two people's movements). GPS track log data indicates that each survey participant walked approximately 10 km, encompassing approximately 50% of effective coverage. No Aboriginal sites were identified during this additional survey.

Topographically Magpie Hollow Road and the Lake Lyell dam crossing and carpark are located from the banks of Lake Lyell, moving up hill to the ridgeline overlooking the Lake. These areas have been significantly impacted by road grading and levelling (refer to Plate 7.13 and Plate 7.14). There is no remnant vegetation in either of these areas as they have been cleared with topsoil removed and fill and tarmac introduced (refer to Plate 7.15).

Pottery Estate is located at the foot slope of the hills and ridgelines of Hassans Walls on the central southern edge of Lithgow (refer to Plate 7.16). This area has been significantly disturbed from past mining, quarrying and the construction and demolition of houses, and while this was previously known, the scale of impact was further validated through the field investigations. Pottery Estate slopes down from the east to level ground in the west with significant waterlogging with a dam in the south west corner (refer to Plate 7.17). Vehicle tracks have been created to access properties adjacent to the area in the west and there are piles of debris and soil across the property (refer to Plate 7.18 and Plate 7.19). Pottery Estate has been entirely cleared of any remnant vegetation and is majority grass across the area (refer to Plate 7.20). There were large exposures across the area revealing clay subsoils and disturbance across the property.

The field investigation did not identify any previously undocumented Aboriginal objects or sites and no previously documented sites were recorded within these additional areas. No areas where sub-surface cultural material may be present were identified in these additional areas. Very low archaeological potential was observed along Magpie Hollow Road, the Lake Lyell Dam crossing and Pottery Estate due to vegetation clearance and soil disturbance across the areas and up to 10 m either side of the road which then adjoined with private properties. There was some steep slope and rock outcrops along either side of Magpie Hollow Road at the ridgeline east of South Bathurst Road which was inspected for cultural materials (refer to Plate 7.21 and Plate 7.22). This area demonstrated archaeological potential outside the road corridor, however the project area does not extend beyond this point and the project does not propose to impact these areas, so they were not inspected. No archaeological sites or potential was identified in these additional areas of the construction envelope.



Plate 7.13 Lake Lyell dam crossing and carpark - view north in southern portion of the construction envelope



Plate 7.14 Magpie Hollow Road near the Lake Lyell accommodation camp option – view east



Plate 7.15 Introduced fill on the side of Magpie Hollow Road demonstrating that the roadside has been cleared and filled – view south-west



Plate 7.16 View east from the north-west corner of Pottery Estate, located at the foot slope of the hills and ridgelines of Hassans Walls on the central southern edge of Lithgow



Plate 7.17 Waterlogging creating a dam in the south west corner of Pottery Estate – view south



Plate 7.18 Piles of debris and old building material and cleared soil across the property – view west



Plate 7.19 Vehicle tracks have been created to access properties adjacent to the area in the west – view west



Plate 7.20 Pottery estates has been entirely cleared of any remnant vegetation and is majority grass across the area – view north



Plate 7.21 Slopes and rock outcrops along either side of Magpie Hollow Road at the ridgeline east of South Bathurst Road. Immediately adjacent to road with >10 m to fenceline - view east



Plate 7.22 Disturbed exposure on southern side of Magpie Hollow Road at the ridgeline east of South Bathurst Road - view south

Table 7.2 Survey summary

Transect (Survey Area)	Survey unit area (m^2)	Landform	Exposure (%)	Visibility (%)	Effective coverage (m^2)	Effective coverage (%)	Aboriginal sites identified
1	119.54	Plain	10	10	1.20	1	
2	609.82	Hillslope, hillcrest / ridgeline and lake bank	10	10	6.10	1	LL AS6
3	859.45	Hillslope and hillcrest / ridgeline	10	10	8.60	1	
4	1231.61	Hillslope and hillcrest / ridgeline	10	10	12.32	1	
5	1133.59	Hillslope, gully and hillcrest / ridgeline	10	10	11.34	1	LL ST1 LL IF1
6	149	Hillslope, gully and hillcrest / ridgeline	10	10	1.49	1	
7	450.27	Hillslope, gully and hillcrest / ridgeline	10	10	4.50	1	
8	913.48	Hillslope, gully and hillcrest / ridgeline	10	10	9.13	1	
9	956.16	Hillslope, gully and hillcrest / ridgeline	10	10	9.56	1	
10	1643.65	Hillslope, gully, alluvial terrace and hillcrest / ridgeline	20	10	32.87	2	LL AS1 LL AS2 LL ST2 LD13 – AHIMS #45-4-0916

Transect (Survey Area)	Survey unit area (m²)	Landform	Exposure (%)	Visibility (%)	Effective coverage (m²)	Effective coverage (%)	Aboriginal sites identified
							LD14 – AHIMS #45-4-0915
11	1868.77	Hillslope, gully and alluvial terrace	20	10	37.38	2	LL AS3 LD8 – AHIMS #45-4-0214
12	533.60	Hillslope, gully, alluvial terrace and hillcrest / ridgeline	10	10	5.34	1	
13	445.78	Hillslope, gully and hillcrest / ridgeline	10	10	4.46	1	
14	83.76	Hillslope and hillcrest / ridgeline	10	10	0.84	1	
15	26.19	Hillslope and hillcrest / ridgeline	20	10	5.23	20	
16	137.5	Hillslope, hillcrest / ridgeline	20	50	13.75	10	
17	41.41	Foot slope	40	60	9.94	24	
Average	***659.03***		***14.11***	***15.29***			
Total	**11,203.58**				**174.05**	**70**	**9**

7.2.4 Identified Aboriginal sites

The field survey identified eight previously undocumented Aboriginal sites and re-identified one previously recorded site (LD8 [AHIMS #45-4-0214]). These included, five stone artefact scatters, two potentially culturally modified trees, and an area of PAD. Two previously documented sites, LD14 (AHIMS #45-4-0915) and LD13 (AHIMS #45-4-0916), could not be relocated, but their general locations appear unaltered from their original recording in 1995 (refer to Section 6.4), and they are considered to remain extant. Further two areas of PAD were identified during the survey. Seven of these sites are within the construction envelope, with four in the broader project area.

Four of the sites were identified on the original creek bank/alluvial terrace adjacent to former Farmers Creek (LL AS2 [AHIMS #45-1-2975], LL AS3 [AHIMS #45-1-2976], LD13 [AHIMS #45-4-0916], LD8 [AHIMS #45-4-0214], and a newly identified area of PAD on the north-eastern bank of Farmers Creek). Four Aboriginal sites were recorded on a hillslope landform (LL AS1 [AHIMS #45-4-1808], LL AS6 [AHIMS #45-4-1807], LL ST1 and LL ST2). One Aboriginal site was identified on ridgeline/crest (LL AS4 [AHIMS #45-1-2978]), with one site previously recorded on this landform (LD 14 [AHIMS #45-4-0915]) and one area of PAD further identified in the proposed accommodation area.

As predicted by previous studies in the region, the identified sites consisted of stone artefacts and a potentially culturally modified tree. Raw materials identified were primarily IMTC with quartz also present in lower densities. Higher densities of artefacts were recorded in proximity to Farmers Creek, as predicted in Section 6.6. The number of artefacts identified on exposures on side slopes, or the bottom of hilly landforms, were considered to have been impacted by varying levels downward movement as a result of colluvial and hill wash processes. In addition, it is likely that excessive grass cover likely prevented the identification of further sites / artefacts.

i Newly identified Aboriginal sites

See Annexure E.1 for full site details.

a LL AS1 (AHIMS #45-4-1808)

LL AS1 is an open site low density artefact scatter recorded on the northern side of hillslope on the southern side of Farmers Creek. The site is located downhill of the transmission tower on an old boat ramp vehicle track. LL AS1 comprises eight quartz stone artefacts and a single IMTC stone artefact. A single tool, a quartz scraper, was identified within the assemblage. The artefacts in LL AS1 appear to be eroding down the hillslope along the track though colluvial and hill wash processes. This site is located in the construction envelope of the project.



Plate 7.23 **View north-east to Farmers Creek, across LL AS1**



Plate 7.24 **Artefacts in LL AS1**

b LL AS2 (AHIMS #45-1-2975)

LL AS2 is an open site low density artefact scatter recorded in the centre of the project area. The site is located on the current southern bank of Farmers Creek, on what would have been the original creek bank / alluvial terrace. LL AS2 comprises nine quartz flakes, a quartz core and a coarse grained IMTC core. The general area surrounding the site was heavily disturbed by pigs. It is unclear whether the artefacts were eroding out of the bank or had been displaced down the hillslope. This site is located in the construction envelope of the project.



Plate 7.25 **Artefacts on edge of Farmers Creek**



Plate 7.26 **Artefacts from LL AS2**

c LL AS3 (AHIMS #45-1-2976)

LL AS3 is a medium density artefact scatter recorded in the centre of the project area. The site is located on the current western bank of Farmers Creek. The artefacts appear to be eroding out of the creek bank, particularly where vehicles have created an off-road track. Artefacts are concentrated around the south of the track, though extends at least 15 m x 10 m. The assemblage consists of at least 30 artefacts, primarily of IMTC material of varying colours (brown, red, white and grey). The vast majority of the assemblage is made up of stone flakes, with a sole core recorded. This site appears to be of a similar composition to LD8 (AHIMS #45-4-0214). Mussel shells were found sporadically across the site; however, this area is a modern campsite, and all the shell material was found to be modern. A potential hearth was identified within the site; however, it appears highly degraded and is located next to a modern camping fire (refer to Plate 7.32). This site is located in the construction envelope of the project.



Plate 7.27 **View northeast along terrace and vehicle track**



Plate 7.28 **View northeast along bank of Farmers Creek - artefacts identified in bank and creek bed (under water)**



Plate 7.29 **Broken chert blade in LL AS3**



Plate 7.30 **Quartz artefacts in LL AS3**



Plate 7.31 **Location of potential hearth - view west across terrace**



Plate 7.32 **Potential hearth with artefacts eroding out of the surface**

d LL AS4 (AHIMS #45-1-2978)

LL AS4 is a discrete artefact scatter that consists of a single quartz flake located on a granite outcrop on a northwestern facing ridge flat, and a single proximal chert flake located on the mountain ridgeline. The chert flake features a plain platform and was recorded in the middle of the vehicle track. The quartz flake was the only piece of quartz identified in the outcrop. An area of PAD was identified around these artefacts due to the ridge flat being the only open, flat area in this location with remnant soil. This site is located in the construction envelope of the project.



Plate 7.33 **View east across ridge flat from vehicle track**



Plate 7.34 **View south across ridge flat showing grass cover and limited exposures**

e LL AS5 (AHIMS #45-1-2977)

LL AS5 is an area of PAD located on the northern bank of Farmers Creek. The area of PAD was identified due to the relatively flat area in this location with remnant soil and proximity to the original creekline, compared to the steep slope to the creek in the surrounding area. The site is located in the east of the project area.



Plate 7.35 **View south-west across area of PAD to Farmers Creek. This area has been cleared for water monitoring**



Plate 7.36 **View west across area of PAD to Farmers Creek, showing vegetation coverage and limited visibility**

f LL AS6 (AHIMS #45-4-1807)

LL AS6 is a low-density artefact scatter located on a vehicle track just outside the project area to the west of the potential accommodation area. The site was recorded on a well-used previously cleared dirt track, on the southern bank of Lake Lyell. The scatter features quartz artefacts eroding out of the sandy silt banks on either side of the tack. A potential granite hammerstone with pitting evident on the side. Site is highly dispersed from water erosion with artefacts being displaced down the slope. It is unlikely that artefacts are in situ. The site extent is defined by the presence of surface artefacts. This site is not located in the project area.



Plate 7.37 View north-west towards Lake Lyell along vehicle track



Plate 7.38 Quartz artefacts in LL AS6

g LL IF1 (AHIMS #45-1-2974)

LL IF1 is an isolated find recorded in the northeast of the project area, just outside the construction envelope. The site consists of a single quartz flake located on a granite outcrop on an eastern facing steep hillslope. The quartz flake was the only piece of quartz identified in the outcrop. This site is nearby LL ST1. This site is within the project area, but outside the construction envelope.



Plate 7.39 Quartz artefact



Plate 7.40 View south-east down slope of Mount Walker

h LL ST1

LL ST1 is a potentially culturally modified tree recorded in the north-east of the project area, just outside the construction envelope. The site features an oval scar on the western side of a eucalypt tree. The dimensions of the scar are as follows: 95 cm (l) x 24 cm (w) x 9 cm (d), height from ground was 24 cm. The site is located on the steep south eastern slope in open forest. The sapwood and heart wood of the tree are both present. This site is classified as tentative, with further specialist investigation proposed in subsequent questions.



Plate 7.41 **Scar on tree from potential cultural modification (scar on western side of tree)**



Plate 7.42 **View south-east down slope of Mount Walker**

i LL ST2

LL ST2 is a potentially culturally modified tree recorded in the centre of the project area, but outside the construction envelope. The site features an oval scar on the northern side of a eucalypt tree. The tree is dead, standing on a north-facing hill slope. The heartwood was absent from the tree and there was fire damage observed on the tree's interior. The dimensions of the scar are as follows: 220 cm (l) x 30 cm (w) x 20 cm (d). This site is not located in the construction envelope of the project. This site is classified as tentative, with further specialist investigation proposed in subsequent sections.



Plate 7.43 Scar on eucalypt tree from potential cultural modification (scar on northern side of tree)



Plate 7.44 View north from tree towards Farmers Creek

ii Previously registered Aboriginal sites

a LD8 (AHIMS #45-4-0214)

LD8 is a medium density artefact scatter reidentified at the confluence of Coxs River and Farmers Creek. The site is located on the elevated southern bank at the confluence of Farmers Creek and Coxs River. The artefacts are eroding out of a vehicle track and sheet wash, as such there are likely more artefacts present than recorded. The assemblage consists of quartz and IMTC flakes and cores. Two blades were identified in the assemblage during the field survey. This site is located in the construction envelope.



Plate 7.45 View east from site exposure along Farmers Creek



Plate 7.46 Broken chert blade in site assemblage

b LD14 (AHIMS #45-4-0915)

This site was originally recorded in the early 1990s as located on a fire trail, dispersed across a ridgeline, with artefacts recorded on and either side of a saddle on the southern side of Farmers Creek. It was observed that artefacts had been moved down the slope likely by flooding events. Originally recorded as a high-density artefact scatter of over 200 crystalline quartz artefacts, and six chert blades located in an area of 3,500 m. Maximum density of artefacts observed was 11 artefacts/m², with low visibility indicating the site is likely larger than able to be recorded at the time. During the survey due to extremely low visibility (largely due to dense scrub and tall grass), and potential further movement of the artefacts down the hillslope from water erosion, no artefacts were able to be re-identified during the survey. Apart from overgrown vegetation no further disturbance was observed, demonstrating that the site is likely to still be intact. This site is located in the construction envelope.



Plate 7.47 **View north towards Farmers Creek and slopes of Mount Walker**



Plate 7.48 **View south-west across ridge flat and spur showing thick ground cover and limited exposures**

c LD13 (AHIMS #45-4-0916)

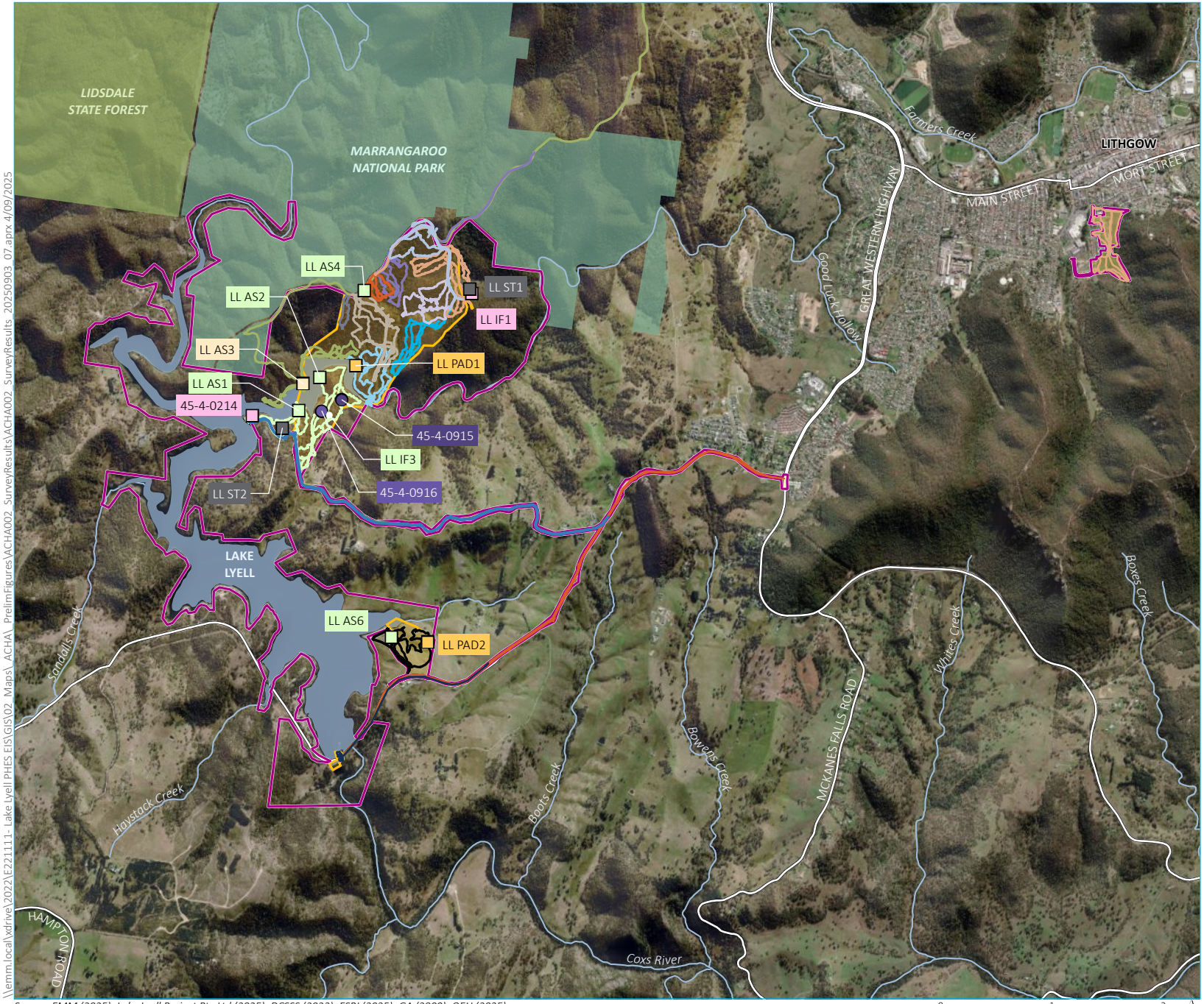
This site was originally recorded in the early 1990s located along a fire trail bordering Farmers Creek. Artefacts were documented on the fire trail, around an ant's nest and observed in the erosion scar around the current waterline of Farmers Creek. Originally recorded as a high-density artefact scatter of 94 quartz and IMTC artefacts located along the fire trail bordering Lake Lyell and, on the slope, adjacent to the east. Wherever visibility exceeded 50% artefacts were observed. Artefacts were located at least ~100 m from original Farmers Creek, prior to flooding. The area of PAD was defined by lack of visibility and based on elevation, lack of slope, and the apparent absence of major sub-soil disturbance. During the survey due to extremely low visibility (largely due to dense blackberry thicket and tall grass) no artefacts were re-identified, however the area of PAD was able to be delineated and the landform was still intact. This site is located in the construction envelope.



Plate 7.49 View west towards Farmers Creek - terrace covered in blackberries, no visibility or exposures



Plate 7.50 View north along terrace



KEY

- Project area
- Construction envelope

Identified Aboriginal site

- Isolated find
- Modified tree
- Artefact scatter
- Artefact scatter, PAD
- PAD

AHIMS (by site type)

- High density artefact scatter
- High density artefact scatter, PAD

Survey track

- LLT 2
- LLT 3
- LLT 4
- LLT 5
- LLT 6
- LLT 7
- LLT 8
- LLT 9
- LLT 10
- LLT 11
- LLT 12
- LLT 13
- LLT 14
- LLT 15
- LLT 16
- LLT 17

Existing environment

- Major road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

Survey results

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2025); GA (2009); OEH (2025)

0 1 2 km

GDA2020 MGA Zone 56

N

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 7.1

EMM
creating opportunities

\\emm.local\xdrive\2022\E221111- Lake Lyell PHES EIS\GIS\02_Maps_ACHA_PrelimFigures\ACHA002_SurveyResults\ACHA002_SurveyResults_20250903_07.aprx 4/09/2025

7.3 Test excavations

7.3.1 Approach and methods

EMM completed an archaeological test excavation of the construction envelope, with the assistance of RAP representatives over a four-week period (26 February to 27 March 2024). These works were undertaken in accordance with the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010) and consisted of small manually dug test pits in transects across the project area. The excavation was directed by Megan Sheppard Brennand (EMM Archaeologist) and Nicolas Reilly (EMM Archaeologist), and a number of RAP organisations were represented throughout the course of the excavation program. A list of groups present during the test excavations is presented in Table 7.3.

The primary aims of the excavations were to:

- Identify, map and characterise the nature, age, extent, integrity and significance of the Aboriginal cultural material within the project area.
- Collect data to answer the following research questions:
    - What are the environmental characteristics associated with the distribution of Aboriginal cultural heritage within the project area?
    - Can the formative processes of the stratigraphic profile provide information on the nature and/or survivability of the archaeological resources?
    - Are there other key factors in the distribution and extent of the material culture within the project area (e.g. how construction will potentially affect these deposits)?
    - What are the cultural, social and public values associated with the Aboriginal archaeological resource within the project area?
    - How should the Aboriginal sites in the region be conserved and managed in the future?
- Better assess the significance and historical meaning of the cultural materials that exist within the project area so that future archaeological investigation can advance our understanding of past Aboriginal cultural behaviour and environmental adaptation.
- Direct future heritage activities and mitigation measures (if required) for the project disturbance footprint.

To achieve these aims, a series of test pits situated along transects were proposed across the construction envelope (refer to Figure 7.2). These focussed on identified Aboriginal sites and landforms of interest documented in the field survey (refer to Section 7.2). Generally, the location of the test pits targeted alluvial terraces and ridgeline / crests within the construction envelope. To ensure a sufficient sample of the project area was tested the transects were spaced 25 m apart on alluvial terraces, and 50 m apart on ridgeline / crests. The length of the transects varied, with the longest (located at the highest point of testing on Mount Walker) being 200 m and consisting of four test pits; and the shortest (on a discrete crest in the centre of the project area to the southeast of Lake Lyell and consisting of two test pits. The average length of each transect was 150 m (consisting of three-seven test pits).

Overall, 67 test pits were completed, achieved the aims outlined above and provides a robust understanding of the cultural materials present across the project area; and importantly focussed along the alluvial terrace and ridgeline/crest landforms that were determined to contain the highest archaeological potential within the project area (refer to Chapter 6 and Section 7.2).

Archaeological test excavations were implemented in accordance with Requirements 16 and 17 of the *Code of Practice for the Investigation of Aboriginal Objects in NSW* (DECCW 2010). In summary, the following methods were adopted for the excavation:

- All test excavation pits were spatially located using a differential GPS device.
- Manual excavation of 0.25 m^2 test pits was completed across evenly spaced transects in areas of archaeological interest within the disturbance footprint.
- All excavation used hand tools, such as shovels, mattocks and trowels.
- Excavation of the first unit was in 5 cm spits, with subsequent excavation in 10 cm spits.
- Manual excavation continued to either: i) the base of the cultural deposits; ii) to the depth of the underlying geology; or iii) to the maximum depth possible via hand excavation (~1 to 1.5 m).
- Dry sieving of all manually excavated material through a 5-millimetre (mm) sieve.
- Soil profiles were recorded in accordance with the Code of Practice (DECCW 2010), and included scaled drawings, photographs, and written descriptions.
- Soil samples were collected for description, sedimentological and chronological analysis where such analysis was considered possible and likely to contribute significant information.

Table 7.3 Registered Aboriginal party representatives present during the excavation

Organisation	Representatives
Mingaan Lithgow Aboriginal Corporation	Sharon Riley, Yamandirra, Patsy Wolfenden, Belinda Simpson, Ricky Ah See and Brian Ah See
Warabinga Native Title Claimants Aboriginal Corporation	Kelsey Williams Fawcett, Damian Manson
Wingara Wilay Aboriginal Corporation	Greg Kennedy, Raymond Hampton
North East Wiradjuri Corporation	Kelsey Williams Fawcett, Coral Williams
Girragirra Murun Aboriginal Corporation	Greg Kennedy, Buddy Kennedy
Thomas Dahlstrom	Thomas Dahlstrom
Gallangabang Aboriginal Corporation	Raymond Hampton, Steven Flick

7.3.2 Results

This section provides a summary of the excavations and subsequent analysis, with further detail provided in Annexure E. This includes test pit data (refer to Annexure E.2), a photographic catalogue of the excavated test pits (refer to Annexure E.4) and detailed lithic and optical stimulated luminescence (OSL) analysis (refer to Annexure E.6 and Annexure E.7). A summary of the post excavation analysis, including stratigraphy, chronology and lithics analysis is provided below.

The majority of the excavations were 0.25 m^2 (n=47). Twenty test pits were expanded to 1 m^2 due to the presence of 5+ artefacts, which would have extrapolated to densities indicative of past foci. The depth of excavation across the test pits averaged ~52 cm (below current ground surface), however two test pits continued to 120 cm (TP 16 and TP 74) to provide a full record of the soil profile. Spatially, these test pits were predominantly situated on the alluvial terraces along Farmers Creek, as well as any flat or expansive ridgelines and spurs on which visitation and habitation was considered feasible.

The excavations and subsequent analysis confirmed that the terraces probably formed through alluvial processes, and that they began forming ~>11 ka. This was a period of climatic amelioration when increased water down the creek system would have resulted in flooding and the formation of floodplains, now represented by the terraces. The soil profile continued to form through either subsequent flooding events and/or pedogenesis of the alluvium, with numerous ages found between ~4 ka and ~8 ka. Following this period, Farmers Creek appears to have begun incising into this former floodplain and resulted in the current creek alignment evident in the formation of the upper soil profile from ~1.5 ka through to modern period. This similarly could be associated with major climatic events such as the Medieval Climatic Anomaly and/or Little Ice Age that occurred over the last 2,000 or so years. It is this period in which most of the cultural assemblage was recovered. The creek level was then raised again by the damning and creation of Lake Lyell, with flooding events causing localised erosion of the terrace landform. In addition, there were observations of artefacts along the edges of Farmers Creek and in the creek bed (visible from the banks), namely around LD13 (AHIMS #45-4-0916) and newly identified site LL AS3 (AHIMS #45-1-2976). This demonstrates the likelihood of artefacts being buried within the current creek bed (formerly the banks) of Farmers Creek.

Forty-two of the 67 test pits (~62.7%) contained artefacts (refer to Annexure E.3), with a total of 1,344 stone artefacts recovered, representing an average density of ~21/m^2 across the construction envelope (refer to Annexure E.3). The average density is slightly elevated by a handful of test pits (n=7) with significant cultural material (>70/m^2), and a value ~8 to 11/m^2 may be more accurate for much of the construction envelope when excising these values. Fifteen test pits (22.39%) were found to contain >30 artefacts/m^2, a density that is typically considered to reflect specific activity zones or past foci of activity in contrast to the broader background scatter. These activity zones were located on both alluvial terraces and a flat ridgeline partway up Mount Walker. These test pits were extensively found within LL AS3 (AHIMS #45-1-2976) and LD13 (AHIMS #45-3-0916) in close proximity on opposite sides of Farmers Creek; and at LL AS4 (AHIMS #45-1-2978) situated on the upper slopes of Mount Walker. The latter is somewhat in contrast to established regional models (refer to Section 6.4) but was one of the few flat areas across the construction envelope and provides excellent views of the surrounding area; and may have formed a direct route between parts of Coxs River and Farmers Creek (being one of several ridgelines and hilltops in a general north-west to south-east orientation at this point).

The stone artefacts were recovered from sediments excavated to 90 cm below the current ground surface with the majority of the assemblage recovered between depths of 0 to 40 cm (n=1,186). Analysis of the cultural assemblage along the terrace landform reveals that the majority of the artefacts were recovered from deposits that align with the last 1,500 or so years of use, although slightly deeper cultural materials notably at LD13 (AHIMS #45-4-0916) the middle soil profile which was dated to between ~ 4 to 8 ka. Typically, the cultural assemblage suggests repeated, but transient use of the locale, with only a small number of test pits on the banks of Farmers Creek potentially indicating a more extended occupation. However, the vertical distribution of artefacts suggests two occupations within the Farmers Creek tests pits, seen in TP52 and TP62. There are a very small number of artefacts (n=<10) present at the base of the excavations, and which correlate with OSL ages of ~11 ka and ~20 ka. This would represent some of the earliest evidence for occupation in the region, but the very low numbers may also be suggestive of bioturbation and movement of these cultural materials from later visitation; and so, should be treated with caution.

Milky and crystal quartz artefacts account for over 80% of the assemblage, with lesser proportions of IMTC. Other raw material types include cryptocrystalline quartz (CCQ) or chalcedony, quartzite and volcanics. The milky quartz artefacts are generally very high quality with few inclusions or flaws. Compositionally, the assemblage is comprised of 307 (22.84%) complete flakes, 725 (53.94%) broken flakes, 33 (2.46%) cores, and other various fragments. Two types of raw material sources were used, terrestrial (primary) and rarely waterborne (secondary). There are more milky quartz artefacts with a terrestrial/outcropping cortex. This result indicates that primary sources were closer to the test pits, possibly on the west side of Farmers Creek. Here most of the milky quartz artefacts with cortex were derived from an outcropping exposure. While this contrasts with McDonald and Barton's (1995) suggestion that the quartz may be exotic in origin (i.e. coming from a more distant source), the assemblage recovered here is dominated by milky quartz rather than the cryptocrystalline variety.

This repeated but transient use of the area is similar to the findings of the assessments undertaken around Lake Lyell and Farmers Creek in the 1990s (Bell 1990, McDonald and Barton 1995, McDonald 1995). LD8 (AHIMS #45-4-0214) was found to be in a similar condition as it was in 1995, but was no further investigation was undertaken as it is not located in the construction envelope. Newly recorded site LL AS3 (AHIMS #45-1-2976) has a similar surface distribution, landform and material/tool type, therefore it is likely LD8 (AHIMS #45-4-0214) has a similar potential for subsurface artefacts.

While the 1995 survey of LD14 (AHIMS #45-4-0915) found ~200 surface artefacts, the current assessment only recorded 17 sub-surface artefacts. This is likely due to dense vegetation, and shallower soil profile, meaning lots of movement of soil down the slope over time. Likely artefacts are at bottom of the slope if they remain. The current results of the assessment of LD13 (AHIMS #45-4-0916) aligns with the findings from 1995, that this is a large site, and the area of PAD was found to be the area of the highest density of artefacts.

Overall, there was limited further disturbance to the areas investigated for this assessment and therefore majority similar findings to the 1990 assessments (Bell 1990, McDonald and Barton 1995, McDonald 1995).

i Stratigraphy

The soil profiles encountered across the 67 test pits were generally consistent and can be described as one of three different types. These included:

- Ridge/hillcrest:
    - Unit 1 - at the surface, a dark grey-brown sandy loam to clay loam with frequent roots, rootlets and gravels (O horizon) extending to ~5 cm depth, overlying
    - Unit 2 - a brownish grey to pale yellow sandy clay loam with frequent rocks and cobbles (B2 horizon) extending to depths of ~30 cm
    - Unit 4 - an orange sandy loam with frequent ironstone/sandstone cobbles at the base of the excavations recorded to depths of ~45 cm below the surface (B2/C horizon).
- Alluvial terraces:
    - Unit 1 - at the surface a dark grey-brown sandy loam with frequent roots and rootlets (A1 horizon) extending to ~20 cm depth, overlying
    - Unit 2 - a pale yellow to light grey fine sandy loam (A2 horizon) with frequent rock and cobble inclusions extending up to ~110 cm in depth, overlaying
    - Unit 3 - a compacted yellow to orange clay (B2 horizon).

- Slopes:
    - Unit 1 - at the surface, a dark grey-brown sandy loam to clay loam with frequent roots, rootlets and gravels (0 horizon) extending to ~5 cm depth, overlying
    - Unit 2 - a brownish grey to pale yellow sandy clay loam with frequent rocks and cobbles (B2 horizon) extending to depths of ~40 cm, overlying either
    - Unit 3 - a compacted yellow to orange clay (B2 horizon) or
    - Unit 5 – degrading sandstone bedrock.

Both the ridgeline/hillcrest and slope soil profiles dominated the project area. Given the steep relief across the site, it is considered that the upper units of these soil profiles are recently formed and/or have been subject to erosion and movement. The upper O or A1 horizons where present sit disconformably on the under-lying residual subsoils that have likely formed through diagenesis of the under-lying geological substrate. Variation seen in this soil profile was considered to correlate with degree of slope on which the excavation was located - higher levels of truncation were observed on higher degrees of slope, with deeper soil profiles encountered at the base of slopes or flatter areas.

The soil profiles found on the alluvial terraces are more established, with a developed A1 horizon and a probable A2 sub-soil – both indicative of lengthy in situ formation. This is supported by the OSL ages indicating up to 10,000 years of formation.



Plate 7.51 **Ridge flat/spur – TP 101 north section**



Plate 7.52 **Ridge flat/spur – TP 7 east section**



Plate 7.53 **Terrace – TP 73 north section**



Plate 7.54 **Terrace – TP 51 north section**



Plate 7.55 **Slopes – TP 81 north section**



Plate 7.56 **Slopes – TP 105 north section**

ii Chronology

To provide a chronology of the deposits, a number of samples were collected for OSL dating. Twenty-two samples were collected from test pits containing dense cultural materials and/or where the deepest deposits were reached; of these, nine were analysed. These samples were selected to provide an initial understanding of the formation history of the terrace landform extending along the Farmers Creek and the age of significant cultural materials. All samples were processed by the University of Wollongong and analysed by Zenobia Jacobs at Chronoz and are reported in detail in Annexure E.7. The samples were processed using the single grain technique, which calculates the age from a large number of quartz grains, each of which is individually measured to determine their age. This method presents a large number of individual ages for a sample that can then be interrogated to determine which is the most suitable based on a range of factors. Typically, the approach will provide a minimum age, incorporating the youngest sand grains in a given sample, a central age or an average result, and a finite mixture model/s that use statistical techniques to identify discrete age populations within the sample that may be more suitable than the other methods. This approach is more time-intensive, and has a range of limitations, but is often adopted in academic and/or research projects.

The OSL age estimates are presented for all samples in Table 7.4. Table 7.5 shows the same data simplified and presented by depth below surface. These show a heavily bioturbated soil profile, with many samples returning multiple age populations. Overall, they suggest a probable mixing of much older material from lower in the soil profile with more recent sediments near the surface. This subsequently results in a mixture of older and younger populations presented in each of the recovered samples. Despite this, an overall formation of the soil profile can be discerned. This suggests that the lowest samples, typically found below 55 cm below surface and assigned to unit 3, all date to >11 ka, with a range between 11 ka and ~17 ka. Between ~35 and 55 cm (unit 2), there is wide variation, but the lower ages are typically centred at ~8 to 9.5 ka (e.g. LC146 and LC150), while the upper samples range from extend between ~3.8 to 4.6 ka (e.g. LC145 and LC149). While the upper samples have older age populations, often with greater percentages, the cultural assemblage is dominated by quartz and bipolar flaking techniques, which did not become prevalent until the last 1,500 or so years (Hiscock and Attenbrow, 2005). Based on this, it is considered that the younger ages in the case of LC145 and LC 148 are more probable and suggest that the upper 30 cm of soil profile dates to ~1.5 ka. Only a single sample, LC148, was recovered from the upper surface, and this suggests a formation in the modern period, and aligns with this recent formation of the upper soil profile.

Based on this chronology, it does suggest that there are several stratigraphic hiatuses within the soil profile. These are found between spits 3 and 4 (~35 cm below surface), and between spits 5 and 6 (~55 cm below surface). In the case of the former, there is a 2,500-year gap between the <1.5 ka ages and the >~3.8 ages through this part of the soil profile. For the latter, there is a ~4 to 6,000-year gap between the lowest unit 2 ages (~8 to 9.5 ka), and the youngest unit 3 age (~15 ka).

In relation to the cultural assemblage, it was primarily found between spits 1-4 (n=1,227; 91%), which aligns closely with unit 1 and the upper portion of unit 2. This suggests that the assemblage was primarily deposited in the last 1,500 years, but with potentially earlier activity – especially at AHIMS #45-4-0916 – between ~4 to 8 ka. Given the majority of this assemblage came from the upper two spits, it indicates that much of the activity may have been primarily in the last 800 or so years.

A smaller portion of the cultural assemblage was recovered from spits 5 and 6 (n=104; 7.7%) may indicate an earlier visitation in the terminal Pleistocene. However, LC146 found towards the base of this zone, and dating to ~8 ka may reflect a more conservative period for these activities; and which aligns more closely with findings of Capertee and other nearby archaeological sites (refer to Section 6). A very small number of artefacts were recovered below spit 6 (n=10; 0.7%), and which correlate with ages of >15 ka. However, it is considered more probable that these reflect bioturbated material, rather than human activity at this time.

Table 7.4 Summary of OSL ages recovered from the test excavations

Test pit	Sample #	Lab code	Spit	Depth (cm below surface)	Soil unit	Age model	Age (ka)
62	7	LC143	4	35	2	FMM-1 (2%) FMM-2 (40%) FMM-3 (54%) FMM-4 (4%)	920±265 **4,180±325** **12,055±820** 59,120±12,100
62	9	LC144	6	55	3	FMM-1 (71%) FMM-2 (29%)	**14,955±925** 74,400±7,660
74	11	LC145	3	25	2	FMM-1 (5%) FMM-2 (4%) FMM-3 (34%) FMM-4 (42%) FMM-5 (15%)	140±35 480±240 **1,510±220** **3,850±420** 13,960±1,610

Test pit	Sample #	Lab code	Spit	Depth (cm below surface)	Soil unit	Age model	Age (ka)
74	13	LC146	6	55	2	FMM-1 (6%) FMM-2 (70%) FMM-3 (24%)	1,760±525 **7,770±640** 28,665±3,260
37	16	LC147	9/10	90	3	FMM-1 (3%) FMM-2 (36%) FMM-3 (44%) FMM-4 (17%)	5,310±780 **11,175±875** **19,900±1,680** 43,540±3,875
52	17	LC148	1	5	1	FMM-1 (67%) FMM-2 (11%) FMM-3 (22%)	**Modern** **1,430±790** 8,695±1,755
52	18	LC149	2/3	20	2	FMM-1 (18%) FMM-2 (26%) FMM-3 (57%)	175±45 **845±255** **4,640±530**
52	19	LC150	4	35	2	FMM-1 (12%) FMM-2 (38%) FMM-3 (38%) FMM-4 (12%)	1,010±155 **3,145±330** **9,425±990** 25,965±4,550
52	20	LC151	6	55	3	FMM-1 (7%) FMM-2 (5%) FMM-3 (14%) FMM-4 (45%) FMM-5 (29%	575±135 1,490±530 4,980±800 **16,800±2,490** **36,530±5,800**

Notes: All uncertainties in age are quoted at 1σ confidence. Further details of this technique are presented in notes below and Annexure E.6.
Bold indicates preferred age for the sample.
FMM = finite mixture model. These models reflect a discrete statistically determined portion of the sample, and the age that this portion of the sample returns when processed. The number of models provide a coarse indication of the level of movement and bioturbation within the soil profile.

Table 7.5 Summary of OSL ages by depth below surface, and only presenting the preferred modelled ages from Table 6.5

Test pit	Sample #	Lab code	Spit	Depth (cm below surface)	Soil unit	Age model	Age (ka)
52	17	LC148	1	5	1	FMM-1 (67%) FMM-2 (11%)	**Modern** **1,430±790**
52	18	LC149	2/3	20	2	FMM-2 (26%) FMM-3 (57%)	**845±255** **4,640±530**
74	11	LC145	3	25	2	FMM-3 (34%) FMM-4 (42%)	**1,510±220** **3,850±420**
62	7	LC143	4	35	2	FMM-2 (40%) FMM-3 (54%)	**4,180±325** **12,055±820**

Test pit	Sample #	Lab code	Spit	Depth (cm below surface)	Soil unit	Age model	Age (ka)
52	19	LC150	4	35	2	FMM-2 (38%) FMM-3 (38%)	**3,145±330** **9,425±990**
74	13	LC146	6	55	2	FMM-2 (70%)	**7,770±640**
62	9	LC144	6	55	3	FMM-1 (71%)	**14,955±925**
52	20	LC151	6	55	3	FMM-4 (45%) FMM-5 (29%	**16,800±2,490** **36,530±5,800**
37	16	LC147	9/10	90	3	FMM-2 (36%) FMM-3 (44%)	**11,175±875** **19,900±1,680**

Notes: FMM = finite mixture model. These models reflect a discrete statistically determined portion of the sample, and the age that this portion of the sample returns when processed. The number of models provide a coarse indication of the level of movement and bioturbation within the soil profile.



Note: Sample numbers are shown in blue together with the age for the component or components that dominate the age population.

Plate 7.57 Photographs of each test pit from which samples were collected for OSL dating

iii Lithics

Lithic analysis was undertaken by Dr Trudy Doelman (full report presented in Annexure E.6). A summary is provided below.

Overall, a total of 1,344 artefacts were recovered from 67 test pits, representing an average artefact density of ~21 artefacts/m^2. The highest number of artefacts were recovered from TP 62 (n=215, 16% of the total excavated assemblage). The second highest number of artefacts were recovered from TP 3 (n=177, 13.17% of the total excavated assemblage). Five other test pits featured over 70 artefacts, TP 7 (n=118, 8.78% of the total assemblage), TP 52 (n=110, 8.18% of the total assemblage), TP 73 (n=96, 7.14% of the total assemblage), TP 74 (n=79, % of the total assemblage) and TP 50 (n=76, % of the total assemblage). Together, these seven test pits account for 64.8% of the total excavated artefact assemblage. Of the remaining test pits, 10 test pits (14.93%) contained 20-60 artefacts and 24 test pits (35.82%) contained 1 to 19 artefacts. A total of 25 test pits contained no artefacts. Given this a value of ~8 to 11 artefacts/m^2 may be more accurate when considering the background scatter levels associated with ephemeral or transient use of the area. These findings ultimately identify at least three main locales or foci within the construction envelope where dense cultural material was present, and which align broadly with identified sites, LL AS3, LL AS4 and AHIMS #45-3-0916. These finding are discussed further in Section 8.2.

Milky and crystal quartz artefacts account for over 80% of the assemblage, with lesser proportions of IMTC (refer to Plate 7.2). Other raw material types include cryptocrystalline quartz (CCQ) or chalcedony, quartzite and volcanics. The milky quartz artefacts are generally very high quality with few inclusions or flaws and many flake conchoidally. Given the size of the IMTC and CCQ artefacts it is likely they were mostly transported to the site/s complete rather than manufactured locally as was proposed by McDonald and Barton (1995). However, it is probable that some were brought in earlier with some local production evident, where platform rejuvenation flakes and ridge-straightening flakes, associated with core reduction, where found.

Two types of raw material sources were used, terrestrial (primary) and rarely waterborne (secondary). There are more milky quartz artefacts with a terrestrial / outcropping cortex. This result indicates that primary sources were closer to the test pits, possibly on the west side of Farmers Creek. Here most of the milky quartz artefacts with cortex were derived from an outcropping exposure. The outcrop/s grade from milky white and opaque to crystal clear. Sometimes impurities are seen which has changed the colour from white to yellow or grey. While this contrasts with McDonald and Barton's (1995) suggestion that the quartz may be exotic in origin (i.e. coming from a more distant source), the assemblage recovered here is dominated by milky quartz rather than the cryptocrystalline variety. Milky quartz outcropping would be expected in the geological substrate of the project area, whereas the lesser represented cryptocrystalline quartz may have been sourced elsewhere.

Compositionally, the assemblage is comprised of 307 (22.84%) complete flakes, 725 (53.94%) broken flakes, 33 (2.46%) cores, and other various angular fragments, core fragments, heat shatter and spall, etc. The characteristics of the quartz assemblage provide the most inferences regarding stone reduction techniques. Angular fragments, from primary exposures and some water-rolled nodules of quartz were used to manufacture quartz cores, with larger flakes also used as a core body. Cores were reduced using a bipolar technique and depending on the size rotated to produce bi-directional and multi-directional cores. A variety of flake types were produced including a surprisingly high number of elongated and sometimes even blade flakes of quartz (refer to Plate 7.3).

Evidence for a 'systematic' reduction of milky quartz cores made on these fragments occurred on site (i.e. the manufacture of elongated / blade flakes). Blocks were flaked along the lateral margin with limited platform preparation. This strategy most likely reflects the opportunistic use of suitably shaped fragments which produced the blanks used to make geometric microliths and Bondi points. Flakes were also used as burin-blade cores. Radial/bifacial and alternate-blade cores of milky quartz were also observed in the assemblages. Larger, wider flakes were also selected, retouched and used as scrapers or, if made from milky quartz, used for its sharp working edge. Occasionally retouch was observed on quartz artefacts including denticulate and step scrapers.

The contents of the assemblage suggest a desirability of the stoneworker for elongated or blade flakes which was facilitated by the importation of non-local material (such as IMTC, CCQ/chalcedony) and/or the transportation of prepared cores to facilitate the creation of backed artefacts (refer to Plate 7.4 and Plate 7.5). The presence of blade cores and unfinished tools composed of milky quartz indicates the creation of backed artefacts on-site. Milky quartz is not commonly used to make backed artefacts due to the high failure rate. The presence of these artefacts indicates a flexibility in the flaking strategies that were employed in the area.

The stone artefact assemblage reflects that occupation across most of the project area was likely short-term single events that were repeated over time with areas featuring a higher stone artefact density indicative of more intensive activity. This is most noticeable around the banks of Farmers Creek. The diversity of tool, artefact and material types around AHIMS #45-4-0916 provides evidence that the area was possibly used for more extended occupation. The assemblage also highlights that activities / site functions varied in different parts of the landscape, for example the assemblage at LL AS4 (AHIMS #45-1-2978), located on a ridgeline on Mount Walker indicated a task-specific area to manufacture backed artefacts and maintain tools; potentially by a hunting band using this area as a look out or using the ridgelines between Coxs River and Farmers Creek.

The presence of backed artefacts indicates that the area was likely occupied at least during the late Holocene (<5 ka) and there is no evidence that indicates that the assemblage is Pleistocene in origin. The presence of bipolar flaking is commonly a more recent technique, and along with the OSL chronology supports a <8 ka use of the locale, with activities correlating more closely with techniques seen in the last two thousand years.

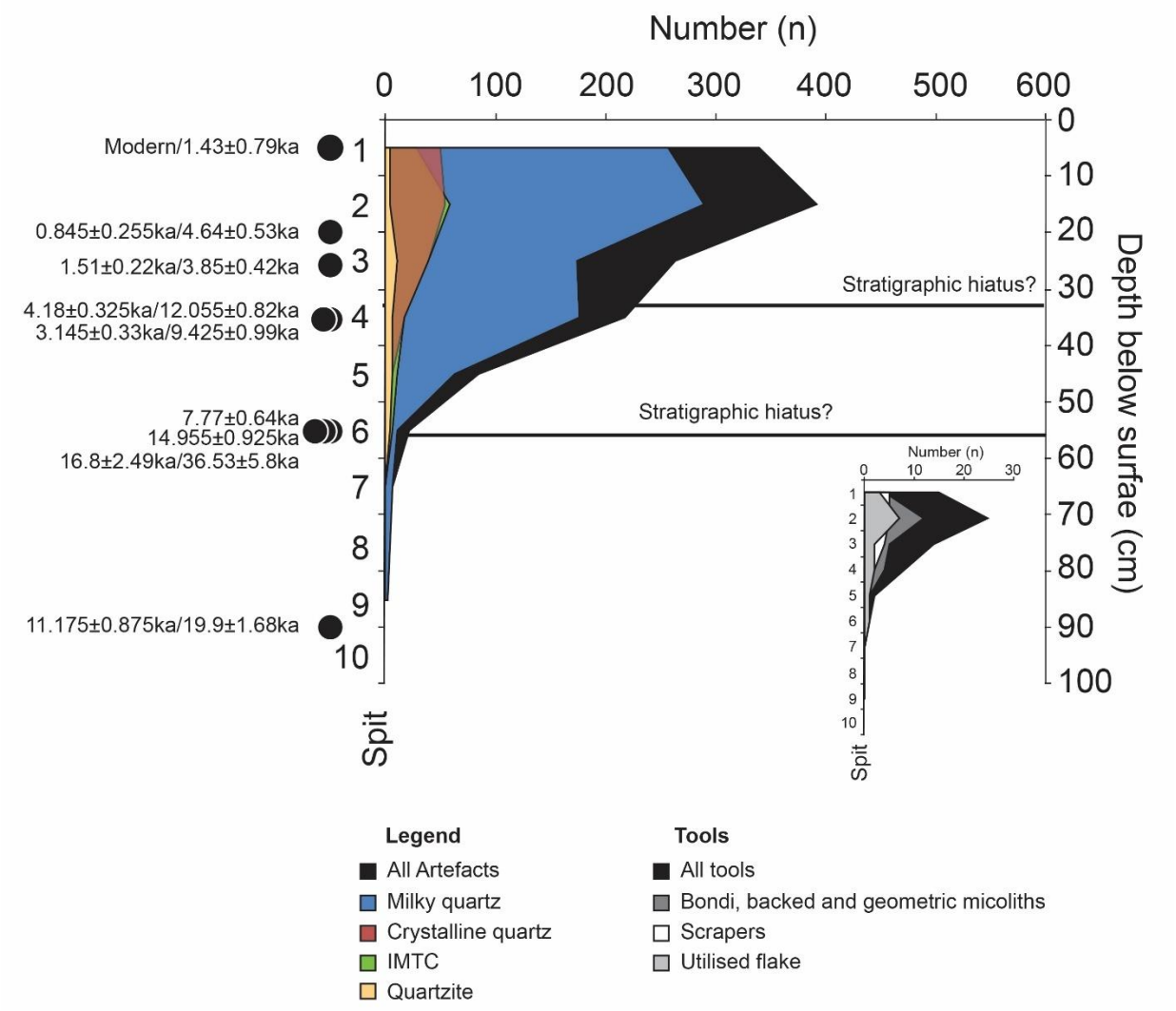


Plate 7.58 **A composite figure of the cultural assemblage showing the main raw material and tool types by depth. OSL ages presented in Section 6.3.2ii are also presented**



Plate 7.59 Examples of ridge-straightening flakes and blades in the assemblage (scale=1 cm)



Plate 7.60 Examples of complete and broken Bondi points (scale 1 cm)



Plate 7.61 Examples of broken and complete geometric microliths in the assemblage (scale 1 cm)



KEY

- Project area
- Construction envelope
- Excavated test pit

Existing environment

- Minor road
- Vehicular track
- Named watercourse
- NPWS reserve
- State forest

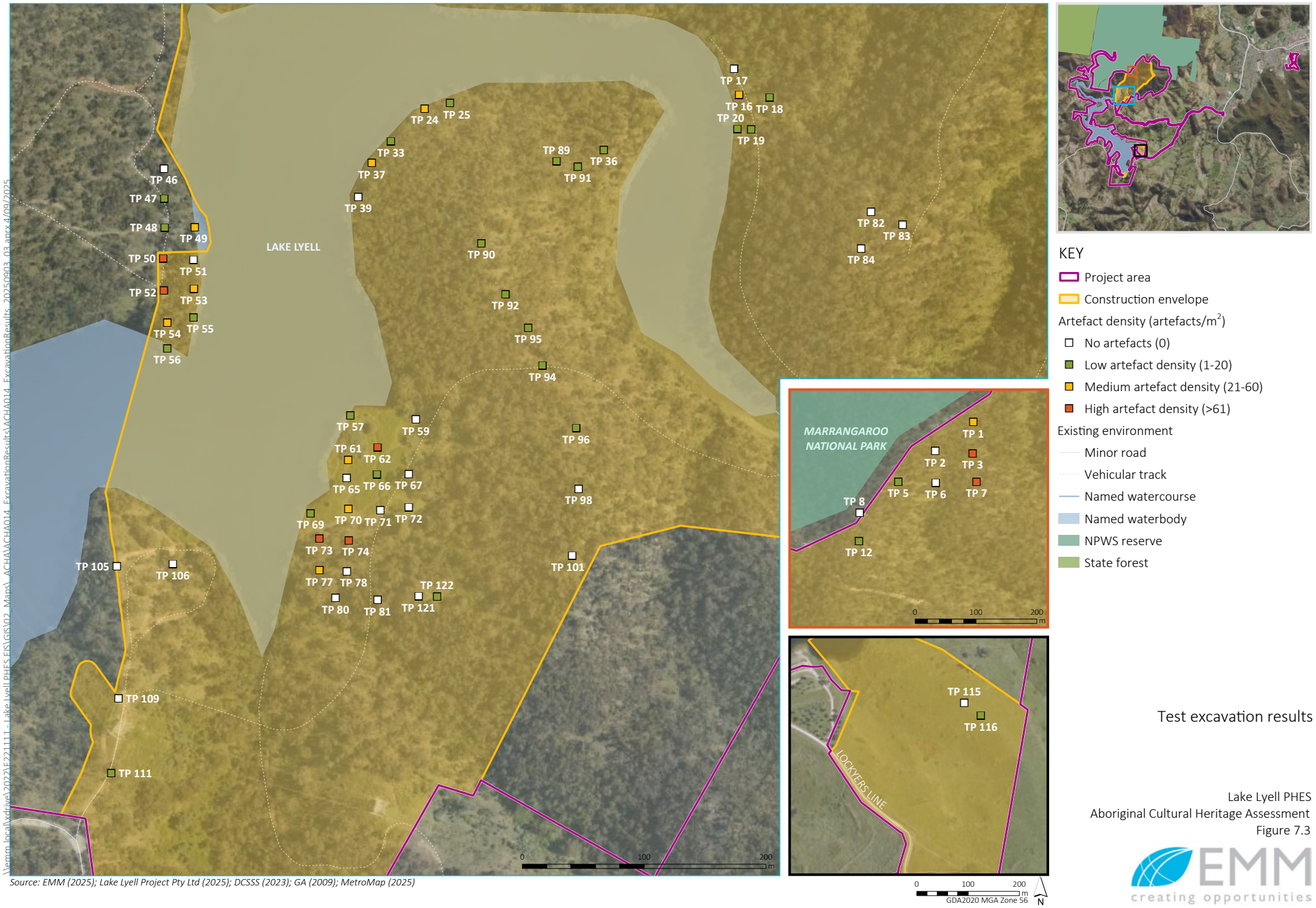
Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); GA (2009); MetroMap (2025)

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES FIS\GIS\02_Maps_ACHA_PrelimFigures\ACHA004_TestPits\ACHA004_TestPits_20250903_04.aprx 4/09/2025

Excavated test pits

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 7.2

EMM
creating opportunities



KEY

- Project area
- Construction envelope

Artefact density (artefacts/m^2)

- No artefacts (0)
- Low artefact density (1-20)
- Medium artefact density (21-60)
- High artefact density (>61)

Existing environment

- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); GA (2009); MetroMap (2025)

\\emm.local\xdrive\2022\EF221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA014_ExcavationResults\ACHA014_ExcavationResults_20250903_03.aprx 4/09/2025

Test excavation results

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 7.3

EMM
creating opportunities

8 The archaeological and cultural resource

8.1 Key findings

- The assessment undertook archaeological field survey and test excavations to explore and document the Aboriginal objects, sites and places within the project area, and to align them within the regional context. Overall, the findings have found the project to be situated within a rich cultural landscape with evidence of extensive but disparate past human activity along Farmers Creek (typically within 100 m) in the past – elements of which remain extant above the existing Lake Lyell dam (formerly part of Coxs River). Large flat ridgelines and spurs on the flanks of Mount Walker also contain evidence of past use and activity.

- The cultural values mapping (refer to Annexure F) identified two contemporary cultural values, only one of which is in the project area. Specifically, the peak of Mount Walker situated immediately north-east of the construction envelope was identified by numerous participants for a range of activities, while a Platypus Dreaming story associated with Coxs River was also documented. This latter value has been linked directly to the platypus (*Ornithorhynchus anatinus*), which is documented to be within Lake Lyell and Farmers Creek (and therefore has not been identified as a discrete place for the purposes of the report).

- The assessments undertaken in the 1990s for Pacific Power found that high density sites are likely to be located within a buffer of approximately 400 m from the original location of Coxs River and 200 m from Farmers Creek. The sites (LD3 [AHIMS #45-4-0209], LD8 [45-4-0209], LD 13 [AHIMS #45-4-0916], and LD 14 [AHIMS #45-4-0915]) were recommended for future conservation as they were composed of high-density artefact scatters of high significance, rare to the region (McDonald and Barton 1995 and McDonald 1995).

- These various site validation activities undertaken over a 12-month period resulted in duplication and overlap of results presented in Sections 6.4, 6.5 and 7.3.2. When combining and ratifying these findings, some n=20 discrete Aboriginal objects and sites amongst the discontinuous background distribution of surface and shallowly buried artefacts are located within the project area. Of these, five are located within the construction envelope. These can be broken down as follows:

    - Within project area (outside construction envelope and not impacted by the project):[2]

        - nine sites (LL IF1 [AHIMS #45-1-2974], LD1 [AHIMS #45-4-0208], LD2 [AHIMS #45-4-0207], LD5 [AHIMS #45-4-0211], LD6 [AHIMS #45-4-0212], LD7 [AHIMS #45-4-0213], LD8 (AHIMS #45-4-0214), LD15 [AHIMS #45-1-0248], and LD16 [AHIMS #45-1-0249]) characterised by low densities of stone artefacts that reflect transient use of the project area

        - two potential culturally modified trees (LLST1, LL ST2) were recorded on hillslopes. Neither of these sites are located within the construction envelope therefore no further analysis of them was undertaken for this assessment

        - two sites recorded as rock shelters with archaeological deposit (Lyell's Crossing [AHIMS #45-4-0006] and LD9 [AHIMS #45-4-0219]) that are low density artefact scatters at the base of granite boulders located ~300 m from the original Coxs River (now on Lake Lyell)

[2] Based on the findings of on-site activities within the construction envelope, it is considered that most of the identified Aboriginal objects, sites and places within the Project area could be re-classified as part of the broader background scatter. However, since they were not specifically inspected as part of this ACHA, no re-classification has been attempted of these sites and they are presented here as documented in Section 5.4.

- level terrain (e.g. alluvial terraces, ridgelines, etc.) along tributaries within 400 m either side of former Coxs River and 200 m of the former Farmers Creek within which higher densities of stone artefacts and/or other areas of past foci may be expected to be present.

- Within the construction envelope:

  - four areas of past foci of activity which ranged in area from ~4,000 to ~13,000 m^2. These include sites where sub-surface artefact densities were >20 artefacts/m^2 (LD 13 [AHIMS #45-4-0916], LL AS3 [AHIMS #45-1-2976] and LL AS4 [AHIMS #45-1-2978]); and one area where combined surface and sub-surface artefact counts were >200 (LD 14 [AHIMS #45-4-0915])

  - a stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which intermittent low to moderate artefact densities of 1 to 21/m^2 may be expected intermixed with culturally sterile zones. This includes a large number of the previously recorded sites (n=5) currently documented across the project area and outlined in subsequent sections

  - a zone of 200 m either side of former Farmers Creek within which higher densities of stone artefacts and/or other areas of past foci may be expected to be present. Such cultural materials and deposits may extend beneath the current surface of Lake Lyell based on field observations.

8.2 Results and synthesis

8.2.1 Previous studies and investigations

Past studies demonstrate that rock shelters have formed the focus of archaeological studies in this region. This is largely the result of pioneering archaeological excavations of rock shelter sites since the 1960s, at Shaws Creek, Springwood Creek, Kings Table, Lyre Bird Dell, Walls Cave, Blackfellows Hand shelter, Capertee 1-5, Emu Plains Shelter and Lapstone Creek (McCarthy 1964; Stockton 1970; 1973; Johnson 1979; Kohen et al. 1981; Kohen 1984; Gaul 1984). Dated rock shelter sites in the area suggest that Aboriginal occupation extended as far back as 14 ka, and potentially as early as 22 ka (see Bowdler 1981 and Johnson 1979) (Stockton 1973; Stockton and Holland 1974). Academic investigations of open sites or major river corridors have, however, been more limited – except where watercourses occur in close proximity to escarpments which were considered to be the primary occupation areas for previous Aboriginal communities (Gorecki 1983, pp.3-4). More recent archaeological studies in the local area, in association with development projects, began to provide greater insight into the use of open, gentle topography by Aboriginal people (McIntyre 1990; ERM 2006; RPS 2010; 2012; 2014). In particular, a series of archaeological assessments were undertaken, overlapping the project area, in response to proposed upgrades of Lake Lyell (Bell 1992; McDonald and Barton 1995; McDonald 1995).

These reports found that open artefact sites were commonly found in low densities in the vicinity of Coxs River and its tributaries, such as Farmers Creek. Interestingly, McDonald (1995) suggests a variation in the utilisation of sites adjacent to Coxs River compared to those adjacent to Farmers Creek; the former posited to be characterised by short-term expedient stone-tool production for task-specific utilisation with the latter presenting evidence for a more concentrated occupation. The identified sites adjacent to Farmers Creek (LD14 [AHIMS #45-4-0915] and LD13 [AHIMS #45-4-0916], LD8 [45-4-0209]), and LD3 (AHIMS #45-4-0209) adjacent to the original Coxs River representing the only open sites demonstrating high densities of surface artefacts within the wider locale. Two of these sites (LD14 [AHIMS #45-4-0915] and LD13 [AHIMS #45-4-0916]) are located within the construction envelope. (The fourth, LD8 [AHIMS #45-4-0214] has been avoided as part of project re-design), represent the only open site demonstrating a high density of surface artefacts within the wider region. These assessments found that high density sites are likely to be located within a buffer of approximately 400 m from the original location of Coxs River and up to 200 m from Farmers Creek.

The sites (LD3 [AHIMS #45-4-0209], LD8 [45-4-0209], LD 13 [AHIMS #45-4-0916], LD 14 [AHIMS #45-4-0915]) were recommended for future conservation as they were composed of high-density artefact scatters of high significance, rare to the region (McDonald and Barton 1995 and McDonald 1995).

Of note was that several studies also indicate that cultural materials were observed beneath the water line along the edges of Lake Lyell and may further indicate that former parts of Coxs River and Farmers Creek may remain relatively unaffected by past inundation.

8.2.2 On-site investigations and validation

An extensive program of ground-truthing was undertaken as part of this assessment, including cultural mapping, archaeological field survey and test excavations of the project area, and focussing on the construction envelope. The aim of these works was to both validate the regional models specific to the construction envelope and identify any previously undocumented cultural sites, places and/or material.

The field survey identified eight discrete observations of Aboriginal sites, places and/or objects. These included one previous registered Aboriginal site (AHIMS #45-2-0214) (refer to Table 7.2). Two other previous registered Aboriginal sites were also located within the project area, however, were unable to be re-identified (LD14 [AHIMS #45-4-0915] and LD13 [AHIMS #45-4-0916]). Test excavations were undertaken at each of these locales and provided further input into the nature of these sites. These observations included four artefact scatters, three isolated finds and two potential culturally modified trees, which were predominantly found on alluvial terraces and ridgelines as predicted (refer to Section 6.6). Four Aboriginal sites (LL ST1, LL ST2, LL IF1 [AHIMS #45-1-2974] and LL AS6 [AHIMS #45-4-1807]) were documented but are now located outside of the project area (through incidental observation or as a result of project re-design). Higher density artefact scatters were more common on alluvial terraces, which reflects the importance of the creek corridor to past visitation and occupation. Similar to the previous investigations, the field teams also observed cultural materials beneath the water line along the edge of Lake Lyell, and which suggests the potential for submerged stone artefacts and deposits to be present despite the past inundation.

A further site, LD 8 (AHIMS #45-4-0214), was previously recorded as part of earlier assessments in 1995 (McDonald and Barton, 1995). This site was considered of high significance, exhibiting exotic raw materials and dense cultural materials, and was recommended for conservation. As a result, the project has been re-designed to avoid the site. It remains within the project area but is considered unlikely to be affected by the project. This assessment found the newly identified site LL AS3 (AHIMS #45-1-2976) to be of a similar composition as that described by LD8.

Archaeological test excavation was undertaken to explore the subsurface potential for cultural materials within the construction envelope. These focussed on alluvial terraces surrounding Farmer's Creek and ridgelines/saddles of Mount Walker and the surrounding hills in the project area, some of which had been identified during the field survey through the presence of surface cultural material. They also focussed on LD13 (AHIMS #45-4-0916) and LD14 (AHIMS #45-4-0915) due to poor visibility during the field survey. The excavations recovered a total of 1,344 stone artefacts. These found that values of ~8 to 21/m^2 were present at most locations and suggest a low-density artefact scatter is discontinuously and intermittently present across the construction envelope. The cultural material was generally recovered from the upper 40 cm of the soil profile. Within this broader background scatter where areas of denser cultural materials, which are considered to reflect foci of past visitation and/or occupation. Typically, values of >30/m^2 were encountered within these locales, with >200/m^2 encountered. Three locations, on either side of Farmers Creek and on a large ridgeline with sweeping views near the top of Mount Walker, have the highest sub surface artefact density and represent more intensive activity (LL AS3 [AHIMS #45-1-2976], LL AS4 [AHIMS #45-1-2978], and LD13 [AHIMS#45-4-0916]).

Analysis of the cultural assemblage indicates that it was primarily deposited in the last 1,500 or so years, and potentially into the post-Contact period. At LD13 (AHIMS #45-4-0916) a slightly deeper portion of the assemblage may reflect visitation between ~8 to 4 ka, and form some of the earliest evidence of Aboriginal people in the locale. This earlier date is consistent with numerous other regional sites such as Capertee rock shelter, which suggest an increasing archaeological signature in the early Holocene. This is potentially as a result of increasing sea-levels between 14 to 8 ka, and which resulted in population packing on the coastal fringe and prompting increase movement inland (Williams et al. 2018). The recovered cultural assemblage suggests a complex brief, but repeated use of the construction envelope, with task-specific activities associated with the manufacture and maintenance of various tools. The assemblage further suggests a focus on the recovery and use of locally derived quartz, as well as the production of certain tool type, including backed artefacts, Bondi points, etc. The demonstrated use of quartz to create backed artefacts is uncommon and reflects a flexibility in flaking strategies, utilising local material that were at hand and complimenting this with the importation of non-local chert and exotic cryptocrystalline quartz – likely along the Coxs River corridor that was used for movement and trade (Barry et al. 2020).

8.2.3 Summary of cultural values and ethnographic data

In the case of cultural or intangible values, an extensive study with Elders and knowledge-holders was undertaken, and is presented in Section 5.3 and Annexure F.

While a number of important values were articulated across the broader region, two are directly relevant to the project. These include:

- the peak of Mount Walker, which was articulated to contain a number of differing contemporary values associated with ceremonial activities, as a lookout and/or observation point (AHIMS #45-1-2997). Some participants considered additional parts, or the whole, mountain as important, but here the consensus view of the peak has been adopted

- a Platypus Dreaming story encompasses portions of the Coxs River and its tributaries extending through the project area. In this instance, no specific location or place was proposed, but the importance of the story is in the platypus species, which is known to live in Farmers Creek.

Other totemic and culturally important flora and fauna were also discussed, and which are documented in the project area.

8.2.4 Summary and ratification of Aboriginal sites and places

As outlined in preceding sections, there have been numerous assessments encompassing the project impact area, as well as different phases of field investigation for the project. As a result, there is a need to ratify the site listings to develop an overall archaeological assemblage or resource for the project. Ratification of the cultural assemblage outlined below has been undertaken using the following tools and approaches:

- Administrative issues, including:

    - removal of destroyed sites, which while important in understanding the regional cultural record and cumulative impacts, are not needed for inclusion in the subsequent management of the project

- removal of duplicate recordings that have been identified either through previous assessments visiting and re-recording the same sites and places, and/or by the field program where the same situation has occurred. This is most evident in the cultural values mapping study, which identified sites already documented as part of the archaeological program and hence resulted in two names for the same place. For example, Bell (1992) and McDonald and Barton (1995) identified a number of sites along Farmers Creek, and which we have re-interpreted here through further on-site works and analysis of the data. While this has not necessarily resulted in the removal or declassification of sites, their composition, size and significance have all been revisited as a result

- removal of sites that are outside the project area. The project was subject to ongoing refinement and was modified throughout the ACHA process and as such some parts of the earlier project area are now a significant distance from the current designs. These sites have been documented in the AHIMS database but are no longer included in the report being outside potential direct and indirect impact zones of the project.

- Analytical issues, including:

  - consolidation of discrete site recordings that reflect the same archaeological site or place, but have been recorded separately, resulting in multiple listings. This typically focussed on stone artefactual material where lots of discrete recordings may reflect part of a larger site or complex but can include other sites

  - the removal of sites that were identified in the field investigations, but which through additional investigation and/or interpretation are considered to be non-cultural

  - aggregation of isolated Aboriginal objects and low-density artefact scatters into a single recording to reflect the broader background scatter well-documented to be present across the project and environs, which enables more extensive and significant cultural material to be presented.

Overall, this demonstrates that 21 Aboriginal sites and/or places are within the project impact area, and includes:

- Within project area (outside construction envelope and not impacted by the project):

  - nine sites (LL IF1 [AHIMS #45-1-2974], LD1 [AHIMS #45-4-0208], LD2 [AHIMS #45-4-0207], LD5 [AHIMS #45-4-0211], LD6 [AHIMS #45-4-0212], LD7 [AHIMS #45-4-0213], LD12 (AHIMS #45-4-0214), LD15 [AHIMS #45-1-0248], and LD16 [AHIMS #45-1-0249]) characterised by low densities of stone artefacts that reflect transient use of the project area. It should be noted that many of these sites could be re-classified into the background artefact scatter considered to reflect ongoing but ephemeral use of the region over millennia and which is found across NSW. However, since many of these sites were not inspected as part of this assessment they have not been redefined

  - three sites (LD3 [AHIMS #45-4-0209], LD4 [AHIMS #45-4-0210], LD8 AHIMS [#45-4-0214]) characterised by high densities of or highly significant artefacts that represent areas of past foci. However, since many of these sites were not inspected as part of this assessment they have not been redefined

  - two potential culturally modified trees (LL ST1, LL ST2) were recorded on hillslopes. Neither of these sites are located within the construction envelope therefore no further analysis of them was undertaken for this assessment

- two sites recorded as rock shelters with archaeological deposit (AHIMS #45-4-0006 and LD9 [AHIMS #45-4-0219]) that are low density artefact scatters at the base of granite boulders located ~300 m from the original Coxs River (now on Lake Lyell)

- a zone of 400 m either side of the former Coxs River and 200 m of the former Farmers Creek within which higher densities of stone artefacts and/or other areas of past foci may be expected to be present.

• Within the construction envelope:

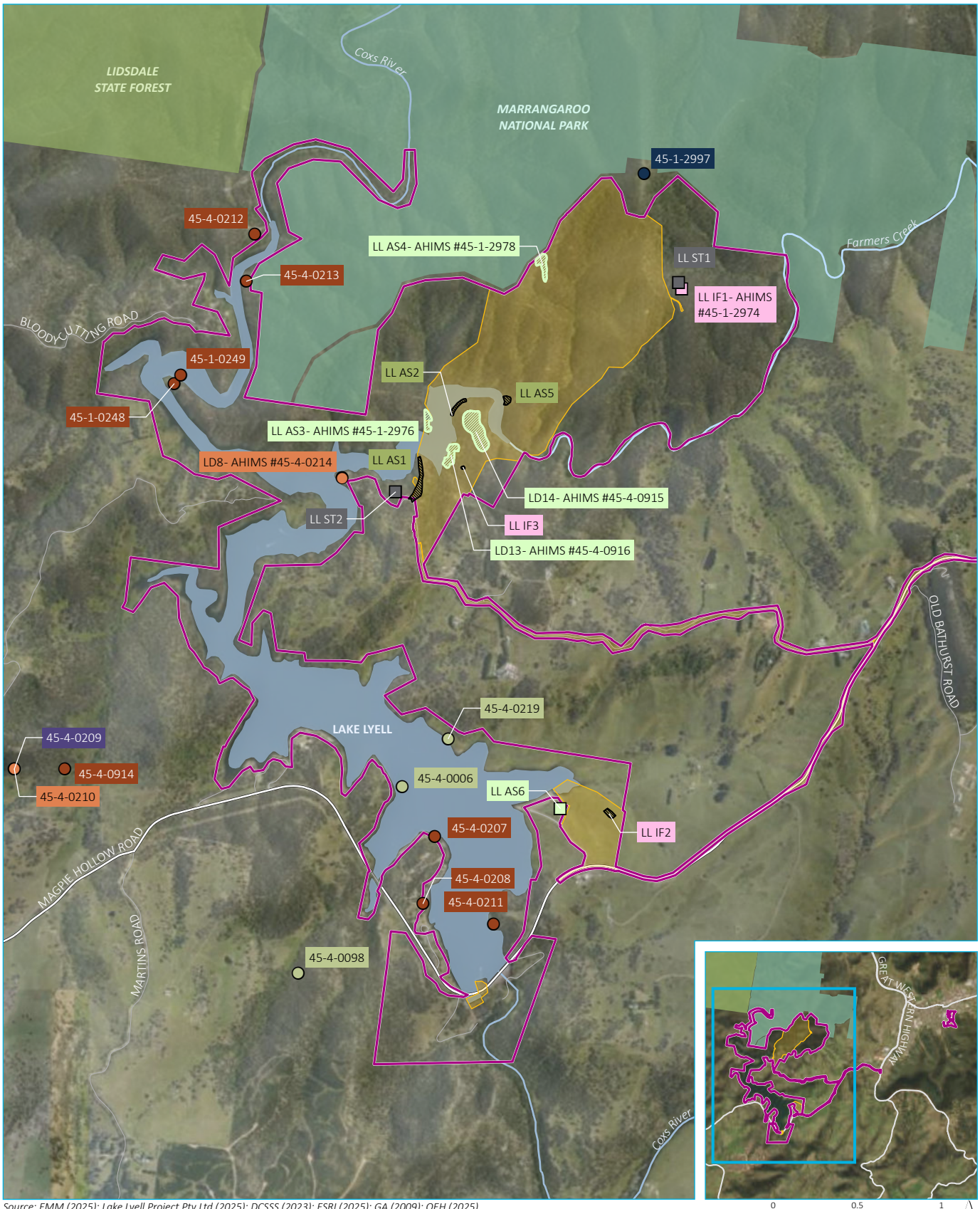
- four areas of past foci of activity which ranged in area from ~4,000 to ~13,000 m^2. These include sites where sub-surface artefact densities were >21 artefacts/m^2 (LD 13 [AHIMS #45-4-0916], LL AS3 [AHIMS #45-1-2976] and LL AS4 [AHIMS #45-1-2978]); and one area where combined surface and sub-surface artefact counts were >200 (LD 14 [AHIMS #45-4-0915])

- a stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which intermittent low to moderate artefact densities of 1 to 11/m^2 may be expected intermixed with culturally sterile zones. This includes several of the previously recorded sites currently documented across the project area, including:

  ▪ two isolated stone artefacts (LL IF2 [AHIMS #45-4-1810], LL IF3 [AHIMS #45-4-1809])

  ▪ three artefact scatters (LL AS1 [AHIMS #45-4-1808], LL AS2 [AHIMS #45-1-2975] and LL AS5 [AHIMS #45-1-2977])

- a zone of 200 m either side of former Farmers Creek within which higher densities of stone artefacts and/or other areas of past foci may be expected to be present. Such cultural materials and deposits may extend beneath the current surface of Lake Lyell based on field observations.



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2025); GA (2009); OEH (2025)

0 0.5 1 km
GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA016_AllSites\ACHA016_AllSites_20250903_04.aprx 9/10/2025

KEY

- Project area
- Construction envelope
- Area of past foci
- Identified Aboriginal site extent

Identified Aboriginal site

- Isolated find
- Modified tree
- Artefact scatter

AHIMS (by site type)

- Aboriginal ceremony and dreaming
- High density artefact scatter
- Low density artefact scatter
- Medium density artefact scatter
- Rockshelter with deposit

Existing environment

- Major road
- Minor road
- Original Coxs River
- Original Farmers Creek
- NPWS reserve
- State forest

All Aboriginal objects, sites and places identified within the Project area

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 8.1

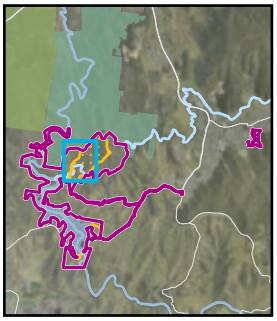
EMM
creating opportunities



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); Metromap (2025); GA (2009)

0 100 200 m
GDA2020 MGA Zone 56
N

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA017_ArchCulturalResource\ACHA017_ArchCulturalResource_20250903_03.aprx 3/09/2025



KEY

- Project area
- Construction envelope
- Area of past foci

Existing environment

- Minor road
- Vehicular track
- Named waterbody
- NPWS reserve

INSET KEY

- Major road
- Original Coxs River
- Original Farmers Creek
- State forest

Archaeological and cultural resource within the construction envelope- areas of past foci

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 8.2

EMM
creating opportunities

9 Significance assessment

9.1 General

All Aboriginal objects in NSW are protected under the *National Parks and Wildlife Act 1974* (NPW Act). *It is* recognised that the impact or destruction of sites may be necessary to allow other activities or developments to occur. In order for the consent authority to make informed decisions on such matters, an important element of cultural resource management is determining the significance of cultural heritage places and objects to understand what may be lost; and how best it can be avoided or mitigated. However, it is highlighted that something can be of little or no significance and still be protected under the NPW Act.

Cultural significance is outlined in Article 1.2 of the *Burra Charter* - the best practise document for managing cultural heritage – as 'aesthetic, historic, scientific, social or spiritual value for past, present or future generations' (Australia ICOMOS, 2013). These values are reiterated in the NSW guidelines, which determines cultural significance of a place can be assessed by identifying the values that are present across the subject area and assessing what is important and why (OEH 2011). In assessing the scientific significance of sites, aspects such as rarity and representativeness and the integrity must be considered. Generally speaking, a site or object that is rare will have a heightened significance, although a site that is suitable of conservation as 'representative' of its type will also be significant. Conversely an extremely rare site may no longer be significant if its integrity has been sufficiently compromised.

The criteria adopted for this report are defined in Table 9.1. The management implications of these sites' significance are discussed in subsequent sections.

Table 9.1 A summary of criteria used to assess the cultural significance (OEH 2011, 8–10)

Criterion	Definition
Social value - Does the place have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?	Social (or cultural) value refers to the spiritual, traditional, historical or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them. Social or cultural value can only be identified through consultation with Aboriginal people.
Historic value - Is the place important to the cultural or natural history of the local area and/or region and/or state?	Historic value refers to the association of a place with a historically important person, event, phase or activity. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have 'shared' historic values with other (non-Aboriginal) communities.
Scientific (archaeological) value - Does the place have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state?	Scientific (archaeological) value refers to the importance of a landscape, area, place or object because of its rarity, representativeness and the extent to which it may contribute to further understanding and information. Information about scientific values is gathered through archaeological investigation undertaken in this report.
Aesthetic value - Is the place important in demonstrating aesthetic characteristics in the local, regional, and/or State environment?	Aesthetic value refers to the sensory, scenic, architectural and creative aspects of the place. It is often linked with social value, and can consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use. This value is only relevant to archaeological sites on only rare occasions, such as rock shelters that contain art, or culturally modified trees in prominent positions, etc.

Assessment of scientific (archaeological) significance considers:

- **Research potential:** the potential of a site to contribute to the present understanding of society and the human past. This is commonly linked to rarity, representativeness, site integrity, research themes and the potential extent of data retrievable for further analysis and interpretation. The research potential of archaeological sites is often only realised through archaeological investigation methods. A site with high research potential would be able to provide information about the past that is not obtainable from any other source, or supplements written and oral sources.

- **Rarity and representativeness:** the frequency of a site type and how the sites relate to the wider archaeological record. The significance may be due to sites being uncommon because of the related activity that created them, or preservation, or they are uncommon now because of ongoing site destruction through development and change. Sites with high representative value would typically need to be a pivotal example of its type that demonstrates the key characteristics of a site.

- **Integrity:** the level of disturbance or intactness of a site and how this may affect research potential. For example, artefacts identified in heavily cultivated areas would be unsuited to addressing research questions of site structure, but it may still be useful to characterise the artefact types and raw materials used in the region.

- **Educational value:** the potential of a site to be used as an educational tool. This usually includes sites with easily identifiable and accessible characteristics that are good representative examples. Sites with high educational value can have aesthetically distinctive or iconic qualities.

9.2 Statement of significance

The assessment identified 21 discrete Aboriginal sites and places located within the project area, with five of those sites within the construction envelope (refer to Section 8). These discrete sites typically reflected past foci and/or repeat occupation located on the alluvial terraces of Farmers Creek, and on the ridge flat to the west of Mount Walker. Other sites include potential culturally modified trees. In addition, the entire construction envelope was characterised by an intermittent and discontinuous low-density background artefact scatter, which has been variously documented by discrete site recordings and other observations previously and during the ACHA investigations (refer to Section 6.4, and Section 8). The results largely align well with the broader regional archaeological picture, which features a high frequency of open stone artefact sites in valleys and adjacent to water courses; and highlights the importance of water courses to Aboriginal visitation and occupation in the past. Two intangible cultural places and/or stories were also linked to the project area or immediate surrounds, and which are of high importance to the local Aboriginal community.

For the purposes of significance assessment, all sites and places have been assigned a classification, even where they are only identified as being of tentative identification to allow the ACHA to be completed. These sites have been conservatively identified as an archaeological and/or cultural site; however, further assessment by a specialist is required for validation should they be impacted in the future. Where sites have been previously recorded and significance documented, we have extended these values to the significance assessment presented below unless they have been subject to additional investigation as part of this report. Where values were not provided, these have been developed based on the documentary evidence provided and our understanding of the regional archaeological record.

At a general level, when considering the scientific significance, a number of the sites and zones can be considered to have moderate (local) or high (regional) significance with the ability to provide information on the past activities of the area (research potential). These sites can primarily be divided into three main categories:

1. Rock shelters that would have been used for habitation in the past. These sites form the foundational information across Australia for past Aboriginal populations, behaviour and activity, and are therefore of high scientific significance. Commonly, they include art and other cultural deposits that make them extremely important to the local Aboriginal community as well. However, in the case of the two rock shelter sites within the project area, they are composed of minimal exposed cultural deposits adjacent large granite boulders (and have largely been mitigated or lost previously). As such, both sites, AHIMS #45-4-0006 and LD9 (AHIMS #45-4-0219), have been considered of moderate significance being able to provide limited further understanding of themselves, or the broader region's use, by people in the past.

2. Culturally modified trees that indicate the use and manipulation of the cultural landscape by Aboriginal people in the past. While typically of limited scientific significance, they are increasingly rare in the region due to land clearance. They are also typically important to the local Aboriginal community. For these reasons, these sites have been assigned a moderate significance. In both instances, LL ST1 and LL ST2, these sites are proposed as tentative with further specialist investigations proposed to determine their anthropogenic origin.

3. High and moderate density artefact scatters that indicate the occupation and/or repeat visitation of a locale by people in the past. The largest portion of the assemblage consisted of surface and/or subsurface stone artefactual material (>21/m^2), which encompassed four (80%) of the five discrete sites within the construction envelope. LD8 (AHIMS #45-4-0214) within the project area also represents a high-density artefact scatter. These sites are assigned either a moderate or high significance based on their potential research potential to inform our understanding of past use and behaviour. Of note is LD14 (AHIMS #45-4-0915), which contain both substantive observed cultural material and buried cultural deposits, which can be explored to inform procurement, technological behaviours, and inform temporal change. This site also had some indication of two phases of occupation, with the lowest assemblage reflecting some of the earliest visitation in the immediate locale (~4 to 8 ka). Similarly, LL AS3 represents one of the few high density artefact scatters encountered away from the major creek lines and near the top of Mount Walker and may provide information about activities associated with the peak of the promontory or as part of travel routes through the construction envelope between Farmers Creek and Coxs River. All of these sites are relatively rare even when considering the broader sites documented in Chapter 8 (which suggests the average number of artefacts in a site is <21). The moderate sites are more marginal in what types of information can be obtained, several contain densities only just above background activity levels, while a number are in disturbed environments. As such, the level of research potential is considered limited, and low and moderate values have been assigned. This is most notable in the case of LD13 (AHIMS #45-4-0916) where a previously significant site found limited surface or subsurface cultural material as part of the ACHA investigations.

The remaining identified sites, including the broader background artefact scatter, are considered to have limited, if any research potential (refer to Table 9.2). While important in demonstrating the longevity and continued use of the region by Aboriginal people in the past, it is considered that little further information can be obtained from additional investigation of these sites, places and objects. This includes several of the eight previously documented stone artefact sites within the project area, which were not inspected as part of the ACHA investigations, but based on descriptions are consistent with components of the broader background scatter.

All the sites have some level of aesthetic significance, but only few can be considered an intrinsic part of their significance. These include Mount Walker that is important (see below) in large part as a major promontory of the region, and the Platypus Dreaming story, which similarly is linked to creeks and tributaries encompassed by the project area. It is probable that LL AS3 situated high up on the flanks of Mount Walker is in part associated with the extensive views present in this locale. To a lesser extent, several of the high-density artefact scatter zones and areas adjacent creeks that were likely selected by people in the past, at least in part, due to their aesthetic appeal.

Two places of cultural importance were identified by the local Aboriginal community. These include Mount Walker, the peak of which is assigned various contemporary values by a number of Elders and knowledge-holders. These values included both the current condition of the mountain, cultural maintenance and access to the mountain, and view-lines from it to the northwest. Several Elders and knowledge-holders have indicated that harm or impacts to the mountain would result in emotional and social damage to the Aboriginal community.

A Platypus Dreaming story associated with Coxs River and surrounding tributaries was also highlighted as of significance. However, in this instance, the values are associated with specific fauna within the current Lake Lyell, and here to impact to them would adversely affect the well-being of the local Aboriginal community. In the case of the stone artefact sites, less input on their cultural value has been provided, although the Barrinang representative has suggested that these sites may reflect ritual/ceremonial activities occurring along Farmers Creek as part of the broader values of Mount Walker.

Table 9.2 provides a summary of the significance values for each Aboriginal object and/or site identified.

Table 9.2 Significance of Aboriginal objects and/or sites identified within the project area

Site	AHIMS #	Site type	Brief description	Site status	Significance (this report)				
					Scientific	Aesthetic	Historical	Cultural/ Social	Overall
Within or near the project area (outside Construction Envelope)									
Mount Walker	45-1-2997	Aboriginal ceremony and Dreaming	Mount Walker is identified by the local Aboriginal community to have a number of contemporary values, including male ritual, lookout and/or observation point.	Valid	Moderate	High	-	High	High
Platypus Dreaming story	-	Aboriginal ceremony and Dreaming	A story associated with Coxs River and tributaries and linked to the platypus species currently within Lake Lyell. Currently, not proposed as a discrete spatial location.	Valid	Moderate	High	-	High	High
LD9	45-4-0219	Rock shelter with deposit	Low density artefact scatter at the base of two granite boulders, some 300 to 400 m from the former Coxs River. The site has probably been disturbed from explosives used on nearby boulders.	Valid	Low	Low	-	Low	Low
Lyell's Crossing	45-4-0006	Rock shelter with deposit	Low density artefact scatter of quartz and jasper eroding beneath overhang of granite boulders. Assessed as majority of the cultural deposit not under the boulders, but likely extending further up nearby slopes.	Valid	Low	Low	-	Low	Low
LL ST1		Culturally modified tree	LL ST1 is a potentially culturally modified tree that features an oval scar on the western side of a eucalypt tree. The dimensions of the scar are as follows: length of scar 95 cm, width 24 cm, depth 9 cm, height from ground 24 cm.	Tentative See Note 4	Moderate	Low	-	High	High
LL ST2		Culturally modified tree	LL ST2 is a potentially culturally modified tree that features an oval scar on the northern side of a eucalypt tree. The dimensions of the scar are as follows: length of the scar: 220 cm, width 30 cm and depth 20 cm.	Tentative See Note 4	Moderate	Low	-	High	High
LL IF1	45-1-2974	Isolated object	LL IF1 is an isolated find recorded in the northeast of the project area. The site consists of a single quartz flake located on a granite outcrop on an eastern facing steep hillslope.	Valid	Low	Low	-	Low	Low

Site	AHIMS #	Site type	Brief description	Site status	Significance (this report)				
					Scientific	Aesthetic	Historical	Cultural/ Social	Overall
LD1	45-4-0208	Medium density artefact scatter	Medium density artefact scatter (n= 32), 300 m from former Coxs River. Site has been disturbed from erosion from flooding of Lake Lyell.	Valid	Low	Low	-	Low	Low
LD2	45-4-0207	Low density artefact scatter	Low density artefact scatter (n= <10) on original banks of Coxs River. On a precipitous slope, extending up to a ridgeline.	Valid	Low	Low	-	Low	Low
LD3	45-4-0209	High density artefact scatter	High density artefact scatter (~3 to 4,000 artefacts/m² and continuous background scatter) located on north facing spur of a ridge 400 m from former Coxs River.	Valid	High	High	-	High	High
LD4	45-4-0210	Moderate density artefacts scatter	Moderate density artefact scatter (>14 artefacts) located on north facing terrace 400 m from former Coxs River. Associated with LD3.	Valid	High	High	-	Moderate	High
LD5	45-4-0211	Low density artefact scatter	Low density artefact scatter (n=>10), on a vehicle track, 250 m from former Coxs River.	Valid	Low	Low	-	Low	Low
LD6	45-4-0212	Low density artefact scatter	Low density artefact scatter located on spur leading to former Coxs River (70-100 m). Deposit likely continues across the top of the spur.	Valid	Low	Low	-	Low	Low
LD7	45-4-0213	Low density artefact scatter	Low density artefact scatter of seven artefacts located 50 to 100 m from Coxs River. The site has some potential for shallow subsurface cultural material.	Valid	Low	Low	-	Low	Low
LD8	45-4-0214	Medium density artefact scatter	A medium density artefact scatter featuring >30 artefacts. The artefacts are largely located on sheet wash and on a vehicle track exposure besides Farmer's Creek. Previously investigated and considered to contain rare and exotic raw materials; was also potentially larger based on these earlier observations.	Valid	High	Low	-	High	High
LD12	45-4-0214	Low density artefact scatter	A low-density artefact scatter related to LD3 and LD4. It is located on a spur jutting into the Lake, north-east of LD4.	Valid	Low	Low	-	Low	Low

Site	AHIMS #	Site type	Brief description	Site status	Significance (this report)				
					Scientific	Aesthetic	Historical	Cultural/ Social	Overall
LD15	45-1-0248	Low density artefact scatter	Low density artefact scatter salvaged on Coxs River of 31 artefacts, including chert and quartz flakes. Potential Contact site with possible glass flakes present. Recovered from disturbed context from the Convict Stockade Site.	Valid	Moderate	Low	-	Moderate	Moderate
LD16	45-1-0249	Low density artefact scatter	Low density artefact scatter salvaged on Coxs River of four artefacts, with three potential quartz flakes. There is another artefact scatter 100 m up slope from here. Recovered from disturbed context from the Convict Stockade Site.	Valid	Low	Low	-	Low	Low
Level terrain (e.g. alluvial terraces, ridgelines, etc) along tributaries within 400 m either side of former Coxs River and 200 m of the former Farmers Creek	-	Potential archaeological deposit	A zone of 400 m either side of Coxs River and 200 m of Farmers Creek within which higher densities of stone artefacts and/or other areas of past foci may be expected to be present.	Valid	Moderate	Low	-	Moderate	Moderate
Within construction envelope									
LL AS3	45-1-2976	High density artefact scatter	LL AS3 is a high-density artefact scatter located on the current northern bank of Lake Lyell. This northern bank likely represented an alluvial terrace prior to the damming of Lake Lyell. The artefacts appear to be eroding out of the terrace, particularly where vehicles have created a 4 x 4 track.	Valid	High	Low	-	High	High
LL AS4	45-1-2978	High density artefact scatter	LL AS4 is a high-density artefact scatter recorded on the mountain ridgeline in line with a dirt track. The primary focal point of the site is the eastern margin where the vast majority of artefacts were recovered from three test pits across an area of roughly 150 m x 25 m. Artefacts are present in in significantly lower densities to the west, as artefacts were likely dispersed through erosion or the installation / maintenance of the dirt track.	Valid	High	Low	-	High	High

Site	AHIMS #	Site type	Brief description	Site status	Significance (this report)				
					Scientific	Aesthetic	Historical	Cultural/ Social	Overall
LD 13	45-4-0916	High density artefact scatter	LD 13 features a high-density artefact scatter located on an alluvial terrace to the south of Farmers Creek.	Valid	High	Moderate	-	High	High
LD 14	45-4-0915	High density artefact scatter	LD 14 features a high-density artefact scatter located on a ridgeline to the south of Farmers Creek.	Valid	Low	Low	-	Low	Low
Level terrain (e.g. alluvial terraces, ridgelines, etc.) along tributaries within 200 m of the former Farmers Creek	-	Potential archaeological deposit	A zone of 200 m of Farmers Creek within which higher densities of stone artefacts and/or other areas of past foci may be expected to be present.	Valid	Moderate	Low	-	Moderate	Moderate
LL background scatter	See note 6	Low density artefact scatter	A stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which disparate low to moderate artefact densities of 1 to 21/m^2 may be expected intermixed with culturally sterile zones; and reflecting long-term, transient use of the region for several thousand years.	Valid	Low	Low	-	Low	Low

Notes:

1. Values are only assigned where the site fulfils that specific criterion.
2. In the case of the cultural criterion, it is ranked in relation to whether the site is important to one individual (low), a mixed view from the Aboriginal participants (moderate) or broad-scale support from all stakeholders (high). Further details are presented in Section 5 and Annexure F.
3. Where relevant, cultural sites rankings are based on the cultural mapping report presented in Annexure F. While all sites identified were of value to the Aboriginal participants, some were clearly of more significance than others. Greater significance was also given to those that had broader regional analogues.
4. Sites requiring further investigation and/or validation, are ranked based on the assumption the site proves valid. However, their significance should be revisited when further analysis and classification of them occurs. These values are presented in red to demonstrate their tentative status.
5. The overall significance is comparable with the highest ranking achieved in any of the four main criteria.
6. LL Background scatter incorporates LLIF3, LLIF2, LL AS1, LL AS2, LL AS5.

10 Impact assessment

10.1 Key findings

- The project would consist of the construction of an upper and lower reservoir, a pipeline connecting them, and a hydro-electric power station connected to the national energy grid that is capable of generating or consuming electricity and associated ancillary activities. The works would result in the impact to an area of up to 137 ha within the disturbance footprint. No direct impacts are considered to extend beyond the construction envelope.

- Throughout the project, LLP has undertaken design refinements and discussions with the RAPs, which has resulted in the avoidance or partial avoidance of two significant sites, LD 8 (AHIMS #45-4-0214) and LL AS3 (AHIMS #45-1-2976). The proposed upper reservoir and associated activities were also moved off the peak ridgeline of Mount Walker in part as a result of its contemporary cultural values.

- Of the 21 discrete Aboriginal sites/places within the project area, five would be subject to direct impacts, including LD 13 (AHIMS #45-4-0916), LD 14 (AHIMS #45-4-0915), LL AS4 (AHIMS #45-1-2978), LL AS3 (part) (AHIMS #45-1-2976), and the background scatter (part) (LL background scatter). Depending on the eventual identification and management of platypus (*Ornithorhynchus anatinus*) species within the construction envelope, some impacts to a Platypus Dreaming story associated with Coxs River may also be adversely affected. Indirect impacts would be limited to the peak of Mount Walker. This place has been identified by the local Aboriginal community as having contemporary values, and while specific activities on the peak would remain unaffected visual and aesthetic values would be adversely affected by the project; and by extension social values assigned to the locale. A number of remaining cultural materials around the broader project area would remain unaffected by the project.

- The potential impacts would result in cumulative impacts to some components of the regional cultural assemblage, notably to the two places of cultural value. However, the opportunity for avoidance given the nature of the project is limited. Archaeological mitigation, especially of subsurface cultural materials to further inform our understanding of the past, is proposed to moderate some of these impacts; and discussions have been undertaken with Elders and knowledge-holders to explore suitable non-archaeological mitigation in relation to impacts to contemporary cultural values.

10.2 Avoidance and minimisation of impacts through design refinements

The following avoidance and impact minimisation results have been achieved through Proposal refinements and discussion with the RAPs:

- Mount Walker peak – the upper reservoir was initially proposed to be situated extremely close to the peak of the mountain. For a range of reasons, including the potential cultural values that have been further explored in this report (Section 5), the reservoir was moved downslope and off the peak ridgeline onto the upper slopes.

- LD8 (AHIMS #45-4-0214) – a previously identified significant artefact scatter on the banks of Farmers Creek was within the construction envelope. Following review of available information and given its peripheral location to the project, formal re-design excluded the site from potential impacts.

- LL AS3 (AHIMS# 45-1-2976) – a significant surface and subsurface artefact scatters situated north of Farmers Creek was initially proposed for complete impact being in the vicinity of a cofferdam during construction. Re-design efforts have been made, and while the site cannot be avoided entirely, substantive portions of the cultural deposit will remain unaffected by the project.

10.3 Potential impacts

As outlined in Chapter 1, the proposed activity involves the establishment of a pumped hydro electrical system (PHES) that will consist of upper and lower water reservoirs, a pipeline connecting them, and a hydro-electric power station connected to the national energy grid that is capable of generating or consuming electricity (refer to Figure 2.1). The works would result in the impact of up to 146 ha within the disturbance footprint.

The construction activities would result in localised impacts >1 m of the soil profile across portions of the construction envelope. Specifically, the project involves the construction of an upper reservoir, a series of tunnels and an underground powerhouse, a site compound, switchyard, cofferdam and permanent bridge. These activities would all result in the localised removal of the upper soil profile where cultural materials across the site are present.

Any ancillary activities would require less disturbance, but even the installation of roads and temporary laydown areas would typically undertake the removal of topsoil and compaction prior to establishment, and therefore impacts to the upper soil profile of at least 50 cm would be expected. All of the proposed activities would require removal of trees and other surface debris (e.g. loose stones, etc.) prior to establishment.

While the project area includes the entirety of Lake Lyell, since lake levels may fluctuate through construction and in-filling of the reservoirs. However, it is understood that levels would typically drop periodically, and therefore any extant cultural materials above the current waterline are unlikely to be affected in these parts of the project. For this reason, only Aboriginal objects and sites within the construction envelope are assessed for potential impacts, with those within the broader project area outside of expected ground disturbance activities.

10.4 Aboriginal heritage impact

Two types of potential impact are considered, direct and indirect. Direct impacts relate to the construction activities and their removal, truncation and/or disturbance of the ground surface. This would include the removal of vegetation, removal or modification of geological outcropping and the removal or disturbance of the upper soil profile. Indirect impacts are the result of both construction and post-construction activities that may result in environmental changes that would affect cultural material within, or near the project activities. General examples of indirect impact may include the burial of a soil profile resulting in its compression and indirectly damaging buried cultural material, or an increase in dust being blown into a rock shelter and negatively affecting art motifs should they be present; and most relevantly to this project visual and aesthetic changes of view-lines to/from key features.

All cultural material identified within the construction envelope was either identified on the current land surface (e.g. culturally modified trees) and/or buried primarily within the upper ~0.5 m of the soil profile. As outlined in Section 10.3, several of the proposed development activities would result in direct impacts to these sites and deposits.

When considering the construction envelope, four areas of past foci would be subject to direct and complete loss, including LL AS3 (part) (AHIMS 45-1-2976), LL AS4 (AHIMS #45-1-2978), LD 13 (AHIMS #45-4-0916), and LD 14 (AHIMS #45-4-0915) (refer to Table 10.1). Three of these sites are considered of high significance. These are primarily found either on the periphery of the upper reservoir construction footprint or on the banks of Farmers Creek near the lower intake canal where significant earthworks are proposed. Avoidance of these sites would be problematic given their location in the centre of the project, although potentially elements of LL AS4 may be avoided during detailed design, with a relatively narrow permanent road being the main impact within its curtilage. In addition to these discrete places, additional landforms of archaeological interest along the edges of Farmers Creek would also be impacted, and result in some loss to these deposits that are likely to extend along other parts of the ~18 km long creek line.

In relation to places of cultural values, elements of the Platypus Dreaming story are considered likely to extend into Farmers Creek and would potentially adversely affect. As outlined in previous sections, this cultural value appears to be associated with the platypus (*Ornithorhynchus anatinus*) species, which is known to be present in Lake Lyell. It is beyond the scope of this report to explore the presence or management of platypus, which are further considered as part of the aquatic ecology studies for the project. The findings, impacts and proposed management outlined in the aquatic ecology study will determine whether platypus would be adversely affected, and by extension whether this reflects an impact to the cultural values presented here. For the purposes of this report, we have indicated that there is potential for impact to this value, but that this would require further exploration once aquatic ecological information and strategies are completed.

As demonstrated in Chapter 8, the entire construction envelope is considered to encompass a low-density stone artefact background scatter that is predicted to occur intermittently and extending beyond its limits within which disparate low to moderate artefact densities of 1 to 21/m^2 may be expected. These cultural deposits will be intermixed with culturally sterile zones, and reflect long-term, transient use of the region for several thousand years. Stone artefacts were either found as isolated objects and/or low-density artefact scatters as part of the field survey and/or as part of the test excavations. These findings reflect the long use of Farmers Creek over several millennia but are considered to have limited archaeological significance. It would be expected that this background scatter would be encountered disparately and intermittently across the 197 ha construction envelope. They may also extend into, and across, the project area outside the construction envelope) more broadly, but on-site investigations were not undertaken to validate this model and it has therefore not been proposed in these parts of the project.

When considering the project area outside the construction envelope, with the exception of Mount Walker (see below), no cultural materials are expected to be adversely affected by the project. As outlined in Section 10.3, these areas would be constrained to lake-level fluctuations – typically lowering of the lake – and as such would not result in any further ground disturbance in these locations. The rock shelter, culturally modified tree and stone artefact sites within the project area would therefore be unaffected by the project (refer to Table 10.1). Further landforms of archaeological interest along the edges of Coxs River and Farmers Creek would similarly be unaffected, with the lowering of lake levels potentially further exposing these deposits for future investigation and analysis.

In the case of Mount Walker peak, there would be no direct impacts from the project. The peak is situated outside the northeastern project area boundary. However, there is potential for indirect impacts to the value of this place (refer to Table 10.1). Generally, the values of the peak have focussed on the ability of Aboriginal people to continue to access and undertake specific activities in this portion of the mountain, and these would remain unaffected by the project. Where view-lines are mentioned, they are typically from the peak towards the north-west, and which would also not be affected by the project that is substantively downslope to the south-west. However, a substantive portion of the value of the place has been interpreted as ‘aesthetic’, being a large promontory highly visible across the region, and presumably one of the reasons it became important to the local Aboriginal community. The aesthetic values, especially the south-western flanks of the mountain would be adversely affected by the project. Further, Aboriginal participants indicated more generally that that project would have adverse impacts to the social values of the site, being so close and intrusive of the peak. Based on this, it is considered that the project would result in partial impacts and loss to the cultural values of Mount Walker’s peak.

10.5 Intergenerational loss/equity

Ecologically sustainable development, or intergeneration equity, is the principle whereby the current generation should maintain the health, diversity and longevity of the environment for the benefit of future society. For Aboriginal heritage management, intergenerational equity can be considered primarily in terms of the cumulative impacts to Aboriginal objects, sites and/or places in a region. If few Aboriginal objects and places remain in a region (e.g. due to development impacts), there are fewer opportunities for future generations of Aboriginal people and the broader community to enjoy the cultural benefits. Information about the integrity, rarity and representativeness of the Aboriginal objects, sites and places that may be impacted, and how they inform the past visitation and occupation of land by Aboriginal people, are relevant to the consideration of intergenerational equity and the understanding of the cumulative impacts of a project. While not directly related to the ACHA process, such (future) impacts are also a critical issue for consideration under the *Native Title Act 1993*.

Overall, the project would potentially result in adverse impacts to two cultural places, four identified Aboriginal sites, objects and/or places, as well as various amounts of buried stone or artefactual material (Chapter 8 and Section 10.4). These consist of the peak of Mount Walker, elements of a Platypus Dreaming story, four areas of discrete stone artefact scatters and/or deposits. A low-density broader background scatter of stone artefacts extending across the construction envelope would also be adversely affected.

Through ongoing project refinement and liaison with the RAPs, several significant sites or components of them have been avoided, including LD 8 (AHIMS #45-4-0214) and LL AS3 (AHIMS #45-1-2976). While impacts are still proposed for Mount Walker – an important contemporary cultural place – re-design of the upper reservoir was undertaken early in the project, in part as a result of cultural values, to minimise encroachment on the peak ridgeline of the promontory.

The majority of the potential direct impacts are to surface and/or subsurface cultural materials, which are common in the region despite extensive development over the last several decades, and which can be suitably mitigated through careful excavation and recovery. Some 70% of the regional cultural assemblage (refer to Section 6.5) is composed of these types of sites. Indeed, improving understanding of the past activity of Coxs River and Farmers Creek has been frequently mentioned through the consultation, and excavation of such deposits would assist in this. The recovery of cultural materials from locations that are fairly inaccessible would also enable them to be applied to potential educative and interpretive opportunities to be explored elsewhere within the project area and/or broader region. Given this, the cumulative impact of the project to these site types is considered relatively minor, since mitigation of these adversely affected sites could moderate such impacts and would enable off-site cultural heritage outcomes.

However, the indirect impacts to the peak of Mount Walker and the potential direct impacts to the Platypus Dreaming story would result in some cumulative impact. There are few cultural places, stories or values documented in the broader region (refer to Chapter 5), and as such impact to these places would directly result in a loss to the regional assemblage. It must be highlighted in the case of the Platypus Dreaming story, suitable management of platypus present within the construction envelope may address any impacts to this value. The impacts to Mount Walker have been an ongoing area of concern by Aboriginal participants through the project (refer to Section 3 and Annexure B). project re-design for proposed activities at the top of Mount Walker has been undertaken to minimise direct impacts, and only indirect impacts are now expected. However, the geographical requirements of the project mean that there is limited scope to entirely avoid activities near the peak of the mountain; and as such visual and aesthetic impacts to the values are probable.

Given this, the project would result in some cumulative impacts to the regional cultural assemblage, including important sites and places. As such management and mitigation measures are proposed to avoid and/or mitigate cultural materials to moderate these impacts wherever feasible. These include specific discussions with Elders and knowledge-holders in relation to cultural places where traditional archaeological salvage techniques are unsuitable.

Table 10.1 Summary of potential impacts to Aboriginal objects and/or sites by the project

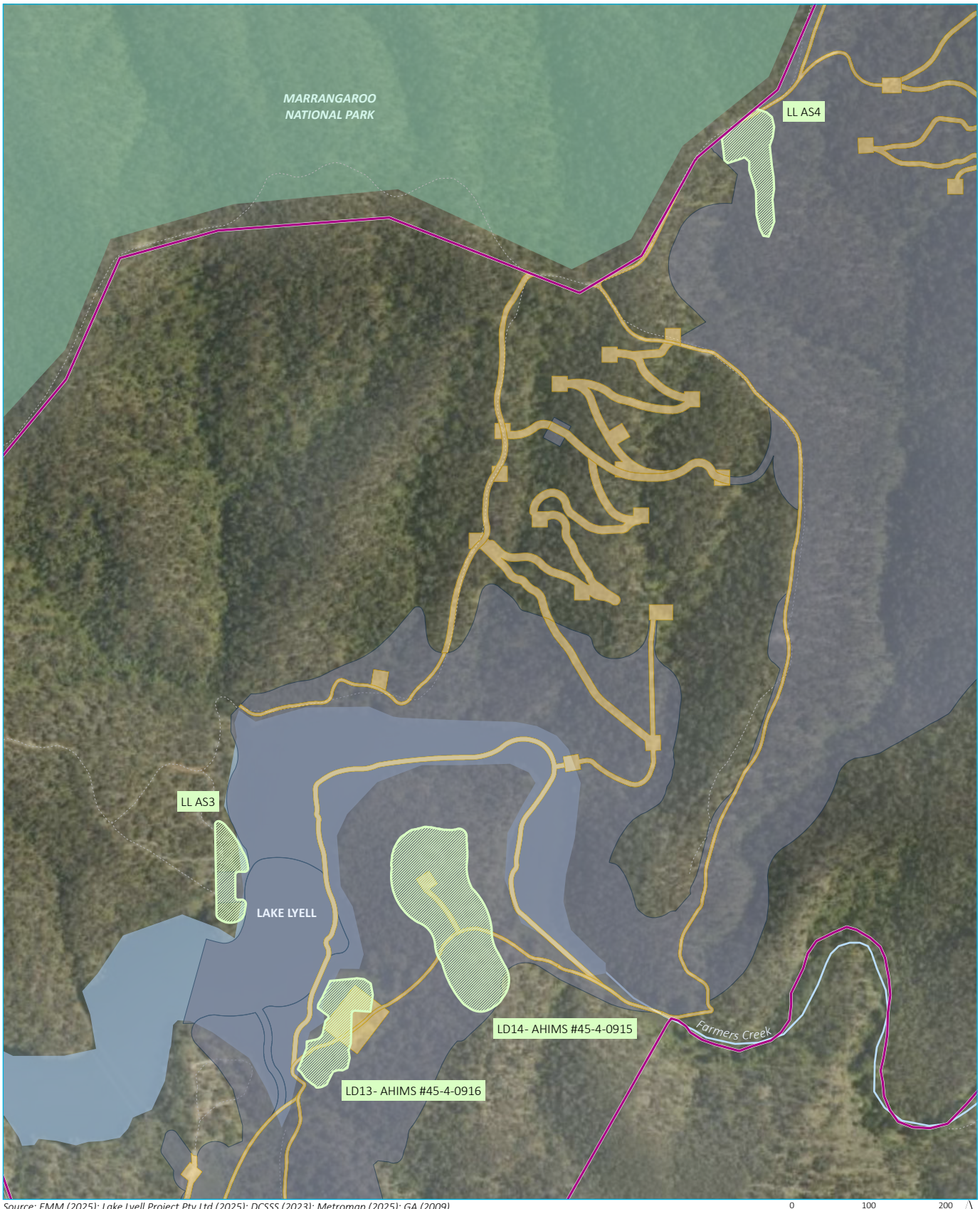
Site	AHIMS #	Site type	Status	Significance	Type of harm	Location and/or activity causing harm	Degree of harm	Consequence of harm	Notes
Within or near the project area									
Mount Walker	45-1-2997	Aboriginal ceremony and Dreaming	Valid	High	Indirect	Upper reservoir and associated activities	Partial	Partial loss of value	This site has important aesthetic characteristics that would be comprised in some views to/from as a result of the proposed works.
Platypus Dreaming story	-	Aboriginal ceremony and Dreaming	Valid	High	Direct	Farmers Creek diversion and associated activities	Partial	Partial loss of value	This value related to platypus populations in Lake Lyell. The impacts and management of this species is beyond the scope of the ACHA and explored further in aquatic ecological reports associated with the project. Should platypus be harmed or adversely affected, it has potential to result in some impacts to this value.
LD9	45-4-0219	Rock shelter with deposit	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
Lyell's Crossing	45-4-0006	Rock shelter with deposit	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LL ST1	-	Culturally modified tree	Tentative	High	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LL ST2	-	Culturally modified tree	Tentative	High	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LL IF1	45-1-2974	Isolated object	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD1	45-4-0208	Medium density artefact scatter	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD2	45-4-0207	Low density artefact scatter	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.

Site	AHIMS #	Site type	Status	Significance	Type of harm	Location and/or activity causing harm	Degree of harm	Consequence of harm	Notes
LD3	45-4-0209	High density artefact scatter	Valid	High	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD4	45-4-0210	Medium density artefact scatter	Valid	High	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD5	45-4-0211	Low density artefact scatter	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD6	45-4-0212	Low density artefact scatter	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD7	45-4-0213	Low density artefact scatter	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD8	45-4-0214	Medium density artefact scatter	Valid	High	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD12	45-4-0914	Low density artefact scatter	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD15	45-1-0248	Low density artefact scatter	Valid	Moderate	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
LD16	45-1-0249	Low density artefact scatter	Valid	Low	-	-	-	-	Adjacent Lake Lyell, no impacts expected from lake level fluctuation.
Within construction envelope									
LL AS3	45-1-2976	High density artefact scatter	Valid	High	Direct	Lower intake canal, Farmers Creek diversion	Partial	Partial loss	Some 27% of this site would be adversely affected by the project.
LL AS4	45-1-2978	High density artefact scatter	Valid	High	Direct	Permanent road, upper reservoir elements	Whole	Complete loss of value	The main activity within this site is a permanent road, and opportunity to avoid some parts of the cultural deposits may be achievable in further detailed design.

Site	AHIMS #	Site type	Status	Significance	Type of harm	Location and/or activity causing harm	Degree of harm	Consequence of harm	Notes
LD 13	45-4-0916	High density artefact scatter	Valid	High	Direct	Switchyard	Whole	Complete loss of value	
LD 14	45-4-0915	High density artefact scatter	Valid	Low	Direct	Farmers Creek infill	Whole	Complete loss of value	
LL background scatter	See note 2	Low density artefact scatter	Valid	Low	Direct	Within inundation extent, within 20 m of the FSL	Partial	Partial loss	This site is considered to extend disparately and intermittently across the project area and extend beyond it.

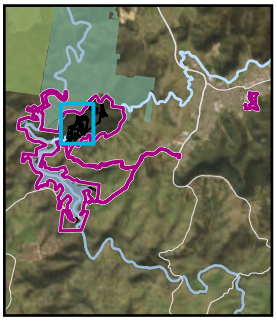
Notes:

1. The type, degree and consequence of harm definitions are based on DECCW's Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW.
2. LL Background scatter incorporates LLIF2 (45-4-1810), LLIF3 (45-4-1809), LL AS1 (45-4-1808), LL AS2 (45-1-2975), LL AS5 (45-1-2975).
3. In the case of the Platypus Dreaming site, potential impacts are shown in red. This reflects that these impacts relate to the management of platypus populations within the construction envelope. The aquatic ecology study for the project has proposed management of platypus populations within the construction envelope. The aquatic ecology study for the project has proposed management and mitigation measures intended to ensure the retention and survival of the platypus population, and therefore the site is expected to remain unaffected. However, as the success of this approach has not yet been demonstrated, potential impacts to this site cannot be entirely ruled out.
4. Sites requiring further investigation and/or validation, are ranked based on the assumption the site proves valid. However, their significance should be revisited when further analysis and classification of them occurs. These values are presented in red to demonstrate their tentative status.



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); Metromap (2025); GA (2009)

0 100 200 m
GDA2020 MGA Zone 56
N



KEY

- Project area
- Area of past foci
- Early works disturbance footprint
- Main works disturbance footprint

Existing environment

- Minor road
- Vehicular track
- Named waterbody
- NPWS reserve

INSET KEY

- Major road
- Original Coxs River
- Original Farmers Creek
- State forest

Archaeological and cultural resource overlaid with disturbance footprint

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure 10.1

EMM
creating opportunities

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES EIS\GIS\02_Maps_ACHA\ACHA018_ArchCulturalResouceDisturbance\ACHA018_ArchCulturalResouceDisturbance_20250903_04.aprx 3/09/2025

11 Management strategy and recommendations

11.1 Key findings

- The ACHA concludes that 21 Aboriginal sites/places are within the project area, of which five are within the construction envelope. These include two rock shelters, two potentially culturally modified trees, and various surface and subsurface stone artefact deposits indicative of repeated visitation and/or extended occupation. In addition, two cultural places (Mount Walker peak, Platypus Dreaming story) are also documented in or near the project area. Of these sites five would be directly impacted by the project, being within ground disturbance activities proposed within the construction envelope, and one site indirectly impacted through impacts to aesthetic and social values. In addition, up to 197 ha of low-density background scatter found intermittently and disparately across the construction envelope.

- Recommendations are proposed for inclusion in the project approval to guide post-approval requirements for Aboriginal heritage (refer to Section 11.3). These include the development of an ACHMP to provide a framework for such activities, as well as direction on its content; development of a cultural values mitigation strategy in discussion with Elders and knowledge-holders around adverse impacts to Mount Walker; and the development of an Interpretation Strategy and Plan to provide acknowledgement and other visual/educational opportunities for the Aboriginal and broader local community.

11.2 Management strategy

11.2.1 Summary of findings and impacts

The assessment outlined in the preceding sections, including Aboriginal consultation with the Wiradjuri traditional owners, included cultural mapping, field survey and test excavations. Each of these activities identified various areas and locales of archaeological and/or cultural value.

Ultimately, on ratifying this data, 21 discrete Aboriginal sites and/or objects were identified within the project area, along with landforms in close proximity to the former Coxs River and Farmers Creek where high density stone artefactual materials may be expected. Outside of these areas, a low density of background stone artefacts between 1 to 21/m^2 is also likely to be intermittently and disparately present across the remainder of the construction envelope. It is considered probable to extend across the project area, but a lack of on-site investigations outside the construction envelope does not allow this model to be robustly applied.

Of these sites, five are within the construction envelope, each consisting of surface and/or subsurface stone artefactual materials indicative of repeated visitation and/or occupation over the last 1,500 years. At least one site, LD 13 (AHIMS #45-4-0916), has a lower cultural assemblage that suggests initial visitation may extend back to 8 ka. These sites each ~0.4 to 2 ha in size and were found within 200 m of Farmers Creek. All cultural deposits were within the upper 1 m of the soil profile, with the majority of stone artefacts found in the upper 50 cm. Observations by the field team indicate that these cultural materials, and potentially other deposits, extend beneath the waterline of Lake Lyell and may reflect past activity along Farmers Creek prior to its inundation.

In addition to the tangible cultural materials, two places of cultural value were identified, Mount Walker and a Platypus Dreaming story associated with Coxs River and surrounding tributaries. The peak of Mount Walker formed the focus of discussions with Aboriginal participants and was identified to have contemporary cultural value for a range of activities, including ceremonial (male), look out and/or observation point. Some participants considered additional parts, or the whole, mountain as important, but here the consensus view of the peak has been adopted.

The Platypus Dreaming story manifested itself in the platypus (*Ornithorhynchus anatinus*) itself, which is known to inhabit Lake Lyell, and as such the values were associated with this species rather than a spatial location. Other totemic and culturally important flora and fauna, including the Powerful Owl, macropods, and the Wedge-tailed eagle were also documented as part of the ACHA investigations.

Of these identified sites, five would be directly impact and one indirectly impacted by the project. These include the four high density surface and/or surface stone artefacts sites, LD13 (AHIMS #45-4-0916), LD14 (AHIMS #45-4-0915), LL AS4 (AHIMS #45-1-2978), and LL AS3 (part) (AHIMS #45-1-2976). There is some potential that direct harm would occur to the Platypus Dreaming story, depending on the identification and management of platypus within the construction envelope; and which is being investigated as part of aquatic ecology studies for the project. The peak of Mount Walker would be indirectly impacted by the project. While specific activities discussed by the Aboriginal participants would remain unchanged (e.g. access to the peak, etc.), aesthetic and visual impacts would result from the project. More generally, Aboriginal participants indicate that the project would adversely affect their perception of the mountain, and hence also impact the social values of the place.

Of those sites that would be adversely affected, a large portion reflect surface and/or sub-surface stone artefactual material, and which can be suitably mitigated prior to development activities. In so doing, these would provide further information on the past use of the region, which has been a focus of consultation with the RAPs. Given these findings and the potential impacts – both project-specific and cumulative – additional Aboriginal heritage requirements and mitigation activities are proposed for subsequent stages of the project, and these are incorporated into the recommendations below. In the case of impacts to cultural places, non-archaeological cultural values mitigation measures have been discussed with Elders and knowledge-holders to address the perceived impacts, and these are similarly included in subsequent sections.

11.2.2 Post-approval requirements

In NSW, Aboriginal objects are provided with statutory protection by the *National Parks and Wildlife Act 1974*. In general, where a proposed activity will result in harm to an Aboriginal object, an Aboriginal Heritage Impact Permit (AHIP) is required. The AHIP contains conditions intended to manage and mitigate the identified impact and allowing harm to proceed. As the proposed development is a CSSI project, an AHIP is not required. The identified harm and any mitigation measures will instead be managed through the project's conditions of approval. The conditions of approval generally incorporate Aboriginal heritage management requirements based on advice from Heritage NSW, and the recommendations of this assessment (refer to Section 11.3).

While some post-approval management and recommendations are included in Bell (1992) and McDonald and Barton (1995) in relation to some of the sites within the construction envelope, it is proposed that Section 11.3 supersedes any previous direction. Chapter 8 undertook a synthesis and re-interpretation of the previous findings by these previous studies as well as undertaking additional works. As such, several of the previous recommendations are no longer relevant, while others do not align with the cultural assemblage as now presented.

Given the project is proposed to be undertaken in a staged manner, with an early / enabling works in advance of the main construction (refer to Chapter 2), recommendations target each of these workstreams. The proposed pre-construction / enabling works consist of typically minor development activities, such as geotechnical investigations and/or formalisation of access tracks, many of which are existing. With the exception of two locations where LD 13 (AHIMS #45-4-0916) and LD 14 (AHIMS #45-4-0915) would be bisected, these activities are proposed in areas where cultural materials were not encountered, or are considered to be characterised as a low significant disparate and intermittent background stone artefact. Following approval, it is proposed that in these areas works may proceed in advance of main works documentation and activities under direction of a heritage specialist and/or RAP/s, who could advise on the need for any on site works. Where cultural materials are encountered, they would be managed in accordance with an unexpected finds process that would require development in advance of the pre-construction/enabling works for the project.

Where the preconstruction/enabling works intersect areas of high significance, notably LD 13 (AHIMS #45-4-0916) and LD 14 (AHIMS #45-4-0915), that are proposed for archaeological mitigation activities, such as salvage excavation, the development of an Archaeological Research Design (ARD) is proposed. This would be a concise document that would outline the mitigation requirements for those portions of the sites to be adversely affected by the development activities. The document would be developed by a heritage specialist in consultation with the RAPs, and include methods and processes for the mitigation measures, post-excavation analysis and reporting requirements. Once completed, it should be submitted to Heritage NSW and any archaeological activities implemented in advance of the development activities.

For the purposes of this project, recommendations below include the development of an ACHMP to provide the post-approval management framework for all future Aboriginal heritage requirements for the project. The recommendations also outline the further specific mitigation measures to be included in the ACHMP that should be implemented prior to and through the project, and which are elaborated upon in Annexure G of this report. These include measures to ensure the avoidance of Aboriginal objects and sites outside of, and being avoided within, the construction envelope (e.g. LL AS3 [AHIMS #45-1-2976] and potentially LL AS4 [AHIMS #45-1-2978]); investigate and salvage (conservation *ex situ*) areas of high significance (including LL AS3 [AHIMS #45-1-2976], LL AS4 [AHIMS #45-1-2978], LD13 [AHIMS #45-4-0916], and LD14 [AHIMS #45-4-0915] were adversely affected), archival recording of all identified sites subject to impact any other recovery and/or collection procedures, completing any post-excavation analyses and reporting, and lodging the various documentation with appropriate public repositories. Notably, the ACHMP also proposes the investigation and (if required) mitigation of any cultural materials present along the former Farmers Creek in those sections that become accessible as a result of the lowering of Lake Lyell for the project.

In the case of the LL background artefact scatter, no further mitigation measures are recommended. It has been demonstrated that 1 to 21 artefacts/m^2 would be expected intermittently and disparately across the construction envelope, which reflects the ephemeral use of the region by Aboriginal people for several millennia. Recovery of such cultural material would have limited scientific value. However, it is acknowledged that the RAPs may wish to collect some of, or all identified, cultural materials, which included infrequent exotic materials and formal tool types that may assist education. Where desired, salvage collection of such cultural materials should be incorporated into the ACHMP.

In the case of impacts to places of cultural value, discussions with Elders and knowledge-holders sought a range of mitigation measures (refer to Section 5.3.3). It is not suitable to include these in the proposed ACHMP above, since they are typically non-archaeological in nature, and rather seek access to Country and support for long-term land management. Further, several of these mitigation measures are likely to require exploration of financial, contractual, community-benefit sharing and traditional ecological knowledge activities. As such, it is recommended that a cultural values impact package is developed to expand on the initial discussions undertaken here, to develop the details of the mitigation strategies proposed by the Aboriginal participants and ensure their implementation should the project be approved. Given the strong focus on ecological outcomes, recommendations also include the suitable integration of Indigenous knowledge in the post-approval requirements of the ecological and aquatic ecological studies being undertaken for the project (see the BDAR [EMM 2025] and the Aquatic ecology report [Austral Research and Consulting 2025] associated with the EIS)).

In addition to the proposed management of cultural values, several Aboriginal participants noted the general absence or acknowledgement of Aboriginal history regionally. To address and further explore these values and as further mitigate proposed harm to the cultural assemblage (Chapter 8), it is recommended that an interpretation strategy, interpretation plan, and their implementation be developed to explore, develop and present Aboriginal heritage values of the site. Guiding principles to be integrated into these documents are presented in Annexure G.

11.3 Recommendations

Table 11.1 provides a series of recommendations to be implemented for the project. These should be read in conjunction with the updated guiding principles in Annexure G.

Table 11.1 Management and mitigation measures for Aboriginal cultural heritage

Reference	Impact	Mitigation measure	Timing	Applicable location
AH01	Cultural heritage management	Where early/enabling works do not intersect with LD 13 (AHIMS #45-4-0916) and LD 14 (AHIMS #45-4-0915), they may proceed under supervision (e.g. micro-siting and/or) by a heritage specialist and/or RAP representatives and managed in accordance with the project's unexpected finds protocols. Where works intersect with LD 13 (AHIMS #45-4-0916) and LD 14 (AHIMS #45-4-0915), an ARD should be developed by a heritage specialist in consultation with the RAPs to outline archaeological mitigation requirements (e.g. salvage excavation) of the portions of the identified site within potential impacts. The ARD should be submitted to Heritage NSW, and implemented prior to ground disturbance activities.	Early / enabling works	LD 13 (AHIMS #45-4-0916) and LD 14 (AHIMS #45-4-0915)
AH02	Cultural heritage management	Prior to implementation of main works, an ACHMP must be developed by a heritage specialist in consultation with the RAPs to provide the post-approval framework for managing archaeological mitigation and Aboriginal heritage within the construction envelope. The ACHMP should include approaches and methods outlined in the guiding principles presented in Annexure G of this report focussing on Aboriginal consultation, avoidance/impact minimisation, and mitigation of identified and/or unexpected cultural materials (e.g. archival recording, salvage excavation, etc).	Pre-construction / construction	Construction envelope and notably LD 8 (AHIMS #45-4-0214), LL AS3 (AHIMS #45-1-2976)., LD 13 (AHIMS #45-4-0916), LD 14 (AHIMS #45-4-0915), LL AS4 (AHIMS #45-1-2978), LL AS3 (part) (AHIMS #45-1-2976)
AH03	Cultural values	A cultural values mitigation strategy must be developed in consultation with the Elders and key knowledge-holders who participated in the cultural values mapping study for the project. This document should be undertaken to explore mitigations for the perceived social and cultural impacts to Mount Walker and a Platypus Dreaming story associated with Coxs River. The document should include, but not be limited to: • Ongoing on-Country access within the project area and/or other mutually agreed location for the local Aboriginal community to undertake traditional cultural and educative activities (e.g. hunting, fishing, etc). • Facilitation and ongoing support of an Aboriginal ranger program or equivalent to enable long-term management of flora and fauna associated with the project area. This may include ongoing access to the project area or equivalent, opportunity to relocate plants and species from the construction envelope prior to, and/or during construction, and educative activities. • Integration of Aboriginal participants, Indigenous knowledge and traditional ecological methods into future ecological and aquatic ecological requirements that result from the EIS assessment. • Suitable management of any impacted view-lines from Mount Walker by the project within the limits of the proposed development activities.	Pre-construction / construction / operation	Mount Walker peak and surrounds (AHIMS #45-1-2997), Platypus Dreaming story

Reference	Impact	Mitigation measure	Timing	Applicable location
AH04	Heritage Interpretation	A heritage-interpretation strategy must be developed by a heritage specialist to identify the interpretive values of the project, and specifically Aboriginal heritage values across the project area, and to provide direction for potential interpretive opportunities for the project and/or off-site (e.g. at Wallerawang and/or Lithgow). This strategy should be made available for consultation and feedback with the Wiradjuri traditional owners. Following consultation and feedback on the strategy, a heritage interpretation plan would refine the strategy with content (visual and textual) and design details in order to allow the implementation stage. The interpretation strategy and interpretation plan must include consideration of guiding principles presented in Annexure G.	Construction / operation	N/A
AH05	Aboriginal consultation	Consultation should be maintained with the RAPs during the finalisation of the assessment process and throughout the project.	Early / enabling works / pre-construction / construction / operation	N/A

References

AAJV (2020) *Windsor Bridge Replacement Project: Salvage Excavation Report - Aboriginal Heritage*. Sydney.

Antill, H. (1914) *Early History of New South Wales: two old journals: being the diaries of Major H.C. Antill on the voyage to New South Wales in 1809, and on a trip across the Blue Mountains in 1815*. Sydney: W.A. Gullick, Govt. Printer.

Australia ICOMOS (2013) 'The Burra Charter and Indigenous Cultural Heritage Management'. Australia ICOMOS.

Backhouse, J. (1843) *A Narrative of a visit to the Australian Colonies*. London: Hamilton, Adams and Co.

Boswell, A. (1890) *Recollections of Some Australian Blacks: Bathurst District, 1835-40, Port Macquarie, 1844, Hunter's River, 1850*. Sydney: George Howe Sydney Gazette Press.

Bowler, J. M. *et al.* (2003) 'New ages for human occupation and climatic change at Lake Mungo, Australia', *Nature*, 421(6925), pp. 837–840. doi: 10.1038/nature01383.

Bradshaw, C. J. A. *et al.* (2019) 'Minimum founding populations for the first peopling of Sahul', *Nature Ecology & Evolution*, 3(7), pp. 1057–1063. doi: 10.1038/s41559-019-0902-6.

Central West Archaeological and Heritage Services Pty Ltd (2000) *An Aboriginal Archaeological Study of the Marangaroo Department of Defence Site, Lithgow, NSW*.

Collins, D. (1798) *An Account of the English Colony in New South Wales Volume 1*. London: T. Cadell Jun. and W. Davies.

Comber Consultants (2009) *Aboriginal Heritage Assessment Preliminary Environmental Investigation Great Western Highway Upgrade Mt Victoria to Lithgow Phase 2: Corridor Area Investigation*. Unpublished report for Sinclair Knight Merz on behalf of the Roads and Traffic Authority.

Connor, J. (2002) *The Australian Frontier Wars 1788-1838*. Sydney: UNSW Press.

Dean-Jones, P. and Mitchell, P. B. (1993) 'Hunter Valley Aboriginal Sites Assessment Project: Environmental modelling for archaeological site potential in the central lowlands of the Hunter Valley'. Unpublished report for NSW National Parks and Wildlife Service.

Dortch, C. E. (1979) 'New Perceptions of the Chronology and Development of Aboriginal Fishing in South-Western Australia', *World Archaeology*, 29(1), pp. 15–35.

Edward Higginbotham & Associates (2013) *The Government Settlement at Bathurst, NSW (1815-1840). Archaeological Management Plan*.

Extent Heritage Advisors (2017) *Bathurst Regional Local Government Area Aboriginal Heritage Study: Public Release Version*.

Fitzsimmons, K. E., Spry, C. and Stern, N. (2019) 'Holocene and recent aeolian reactivation of the Willandra Lakes lunettes, semi-arid southeastern Australia', *Holocene*, 29, pp. 606–621.

Geoscience Australia (2021) *Geoscience Australia Portal*, *Commonwealth of Australia*. Available at: https://portal.ga.gov.au/restore/38ed09a9-9e23-45eb-9016-dbe1dc92531d (Accessed: 11 January 2021).

GHD (2024) *Lake Lyell PHES Interim Phase 2 Geotechnical Investigation Program - Factual Report*. Lithgow.

Go Green Services (2002) *Wiradjuri Heritage Study For the Wagga Wagga Local Government Area of New South Wales*.

Gollan, K. (1987) *Archaeological Investigations on Newnes Plateau*. Unpublished report for National Parks and Wildlife Service New South Wales.

Gorecki, P. (1982) *Archaeological Survey, Angus Place Colliery Lease, Lithgow, NSW*.

Gould, R. (1977) 'Puntutjarpa Rockshelter and the Australian desert culture', *Anthropological Papers of the American Museum of Natural History*.

Greenwood, P. (2013) *Land of the Wiradjuri: Traditional Wiradjuri Culture*. Wagga Wagga, NSW: Riverina Environmental Education Centre.

Hamm, G. *et al.* (2016) 'Cultural innovation and megafauna interaction in the early settlement of arid Australia.', *Nature*, 539.

Hood, J. (1843) 'Australia and the East, a Journal Narrative of a Voyage to New South Wales in an Emigrant Ship with a

Residence of Some Months in Sydney and the Bush in the Years 1841 and 1842', London, England, UK.

Hughes, P. J., Spooner, N. and Questiaux, D. (2014) 'The central lowlands of the Hunter Valley, NSW: Why so few early sites have been found in this archaeologically-rich landscape', *Australian Archaeology*, 79, pp. 34–44. doi: 10.1080/03122417.2014.11682017.

Hunter, J. (1793) *An Historical Journal of the Transactions at Port Jackson and Norfolk Island*. London: John Stockdale.

Huonbrook Environment & Heritage Pty Ltd (1999) *A Geomorphological Assessment of the Proposed Carrington Mine Site, Hunter Valley, NSW*. Unpublished report to ERM Mithcell McCotter Pty Ltd.

Jack, R. I. (2000) *City of Lithgow Heritage Study*.

Johnson, D. (2007) *Sacred waters: the story of the Blue Mountains gully traditional owners*. Sydney: Halstead Press.

Karskens, G. (2020) *People of the river: lost worlds of early Australia*. Sydney: Allen & Unwin.

Koettig, M. (1986) *Test excavations at six locations along the proposed pipeline between Singleton and Glennies Creek, Hunter Valley region, NSW*.

Koettig, M. (1987) *Monitoring excavations at three locations along the Singleton to Glennies Creek pipeline route, Hunter Valley, NSW*.

Koettig, M. (1990) *Camberwell Coal Project - Glennies Creek Supplementary Report on Aboriginal Sites*. Unpublished report for Epps and Associates Pty Limited.

Kohen, J. (1993) *The Darug and their neighbours: the traditional owners of the Sydney region*. Blacktown: Darug Link in association with the Blacktown and District Historical Society.

Kuskie, P. J. and Kamminga, J. (2000) *Salvage of Aboriginal archaeological sites in relation to the F3 Freeway near Lenaghans Drive, Black Hill, New South Wales*. Unpublished report by Southeast Archaeology to Northern Region, Roads and Traffic Authority.

Langley, M., Clarkson, C. and Ulm, S. (2011) 'From small holes to grand narratives: The impact of taphonomy and sample size on the modernity debate in Australia and New Guinea', *Journal of Human Evolution2*, 61(2).

Macfarlane, C. *et al.* (2017) *Description of the water-dependent asset register for the Hunter subregion. Product 1.3 for the Hunter subregion from the Northern Sydney Basin Bioregional Assessment*. Department of the Environment, Bureau of Meteorology, CSIRO and Geoscience Australia, Australia.

Mathews, R. H. (1898) 'Initiation Ceremonies of Australian Tribes', *Proceeding of the American Philosophical Society*, 37(157), pp. 54–73.

McCarthy, F. D. and Davidson, F. A. (1943) *The Elouera industry of Singleton, Hunter River, New South Wales*. Records of the Australian Museum.

Meredith, C. (1973) *Notes and Sketches of New South Wales: During a Residence in the Colony From 1839 to 1844*. Sydney: Ure Smith in Association with the National Trust of Australia (NSW.

NPWS (2003) 'The Bioregions of New South Wales - their biodiversity, conservation and history. Chapter 11: The Brigalow Belt South Bioregion'.

O'Connell, J. F. *et al.* (2018) 'When did Homo sapiens first reach Southeast Asia and Sahul?', *Proceedings of the National Academy of Sciences*, 115(34), pp. 8482–8490. doi: 10.1073/pnas.1808385115.

OzArk Environmental & Heritage Management Pty Ltd (2011) *Wallerawang Quarry Extension Project - Aboriginal and Historic Cultural Heritage Assessment Report*.

OzArk Environmental & Heritage Management Pty Ltd (2021) *Wallerawang Quarry Modification 3: Aboriginal Cultural Heritage Salvage Report*.

Pacific Power

1992 Bell, *Aboriginal Sites Survey: Proposed Upgrades to Lyell Dam*.

1995 McDonald and Barton, Archaeological investigation of sites affected by augmentation works at Lyell Dam - Salvage and Test Excavation Report.

1995b McDonald, Archaeological survey of proposed works on a firetrail near Lyell Dam.

Pardoe, C. (1995) 'Riverine, biological and cultural evolution in southeastern Australia', *Antiquity*, 69(265), pp. 696–713. doi: 10.1017/S0003598X00082284.

Parry, N. (2008) *1813 - Crossing Blue Mountains*, *Lithgow History Avenue*. Available at: https://www.lithgow.com/historyavenue/1813_crossing.html (Accessed: 12 January 2023).

Pate, D. F. (1998) 'Stable Carbon and Nitrogen isotope evidence for prehistoric hunter-gatherer diet in the lower Murray River basin, South Australia', *Archaeology in Oceania*, 33(2), pp. 92–99.

Sue Rosen Pty Ltd.

1992. *Heritage Assessment of Second Cox's River Stockade Site and Associated Graves: Proposed Upgrade Of Lyell Dam, Lithgow*.

1994. *A History Of No.2 Stockade Cox's River*.

Rosen, Sue, and Michael Pearson. 1997. *The No.2 Stockade Cox's River - Its Life and Times an Historical and Archaeological Investigation.*

Rosen, Sue. (2006) "That Den of Infamy, the No. 2 Stockade Cox's River": An historical investigation into the construction, in the 1830s, of the Western Road from Mt Victoria to Bathurst by a convict workforce, University of Western Sydney.

Saturday Magazine (1836) 'No Title', *Saturday Magazine*, 25 June, p. 242.

Smith, Jim

2017a Aboriginal place names along the upper Cox River - Part 1. In Heritage. Pp. 8-12. Online: Blue Mountains Association of Cultural Heritage Organisations.

2017b Aboriginal place names along the upper Cox River - Part 2. In Heritage. Pp. 10-14. Online: Blue Mountains Association of Cultural Heritage Organisations.

2017c Aboriginal place names along the upper Cox River - Part 3. In Heritage. Pp. 12-15. Online: Blue Mountains Association of Cultural Heritage Organisations.

Sniffin, M. and Beckett, J. (1995) 'Sydney Basin – Hunter Coalfield', in Ward, C. R. et al. (eds) *Geology of Australian Coal Basins*. Sydney: Geological Society of Australia, Coal Geology Group, pp. 177–195.

The Sydney Gazette and New South Wales Advertiser (1816) 'Proclamation', *The Sydney Gazette and New South Wales Advertiser*, 4 May, p. 1. Available at: https://trove.nla.gov.au/newspaper/article/2176637/493033.

The Sydney Mail and New South Wales Advertiser (1896) 'The Men of the Mountains', *The Sydney Mail and New South Wales Advertiser*, 12 December, p. 1250. Available at: http://nla.gov.au/nla.news-article163785578.

Tindale, N. B. (1974) *Aboriginal Tribes of Australia: Their terrain, Environmental Controls, Distribution, Limits and Proper Names*. Canberra, A.C.T.: Australian National University Press.

Tobler, R. *et al.* (2017) 'Aboriginal mitogenomes reveal 50,000 years of regionalism in Australia', *Nature*, 544(7469), pp. 180–184.

Turney, C. S. M. *et al.* (2001) 'Early Human Occupation at Devil's Lair, Southwestern Australia 50,000 Years ago', *Quarternary Research*, 55(1).

Umwelt (2016) *Aboriginal Cultural Heritage and Archaeological Assessment: Invincible Southern Extension Project*. unpublished report for Castlereagh Coal Pty Ltd.

Veth, P. (1993) *Islands in the Interior: The Dynamics of Prehistoric Adaptations within the Arid Zone of Australia*. Michigan: Ann Arbor.

Warren, C. (2014) 'Smallpox at Sydney Cove – who, when, why?', *Journal of Australian Studies*, 38(1), pp. 68–86. doi: 10.1080/14443058.2013.849750.

Williams, A. N. *et al.* (2012) 'A Terminal Pleistocene Open Site On The Hawkesbury River, Pitt Town, New South Wales', *Australian Archaeology*, 74(1), pp. 85–97. doi: 10.1080/03122417.2012.11681937.

Williams, A. N. (2013) 'A new population curve for prehistoric Australia', *Proceedings of the Royal Society B: Biological Sciences*, 280(1761), p. 20130486. doi: 10.1098/rspb.2013.0486.

Williams, A. N. *et al.* (2014) 'A glacial cryptic refuge in south-east Australia : human occupation and mobility from 36

000 years ago in the', *Journal of Quaternary Science*, 29(8), pp. 735–748. doi: 10.1002/jqs.2742.

Williams, Alan N *et al.* (2015) 'A continental narrative: Human settlement patterns and Australian climate change over the last 35,000 years', *Quaternary Science Reviews*, 123(2015), pp. 91–112. doi: 10.1016/j.quascirev.2015.06.018.

Williams, A.N. *et al.* (2015) 'Holocene Demographic Changes and the Emergence of Complex Societies in Prehistoric Australia', *PLoS ONE*, 10(6), p. e0128661.

Williams, A. N. *et al.* (2017) 'The Cranebrook Terrace revisited: recent excavations of an early Holocene alluvial deposit on the banks of the Nepean River, NSW, and their implications for future work in the region', *Australian Archaeology*, 83(3), pp. 100–109. doi: 10.1080/03122417.2017.1392834.

Williams, A. N. *et al.* (2018) 'Sea-level change and demography during the last glacial termination and early Holocene across the Australian continent', *Quaternary Science Reviews*, 182, pp. 144–154. doi: 10.1016/j.quascirev.2017.11.030.

Wilson, A. (1917) 'From One Tree Hill to the Western Country and Development in the Lithgow Valley', *Journal and Proceedings of the Australian Historical Society*, 3(11), pp. 545–558. Available at: http://nla.gov.au/nla.obj-594292669.

Abbreviations

AHD	Australian Height Datum
ACHA/ACHAR	Aboriginal cultural heritage assessment report
AHIMS	Aboriginal Heritage Information Management System
ACHMP	Aboriginal Cultural Heritage Management Plan
BP	Years before present
c.	circa
cm	centimetres
DEC	Department of Environment and Conservation, now Heritage NSW
DECCW	Department of Environment Climate Change and Water, now Heritage NSW
DPC	Department of Premier and Cabinet
DPE	Department of Planning and Environment, now DPIE
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EMM	EMM Consulting Pty Ltd
EP&A Act	*Environmental Planning and Assessment Act 1979*
ESD	Ecologically sustainable development
FGS	Fine grained siliceous
FSL	Full Supply Level
g	grams
GIS	geographical information system
GPS	global positioning system
ha	hectare
ICOMOS	International Council on Monuments and Sites
IMTC	Indurated mudstone/tuff/chert
ka	Thousand years ago (e.g. 1 ka = 1,000 years ago)
km	kilometres
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
m	metres
m^2	square metres
mm	millimetres

n	Number
NSW	New South Wales
OEH	Office of Environment and Heritage, now Heritage NSW
PAD	Potential archaeological deposit
RAP	Registered Aboriginal Party
SEARs	Secretary's Environmental Assessment Requirements
t	Tonne
TP	Test pit

Glossary

Many of these definitions have been taken from the Code of Practice for archaeological investigation of Aboriginal objects in NSW (DECCW 2010).

Aboriginal object: A physical manifestation of past Aboriginal activity. The legal term is defined in the *National Parks and Wildlife Act 1974* Section 5 as: any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains.

Typical examples include stone artefacts, grinding grooves, Aboriginal rock shelters which by definition include physical evidence of occupation, midden shell, hearths, stone arrangements and other landscape features which derive from past Aboriginal activity.

Archaeological survey: A method of data collection for Aboriginal heritage assessment. It involved a survey team walking over the land in a systematic way, recording information. Activities are not invasive or destructive.

Aboriginal culturally modified tree: A tree of sufficient age to have been mature at the time of traditional Aboriginal hunter-gatherer life and therefore generally of more than 220 years ago with evidence of bark or cambium wood removal for the purpose of implement manufacture, footholds, bark sheet removal for shelter, or extraction of animals or other food. Care must be taken to distinguish Aboriginal scars from the much more common natural causes of branch tear, insect attack, animal impact, lightning strike and dieback. Culturally modified tree recognition guidelines exist to distinguish these features. Naturally scarred trees are often misidentified as Aboriginal culturally modified trees.

Aboriginal site: The location where a person in the present day can observe one or more Aboriginal objects. The boundaries of a site are limited to the extent of the observed evidence. In the context of this report a 'site' does not include the assumed extent of unobserved Aboriginal objects (such as archaeological deposit). Different archaeologists can have varying definitions of a 'site' and may use the term to reflect the assumed extent of past Aboriginal activity beyond visible Aboriginal objects. Such use of the term risks defining all of Australia as a single 'site'.

Aboriginal stone artefact: A stone object with morphological features derived from past Aboriginal activity such as intentional fracture, abrasion or impact. Artefacts are distinguished by morphology and context. Typically flaked stone artefacts are distinguished from naturally broken stone by recognition of clear marginal fracture initiation (typically herzian/conchoidal or wedging initiation) on highly siliceous stone types which can often be exotic to the area. Care must be taken to distinguish modern broken stone in machine impacted contexts and therefore context must be carefully considered as well as morphology.

Aggradation: a term used in geology for the increase in land elevation, typically in a river system, due to the deposition of sediment.

AHIMS: Aboriginal Heritage Information Management System — a computer software system employed by the Office of Environment and Heritage to manage many aspects of Aboriginal site recording and permitting. AHIMS includes an Aboriginal sites database which can be accessed via an internet portal.

Archaeological deposit: Aboriginal objects occurring in one or more soil strata. The most common form of archaeological deposit relates to the presence of a single conflated layer of Aboriginal stone artefacts worked into the topsoil through **bioturbation**.

Backed artefact: A thin flake or blade-flake that has been shaped by secondary flaking (**retouch**) along one lateral margin. The retouched margin is typically steep and bipolar to form a blunt 'back' in the manner of a modern scalpel blade. Distinctive symmetrical and asymmetrical forms are typically found called geometric **microliths** and Bondi points respectively. A thick symmetrical form, called an Elouera, is typically the size of a mandarin segment.

Bioturbation: is the reworking of soils and sediments by animals or plants. Its effects include changing texture of sediments (diagenetic), bioirrigation and displacement of microorganisms and non-living particles.

Bipolar flaking: Where the stone to be worked is rested on an anvil or other stone before being hit by the hammerstone. This results in the presence of negative flake scars on both ends of the core.

Bondi point: See backed artefact definition.

Brown podosols: Topsoils have loamy textures. A2 horizons are common, there is a clear boundary onto the B horizon. They have a sandy clay to heavy clay texture (typically occur on upper and mid-slopes).

Chocolate Soils: Soils that are typically formed in a basaltic parent material where slope or bedrock strata influence drainage. Surface horizons comprise loam, clay loam or silty clay loam. There is a gradual boundary to a brown or brownish black B horizon. There is no A2 horizons.

Conchoidal: A term used in relation to fracture surfaces on Aboriginal stone artefacts - bulb-like in the manner of a bulbous protrusion on a bivalve shell.

Elouera: See backed artefact definition.

Eraillure scar: The small flake scar on the dorsal side of a flake next to the platform. It is the result of rebounding force during percussion flaking.

Exposure: estimates the area with a likelihood of revealing buried artefacts or deposits, not just an observation of the amount of bare ground.

Geometric microlith: See backed artefact definition.

Grinding grooves: Grinding grooves typically derive from the sharpening of stone hatchet heads on sandstone rock. Grooves appear as elliptical depressions of around 25 cm length with smooth bases. Although mostly occurring in association with water to wash the abraded stone dust away from the groove, such sites have been recorded away from water. Narrow grooves or broad abraded areas may occur less commonly and may be derived from spear sharpening or other grinding activities.

Haematite: a pigment featured in ochre used for tinting with a permanent colour.

Holocene: A period of time generally 10,000 years, which marks the end of the last ice age, to the present.

Igneous: relating to or involving volcanic or plutonic processes.

Indurated mudstone/tuff (IMT): the fine textured, very hard, yellowish, orange, reddish-brown or grey rocks from which stone artefacts are made.

Isotropic: Having a physical property that has the same value when measured in different directions. In relation to stone used for stone tools a fracture path is not hindered by layer boundaries or other favoured plane of cleavage.

Keeping place: A room or facility with the express and exclusive purpose of storing Aboriginal cultural heritage materials with accompanying documentation in a secure and accessible manner which protects their cultural heritage values.

Knapping: This term is used in reference to stone tool production. Specifically, it relates to the production and shaping of a block of stone (e.g. a cobble) into a stone tool. The process is called knapping, while the individual undertaking the task is often called a knapper. A knapping floor or event often referenced in the literature relates to an archaeological deposit, usually of high densities of stone artefacts, where researcher's believe this process has occurred in a given locale.

Krasnozems: Mainly loams, clay loams and silty clay loams with a clear or gradual boundary to a dark reddish brown B horizon. Clays are typically light to medium and occasionally heavy.

Lithosols: Soils that have little or no profile development. They occur on steep slopes and are usually shallow and are left mainly as uncleared native bushland.

Microlith: Very small fragments of flakes retouched into geometric shapes and usually present on tools like barbed spears, arrows and sickles.

Midden: A collection of shells and associated economic remains resulting from Aboriginal food gathering and processing activity. Middens comprise shellfish remains of consistent size in a rich dark earth matrix commonly associated with stone artefacts, fish bone and animal bone although shells are commonly the most obtrusive element.

Open stone artefact site/stone artefact site: An unenclosed area where Aboriginal stone artefacts occur – typically exposed from a topsoil archaeological deposit by erosion. Typically, the term is used to refer to two or more artefacts although this is an arbitrary distinction. A general 'rule of thumb' boundary definition employed by archaeologists is that artefacts or features more than 50 m apart are regarded as separate sites, however there is no theoretical imperative dictating such as rule. (The 50 m separation rule is used for the most part in EMM's work).

Pirri point: A leaf-shaped stone implement with unifacial retouch extending from the lateral margins to a central keel running the length of the dorsal surface.

Pleistocene: A period of time 2.6 million years ago to 10,000 years ago. Reference to 'Pleistocene sites' generally means reference to sites older than 10,000 years.

Podosols: Soils with accumulations of organic matter, iron and aluminium. They are usually sand textured to depth. Yellow and red podosols are generally acid neutral. Yellow podosols have coarse to medium textured A horizons.

Point cluster: A group of GPS points used to identify the locations of individual artefacts in the field.

Potential Archaeological Deposit (PAD): An area where there is an inferred presence of Aboriginal objects in the soil based on the environmental context which is typically associated with discovery of Aboriginal objects in analogous areas. This is not strictly a 'site' type, although AHIMS records it as such for the purpose of associating Aboriginal heritage Impact Permits with geographical areas.

Red podosols: Podosols with a pronounced texture contrast and clear to abrupt boundaries between A and B horizons. A2 is often massive and gravelly.

Retouch: The modification of the edges of a flake or tool by the removal of a series of small flakes.

Siliceous Sands: Sands that are usually found on coarse-grained sandstones and in sandstone colluvium. They are often sandstone outcrops present in the landscape. The topsoil has a loamy sand to light sandy clay.

Scarp: a steep slope characterised by outcropping bedrock. In this report, scarp refers to a combination of landform elements including scarp foot slopes, scarps, and cliff lines where outcropping sandstone is present in the landscape 10% and above.

Spit/s: This term reflects an arbitrary unit of depth that archaeologists excavate when lacking evidence of a stratigraphy within the soil profile. Commonly, archaeologists remove vertical intervals of 5, 10 or 20 cm, each representing a spit, down the soil profile. Through this process, archaeologists can determine the depth at which archaeological materials are found, even in soil profiles with no clear divisions or boundaries.

Spur: the lateral crests of land that descend from the summit of hills or ridges. Spurs typically extend, with decreasing elevation, closer to streams and valley floors than the main crest of a hill.

Taphonomic: the events and processes, such as burial in sediment, leading to the degradation, decomposition or preservation of objects.

Thumbnail scraper: A thumbnail sized thin flake with steep unidirectional retouch or use-wear around a convex working edge.

Transect: A sample unit which is walking line or corridor across the project area.

Upsidence: phenomena that occurs when mining approaches and undermines river valleys. It can result in cracking and buckling of riverbeds and rock bars and localised loss of water flow.

Visibility: The amount of bare ground on exposures which might reveal artefacts or other archaeological materials.

Yellow earths: predominantly sandy-textured soils with earthy porous fabric, weak profile differentiation and gradual or diffuse boundaries except for the darker A1 horizon.

Yellow podosols: Podosols which typically occur on the upper slopes of steep landscapes and on the mid to lower slopes of others. The A2 soil horizon is present in most profiles and the boundary change to the B horizon is generally clear. The B horizon is typically sandy clay to heavy clay.

Annexure A
Legislative context

EMM
creating opportunities

A.1 Commonwealth

A.1.1 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* preserves and protect areas (especially sacred or intangible sites) and places of particular significance to Aboriginal people from damage or destruction. Steps necessary for the protection of a threatened place are outlined in a gazetted Ministerial Declaration (Sections 9 and 10); and which can result in a cessation of any development activity.

In addition, the Act also protects objects by Declaration, notably Aboriginal skeletal remains (section 12). This can be applied at a State level where a State is unwilling or unable to provide such protection.

A.1.2 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* provides for protection of natural and cultural heritage places. The Act establishes a National Heritage List (NHL) and a Commonwealth Heritage List (CHL) upon which places of natural or cultural significance can be listed. Sites at a National level and can be in public or private ownership. The CHL is limited to places owned by the Commonwealth, and most frequently encompass Department of Defence sites. Sites and places listed on the NHL are considered to be of State and local heritage value, even if they are not listed or documented as such at a State level.

The values of sites and places on the NHL / CHL are protected under the EPBC Act. The Act requires that the Minister administering the Act assess any action which has, will have, or is likely to have, a significant impact on the heritage values. Where relevant, a referral is made to the relevant Commonwealth Department, and either approval, approval with controls, or rejection of the proposed action is determined.

A.1.3 Native Title Act 1993

The *Native Title Act 1993* provides recognition and protection for native title. The Act establishes the managing body, National Native Title Tribunal, who administers native title claims to rights and interests over lands and waters by Aboriginal people. It also administers the future act processes that allow proponents to identify and manage potential native title issues for a given activity on a site where a claim has yet to be made or finalised.

In addition, the Act provides for Indigenous Land Use Agreements (ILUA), which is an agreement between a native title group and others about the use and management of land and waters. ILUAs were introduced as a result of amendments to the Act in 1998. They allow people to negotiate flexible and bipartisan agreements to suit their particular circumstances often circumventing lengthy timeframes associated with the native title process. An ILUA can be negotiated over areas where native title has, or has not yet, been determined. They can be part of a broader determination or settled separately.

A.2 State

A.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the over-arching Act that dictates the nature of assessment and management of the environment during a development Project, and within which heritage forms a component. requires that environmental and heritage impacts are considered by consent authorities prior to granting development approvals.

The Act has two main approval pathways within which heritage needs to be considered. Generally, for smaller scale (either financially or spatially), Parts 4 (Division 4.1) and 5 (Division 5.1) of the Act are implemented. Part 4 requires that a proponent submits a Development Application (DA) to local council for a given development, and within this document a consideration of Aboriginal and historical heritage is required. The specific nature of the assessment is usually determined at a pre-DA meeting with the Council, and in relation to the relevant heritage Acts. Where Aboriginal heritage is identified as an issue, the DA may become Integrated Development, whereby the State government is also required to review and provide comments on the DA prior to its issue. Part 5 of the Act is a similar process, but only relates to approvals developed and issued by State government departments. Each State government department has their own internal approach to considering environmental issues, but ultimately must develop a Review of Environmental Factors (REF), which is comparable to a DA, and which requires consideration and management of heritage. Similarly, where heritage is identified as an issue, liaison with relevant State consent authorities and approvals under other Acts may still be required.

The other approval pathway relates to State Significant Development and/or Infrastructure (Parts 4.7 and 5.2, respectively). These processes require an Environmental Impact Statement (EIS) to be developed for a Project and assessed currently by the Department of Planning, Industry and Environment. Importantly, the SSD and SSI processes turns off a number of pieces of other legislation, including parts of the *National Parks and Wildlife Act 1974*. In the case of Aboriginal heritage, both the assessment and approval for harm are dictated by the Secretary's environmental assessment requirements (SEARs) outlining the contents and scope of the EIS, and the Project Approval that dictates controls on how a development should proceed.

A.2.2 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides protection for Aboriginal objects and places across NSW:

- An Aboriginal object is defined as: *Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.*

- An Aboriginal place is any place declared to be an Aboriginal place under section 84. This is a very specific piece of legislation that provides process and management of Aboriginal sites of cultural, but not necessarily scientific, values. They are commonly, but not always associated with intangible values.

- Any place declared to be an Aboriginal place by the Minister for the Environment, under Section 84 of the Act.

It is an offence to disturb Aboriginal objects or places without an Aboriginal Heritage Impact Permit (AHIP), which is outlined in section 90 of the Act. Currently, such permits can be sought from the Chief Executive of the NSW Department of Premier and Cabinet (DPC), with the recent relocation of the Office of Environment and Heritage.

To obtain an AHIP, certain assessment and documentation (outlined in this report) must be provided to DPC for their consideration. Once satisfied, they may endorse an AHIP to harm cultural heritage either conditionally or unconditionally. They can also refuse an application as outlined in Section 90C of the Act, and which can be appealed in accordance with Section 90L.

A.2.3 Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* provides process and protocols for the transfer of vacant Crown land ownership to a Local Aboriginal Land Council (LALC), where the land is not for an essential purpose or for residential land. These lands are then managed and maintained by the LALC.

For the purposes of this report, the Act is primarily important to inform relevant Aboriginal communities for consultation; and where Crown lands form part of the development area may require additional liaison with the LALC as a potential, or existing, landowner.

Annexure B

Aboriginal community consultation

EMM
creating opportunities

B.1 Consultation log and communications record

Aboriginal Consultation Requirements for Proponents (DECCW 2010) *

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell | **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
9-Jun-23	Outgoing	The Office of the Registrar, Aboriginal Land Rights Act 1983	Alan Williams	-	Email	Sought information on the Aboriginal parties within the region that may require consultation
9-Jun-23	Outgoing	National Native Title Tribunal	Alan Williams	-	Email	Sought information on the Aboriginal parties within the region that may require consultation
9-Jun-23	Outgoing	Heritage NSW	Alan Williams	-	Email	Sought information on the Aboriginal parties within the region that may require consultation
9-Jun-23	Outgoing	Bathurst Local Aboriginal Land Council	Alan Williams	Tonilee Scott	Email	Sought information on the Aboriginal parties within the region that may require consultation
9-Jun-23	Outgoing	Native Title Services NTSCORP	Alan Williams	-	Email	Sought information on the Aboriginal parties within the region that may require consultation
9-Jun-23	Outgoing	City of Lithgow Council	Alan Williams	-	Email	Sought information on the Aboriginal parties within the region that may require consultation
9-Jun-23	Outgoing	Central Tablelands LLS	Alan Williams	-	Email	Sought information on the Aboriginal parties within the region that may require consultation
9-Jun-23	Incoming	Native Title Services NTSCORP	-	Alan Williams	Email	Advised that the project intersected with the Warrabinga Wiradjuri #7 application
14-Jun-23	Incoming	Heritage NSW	Barry Gunther	Alan Williams	Email	Provided list of potential stakeholders for the Lithgow LGA
16-Jun-23	Incoming	Lithgow City Council	Lauren Stevens	Alan Williams	Email	Provided list of potential stakeholders in the area that may be of interest to the project.
14-Jun-23	Incoming	The Office of the Registrar, Aboriginal Land Rights Act 1983	-	Alan Williams	Email	Advised of no registered Aboriginal owners, but suggest contact to the Bathurst LALC be undertaken
			AGENCY REQUESTS - UPDATED MAY 2024			
23-May-24	Outgoing	The Office of the Registrar, Aboriginal Land Rights Act 1983	Amber Morgan	-	Email	Updated search - Sought information on the Aboriginal parties within the region that may require consultation
23-May-24	Outgoing	National Native Title Tribunal	Amber Morgan	-	Email	Updated search - Sought information on the Aboriginal parties within the region that may require consultation
24-May-24	Incoming	National Native Title Tribunal	-	Amber Morgan	Email	Advised that the project intersected with the Warrabinga Wiradjuri #7 application
			STAGE 1- INVITATION TO REGISTER INTEREST			
22-Jun-23	Outgoing	Barraby Cultural Services	Megan Sheppard Brennand	Lee Field	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Bill Allen	Megan Sheppard Brennand	Bill Allen	Post	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	[redacted]	Megan Sheppard Brennand	[redacted]	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Dhuuluu-Yala Aboriginal Corporation	Megan Sheppard Brennand		Post	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Didge Ngunawal Aboriginal Corporation	Megan Sheppard Brennand	Paul Boyd and Lillie Carroll	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Gilay Consultants	Megan Sheppard Brennand	Carol Slater	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Gunduneurra Aboriginal Heritage Association Inc	Megan Sheppard Brennand	Sharyn Halls	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Gunduneurra Tribal Council Aboriginal Corporation	Megan Sheppard Brennand	Sharyn Brown	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Gunjeewong Cultural Heritage Aboriginal Corporation	Megan Sheppard Brennand	Shayne Dickson	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Hawkesbury- Nepean Catchment Management Authority	Megan Sheppard Brennand		Post	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Kamilaroi Yankuntjatjara Working Group	Megan Sheppard Brennand	Phil Khan	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Konanggo Aboriginal Cultural Heritage Services	Megan Sheppard Brennand	Robert Young	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Koori Digs Services	Megan Sheppard Brennand	Korri Currell	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	North East Wiradjuri Corporation	Megan Sheppard Brennand	Virginia Doig	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Helen Riley	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Mooka	Megan Sheppard Brennand	Neville Williams	Post	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Murra Bidgee Mullangari Aboriginal Corporation	Megan Sheppard Brennand	Ryan Johnson	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Thomas Dahlstrom	Megan Sheppard Brennand	Thomas Dahlstrom	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Timothy Stubbs	Megan Sheppard Brennand	Timothy Stubbs	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Trevor Robinson	Megan Sheppard Brennand	Trevor Robinson	Post	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Wiradjuri Council of Elders	Megan Sheppard Brennand	Robert Clegg	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Wiradjuri Interim Working Party	Megan Sheppard Brennand		Post	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Yurrandaali	Megan Sheppard Brennand	Bo Field	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Yurwang Gundana Consultancy Cultural Heritage Services	Megan Sheppard Brennand	Dean Bell	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Dharramalin	Megan Sheppard Brennand	Gary Dunn	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Girragirra Murun Aboriginal Corporation	Megan Sheppard Brennand	Diana Astin	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Wingarra Wilay Aboriginal Corporation	Megan Sheppard Brennand	Raymond Moon	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Bathurst Local Aboriginal Land Council	Megan Sheppard Brennand	Tonilee Scott	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Muragadi Heritage Indigenous Corporation	Megan Sheppard Brennand	Jesse Johnson	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Outgoing	Yulay	Megan Sheppard Brennand	Arika Jalomaki	Email	Inquired about registering for the project. Requested responses by 6 July 2023
22-Jun-23	Incoming	Didee Naunawal Aboriginal Corporation	Lillie Carroll	Megan Sheppard Brennand	Email	Registered for the project
23-Jun-23	Incoming	Kamilaroi Yankuntiatiara Working Group	Phil Khan	Megan Sheppard Brennand	Email	Registered for the project
23-Jun-23	Incoming	Wingarra Wilay Aboriginal Corporation	Raymond Moon	Megan Sheppard Brennand	Email	Registered for the project
23-Jun-23	Incoming	North East Wiradjuri Corporation	Virginia Doig	Alan Williams	Email	Registered for the project
23-Jun-23	Outgoing	Lithgow Mecury			Newspaper notification	Advertising the project for registration of interest
25-Jun-23	Incoming	[redacted]	[redacted]	Megan Sheppard Brennand	Email	Registered for the project
26-Jun-23	Incoming	Konanggo Aboriginal Cultural Heritage Services	Robert Young	Megan Sheppard Brennand	Email	Registered for the project
26-Jun-23	Incoming	Girragirra Murun Aboriginal Corporation	Diana Astin	Megan Sheppard Brennand	Email	Registered for the project
26-Jun-23	Incoming	Gallanggabang Aboriginal Corporation	Melissa Chown	Megan Sheppard Brennand	Email	Registered for the project
26-Jun-23	Incoming	Booral Maliyan	Bradley R Bliss	Megan Sheppard Brennand	Email	Registered for the project - asked corresondance for this group to be sent here: brad4975@hotmail.com
26-Jun-23	Incoming	Wellington Valley Wiradjuri Aboriginal Corporation	Bradley R Bliss	Megan Sheppard Brennand	Email	Registered for the project
26-Jun-23	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Alan Williams	Email	Registered for the project
28-Jun-23	Incoming	Yurwang Gundana Consultancy Cultural Heritage Services	Merekai Bell	Alan Williams	Email	Registered for the project
28-Jun-23	Incoming	Thomas Dahlstrom Cultural Heritage Consult	Thomas Dahlstrom	Megan Sheppard Brennand	Email	Registered for the project
28-Jun-23	Incoming	Girragirra Murun Aboriginal Corporation	Diana Astin	Megan Sheppard Brennand	Email	Asked for confirmation that they have registered
28-Jun-23	Incoming	Wingarra Wilay Aboriginal Corporation	Raymond Moon	Megan Sheppard Brennand	Email	Asked for confirmation that they have registered
03-Jul-23	Incoming	Tim Stubbs	Tim Stubbs	Megan Sheppard Brennand	Email	Registered for the project
04-Jul-23	Incoming	Yula you Cultural service's	Arika Jalomaki	Megan Sheppard Brennand	Email	Registered for the project
26-Jun-23	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Alan Williams	Email	Registered for the project
04-Jul-23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Alan Williams	Kylie Manson	Email	Confirmed registration has been received and documented
10-Jul-23	Incoming	murrabidgee mullangari	Darleen Johnson	Megan Sheppard Brennand	Email	Registered for the project
27-Jul-23	Outgoing	All RAPs	Alan Williams	-	Email	Distributed an invitation to nominate individuals for a cultural values mapping study of the project
27-Jul-23	Outgoing	Heritage NSW	Alan Williams	-	Email	Provided a list of registered Aboriginal parties following the notification process
27-Jul-23	Outgoing	Bathurst Local Aboriginal Land Council	Alan Williams	Tonilee Scott	Email	Provided a list of registered Aboriginal parties following the notification process
27-Oct-23	Incoming	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Jade Flynn	Megan Sheppard Brennand	In person	Registered for the project
27-Oct-23	Incoming	Bill Allen	Bill Allen	Megan Sheppard Brennand	Phone	Registered for the project
02-Apr-24	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email/Phone	Registered for the project
			METHODOLOGY			
01-Sep-23	Outgoing	All RAPs	Alan Williams	-	Email	Distribution of assessment methodology document for review and comment
01-Sep-23	Incoming	Gallanggabang Aboriginal Corporation	Melissa Chown	Alan Williams	Email	Acknowledged receipt of methodology and indicated that they would provide feedback shortly.
01-Sep-23	Incoming	Didge Ngunawal Aboriginal Corporation	Lillie Carroll	Alan Williams	Email	Advised support of the proposed methodology, and requested participation in the fieldwork
01-Sep-23	Incoming	Girragirra Murun Aboriginal Corporation	Diana Astin	Alan Williams	Email	Acknowledged receipt of methodology and indicated that they would provide feedback shortly.
01-Sep-23	Incoming	Wingarra Wilay Aboriginal Corporation	Raymond Moon	Alan Williams	Email	Acknowledged receipt
19-Sep-23	Incoming	Yulay Cultural Services	Arika Jalomaki	Megan Sheppard Brennand	Email	Acknowledged receipt of and said that they agree with the methdology
25-Sep-23	Incoming	Wellington Valley Wiradjuri Aboriginal Corporation	Bradley R Bliss	Alan Williams	Email	Acknowledged receipt of and said that they agree with the methdology. Brad said that due to the large number of RAPs he would participate as a RAP for comment and recommendations but would not participate in the fieldwork
			SUPPLEMENTARY TEST EXCAVATION METHODOLOGY			

Aboriginal Consultation Requirements for Proponents (DECCW 2010) *

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
11-Jan-24	Outgoing	All RAPs	Megan Sheppard Brennand	-	Email	Sent the supplementary test excavation methodology
11-Jan-24	Incoming	Konanggo Aboriginal Cultural Heritage Services	Robert Young	Megan Sheppard Brennand	Phone	Robert said that he approved of the methodology however because he hadn't walked on Country couldn't give more information than that. Expressed an interest in being part of the test excavations and said he would be attending the AFG meeting online
11-Jan-24	Incoming	Konanggo Aboriginal Cultural Heritage Services	Robert Young	Megan Sheppard Brennand	Email	Robert sent a follow up email to the phone call - expressed an interest in the test excavation work, has no comments on the supplementary methodology at this stage.
15-Jan-24	Incoming	Kamilaroi Yankuntjatjara Working Group	Phil Khan	Megan Sheppard Brennand	Email	Thanked EMM for providing the supplementary test excavation methodology and said that KYWG agree and support the methodology and expressed an interest in being part of the fieldwork.
16-Jan-24	Incoming	Yurwang Gundana Consultancy Cultural Heritage Services	Merekai Bell	Megan Sheppard Brennand	Email	Replied to say that they agree and support the supplementary test excavation methodology and expressed an interest in being part of the fieldwork.
22-Jan-24	Incoming	murrabidgee mullangari	Darleen Johnson	Megan Sheppard Brennand	Email	Replied to the AFG meeting invite to say they would attend the online meeting
24-Jan-24	Incoming	Thomas Dahlstrom	Thomas Dahlstrom	Megan Sheppard Brennand	Email	Replied to say that they agree and support the supplementary test excavation methodology and expressed an interest in being part of the fieldwork.
30-Jan-24	Outgoing	WTOCWAC	Megan Sheppard Brennand	Leanna Carr-Smith, Jade Flynn, Lisa and a member of the board	Email	Thanked WTOCWAC for the meeting on 29-Jan-24. Provided them with the supplementary test excavation methodology and the AFG online meeting link as they were unable to attend the in person meeting
01-Feb-24	Incoming	murrabidgee mullangari	Darleen Johnson	Megan Sheppard Brennand	Email	Replied to say that they agree and support the supplementary test excavation methodology.
			AFG MEETING October 2023			
27-Sep-23	Outgoing	All RAPs	Alan Williams	-	Email	Invited all participants to an in-person and/or online meeting to discuss the project in early October.
29-Sep-23	Incoming	Thomas Dahlstrom	Thomas Dahlstrom	Alan Williams	Email	Sought to be invited to online option, which AW provided the link to.
05-Oct-23	Incoming	Wingarra Wilay	Ray Moon	Alan Williams	Email	Seeking involvment in fieldwork. AW advised that an AFG meeting was proposed to discuss this more
10-Oct-23	Outgoing	All RAPs	Alan Williams	-	Email	Sent a reminder of the AFG meetings proposed this week and next to discuss the project
10-Oct-23	Incoming	Wellington Valley Wiradjuri Aboriginal Corporation	Bradley R Bliss	Alan Williams	Email	Advised he could not attend the AFG meeting. Indicated he would contact AW later to discuss
11-Oct-23	Outgoing	Bathurst Local Aboriginal Land Council	Alan Williams		Phone	Left a message to confirm attendance at AFG tomorrow
11-Oct-23	Outgoing	Mingaan Aboriginal Corporation	Alan Williams	Auntie Helen Riley	Phone	Asked whether she would be attending the AFG meeting. Confirmed a representative would be attending
11-Oct-23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Alan Williams	Kylie Manson	Phone	Asked whether she would be attending the AFG meeting. Confirmed a representative would be attending
11-Oct-23	Outgoing	Gallanggabang Aboriginal Corporation	Alan Williams	Melissa Chown	Phone	Asked whether she would be attending the AFG meeting. Confirmed a representative would be attending. A;so advised several organistions on Sorry Business
11-Oct-23	Outgoing	North East Wiradjuri Corporation	Alan Williams	-	Phone	Left a message to confirm attendance at AFG tomorrow
11-Oct-23	Outgoing	Girragirra Murun Aboriginal Corporation	Alan Williams	-	Phone	Left a message to confirm attendance at AFG tomorrow
11-Oct-23	Incoming	Girragirra Murun Aboriginal Corporation	Diana Astin	Alan Williams	Phone	Advised she could not attend due to Sorry Business
12-Oct-23	Outgoing	Mingaan Aboriginal Corporation	Alan Williams	Sharon Riley	Meeting	Attended AFG Meeting # 1 - see meeting minutes for details
12-Oct-23	Incoming	North East Wiradjuri Corporation	Virginia Doig	Alan Williams	Phone	Advised she was unable to attend the meeting
12-Oct-23	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Alan Williams	Phone	Advised she was unable to attend the meeting
16-Oct-23	Outgoing	Warrabinga Native Title Aboriginal Corporation, Didge Ngunawal Aboriginal Corporation, Kamilaroi Yankuntjara Working Group, Konanggo Aboriginal Cultural Heritage Services	Alan Williams	-	Meeting (online)	Attended AFG Meeting # 1 - see meeting minutes for details
16-Oct-23	Incoming	North East Wiradjuri Corporation	Virginia Doig	Alan Williams	Phone	Advised she was unable to attend the meeting
			CULTURAL VALUES MAPPING			
28/Sep/23	Outgoing	Mingaan Aboriginal Corporation	Helen Riley	Megan Sheppard Brennand	Phone	Asked Helen if she would like to be involved in the Cultural values mapping for the project. Helen said she would but that we would need to talk to her daughter Sharon as she organises all of the logistics.
28/Sep/23	Outgoing	Mingaan Aboriginal Corporation	Sharon	Megan Sheppard Brennand	Phone	Sharon said she would like to be involved in the cultural values mapping. She recommended that we also speak with Bill Allan and Jade Flynn from the Wiradjuri Elders
28/Sep/23	Outgoing	Gallanggabang Aboriginal Corporation	Melissa Chown	Megan Sheppard Brennand	Phone	Asked Melissa if Gallanggabang would like to be involved in the Cultural values mapping for the project. Melissa said she would like to be involved and recommended Raymond Moon to be invited as well. She recommended her and her sister (Diane Astin) could be interviewed at the same time.
28/Sep/23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Megan Sheppard Brennand	Phone	Asked if Warrabinga NTC would like to be involved in the Cultural values mapping for the project. Kylie said that they would but best to contact Jack Pennell for this aspect. She said they would like to be involved in the fieldwork for the project.
	Outgoing	Wingarra Wilay	Megan Sheppard Brennand	Ray Moon	Email	Replied to Ray inviting him to be a part of the fieldwork and the Cultural Values Mapping
24-Aug-23	Incoming	Gallanggabang Aboriginal Corporation	Melissa Chown	Alan Williams	Phone	Sought an update following the discontinuance of the cultural values mapping due to Phil Clarke's health issues.
09-Oct-23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell	Email	Asked Jack if he would be interested in and/or available for the cultural values mapping on 26th or 27th October.
10-Oct-23	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Jack Pennell	Megan Sheppard Brennand	Email	Jack said he would be interested in the cultural values mapping and that 26/10/2023 would be the best day for him.
21-Dec-23	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley and Helen Riley	Email	Sent the cultural values mapping report for review and comment
21-Dec-23	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Email	Sent the cultural values mapping report for review and comment
21-Dec-23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell	Email	Sent the cultural values mapping report for review and comment
21-Dec-23	Outgoing	Adrian Williams	Megan Sheppard Brennand	Adrian Williams	Email	Sent the cultural values mapping report for review and comment
21-Dec-23	Outgoing	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn and Leanna Carr-Smith	Email	Sent the cultural values mapping report for review and comment
21-Dec-23	Outgoing	Uncle Bill Allen	Megan Sheppard Brennand	Uncle Bill Allen	Email and mail	Sent the cultural values mapping report for review and comment
22-Dec-23	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Jack Pennell	Megan Sheppard Brennand	Email	Jack said that he has no objections to the draft cultural values mapping report
11-Jan-24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley and Helen Riley	Email	Sent a follow up email about reviewing the cultural values mapping report and suggested an in person meeting on 29th January to discuss any comments.
11-Jan-24	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Email	Sent a follow up email about reviewing the cultural values mapping report and suggested an in person meeting on 29th January to discuss any comments.
11-Jan-24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell, Kylie Manson	Email	Sent a follow up email about reviewing the cultural values mapping report and suggested an in person meeting on 29th January to discuss any comments.
11-Jan-24	Outgoing	Adrian Williams	Megan Sheppard Brennand	Adrian Williams	Email	Sent a follow up email about reviewing the cultural values mapping report and suggested an in person meeting on 29th January to discuss any comments.
11-Jan-24	Outgoing	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn and Leanna Carr-Smith	Email	Sent a follow up email about reviewing the cultural values mapping report and suggested an in person meeting on 29th January to discuss any comments.
11-Jan-24	Outgoing	Uncle Bill Allen	Megan Sheppard Brennand	Uncle Bill Allen	Email	Sent a follow up email about reviewing the cultural values mapping report and suggested an in person meeting on 29th January to discuss any comments.
11-Jan-24	Incoming	Mingaan Aboriginal corporation	Aunty Helen Riley	Megan Sheppard Brennand	Email	Aunty Helen replied to the cultural values mapping report review email to say that she would ask Sharon what time suited her best for the meeting
12-Jan-24	Incoming	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn and Leanna Carr-Smith	Phone	Left a message to discuss the cultural values mapping report.
15-Jan-24	Outgoing	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn and Leanna Carr-Smith	Phone	Called back to discuss cultural values mapping report. Agreed to meet to discuss the report on 29th January
18-Jan-24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Called Sharon and left a message to arrange a meeting to discuss cultural values mapping report and see if she could attend the AFG meeting

Aboriginal Consultation Requirements for Proponents (DECCW 2010) *

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
22-Jan-24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Called Sharon and left a message to arrange a meeting to discuss cultural values mapping report and see if she could attend the AFG meeting
24-Jan-24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Helen Riley	Phone	Called Sharon and left a message to arrange a meeting to discuss cultural values mapping report and see if she could attend the AFG meeting
24-Jan-24	Incoming	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Replied to say she would call back
25-Jan-24	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Phone	Called Melissa to arrange a meeting to discuss the cultural values mapping report. Melissa said her and Kylie could meet on 30th Jan and would attend the in person AFG meeting
25-Jan-24	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Email	Sent an email confirming the meeting on 30th Jan and the AFG meeting details
25-Jan-24	Outgoing	Adrian Williams	Megan Sheppard Brennand	Adrian Williams	Phone	Called Adrian to arrange a meeting to discuss the cultural values mapping report. Adrian said he could meet at 2.30pm on 29th Jan. Asked Adrian if he wished to register for the project but Adrian said he didn't think it would make a difference.
25-Jan-24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley	Email	Sent Sharon an email to ask if she would be available on Monday or Tuesday to discuss the cultural values mapping report
25-Jan-24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Called Sharon and left a message to arrange a meeting to discuss cultural values mapping report and see if she could attend the AFG meeting
29-Jan-24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Called Sharon and left a message to arrange a meeting to discuss cultural values mapping report and see if she could attend the AFG meeting
29-Jan-24	Incoming	Mingaan Aboriginal corporation	Sharon Riley	Megan Sheppard Brennand	Phone	Sharon sent a text message to ask Megan to call back later
29-Jan-24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Called Sharon and left a message to arrange a meeting to discuss cultural values mapping report and see if she could attend the AFG meeting
29-Jan-24	Incoming	Mingaan Aboriginal corporation	Sharon Riley	Megan Sheppard Brennand	Phone	Sharon sent a text message to say she would call back later that evening or the next day around 12/1 after a meeting she had at 10am.
29-Jan-24	Outgoing	WTOCWAC	Megan Sheppard Brennand	Leanna Carr-Smith, Jade Flynn, Lisa and a member of the board	Meeting	Meeting in person to discuss the cultural values mapping report. WTOCWAC were generally happy with the report. They expressed that they have concerns about the project as a whole and do not wish for it to go ahead
29-Jan-24	Outgoing	Adrian Williams	Megan Sheppard Brennand	Adrian Williams	Meeting	Meeting in person to discuss the cultural values mapping report. Adrian had not yet read the report but said he would do so and get back to us with comments. Expressed concerns with the project as a whole.
2/Apr/24	Incoming	Barrinang	Rick Slaven	Mick Hanly	Phone	Contacted to discuss community rumors of the project and findings. Subsequently added as a registered Aboriginal party.
4/Apr/24	Incoming	Barrinang	Rick Slaven	Mick Hanly	Email	Provided a list of issues, primarily around how Barrinang had not been previously consulted, concerns with the potential impacts to cultural heritage, and seeking information on who had been involved in field activities. Also seeking an opportunity for fieldwork.
11/Apr/24	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Phone	•MSB spoke to Rick about his concerns around the project. One of Rick's main concerns was that artefacts had been taken off Country, and especially without a permit. Which, MSB explained to him is not required under SSD projects. Rick was of the understanding that EMM had only just undertaken the survey and that artefacts had been removed during this process. Once he understood that we had already undertaken the test excavation program he seemed surprised. •I explained that under the ACHA process the artefacts from the test excavation are able to be removed from site and kept in a safe location while analysis is undertaken. As part of the ACHA process EMM will liaise with the RAPs and EA to come to a decision as to the long term management of the artefacts. •Rick told MSB similar stories about the cultural values of the area to those given in the cultural values report •Rick was extremely negative about the project going ahead •Rick told me that he has sent a formal complaint to Heritage NSW about the project
24/Apr/24	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Phone/Email	Called Rick, no answer so sent an email. Inviting Rick to be part of the cultural values mapping report. Asked Rick if he would like to be interviewed and share cultural values about project area. Rick was very keen to talk but also negative about the project and involvement of others and his lack of involvement until now. Rick said he had previously been interviewed extensively by an anthropologist for the Native Title Claim
29-Apr-24	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick said he would be interested in being involved and expressed concerns around who is involved in the CVM and he wants to make sure the right people are talking for country.
1-May-24	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email	Arranged to meet on 7th May in Lithgow
7-May-24	-	Barrinang	Megan Sheppard Brennand (EMM) and Patrick Horton (Anthropologist)	Rick Slaven and Judith Harding	Meeting	Megan and Patrick met with Rick and Judith at Club Lithgow to talk through the CVM consultation. Rick and Judith shared information about their family and Barrinang. They were generally negative about the project but seemed interested in providing information and telling their story. Rick signed the contract but would not accept payment
27/May/24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Helen Riley	Phone	Asked Helen if Sharon and herself would be available on Tuesday 11th June to discuss the CVM report and mitigation measures.
27/May/24	Outgoing	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn and Leanna Carr-Smith	Phone	No answer
27/May/24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell and Kylie Manson	Phone	No answer
27/May/24	Outgoing	Adrian Williams	Megan Sheppard Brennand	Adrian Williams	Phone	No answer
27/May/24	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Phone	Asked Melissa if she would be available to meet on Wednesday 12th June at 1pm in Mudgee to discuss the CVM report and mitigation measures. Melissa confirmed she would be available and not to contact Diana Astin, that she would do it
29-May-24	Outgoing	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn and Leanna Carr-Smith	Email	Asked if the corporation would be available to meet on Tuesday 11th June to discuss the CVM report and mitigation measures
31/May/24	Outgoing	Mingaan Aboriginal corporation	Megan Sheppard Brennand	Helen Riley	Email	Confirming with Helen meeting on either Monday 10th in the evening or Tuesday 11th June to discuss CVM report
31/May/24	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Email	Confirming with Melissa meeting at 1pm on Wednesday 12th June to discuss CVM report
31/May/24	Outgoing	Bill Allen	Megan Sheppard Brennand	Bill Allen	Email	Asked if Bill would be available to meet on Tuesday 11th June to discuss the CVM report and mitigation measures
31/May/24	Outgoing	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn and Leanna Carr-Smith	Phone	No answer
31/May/24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell	Phone	No answer
31/May/24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell and Kylie Manson	Email	Asked if Jack would be available to meet on Wednesday 12th June to discuss the CVM report and mitigation measures
31/May/24	Outgoing	Adrian Williams	Megan Sheppard Brennand	Adrian Williams	Phone	No answer
31/May/24	Outgoing	Adrian Williams	Megan Sheppard Brennand	Adrian Williams	Email	Asked if Adrian would be available to meet on Monday 10th June in the evening or Tuesday 11th June in the later afternoon to discuss the CVM report and mitigation measures
3-Jun-24	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Helen Riley	Phone	Called Aunty Helen to lock in a time to meet. Helen said she didn't mind what time/day so to call Sharon and arrange with her
3-Jun-24	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Called Sharon and arranged to meet Aunty Helen, Sharon and possibly Patsy on Tuesday 11th June at 2pm. She asked Megan to send a test message to confirm

Aboriginal Consultation Requirements for Proponents (DECCW 2010) *

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell | **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
3-Jun-24	Outgoing	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn	Phone	Asked Jade if he could meet on Tuesday 11th. Jade said that he didn't have time available and feel they don't need to and their opinion of the project hasn't changed. They defer to Mingaan for their opinion. Jade offered to send an email confirming what he had said and asked Megan to remind him in an email
3-Jun-24	Outgoing	Wiradyuri Traditional Owners Central West Aboriginal Corporation	Megan Sheppard Brennand	Jade Flynn and Leanna Carr-Smith	Email	Sent Jade an email to confirm what he said on the phone and remind him to send an email confirming the corporations position
3-Jun-24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell	Phone	Called Jack and arranged to meet at 9am on Wednesday 12th June in Mudgee. Jack asked Megan to send a confirmation email
3-Jun-24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell and Kylie Manson	Email	Confirmed with Jack meeting at 9am in Mudgee on Wednesday 12th June
3-Jun-24	Outgoing	Barrinang	Patrick Horton (anthropologist)	Rick Slaven	Email/Phone	Arranged to meet on 11th June at 12pm in Lithgow
5-Jun-24	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Phone/Email	Arranged with Melissa to meet at 11am on Wednesday 12th June in Mudgee instead of 1pm
5-Jun-24	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Helen Riley	Email	Emailed Aunty Helen to tell her we had arranged with Sharon to meet at 2pm on Tuesday 11th June
5-Jun-24	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Sent Sharon a message to confirm meeting at 2pm on Tuesday 11th June
11-Jun-24	Outgoing	Barrinang	Alan Williams, Patrick Horton	Rick Slaven	Meeting	Met with Rick Slaven to discuss the cultural values study and begin to explore mitigaiton measures of intangible values. Further details are provided in the report.
11-Jun-24	Outgoing	Mingaan Aboriginal Corporation	Alan Williams, Patrick Horton	Helen and Sharon Riley	Meeting	Met with HR and SR to discuss the cultural values study and begin to explore mitigaiton measrues of intangible values. Further details are provided in the report.
12-Jun-24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Alan Williams, Patrick Horton	Jack Pennell	Meeting	Met with JP to discuss the cultural values study and begin to explore mitigaiton measrues of intangible values. Further details are provided in the report.
			FIELDWORK - SURVEY			
06-Oct-23	Outgoing	North East Wiradjuri Corporation	Amber Morgan	Virginina Doig	Phone	Called to ask if they would have a field rep availible for upcoming survey but no response - left a voicemail
06-Oct-23	Outgoing	Gallanggabang Aboriginal Corporation	Amber Morgan	Melissa Chown	Phone	Called to ask if they would have a field rep availible for upcoming survey and she said they would. - advised that a formal email would be sent out on Monday
06-Oct-23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Amber Morgan	Kylie Manson	Phone	Called to ask if they would have a field rep availible for upcoming survey but no response - left a voicemail
06-Oct-23	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	Auntie Helen Riley	Phone	Called to ask if they would have a field rep availible for upcoming survey but no response - left a voicemail
06-Oct-23	Outgoing	Bathurst Local Aboriginal Land Council	Amber Morgan	-	Phone	Called to ask if they would have a field rep availible for upcoming survey but no response - line was busy
06-Oct-23	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Amber Morgan	Phone	Responded to voicemail but said she could confirm next week if she would have a rep available
10-Oct-23	Outgoing	North East Wiradjuri Corporation	Nic Reilly	Virginina Doig	Phone	Called to confirm that they were available for their rostered survey slot, Virginia confirmed. Nic stated that he was sending out official email invitations today
10-Oct-23	Outgoing	Gallanggabang Aboriginal Corporation	Nic Reilly	Melissa Chown	Phone	Called to confirm availibility for rostered survey spot. Melissa advised that they would call back
10-Oct-23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Nic Reilly	Kylie Manson	Phone	Called to confirm that they were available for their rostered survey slot, Kylie confirmed. Nic stated that he was sending out official email invitations today
10-Oct-23	Outgoing	Mingaan Aboriginal Corporation	Nic Reilly	Auntie Helen Riley	Phone	Called to confirm availiability for rostered survey spot. No answer
10-Oct-23	Outgoing	Bathurst Local Aboriginal Land Council	Nic Reilly	Tonilee Scott	Phone	Called to confirm that they were available for their rostered survey spots. Tonilee said that would attempt to get people out for both weeks though may struggle getting someone out in the middle.
10-Oct-23	Incoming	Gallanggabang Aboriginal Corporation	Melissa Chown	Nic Reilly	Phone	Melissa called back and advised that they were avaliable on their rostered survey days
11-Oct-23	Outgoing	North East Wiradjuri Corporation	Nic Reilly	Virginina Doig	Email	Sent out official invitation for survey fieldwork
11-Oct-23	Outgoing	Gallanggabang Aboriginal Corporation	Nic Reilly	Melissa Chown	Email	Sent out official invitation for survey fieldwork
11-Oct-23	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Nic Reilly	Kylie Manson	Email	Sent out official invitation for survey fieldwork
11-Oct-23	Outgoing	Mingaan Aboriginal Corporation	Nic Reilly	Auntie Helen Riley	Email	Sent out official invitation for survey fieldwork
11-Oct-23	Outgoing	Bathurst Local Aboriginal Land Council	Nic Reilly	Tonilee Scott	Email	Sent out official invitation for survey fieldwork
11-Oct-23	Outgoing	Wingarra Wilay Aboriginal Corporation	Nic Reilly	Raymond Moon	Email	Sent out official invitation for survey fieldwork
11-Oct-23	Incoming	Mingaan Aboriginal Corporation	Sue Hayes OBO Auntie Helen Riley	Nic Reilly	Email	Provided insurances
13-Oct-23	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Mason	Nic Reilly	Email	Provided insurances
16-Oct-23	Incoming	North East Wiradjuri Corporation	Virginia Doig	Nic Reilly	Email	Provided insurances
30-Oct-23 - 9-Nov-23	-	Mingaan Aboriginal Corporation, North East Wiradjuri Corporation, Gallanggabang Aboriginal Corporation, Warrabinga Native Title Claimants Aboriginal Corporation, Wingarra Wilay Aboriginal Corporation, Girraaiirra Murun Aboriginal Corporation	various	Megan Sheppard Brennand and Nicolas Riley	-	Undertook field survey
			PROJECT UPDATE DECEMBER 2023			
21-Dec-23	Outgoing	All RAPs	Megan Sheppard Brennand	various	Email	Provided a project update
21-Dec-23	Incoming	Didge Ngunawal Aboriginal Corporation	Lily Carroll	Megan Sheppard Brennand	Email	Lily expressed an interest in being a part of the test excavations
21-Dec-23	Incoming	Thomas Dahlstrom Cultural Heritage Consult	Thomas Dahlstrom	Megan Sheppard Brennand	Email	Thomas expressed an interest in being a part of the test excavations and expressed approval of the work to date
21-Dec-23	Incoming	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	Email	Sharon said that a meeting needed to be held to discuss the next steps for the project. Sharon also expressed concern at not being involved in the Platypus monitoring work that was undertaken by the ecologists.
22-Dec-23	Incoming	Kamilaroi Yankuntjatjara Working Group	Phil Khan	Megan Sheppard Brennand	Email	Thanked EMM for the update on the project.
22-Dec-23	Incoming	Mingaan Aboriginal Corporation	Helen Riley	Megan Sheppard Brennand	Email	Aunty Helen requested a meeting to discuss the project as soon as possible.
22-Dec-23	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Email	Megan said would check in the new year why contact hadn't been made, but understood that Gill had called Sharon to arrange participation. Megan said she would call Sharon in the new year to discuss meeting.
22-Dec-23	Incoming	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	Email	Acknowledged that the ecologist had made contact initially but that no further contact had occurred. Sharon said that she had met with EA that morning to discuss
04-Jan-24	Incoming	Yulay Cultural Services	Arika Jalomaki	Megan Sheppard Brennand	Email	Thanked EMM for the update on the project.
11-Jan-24	Outgoing	All RAPs	Megan Sheppard Brennand	various	Email	Provided supplementary methodology for test excavation
11-Jan-24	Outgoing	Thomas Dahlstrom Cultural Heritage Consult	Megan Sheppard Brennand	Thomas Dahlstrom	Email	Megan replied to Thomas' email from December - EMM are aiming to have Thomas Dahlstrom Cultural Heritage Consult on the test excavation fieldwork
			AFG MEETING FEBUARY 2024 (INCLUDING PROJECT UPDATE)			
11-Jan-24	Outgoing	All RAPs	Megan Sheppard Brennand	various	Email	Invited all participants to an in-person and/or online meeting to discuss the project end of January 2024
11-Jan-24	Incoming	Konanggo Aboriginal Cultural Heritage Services	Robert Young	Megan Sheppard Brennand	Phone	Robert said that he approved of the methodology however because he hadn't walked on Country couldn't give more information than that. Expressed an interest in being part of the test excavations and said he would be attending the AFG meeting online
11-Jan-24	Incoming	Konanggo Aboriginal Cultural Heritage Services	Robert Young	Megan Sheppard Brennand	Email	Robert sent a follow up email to the phone call - expressed an interest in the test excavation work, has no comments on the supplementary methodology at this staze.
11-Jan-24	Incoming	Yulay Cultural Services	Arika Jalomaki	Megan Sheppard Brennand	Email	Replied to the AFG meeting invite to say they would attend the online meeting
15-Jan-24	Incoming	Kamilaroi Yankuntjatjara Working Group	Phil Khan	Megan Sheppard Brennand	Email	Thanked EMM for providing the supplementary test excavation methodology and said that KYWG agree and support the methodology and expressed an interest in being part of the fieldwork.
15-Jan-24	Incoming	Kamilaroi Yankuntjatjara Working Group	Phil Khan	Megan Sheppard Brennand	Email	Replied to the AFG meeting invite to say they would attend the online meeting
16-Jan-24	Incoming	Yurwang Gundana Consultancy Cultural Heritage Services	Merekai Bell	Megan Sheppard Brennand	Email	Replied to the AFG meeting invite to say they would attend the online meeting
16-Jan-24	Incoming	Yurwang Gundana Consultancy Cultural Heritage Services	Merekai Bell	Megan Sheppard Brennand	Email	Replied to say that they agree and support the supplementary test excavation methodology and expressed an interest in being part of the fieldwork.
22-Jan-24	Incoming	murrabidgee mullangari	Darleen Johnson	Megan Sheppard Brennand	Email	Replied to the AFG meeting invite to say they would attend the online meeting
24-Jan-24	Incoming	Thomas Dahlstrom	Thomas Dahlstrom	Megan Sheppard Brennand	Email	Replied to say that they agree and support the supplementary test excavation methodology and expressed an interest in being part of the fieldwork.
25-Jan-24	Outgoing	All RAPs	Megan Sheppard Brennand	various	Email	Sent reminder for online AFG meeting with date and time
25-Jan-24	Outgoing	All RAPs	Megan Sheppard Brennand	various	Email	Sent reminder for in person AFG meeting with date and time
29-Jan-24	Incoming	Warabinga Native Title Claimants	Kylie Manson	Megan Sheppard Brennand	Email	Kylie said that her and Jack were unable to attend the meeting in person but that they would attend the online AFG meeting
30-Jan-24	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Phone	Asked Melissa if she would be attending the AFG meeting. Melissa said she was unable to attend as she was driving but would attend the online meeting.
30-Jan-24	Outgoing	Thomas Dahlstrom	Megan Sheppard Brennand	Thomas Dahlstrom	Phone/Email	Asked Thomas if he would be attending the AFG meeting. Thomas said he was unable to attend the meeting in person but would attend the online meeting
30-Jan-24	Outgoing	-	Megan Sheppard Brennand	various	-	Megan, Mick Hanley (EnergyAustralia) and Alan Williams attended the AFG meeting in Portland. No RAPs attended the meeting.

Aboriginal Consultation Requirements for Proponents (DECCW 2010) *

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell | **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
30-Jan-24	Outgoing	WTOCWAC	Megan Sheppard Brennand	Leanna Carr-Smith, Jade Flynn, Lisa and a member of the board	Email	Thanked WTOCWAC for the meeting on 29-Jan-24. Provided them with the supplementary test excavation methodology and the AFG online meeting link as they were unable to attend the in person meeting
06-Feb-24	Outgoing	Various	Alan Williams	-	Online meeting	Undertook online meeitng with several RAPs. See meeting minutes for further information. Distributed meeting minutes to RAPs
			FIELDWORK - TEST EXCAVATION			
01-Feb-24	Outgoing	Gallangganbang Aboriginal Corporation	Nicolas Reilly	Melissa Chown	Phone	Call informing RAP of upcoming test excavation fieldwork and their rostered days
01-Feb-24	Outgoing	North East Wiradjuri Aboriginal Corporation	Nicolas Reilly	Virginia Doig	Phone	Call informing RAP of upcoming test excavation fieldwork and their rostered days
01-Feb-24	Outgoing	Thomas Dahlstrom	Nicolas Reilly	Thomas Dahlstrom	Phone	Call informing RAP of upcoming test excavation fieldwork and their rostered days- no answer
01-Feb-24	Outgoing	Warrabinga Native Title Claimants	Nicolas Reilly	Kylie Manson	Phone	Call informing RAP of upcoming test excavation fieldwork and their rostered days
01-Feb-24	Outgoing	Bathurst LALC	Nicolas Reilly	Tonilee Scott	Phone	Call informing RAP of upcoming test excavation fieldwork and their rostered days
02-Feb-24	Incoming	Thomas Dahlstrom	Thomas Dahlstrom	Nicolas Reilly	Phone	Thomas stated he was available that week and asked if there could be a reserve for fieldwork if people don't show up. Nic stated it was unlikely for on the day changes but would follow up to see if possible if group pulled out with enough notice
05-Feb-24	Incoming	Gallangganbang Aboriginal Corporation	Melissa Chown	Nicolas Reilly	Email	Melissa provided updated email for Gallanggabang and requested all emails be directed there
07-Feb-24	Outgoing	Gallangganbang Aboriginal Corporation	Nicolas Reilly	Melissa Chown	Email	Email providing official invitation to test excavation fieldwork and requested insurances and signed sub-consultant paper
07-Feb-24	Outgoing	Thomas Dahlstrom	Nicolas Reilly	Thomas Dahlstrom	Email	Email providing official invitation to test excavation fieldwork and requested insurances and signed sub-consultant paper
07-Feb-24	Outgoing	Mingaan Aboriginal Corporation	Nicolas Reilly	Sharon Riley	Email	Email providing official invitation to test excavation fieldwork and requested insurances and signed sub-consultant paper
07-Feb-24	Outgoing	Bathurst LALC	Nicolas Reilly	Tonilee Scott	Email	Email providing official invitation to test excavation fieldwork and requested insurances and signed sub-consultant paper
07-Feb-24	Outgoing	Wingarra Wilay Aboriginal Corporation	Nicolas Reilly	Raymond Moon	Email	Email providing official invitation to test excavation fieldwork and requested insurances and signed sub-consultant paper
07-Feb-24	Outgoing	North East Wiradjuri Aboriginal Corporation	Nicolas Reilly	Virginia Doig	Email	Email providing official invitation to test excavation fieldwork and requested insurances and signed sub-consultant paper
07-Feb-24	Outgoing	Girragirra Murun Aboriginal Corporation	Nicolas Reilly	Diana Astin	Email	Email providing official invitation to test excavation fieldwork and requested insurances and signed sub-consultant paper
07-Feb-24	Outgoing	Warabinga Native Title Claimants	Nicolas Reilly	Kylie Manson	Email	Email providing official invitation to test excavation fieldwork and requested insurances and signed sub-consultant paper
08-Feb-24	Incoming	Warabinga Native Title Claimants	Kylie Mason	Nicolas Reilly	Email	Email confirming they will attend the fieldwork and provided insurances and signed sub-consultant agreement.
09-Feb-24	Incoming	Wingarra Wilay Aboriginal Corporation	Raymond Mood	Nicolas Reilly	Email	Email confirming they will be attending fieldwork. Insurances on file are still valid
09-Feb-24	Incoming	Girragirra Murun Aboriginal Corporation	Diana Astin	Nicolas Reilly	Email	Email confiming they will be attending fieldwork. No insurances attached to email
09-Feb-24	Incoming	Gallangganbang Aboriginal Corporation	Melissa Chown	Nicolas Reilly	Email	Email confimrine they will attend fieldwork. No insurances attached in email.
14-Feb-24	Outgoing	Heritage NSW	Nicolas Reilly	Heritage NSW	Email	Notification to Heritage NSW of upcoming test excavation
14-Feb-24	Incoming	North East Wiradjuri Aboriginal Corporation	Virginia Doig	Nicolas Reilly	Phone	Call to check whether they had responded to invitation. NR stated that no response had been received yet. VD confirmed that they would attend and that she would respond to email today
14-Feb-24	Incoming	North East Wiradjuri Aboriginal Corporation	Virginia Doig	Nicolas Reilly	Email	VD confirmed Coral Williams or Kelsey Williams Fawcet would be attending fieldwork. Insurance in file are still valid
14-Feb-24	Incoming	Mingaan Wiradjuri Aboriginal Corporation	Aunty Helen Riley	Nicolas Reilly	Phone	Call to see if response had been made regarding fieldwork. NR stated that no response had been received but that Mingaan were still considered for the fieldwork. Aunty Helen requested I resend sub-consultant form and to check if the insurance on file were still valid.
14-Feb-24	Outgoing	Mingaan Wiradjuri Aboriginal Corporation	Nicolas Reilly	Auntie Helen Riley	Email	NR provided another copy of sub-consultant form and requested an updated certificate of currecny of workers compensation
15/Feb/24	Incoming	Mingaan Wiradjuri Aboriginal Corporation	Aunty Helen Riley	Nicolas Reilly	Phone	Aunty Helen asked which insurance was needed, NR stated that only workers compensation was out of date. Aunty Helen stated that she would send through today
15/Feb/24	Incoming	Mingaan Wiradjuri Aboriginal Corporation	Aunty Helen Riley	Nicolas Reilly	Email	Aunty helen provided updated worker comp insurance
15/Feb/24	Outgoing	Thomas Dahlstrom Cultural Heritage Consult	Nicolas Reilly	Thomas Dahlstrom	Phone	NR asked for confirmation as to whether TD will be attending fieldwork. TD stated that he will be. NR requested copies of insuarnces be sent across. TD stated that he would do that today
15/Feb/24	Incoming	Thomas Dahlstrom Cultural Heritage Consult	Thomas Dahlstrom	Nicolas Reilly	Email	TD provided insurances
15/Feb/24	Outgoing	Girragirra Murun Aboriginal Corporation	Nicolas Reilly	Diana Astin	Email	NR emailed requesting copies of insurances
15/Feb/24	Outgoing	Gallanggabang Aboriginal Corporation	Nicolas Reilly	Melissa Chown	Email	NR requested updated insurances
11-Mar-24	-	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	-	Sharon spoke with Megan on site about the possibility of the ultimate keeping place of artefacts recovered from the excavations being kept at a new keeping place that Mingaan are planning on having built in Lithgow. Sharon expressed an interest in having the artefacts available for teaching
14/Mar/24	Incoming	Thomas Dahlstrom Cultural Heritage Consult	Thomas Dahlstrom	Alan Williams	Email	Numerous text messages expressing dissatisfaction with being left out of further test excavations. AW advised that the level of communication on this issue with personnel and out of hours was potentially in breach of WHS policy and would be explored further. TD subsequently sent his issues and all communication to Heritage NSW complaining of lack of involvement
19/Mar/24	Outgoing	Thomas Dahlstrom Cultural Heritage Consult	Alan Williams	Thomas Dahlstrom	Email	Responded advising that there are a large number of RAPs, and while we have enabled some field involvement of TD, additional opportunities are limited.
19/Mar/24	Incoming	Thomas Dahlstrom Cultural Heritage Consult	Thomas Dahlstrom	Alan Williams	Phone	Called and indicated that he may have gone a bit too far in his level of concern and complaint over the last week; and appreciated the responses provided in relation to the issue. Considers the matter closed.
26-Feb-24 - 27-Mar-24	-	Mingaan Aboriginal Corporation, North East Wiradjuri Corporation, Gallanggabang Aboriginal Corporation, Warrabinga Native Title Claimants Aboriginal Corporation, Wingarra Wilay Aboriginal Corporation, Girragirra Murun Aboriginal Corporation, Thomas Dahlstrom	various	Megan Sheppard Brennand (field lead) and Nicolas Riley (2IC)	-	Undertook test excavation
			ADDITIONAL CONSULTATION			
25-Jun-24	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick enquired about the number of artefacts recovered from the test excavations and asked if any bones had been found. Rick asked for a detailed assessment of the artefacts.
25-Jun-24	outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email	Megan advised Rick of the number of artefacts and that a project update would be sent in the next week and the draft report was coming soon for review which would provide details of the artefacts.
26-Jun-24	incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick thanked Megan for her reply and said that he was focused on the repatriation of the artefacts to their original location. Rick said he was worried about sickness increasing and that he needs to be a part of the process to get the artefacts returned as soon as possible to Wiradjuri country
1-Jul-24	Incoming	Barrinang	Rick Slavin	Alan Williams, Patrick Horton	Email	Rick sent an email expressing his opposition of the project and that Mount Walker is a sacred area and has been so for 65000 years. The tip of Mount Walker is where the wedge-tail eagles dream (which is the Wiradjuri women's totem) and it represents strength and safety. The peak of the mountain is a men's sacred area, and has always been a place for ceremonies and initiation of younger men. Farmers Creek is a songline, part of the protection for journey from Newnes Plateau sacred sites to the Mt Walker sacred sites. Farmers creek provided water, food, birthing areas, training in survival and hunting skills for the young, as they learnt from their Elders. Rick states that the proof of cultural significance has already been proven by the guidelines, with the collection of 1344 artefacts. Rick states that Mt Walker is sacred from the bottom all around Farmers Creek all the way to the peak where the wedge tail eagles dream and sacred mens ceremony took place. The same tracks would have been walked from top to bottom, with ceremonial areas along the way for different stories and initiation. Rick states that Mt Walker always had koalas, which is sacred and protected by Wiradjuri, but it appears they are missing in the proposal area. Rick says it is distressing that they want to develop on a sacred area, where water is essential, and therefore brings stress to the totem that controls rains and will cause drought to the land if disrespected (the koala). Rick says he has seen sites and artefacts all over the mountain on the Marrangaroo side, and seen ancestral lights and heard ancestors clapping sticks. The presence of the Powerful owl, kangaroo, platypus, Wedge-tail eagle, Goanna – being Totems of Wiradjuri stories and connection of strength to the earth and ancestors. Mt Walker is the heart of spiritual connection and protection for all life its not just the journey of the Ancestors spirits its the journey of Totem spirits as well. Rick states that it is the whole of Mount Walker that is sacred. Rick says it should not be possible to impact this mountain. Rick requests a meeting with the CEO of EnergyAustralia, and asks for non local Wiradjuri to stop being invited on to Mt Walker. Rick says that Mt Walker needs total mountain sacred site classification and all artefacts need to be returned and smoked. He wants Mt Walker to be registered as a place of Aboriginal importance, then implementation of an OEH declaration, then an Aboriginal management plan. Rick asks for assistance with this process and concludes with - Mt Walker needs to be placed under a Cultural Significant Wiradjuri place of importance status from farmers creek all the way to the peak and the surrounding hills which all had cultural ceremony conducted and back to the other side where cox's river passes Mt Walker
2-Jul-24	Outgoing	Barrinang	Alan Williams	Rick Slavin	Email	Alan thanked Rick for sharing his knowledge and understanding and said that we have endeavoured to incorporate as much of this information and knowledge as possible into the Aboriginal cultural heritage assessment and the cultural values mapping report, which we will be sending shortly for your review, inputs and comments. Alan said we will pass on Rick's email to the proponent and include it in the report. Alan outlined the documentation of the local Aboriginal communities views of Mt Walker, focusing on the peak of the Mountain that is recommended to be listed on AHIMS as a site. Alan also said that the report will outline the tangible cultural heritage. Alan said it is likely that an Aboriginal cultural heritage management plan will be proposed, in consultation with RAPs.
			PROJECT UPDATE JULY 2024			
4-Jul-24	Outgoing	All RAPs	Megan Sheppard Brennand	various	Email	Provided a project update with a broad description of results and that we are aiming to distribute the draft report for RAP review within the next month
4-Jul-24	Incoming	Didge Ngunawal Aboriginal Corporation	Lily Carroll	Megan Sheppard Brennand	Email	Thanked MSB for the project update.
15-Jul-24	Incoming	Kamilaroi Yankuntjatjara Working Group	Phil Khan	Megan Sheppard Brennand	Email	Thanked MSB for the project update.

Aboriginal Consultation Requirements for Proponents (DECCW 2010)*

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell | **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
15-Jul-24	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick said that he hadn't received a project update and that he wanted more information on where the artefacts from the test excavation were being stored, if they were secure and when would they be returned to country and who would be making that decision
16-Jul-24	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email	Megan informed Rick that a project update had been sent on 4th July and asked if he would like that email forwarded to him. Megan said that the artefacts were securely stored in the EMM sydney office in St Leonards and that following the review of the draft ACHA report discussions would be held with the local RAPs to decide where the artefacts would be returned to and discuss when this would happen
22-Jul-24	Incoming	Robert Young	Megan Sheppard Brennand	Robert Young	Email	Thanked MSB for the project update.
			DRAFT ACHA			
16-Aug-24	Outgoing	Various	Megan Sheppard Brennand	various	Email	Sent draft report to Elders and knowledge holders who participated in cultural values mapping, for a weeks review and comment prior to sending to all RAPs for 28 day review period. Review period ends 23 August 2024
18-Aug-24	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Jack Pennell	Megan Sheppard Brennand	Email	Jack said that he couldn't access the report through the link sent to him
19-Aug-24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell	Email	Megan sent Jack a new link
26/Aug/24	Outgoing	All RAPs	Megan Sheppard Brennand	-	Email	Distributed draft report for review and comment.
23/Aug/24	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick is concerned that the ACHA is long with some irrelevant information and also excludes some important issues. Rick would like to add to the report that Mt Walker is known as the place of the Wedgetail eagle dreaming. Rick expressed concerns with the amount of RAPs involved in the assessment. Rick expressed concerns that the archaeological findings are not given the significance in the report that he believes they should be given. Rick expressed his concern that the artefacts have been removed from site. Rick said that he is dissatisfied with the project and the ACHA.
23/Aug/24	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email	MSB thanked Rick for his feedback and comments and said that they would be incorporated into the ACHA and passed on to the client.
24/Aug/24	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Jack Pennell	Megan Sheppard Brennand	Email	Jack said that he thought the report was well put together (but long)
16/Sep/24	Incoming	WVWAC	Bradley R Bliss	Megan Sheppard Brennand	Email	WVWAC agree with the findings and recommendations of the ACHA. Through the care and control section - any artefacts recovered from the site should be returned and reburied on site close to where the material was obtained in a mutually agreed area outside of any development impacts. Brad said that all cultural material must be returned to Country
16/Sep/24	Incoming	Booral Maliyan	Bradley R Bliss	Megan Sheppard Brennand	Email	Brad consulted with various Dargin Family and from this agree with the findings and recommendations of the ACHA. Brad recommended that any artefacts recovered from the site should be returned and reburied on site close to where the material was obtained in a mutually agreed area outside of any development impacts. Brad said that all cultural material must be returned to Country
			AFG MEETING SEPTEMBER 2024			
22/Aug/24	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email	Invited to in person meeting
22/Aug/24	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick said that he had read the report and we would be receving his response later that day
27/Aug/24	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick that he was sorry but he was unavailable for an in person meeting
4/Sep/24	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email	Thanked Rick for his email and said that an invite for an online meeting would be sent out
22/Aug/24	Outgoing	Gallangabang Aborigjnal Corporation	Megan Sheppard Brennand	Melissa Chown	Email	Invited to in person meeting
22/Aug/24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell	Email	Invited to in person meeting
	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Jack Pennell	Megan Sheppard Brennand	Email	Jack said he could make a meeting on Friday 30 August in Mudgee
22/Aug/24	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley and Helen Riley	Email	Invited to in person meeting
	Incoming	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	Email	Sharon said she could attend a meeting on Thursday 29 August in Lithgow
28/Aug/24	Outgoing	Gallangabang Aborigjnal Corporation	Megan Sheppard Brennand	Melissa Chown	Email	Invited to in person meeting
28/Aug/24	Outgoing	Girra Girra Murun	Megan Sheppard Brennand	Diana Astin	Email	Invited to in person meeting
29/Aug/24	Outgoing	Bathurst Local Aboriginal Land Council	Megan Sheppard Brennand	Tonilee Scott	Email	Invited to in person meeting
29/Aug/24	Incoming	Bathurst Local Aboriginal Land Council	Toni-Lee Scott	Megan Sheppard Brennand	Email	Tonilee said that she was sorry but she was unavailable for an in person meeting
4/Sep/24	Outgoing	Bathurst Local Aboriginal Land Council	Megan Sheppard Brennand	Tonilee Scott	Email	Thanked Tonilee for her email and said that an invite for an online meeting would be sent out
29/Aug/24	Outgoing	North East Wiradjuri Company	Megan Sheppard Brennand	Virginia Doig	Email	Invited to in person meeting
29/Aug/24	Incoming	North East Wiradjuri Company	Virginia Doig	Megan Sheppard Brennand	Email	Virginia said that she unfortunately could not make an in person meeting
4/Sep/24	Outgoing	North East Wiradjuri Company	Megan Sheppard Brennand	Virginia Doig	Email	Thanked Virginia for her email and said that an invite for an online meeting would be sent out
29/Aug/24	Outgoing	WVWAC, Booral Maliyan	Megan Sheppard Brennand	Bradley Bliss	Email	Invited to in person meeting
29/Aug/24	Incoming	WVWAC, Booral Maliyan	Bradley Bliss	Megan Sheppard Brennand	Email	Brad said that he unfortunately could not make an in person meeting
4/Sep/24	Outgoing	WVWAC, Booral Maliyan	Megan Sheppard Brennand	Bradley Bliss	Email	Thanked Brad for his email and said that an invite for an online meeting would be sent out
29/Aug/24	Outgoing	Mingaan Aboriginal Corporation	Alan Williams, Megan Sheppard Brennand	Sharon Riley	Meeting	Undertook a meeting to present the results of the report - Sharon is happy with the report overall. see minutes for further details
30/Aug/24	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Alan Williams, Megan Sheppard Brennand	Jack Pennell	Meeting	Undertook a meeting to present the results of the report - Jack is happy with the report overall. see minutes for further details
4/Sep/24	Outgoing	Various	Megan Sheppard Brennand	All RAPs	Email	Inviting all RAPs to online AFG meeting on 10 September
10/Sep/24	Outgoing	Barrinang, Didge Ngunawal Aboriginal Corporation, North East Wiradjuri	Alan Williams	-	Online Meeting	Undertook a meeting to present the results of the report - see minutes for further details
10/Sep/24	Incoming	[redacted]	[redacted]	Megan Sheppard Brennand	Email	Apologised for not being able to attend the meeting and asked for minutes to be forwarded
13/Sep/24	Outgoing	Barrinang, Didge Ngunawal Aboriginal Corporation, North East Wiradjuri	Alan Williams	-	Email	Distributed meeting minutes
25/Sep/24	Outgoing	Mingaan Aboriginal Corporation, Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley and Jack Pennell	Email	Distributed meeting minutes
25/Sep/24	Outgoing	[redacted]	Megan Sheppard Brennand	[redacted]	Email	Forwarded meeting minutes
26/Sep/24	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Jack Pennell	Megan Sheppard Brennand	Email	Acknowledged receipt of meeting minutes and said no changes were necessary
			TEMPORARY ARTEFACT RELOCATION			
24/Jan/25	Outgoing	Mingaan	Megan Sheppard Brennand	Sharon Riley	Phone	Sharon mentioned she had spoken with EnergyAustralia about visiting the artefacts with them in the Sydney office. Sharon also mentioned that she would like the artefacts to ultimately be kept at the (as yet unbuilt) cultural centre.
3/Feb/25	Outgoing	All RAPs	Megan Sheppard Brennand	Various	Email	Updating the RAPs on EMM and the clients intention to relocate the artefacts to a temporary storage location on country. The Mt Piper keeping place was put forward as an option and the RAPs were asked to reply whether or not they supprot this location. This is due to the ongoing nature of the project and while the artefacts cannot be returned to a final location while the project is ongoing, they can be moved back to Lithgow (or close by) so that they are on country and can be more easily accessed by the RAPs if they wish.
4/Feb/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick does not agree with any temporary storage of the artefacts, he wishes for them to be returned to Country and reburied at Mt Walker.
4/Feb/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick enquired about the date given for feedback
10/Feb/25	Incoming	Barrinang	Karen Brown	Megan Sheppard Brennand	Email	Karen expressed that Barrinang are not pleased with the way the email from EMM was written and that they feel they were not allowed to visit the artefacts in Sydney. Barrinang are not pleased that the option of the artefacts being reburied on site was not given. They are concerned that EMM are offering a voting system on what happens to the artefacts.
10/Feb/25	Incoming	Konanggo Aboriginal Cultural Heritage Services	Robert Young	Megan Sheppard Brennand	Email	Thanked Megan for the email and suggested that EMM talk to local Elders to understand what they wish to do with the artefacts. Whether they wish to display them or return them to country with a smoking ceremony
10/Feb/25	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Megan Sheppard Brennand	Email	Warrabinga said that they are happy to see the artefacts temporarily stored at Mt Piper Power Station Energy Expo building
11/Feb/25	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven and Karen Brown	Email	Thanked Barrinang for their emails and advised that the artefacts are only temporarily off Country as part of an established practice in the ACHA process. MSB also advised that all RAPs are welcome to visit the artefacts at any time, and that this email was meant to provide an opportunity for RAPs to express their views on where they would like the artefacts to be temporarily stored, not as a form of voting on the management of the artefacts.
12/Feb/25	Incoming	murrabidgee mullangari	Darleen Johnson	Megan Sheppard Brennand	Email	Darleen said that she agreed with the artefacts being temporarily stored at Mt Piper Power Station Energy Expo building
12/Feb/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick expressed his concern with EMM and EnergyAustralia not being transparent and that he had been lied to. Rick reiterated that he wants total transparency and wishes for the artefacts to be returned to Mt Walker and for Mt Walker to be left alone.
14/Feb/25	Incoming	Barrinang	Judith Harding	Megan Sheppard Brennand	Email	Judith expressed her wish for the artefacts to be immediately returned to where they were taken from and a smoking ceremony arranged. Judith does not wish for the artefacts to be stored at Mt Piper.
14/Feb/25	Incoming	Barrinang	Karen Brown	Megan Sheppard Brennand	Email	Barrinang had a meeting and concluded that EMM were proposing what EMM would like to see happen to the artefacts. Karen expressed that Barrinang have put forward their view for several months that the artefacts should be returned to and reburied on Country and feel their views have been disregarded. Barrinang feel EnergyAustralia cannot be trusted with the artefacts and they do not support the artefacts being relocated to Mt Piper.
18/Feb/25	Outgoing	North East Wiradjuri Corporation	Megan Sheppard Brennand	Virginia Doig	Phone	Left a message for Virginia to talk about potential temporary artefact relocation
18/Feb/25	Outgoing	Girragirra Murun Aboriginal Corporation	Megan Sheppard Brennand	Diana Astin	Phone	Left a message for Diana to talk about potential temporary artefact relocation
18/Feb/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Left a message for Sharon to talk about potential temporary artefact relocation
20/Feb/25	Outgoing	Konanggo Aboriginal Cultural Heritage Services	Megan Sheppard Brennand	Robert Young	Email	Thanked Rob for his email and said that EMM would and have been consulting with the Elders and would be letting all RAPs know what the outcome was of the suggestion of temporary artefact relocation
20/Feb/25	Outgoing	Gallangabang Aborigjnal Corporation	Megan Sheppard Brennand	Melissa Chown	Phone	MSB spoke to Melissa about the possible relocation of artefacts - Melissa said that the ultimate preference was for the artefacts to be reburied on Country with a smoking ceremony but that the preference at the moment was that they were brought back to Wiradjuri Country and could be stored at Mt Piper
20/Feb/25	Incoming	Gallangabang Aborigjnal Corporation	Melissa Chown	Megan Sheppard Brennand	Email	Melissa confirmed by email that Gallangabang is happy to see the artefacts temporarily stored at Mt Piper Power Station Energy Expo building
20/Feb/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Auntie Helen Riley	Phone	Left a message for Aunty Helen to talk about potential temporary artefact relocation
20/Feb/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Left a message for Sharon to talk about potential temporary artefact relocation
20/Feb/25	Outgoing	Girragirra Murun Aboriginal Corporation	Megan Sheppard Brennand	Diana Astin	Phone	Spoke with Diana on the phone but she was unwell so sent her a text message to ask her opinion on moving the artefacts to a temporary storage location. Diana replied that Mt Piper would be ok as long as it was only temporary.
20/Feb/25	Outgoing	North East Wiradjuri Corporation	Megan Sheppard Brennand	Virginia Doig	Phone	Virginia said that she had been away and would speak to corporation members on Monday to determine their opinion on where the artefacts should be stored
24/Feb/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Auntie Helen Riley	Phone	Left a message for Aunty Helen to talk about potential temporary artefact relocation
24/Feb/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Left a message for Sharon to talk about potential temporary artefact relocation
24/Feb/25	Incoming	Mingaan Aboriginal Corporation	Sharon Riley and Aunty Helen Riley	Megan Sheppard Brennand	Phone	Sharon, Helen and Patsy were on the phone. Sharon said that they had arranged with EnergyAustralia to come to Sydney on 6 March to collect the artefacts and that they would be stored in Mingaan's storage facility. Sharon said that the artefacts should be stored with Mingaan and that their ultimate location should be at the proposed cultural centre

Aboriginal Consultation Requirements for Proponents (DECCW 2010) *

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
24/Feb/25	Incoming	North East Wiradjuri Corporation	Megan Sheppard Brennand	Virginia Doig	Phone	Virginia said that she had spoken to the sites officers who attended the fieldwork for the project and that they would like to artefacts temporarily stored at Mt Piper. They did not want them reburied as they were concerned they could be stolen.
4/Mar/25	Outgoing	All RAPs	Megan Sheppard Brennand	Various	Email	Informed the RAPs of intent for EnergyAustralia to relocate the artefacts to Mt Piper Power Station Energy Expo Keeping Place in late March 2025, providing date options to choose which is best, and sought further input for the long term management of the artefacts
4/Mar/25	Outgoing	Heritage NSW	Megan Sheppard Brennand	Alison Lamond	Email and Major Projects Portal	In accordance with requirement 15c of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW, EMM provided Heritage NSW at least 14 days' notice for the change of temporary storage location for the Lake Lyell pumped hydro artefacts to Mt Piper Power Station Energy Expo Keeping Place in late March 2025
4/Mar/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick expressed his anger with the decision that has been made to move the artefacts to Mt Piper. Rick said that we should not have control of the artefacts as we are not Wiradjuri and that we are dictating about the artefacts. Rick also asked for a breakdown of all RAPs responses to the email about suggesting a new temporary storage location for the artefacts so that he knew it was all factual. Rick said that some of the RAPs have no connection to Lithgow or Mt Walker, or are not Wiradjuri. Rick asked if the Aboriginal groups are the first or last to know about the movement of the artefacts. Rick reiterated that EMM nor EnergyAustralia are Wiradjuri and should not be making these decisions, the artefacts must be put back in the exact spot they were taken from and an apology must be given. Rick stated that EMM were hired by EnergyAustralia to get the approval for the project and that EMM have used dicussions with Wiradjuri people to make their own opinion. Rick would like to know if any of the RAPs have been paid for their involvement at any stage and if so he sees this as insider trading. Therefore it is not transparent or ethical. Rick is totally against the temporary storage of the artefacts at Mt Piper. Rick says that these are Wiradjuri artefacts, why won't we protect them as requested by local Wiradjuri custodians. Rick said that he thinks once they are at Mt Piper they will stay there forever. Rick has spoken to Heritage NSW about his concerns about the artefacts and their safety, he does not trust EnergyAustralia with the artefacts. Rick would like to request a contract with EMM and EnergyAustralia so that they are secured and not displayed in any way. He does not want anyone to have access to the artefacts or be able to touch, or see them without approval by all parties including himself and Barrinang. Rick wants accountability and transparency. Rick wants every indivudal piece photographed and tagged with a number for individual identification so we know what has gone missing should they go missing. Rick said that all of the artefacts could be replaced with 1344 pebbles of quartz and the real artefacts could go missing. Rick said EMM's treatment of culture is appalling and that someone is going to foot the blame. Rick said he will be contacting Heritage NSW and now the game changes. Rick said he has given us every opportunity to fix this breach of cultural lore over and over but our self importance has shown through. Rcik said he must fight to the next level and that EMM must take responsibility for the future judgement of our destiny. Rick wants the artefacts put back in the spot they were taken from.
4/Mar/25	Incoming	Didge Ngunawal Aboriginal Corporation	Lilly Carroll	Megan Sheppard Brennand	Email	Lilly asked if the movement of the artefacts would be paid
5/Mar/25	Outgoing	Didge Ngunawal Aboriginal Corporation	Megan Sheppard Brennand	Lilly Carroll	Email	Megan advised that it would not be paid
12/Mar/25	Incoming	Heritage NSW	Alison Lamond	Megan Sheppard Brennand	Email/Phone	Alison passed on details from a phone call and email with Rick Slaven (with his permission) regarding his request that he be provided the catalogue of artefacts including all photos and photos taken during the excavation. Alison also passed on that Rick is concerned that the proposed Wiradjuri Cultural Centre mentioned in the Energy Australia community newsletter and would like confirmation if it is associated with the Lake Lyell Pumped Hydro Project. Rick is concerned that this is where the artefacts will end up rather than being reburied. Alison restated to him that the NPW Act and regulations require consultation with the RAPs about the long term management of the Aboriginal Objects in temporary storage at the end of the assessment process and if they are not to be reburied on country a Care Agreement signed off on by HNSW would be required before they could be transferred to any organisation to be used for display or education programs. Megan acknowledged this and said that the information and photographs/catalogue Rick requested would be gathered together and emailed to him.
16/Mar/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick said that he has been waiting for a reply for a long time. Rick requested that he would like the artefact photographs and catalogue and photographs from the excavation. Rick is concerned about the RAPs accompanying the artefacts to Mt Piper, and says that we need to agree on who the accountable controlling person is. Rick expressed his concerns about the artefacts ultimately being stored in a future cultural centre and that they will go missing at Mt Piper. Rick said that, as he had told Heritage NSW, he wants to artefacts out of sight and locked away at Mt Piper and to be able to call on the person responsible for the artefacts at any time. Rick mentioned a back burn at Mt Walker the other week by NPWS, and that he didn't think this was a coincidence
18/Mar/25	Outgoing	Wingarra Wilay Aboriginal Corporation	Megan Sheppard Brennand	Raymond Moon	Phone	Spoke with Melissa from Gallanggabang who is managing Wingarra for Ray at the moment. Asked if Wingarra would like to be involved in the relocation of the artefacts and if they had a preferred date.Melissa said she would organise for someone to attend at Mt Piper on either 27 or 28 March, whichever the majority of RAPs prefer. They would not come to Sydney, just meet at Mt Piper
18/Mar/25	Outgoing	North East Wiradjuri Corporation	Megan Sheppard Brennand	Virginia Doig	Phone	Called to ask if NEWC would like to be involved in the relocation of the artefacts and if they had a preferred date. No answer, left a message
18/Mar/25	Outgoing	Girragirra Murun Aboriginal Corporation	Megan Sheppard Brennand	Diana Astin	Phone	Called to ask if Girragirra would like to be involved in the relocation of the artefacts and if they had a preferred date. Diana said that she would like to attend at Mt Piper and not come to Sydney. Diana said either 27 or 28 March
18/Mar/25	Outgoing	Gallanggabang Aboriginal Corporation	Megan Sheppard Brennand	Melissa Chown	Phone	Called to ask if Gallanggabang would like to be involved in the relocation of the artefacts and if they had a preferred date. Melissa said she would organise for someone to attend at Mt Piper on either 27 or 28 March, whichever the majority of RAPs prefer. They would not come to Sydney, just meet at Mt Piper
18/Mar/25	Outgoing	Wellington Valley Wiradjuri Aboriginal Corporation	Megan Sheppard Brennand	Bradley R Bliss	Phone	Called to ask if WVWAC would like to be involved in the relocation of the artefacts and if they had a preferred date. No answer, left a message
18/Mar/25	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Kylie Manson	Phone	Called to ask if Warrabinga would like to be involved in the relocation of the artefacts and if they had a preferred date. Kylie said they are very busy and is happy to not be present if Mingaan are going to be there. MSB said that in the email with the date EMM would provide the Energy Australia contact so that the artefacts can be visited and viewed at another time and Virginia said that would be good
18/Mar/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Phone	Called to ask if Mingaan would like to be involved in the relocation of the artefacts and if they had a preferred date. No answer, left a message. Sharon messaged to say that she will call back later
18/Mar/25	Outgoing	Bathurst LALC	Megan Sheppard Brennand	Tonilee Scott	Phone	Called to ask if BLALC would like to be involved in the relocation of the artefacts and if they had a preferred date. No answer, left a message
19/Mar/25	Incoming	Heritage NSW	Alison Lamond	Megan Sheppard Brennand	Email	Alison passed on details from a phone call with Rick in relation to his 16 March email. Alison said that the critical element in the email that needs to be addressed as soon as possible (before the Lake Lyell Pumped Hydro Project artefacts are moved into temporary storage at Mt Piper) is the information on the details of secure storage at Mt Piper and for and the written guarantee that they will remain securely stored and not used for display or education purposes. Rick would also like a written commitment that when the assessment for the Lake Lyell Pumped Hydro Project is complete, consultation will be undertaken for long term management of the all the artefacts in temporary storage from the assessment process and it will include serious consideration of reburial within the project area.
19/Mar/25	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email	Replied to Rick with a link to the artefact catalogue and photos that he requested (to be uploaded the following day), including photos of the lock box for the artefacts and reassuance that the artefacts would be kept in a locked box in a locked room. Asked Rick if he would like to be present for any part of the artefacts being moved to Mt Piper. Two dates were given for the relocation, 27 and 28 March, and Rick was asked to nominate his preferred day if he wished to attend. Confirmed details around the proposed Wiradjuri Cultural Centre and that it would be funded by the proposed Lake Lyell Pumped Hydro Energy Community Benefit Sharing Fund. NPW Act and regulations require consultation with the RAPs about the long term management of the Aboriginal Objects in temporary storage at the end of the assessment process and if they are not to be reburied on country a Care Agreement signed off on by HNSW would be required before they could be transferred to any organisation to be used for display or education programs.
19/Mar/25	Incoming	Booral Maliyan	Megan Sheppard Brennand	Bradley R Bliss	Phone	Agrees with the temporary storage of the artefacts at Mt Piper. Will not be able to attend the relocation but is happy for it to go ahead
19/Mar/25	Incoming	Wellington Valley Wiradjuri Aboriginal Corporation	Megan Sheppard Brennand	Bradley R Bliss	Phone	Agrees with the temporary storage of the artefacts at Mt Piper. Will not be able to attend the relocation but is happy for it to go ahead
19/Mar/25	Incoming	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	Phone	Sharon called and left a message. MSB called Sharon back and left a message
20/Mar/25	Incoming	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	Phone	MSB spoke to Sharon - Sharon said Mingaan are the acknowledged traditional owners of the area. Sharon said that Mingaan agrees with the temporary relocation of the artefacts to Mt Piper and would like to accompany the artefacts from Sydney to Mt Piper and would get back to MSB with a date, but 28 March was likely the most suitable
20/Mar/25	Incoming	Kamilaroi Yankuntjatjara Working Group	Phil Khan	Megan Sheppard Brennand	Email	The long term management approach for the artefacts should be reburying them within a safe area within the project area and that RAPs be in attendance for the reburial.
20/Mar/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick is not happy with the response EMM provided and would like further detail around a specific contact who will be solely responsible for the artefacts at Mt Piper. Rick would like to know who has access to the locks - Rick would like one person to have access to the keys. Rick reiterated that he would like the artefacts reburied in the test pits they were taken from.
20/Mar/25	Incoming	Heritage NSW	Alison Lamond	Megan Sheppard Brennand	Email	Acknowledged receipt of the artefacts temporary storage location change
21/Mar/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick had not received the artefact photos or catalogue on the day that was specified in Megan's email and was wondering if something had gone wrong. Rick said that one person needs to be solely responsible for the artefacts.
21/Mar/25	Incoming	Barrinang	Rick Slaven	Cath Russell (EnergyAustralia)	Email	Rick contacted Cath to introduce himself and relayed his interactions with EMM and concerns about the relocation of the artefacts. Rick asked if Cath would be the person taking accountability for the temporary storage of the artefacts.

Aboriginal Consultation Requirements for Proponents (DECCW 2010) *

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
24/Mar/25	Incoming	Barrinang	Rick Slaven	Alan Williams	Email	Expressed concerns to Alan about transparency around artefacts being stored at Mt Piper. Requested the sole person responsible for the artefacts at Mt Piper. Rick said he has been in constant communication with Heritage NSW about his concern for the artefacts. Rick said that he wants screenshots of the date stamped photographs and the same for the artefacts. Rick reiterated that he wants a contract for the artefacts. Rick said he originally got involved as he was concerned for the safety of the artefacts after the survey. Rick said he thinks EMM is doing everything to stop him from getting the artefacts returned to the test pits at Mt Walker. Rick believes he has been lied to throughout the process and he wants dated photos for cross referencing. Rick is concerned about the artefacts going to Mt Piper and that they will be moved against Heritage NSW guidelines.
25/Mar/25	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email/Phone	Apologised for the artefact photos and catalogue being late, as there were some technical difficulties and provided a link to the onedrive folder. Told Rick that Cath Russell was the person responsible for the artefacts
25/Mar/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Rick said that he wanted it specified in writing who the person responsible for the artefacts was, not just written that Cath was the contact for the artefacts. Rick is still concerned about how the photos have been presented and wants them linked back to the test pits. Rick reiterated that he wants to artefacts returned to Mt Walker, not stored at Mt Piper. Rick said he is going by the Heritage NSW guidelines.
25/Mar/25	Outgoing	RAPs	Megan Sheppard Brennand	Various	Email	Advised those RAPs who had expressed an interest in attending the artefact relocation at Mt Piper that the relocation would take place on 28 March. Provided details including time and location
25/Mar/25	Outgoing	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	Phone	Contacted Sharon to say that the artefacts will be moved to Mt Piper on Friday 28 March and would she be able to attend. Sharon said that unfortunately she would not be able to attend on Friday. MSB asked if another representative would like to attend but Sharon did not reply
25/Mar/25	Outgoing	Mingaan Aboriginal Corporation	Helen Riley	Megan Sheppard Brennand	Phone	Called Helen to ask if she would like to attend the artefact relocation on Friday 28 March. No answer, left a message
25/Mar/25	Outgoing	Mingaan Aboriginal Corporation	Helen Riley	Megan Sheppard Brennand	Phone	Helen said she would like to attend the artefact relocation on Friday 28 March. MSB provided details
25/Mar/25	Outgoing	Barrinang	Cath Russell (Energy Australia)	Rick Slaven	Email	Cath introduced herself and invited to meet Rick in person. Cath said that she was across EMM correspondence and that she was the accountable person for the artefacts temporary storage location and outlined how the artefacts would be stored.
26/Mar/25	Outgoing	Barrinang	Alan Williams	Rick Slaven	Email	Alan confirmed that Cath Russell would be the person soley responsible for the artefacts. Alan outlined how the photographs worked and that we likely couldn't provide anything more specific. Alan said that no unauthorised behaviour had occurred on site but if Rick could provide further detail he would look into it. Alan said that all RAPs are paid for their time and EMM believes people should be reimbursed for their time. Outlined that the artefacts would be taken to Mt Piper on 28 March. Alan said he did not understand concerns around deception by EMM or proponent and believes we have been transparent.
28/Mar/25	-	-	Cath Russell (Energy Australia)	-	-	Artefacts collected from the temporary storage location at the EMM Consulting Sydney office by Cath Russell and Michael De Vink (Energy Australia) and Aunty Helen and Ellen Riley (Mingaan Aboriginal Corporation) and taken to the new temporary storage location at Mt Piper Energy Expo. While a number of RAPs had indicated they would attend the relocation at Mt Piper Energy Expo, no other RAPs were in attendance.
28/Mar/25	Incoming	Barrinang	Rick Slaven	Alan Williams	Email	Rick asked if the artefacts have been taken to Mt Piper Energy Expo. Rick again requested the test pit photos with time stamps and requested two hard copies of the reports. Rick also asked how many Wiradjuri RAPs helped transport the artefacts.
1/Apr/25	Outgoing	Barrinang	Alan Williams	Rick Slaven	Email	Alan replied to say that he believed Cath had replied to Rick's questions but asked if there was anything outstanding Alan would try to resolve
2/Apr/25	Outgoing	All RAPs	Megan Sheppard Brennand	-	Email	Provided an artefact relocation summary, prepared by Energy Australia, to all RAPs. The summary outlines that the artefacts were moved to the new temporary storage location at Mt Piper Energy Expo and that representatives from Mingaan Aboriginal corporation were in attendance and undertook a smoking ceremony before the artefacts were put into storage.
2/Apr/25	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Megan Sheppard Brennand	Email	Thanked EMM for the update.
7/Apr/25	Incoming	Heritage NSW	Alison Lamond	Cath Russell (EnergyAustralia)	Phone/Email	Alison emailed Cath outlining recent communication with Rick Slaven and concerns around the change in temporary storage location of the artefacts. Cath called Alison and outlined that indicative dates of artefact return had been provided to Rick, EA/EMM went with the date that the majority of RAPs indicated a preference for, Rick did not indicate a preference, Rick's email were responded to throughout the consultation period and he was provided with further documentation as requested, EA's summary of artefact return was provided to all RAPs to be transparent about the process
			UPDATED PROJECT AREA - METHODOLOGY			
14/Apr/25	Outgoing	All RAPs	Megan Sheppard Brennand	Various	Email	Provided a project update, including that the project area has been updated and providing the draft
16/Apr/25	Incoming	Kamilaroi Yankuntjatjara Working Group	Phil Khan	Megan Sheppard Brennand	Email	Thanked Megan for the update
16/Apr/25	Incoming	Barrinang	Rick Slaven	Alan Williams	Email	Reiterated issues with the project and distrusts this project boundary update
			GENERAL CONSULTATION			
17/Apr/25	Incoming	Barrinang	Rick Slaven	Alan Williams	Email	Reiterated issues with the project and the Heritage NSW guidelines. Rick is unhappy with the way the project is being run and reiterates that himself and Barrinang are being disrespected
6/May/25	Outgoing	Barrinang	Alan Williams	Rick Slaven	Email	Addresses Rick's questions and concerns and reiterated that EMM are following the Heritage NSW guidelines. Alan outlined that Rick and Barrinang's concerns around the artefact management have formed a focus of our activities including organising for the artefacts to be returned to Wiradjuri country.
			PROJECT UPDATE JUNE 2025			
19/Jun/25	Outgoing	All RAPs	Megan Sheppard Brennand	Various	Email	Provided a project update, that EnergyAustralia has partnered with EDF Australia on the project and provided links for further information
19/Jun/25	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Megan Sheppard Brennand	Email	Thanked MSB for the project update.
			AFG MEETING AUGUST 2025			
25/Jul/25	Outgoing	Local RAPs	Megan Sheppard Brennand	Various	Email	invited all local RAPs to in person meetings in or near Lithgow and Mudgee
26/Jul/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand and Alan Williams	Email	Will not attend a meeting with anyone from EMM. is strongly against the project and the work that we are doing
6/Aug/25	Outgoing	All RAPs	Megan Sheppard Brennand	Various	Email	Invited all RAPs to an online AFG meeting to discuss the updates to the project
6/Aug/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand and Amber Morgan	Sharon Riley	in person	Meeting to discuss the project updates. SR e
7/Aug/25	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell and Kylie Manson	Online Meeting	Meeting to discuss the project updates. KM and JP said that they are satisfied with the inclusions and the approach EMM are taking, and identified no specific issues. They are happy with the project and appreciate EMM's approach to consultation, keeping them well informed on the project and including the RAPs in decision making
11/Aug/25	Outgoing	Didge Ngunawal Aboriginal Corporation	Alan Williams	Paul boyd	Online Meeting	Meeting to discuss the project updates
13/Aug/25	Incoming	[redacted]	[redacted]	Megan Sheppard Brennand	Email	Requested a copy of the meeting minutes
28/Aug/25	Outgoing	[redacted]	Megan Sheppard Brennand	[redacted]	Email	Forwarded meeting minutes
2/Sep/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Email	Provided meeting minutes
2/Sep/25	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Jack Pennell and Kylie Manson	Email	Provided meeting minutes
2/Sep/25	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Megan Sheppard Brennand	Email	Acknowledged receipt of and agreement with the meeting minutes
			SURVEY 2025			
16/Jul/25	Outgoing	Gallanggabang Aboriginal Corporation	Amber Morgan	Jamie-lee Thain	Phone	Called to invite for survey on Tues 5th Aug. Said they would have a site officer available.
16/Jul/25	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Amber Morgan	Kylie Manson	Phone	Called to invite for survey on Tues 5th Aug. Said they would have a site officer available.
16/Jul/25	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	(Auntie Helen Riley)	Phone	Called to invite for survey on Tues 5th Aug. Said they would have a site officer available.
16/Jul/25	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	Sharon	Phone	Called to invite for survey on Tues 5th Aug. Said they would have a site officer available.
16/Jul/25	Outgoing	North East Wiradjuri Corporation	Amber Morgan	Virginia Doig	Phone	Called to invite for survey on Tues 5th Aug. No answer - left voicemail.
16/Jul/25	Outgoing	Various	Amber Morgan	Various	Email	Emailed with details for meeting for survey
5/Aug/25	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation, Mingaan Aboriginal Corporation, North East Wiradjuri Corporation, Girragirra Murun Aboriginal Corporation, Wingarra Wilay Aboriginal Corporation	Amber Morgan and Megan Sheppard Brennand	Various	in person	Undertook site survey of additions to the project area
			DRAFT ACHA - UPDATED PROJECT AREA			
8/Oct/25	Outgoing	All RAPs	Megan Sheppard Brennand	Various	Email	Sent draft report to all RAPs for review and comment for 28 day review period. Review period ends 4 November 2025
9/Oct/25	Incoming	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	Email	Asked for a hard copy of the report to be mailed to Mingaan
10/Oct/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Email	Asked Sharon to confirm the address
13/Oct/25	Incoming	Mingaan Aboriginal Corporation	Sharon Riley	Megan Sheppard Brennand	Email	Sharon sent details
13/Oct/25	Incoming	Wellington Valley Wiradjuri Aboriginal Corporation	Bradley R Bliss	Megan Sheppard Brennand	Email	WVWAC do not have any objections or additional comments on the ACHA as the report was discussed at a meeting and those attending did not raise any concern
12/Oct/25	Incoming	Warrabinga Native Title Claimants Aboriginal Corporation	Kylie Manson	Megan Sheppard Brennand	Email	Acknowledged receipt of the report and appreciate the thoroughness of the assessment and ongoing engagement with the community. Warrabinga support the proposed development of key mitigation and management strategies—including the Aboriginal Cultural Heritage Management Plan, the Cultural Values Impact Strategy, and the Interpretation Strategy and Plan—they feel it is important to highlight that the assessment does not fully address the intangible impacts or the deep spiritual connection to Country. They urge that future assessments and management plans give greater consideration to these intangible and spiritual values, and that the voices of Elders and knowledge-holders continue to be central in all decision-making processes.
13/Oct/25	Incoming	Booral Maliyan	Bradley R Bliss	Megan Sheppard Brennand	Email	Agree to the updated ACHA
14/Oct/25	Outgoing	Mingaan Aboriginal Corporation	Megan Sheppard Brennand	Sharon Riley	Email	Acknowledged a hard copy of the report would be sent
15/Oct/25	Outgoing	Mingaan Aboriginal Corporation	Phillipa O'Brien Pounde	Sharon Riley	Post	Sent a hard copy of the draft ACHA for review
16/Oct/25	Outgoing	Warrabinga Native Title Claimants Aboriginal Corporation	Megan Sheppard Brennand	Kylie Manson	Email	Thanked Kylie for the comments and acknowledged they would be incorporated into the report
17/Oct/25	Incoming	murrabidgee mullangari	Darleen Johnson	Megan Sheppard Brennand	Email	Darleen endorses the recommendations of the ACHA
27/Oct/25	Incoming	Barrinang	Rick Slaven	Alan Williams	Email	Continued to outline concerns and issues with the project. Sought to include statements around the payment of Aboriginal participants in the report in contrast to Barrinang's involvement to date. Asked for two copies of the report to be posted to him.
31/Oct/25	Outgoing	All RAPs	Amber Morgan	Various	Email	Send reminder email that review period ends next week on 4th Nov.
31/Oct/25	Incoming	Didge Ngunawal Aboriginal Corporation	Lillie Carroll	Amber Morgan	Email	DNAC are happy with everything, ready to move on and thanked for being part of the project
4/Nov/25	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	Sharon Riley	Phone	Called to ask for input on draft ACHA. No answer left a voicemail.

Aboriginal Consultation Requirements for Proponents (DECCW 2010) *

ABORIGINAL COMMUNICATIONS LOG

Project Name: Lake Lyell | **Project #: E221111**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
			AGENCY REQUESTS			
4/Nov/25	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	Aunty Helen Riley	Phone	Called to ask for input on draft ACHA. No answer left a voicemail.
7/Nov/25	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	Aunty Helen Riley	Phone	Called to ask for input on draft ACHA. Aunty Helen said she had no inputs but that Sharon may have and advised to call her
7/Nov/25	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	Sharon Riley	Phone	Called to ask for input on draft ACHA. No answer left a voicemail.
10/Nov/25	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	Sharon Riley	Phone	Called to ask for input on draft ACHA. Sharon said she doesn't want the artefact reburied and that they should instead be with a TO - preferably the keeping place at Mingaan's new office, as they will have a secure display cabinet that can be used for education, display, and keeping. She said she would call AM back as she was on the road and apologised for not getting more input together sooner, noting that they have been quite busy with other work.
10/Nov/25	Incoming	Yurwang Gundana Consultancy Cultural Heritage Services	Merekai Bell	Amber Morgan	Email	Sent email with comments and recommendations, emphasising the importance of Aboriginal-led practice, cultural protection protocols, and maintaining Aboriginal custodianship and confidentiality throughout the process. Also recommended a "Cultural Closure Ceremony" and "On-Country Custodianship", with artefacts returned to Country and decisions regarding their long-term storage to be made collectively by the RAPs.
13/Nov/25	Outgoing	Mingaan Aboriginal Corporation	Amber Morgan	Sharon Riley	Phone	Asked if she had any more comments for the ACHA
13/Nov/25	Outgoing	Yurwang Gundana Consultancy Cultural Heritage Services	Amber Morgan	Merekai Bell	Email	Thanked them for their detailed recommendations and asked for permission to use their comments and recommendations in the ACHA, as this was a repeated point in their email (RAP input and commentary are culturally protected).
17/Nov/25	Incoming	Barrinang	Rick Slaven	Megan Sheppard Brennand	Email	Following up on his email from 27 October, asking for two hard copies of the report to be mailed and for extra time to review as he had not received them yet. Also asked for his comments to be incorporated into the report and continued to outline concerns and issues with the project.
18/Nov/25	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Email	Apologised for late reply, MSB has been on leave. Two copies of the ACHA will be posted today and Rick will be allowed some extra time to review the report (until beginning of December). Acknowledged that comments would be incorporated into the report
18/Nov/25	Outgoing	Barrinang	Megan Sheppard Brennand	Rick Slaven	Mail	Posted two copies of the ACHA report to Rick as requested.

B.2 List of identified Aboriginal stakeholders in the region

- Barraby Cultural Services
- Bill Allen
- [redacted]
- Dhuuluu-Yala Aboriginal Corporation
- Didge Ngunawal Aboriginal Corporation
- Gilay Consultants
- Gundungurra Aboriginal Heritage Association Inc
- Gundungurra Tribal Council Aboriginal Corporation
- Gunjeewong Cultural Heritage Aboriginal Corporation
- Hawkesbury- Nepean Catchment Management Authority
- Kamilaroi Yankuntjatjara Working Group
- Konanggo Aboriginal Cultural Heritage Services
- Koori Digs Services
- North East Wiradjuri Corporation
- Mingaan Aboriginal Corporation
- Mooka
- Murra Bidgee Mullangari Aboriginal Corporation
- Thomas Dahlstrom
- Timothy Stubbs
- Trevor Robinson
- Warrabinga Native Title Claimants Aboriginal Corporation
- Wiradjuri Council of Elders
- Wiradjuri Interim Working Party
- Yurrandaali
- Yurwang Gundana Consultancy Cultural Heritage Services
- Dharramalin

- Girragirra Murun Aboriginal Corporation
- Wingarra Wilay Aboriginal Corporation
- Bathurst Local Aboriginal Land Council
- Muragadi Heritage Indigenous Corporation
- Yulay
- Gallanggabang Aboriginal Corporation
- Booral Maliyan
- Wellington Valley Wiradjuri Aboriginal Corporation
- Murrabidgee mullangari

B.3 List of registered Aboriginal parties following notification

- Didge Ngunawal Aboriginal Corporation
- Kamilaroi Yankuntjatjara Working Group
- Wingarra Wilay Aboriginal Corporation
- North East Wiradjuri Corporation
- [redacted]
- Konanggo Aboriginal Cultural Heritage Services
- Girragirra Murun Aboriginal Corporation
- Gallanggabang Aboriginal Corporation
- Booral Maliyan
- Wellington Valley Wiradjuri Aboriginal Corporation
- Warrabinga Native Title Claimants Aboriginal Corporation
- Yurwang Gundana Consultancy Cultural Heritage Services
- Thomas Dahlstrom Cultural Heritage Consult
- Tim Stubbs
- Yulay Cultural service's
- Murrabidgee Mullangari
- Mingaan Aboriginal Corporation
- Bathurst LALC
- Wiradyuri Traditional Owners Central West Aboriginal Corporation
- Bill Allen
- Barrinang Aboriginal Corporation

B.4 Stage 1 – Notification and registration

This section contains the following documents:

- Government agency requests and responses.
- Public media notifications.
- Aboriginal party invitation to register for the project.
- Aboriginal party registrations of interest.
- Notification to Heritage NSW (formerly DPIE) and the Tharawal LALC of registered parties.

B.5 Stages 2 and 3 – presentation of information and gathering cultural information

This section contains the following documents:

- Project information and assessment methodology letter.

This appendix has been redacted from this version of the ACHA due to culturally sensitive information. Please contact EMM if a copy is required.

B.6 AFG meetings

This appendix has been redacted from this version of the ACHA due to culturally sensitive information. Please contact EMM if a copy is required.

B.7 Stage 4 – Aboriginal feedback of the draft ACHA

- RAP feedback from draft ACHA report.

This appendix has been redacted from this version of the ACHA due to culturally sensitive information. Please contact EMM if a copy is required.

B.8 Additional consultation

This appendix has been redacted from this version of the ACHA due to culturally sensitive information. Please contact EMM if a copy is required.

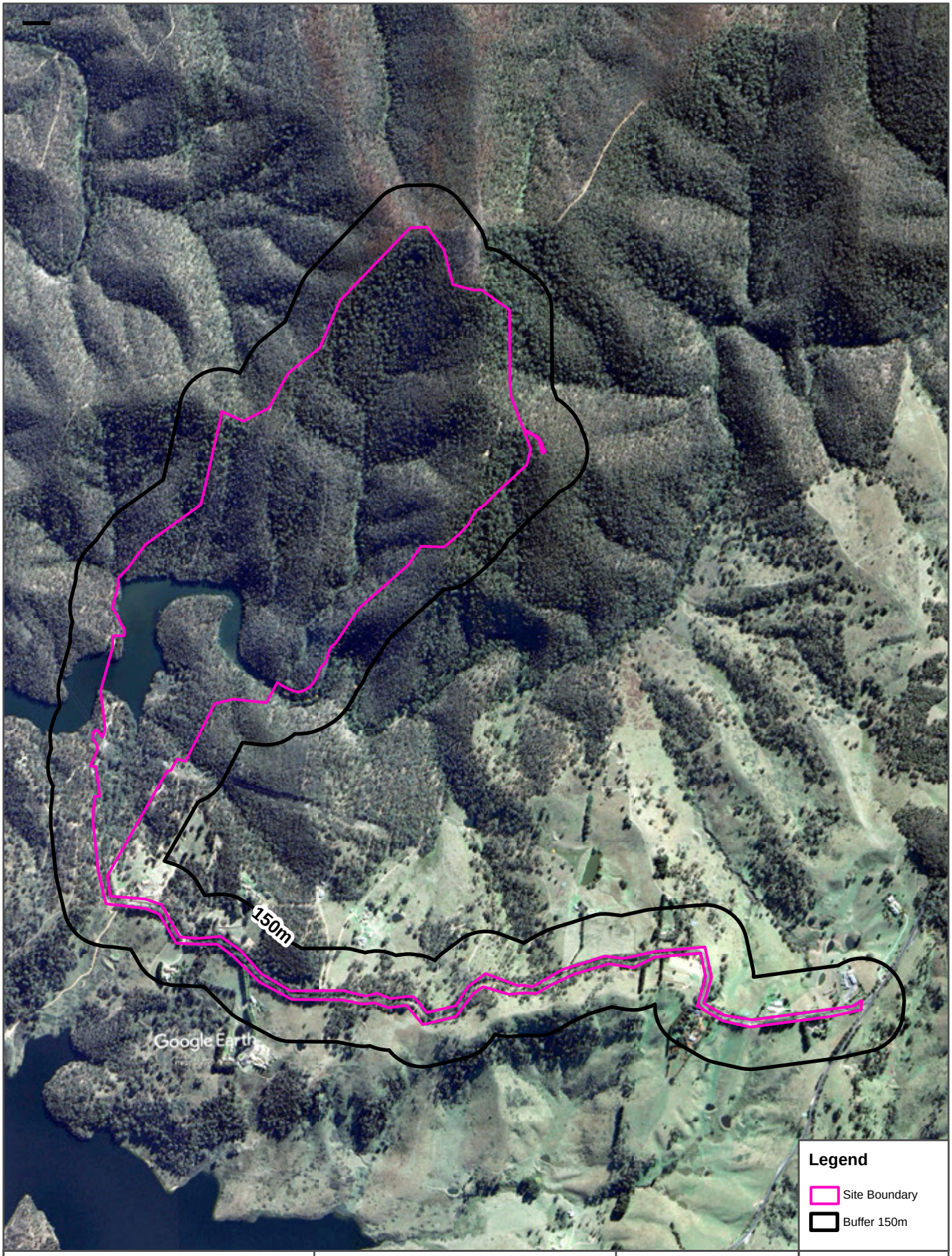
Annexure C
Historical aerials

EMM
creating opportunities

C.1 Project area

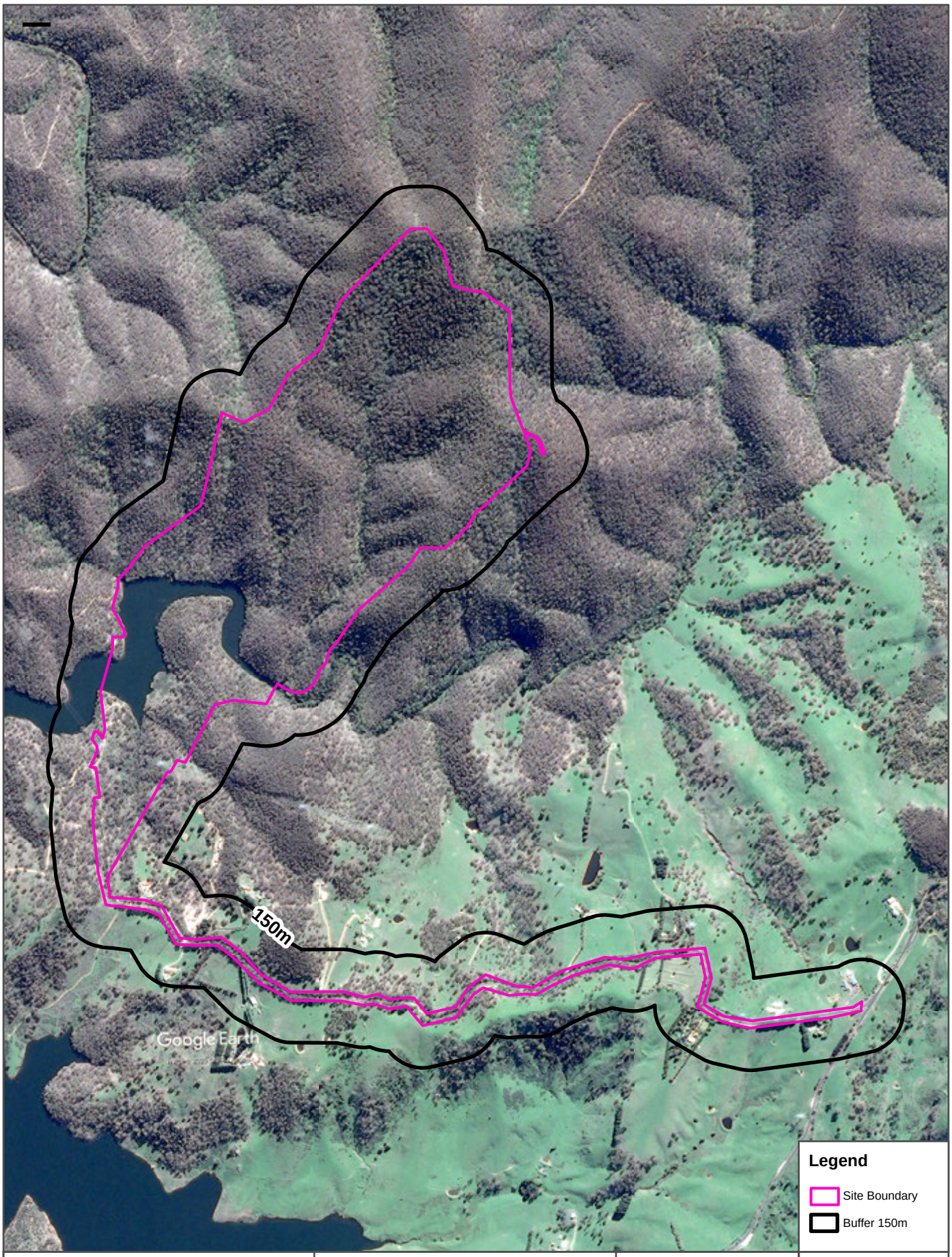
Aerial Imagery 2025

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



Aerial Imagery 2014

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



Scale:
0 220 440 660 880
Meters

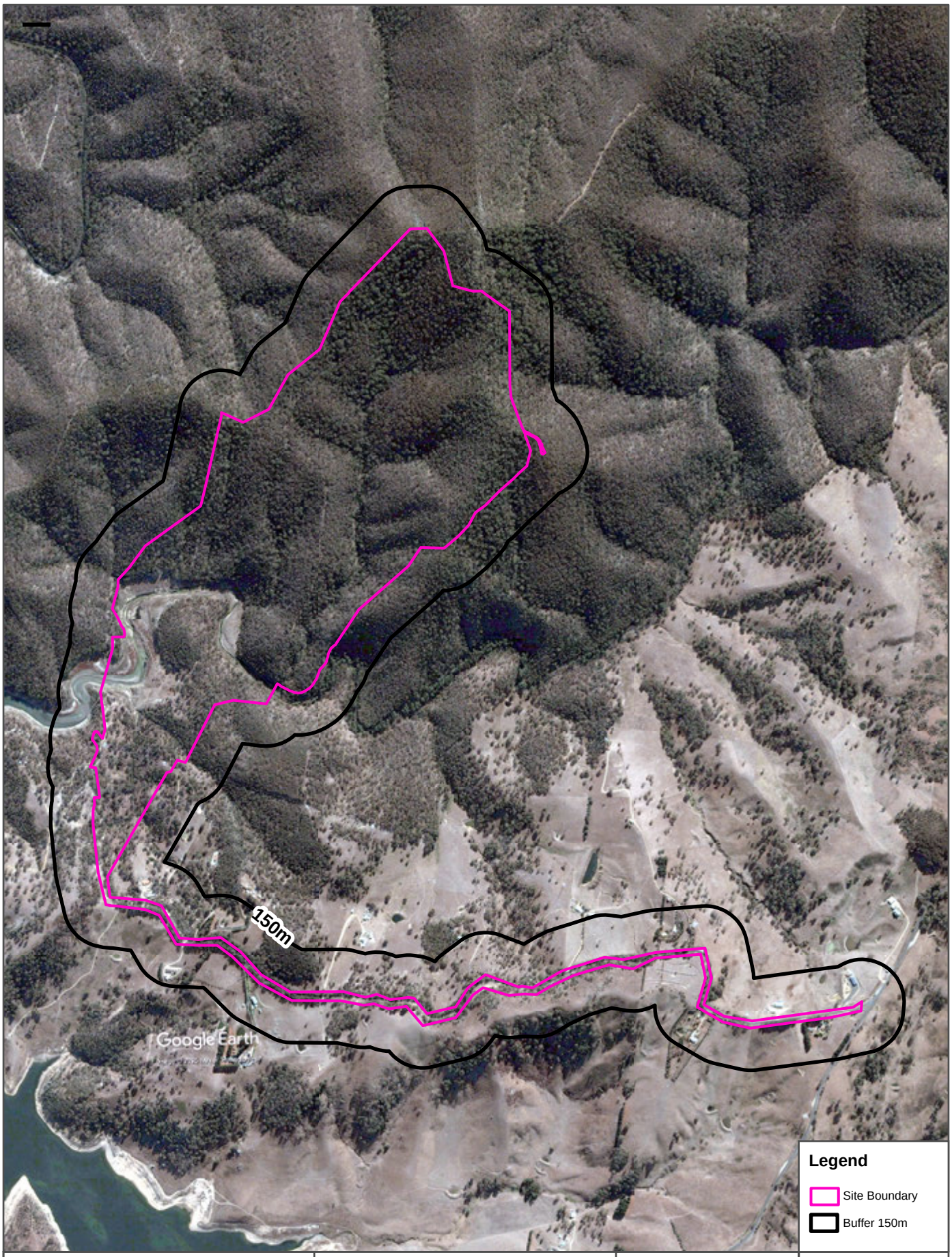
Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 03 July 2025

Aerial Imagery 2006

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



Scale:
0 220 440 660 880
Meters

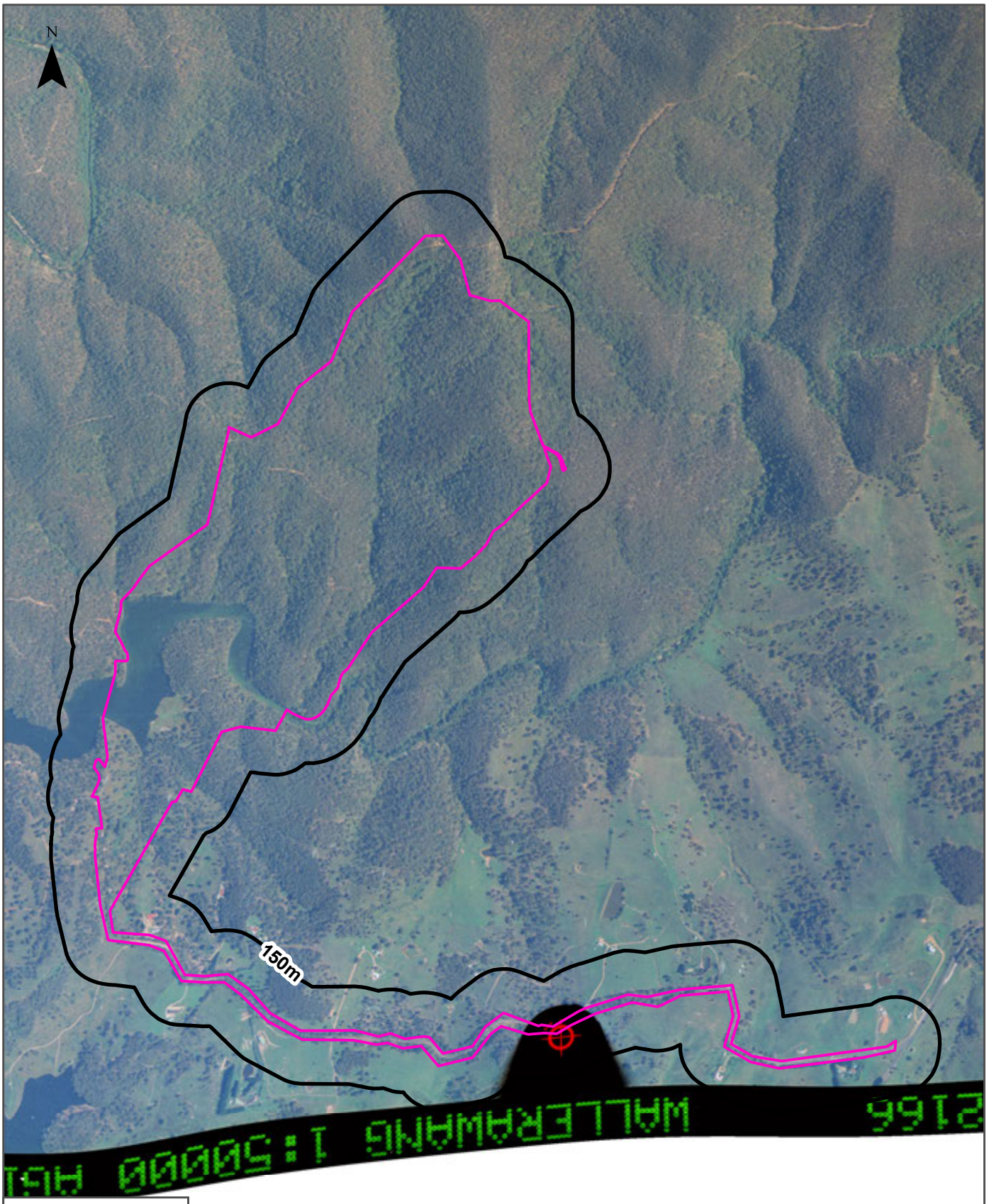
Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 03 July 2025

Aerial Imagery 1999

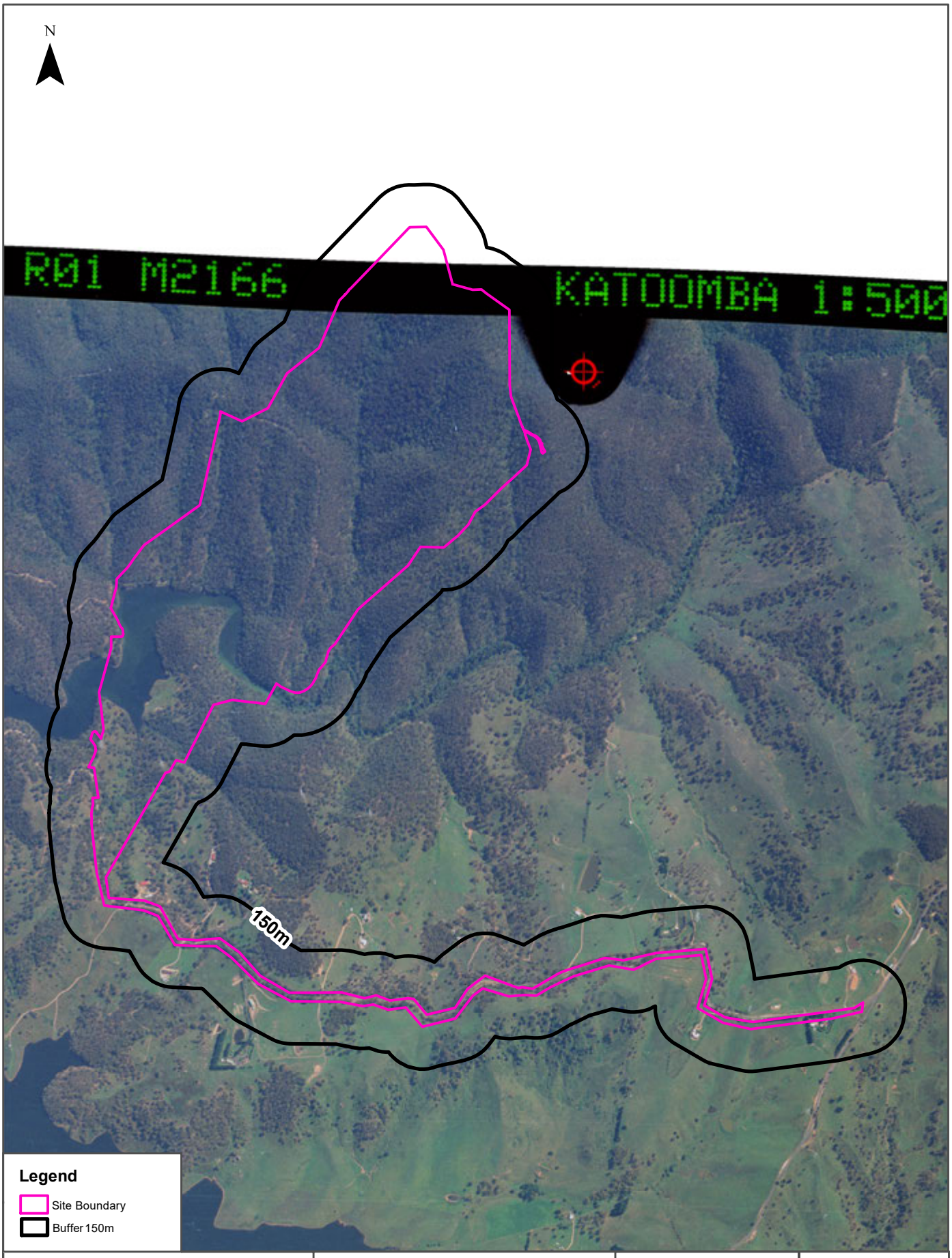
South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 03 July 2025
0 210 420 630 840 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1999

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



Aerial Imagery 1991

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



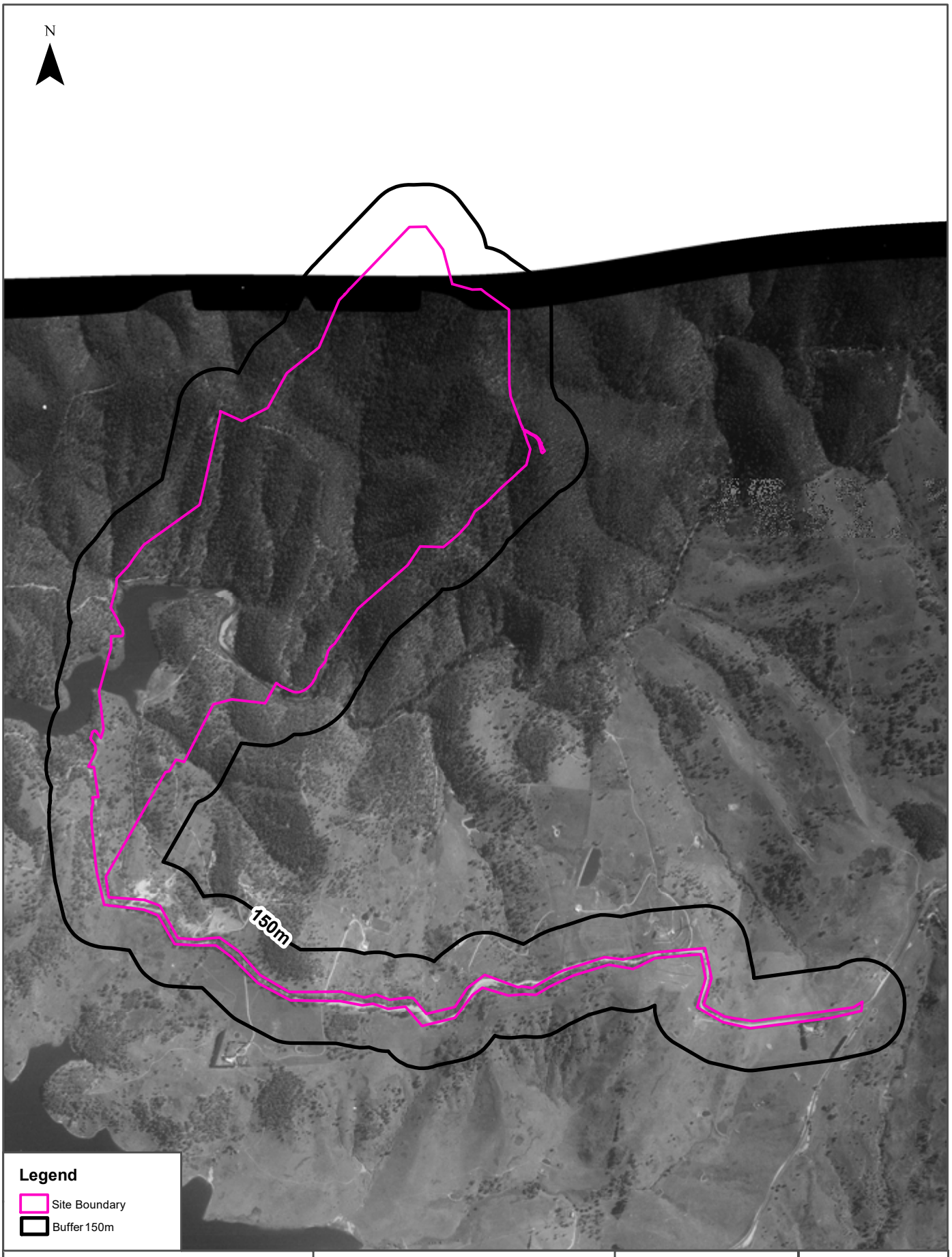
Legend

- Site Boundary
- Buffer 150m

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 03 July 2025
0 210 420 630 840 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

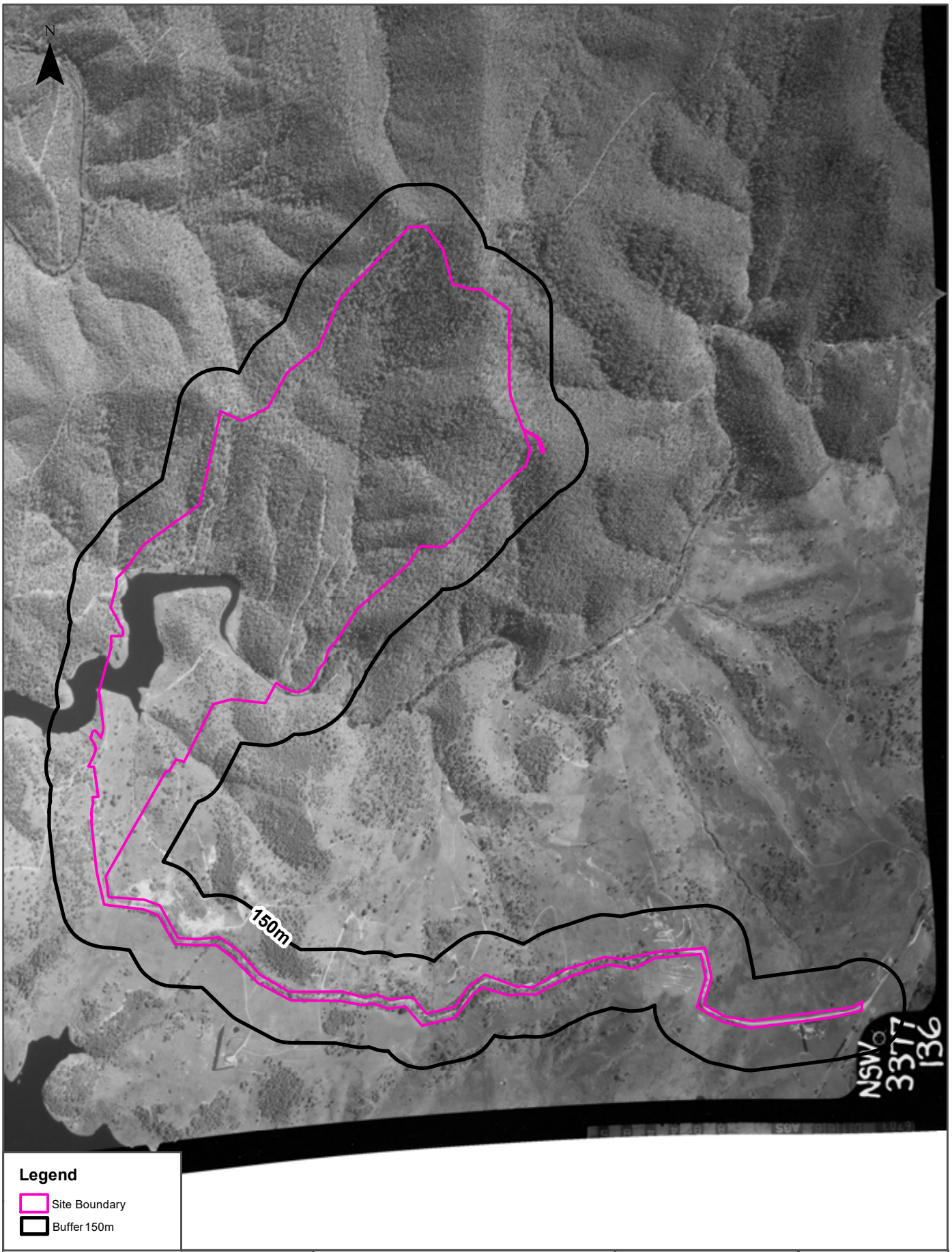
Aerial Imagery 1989

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



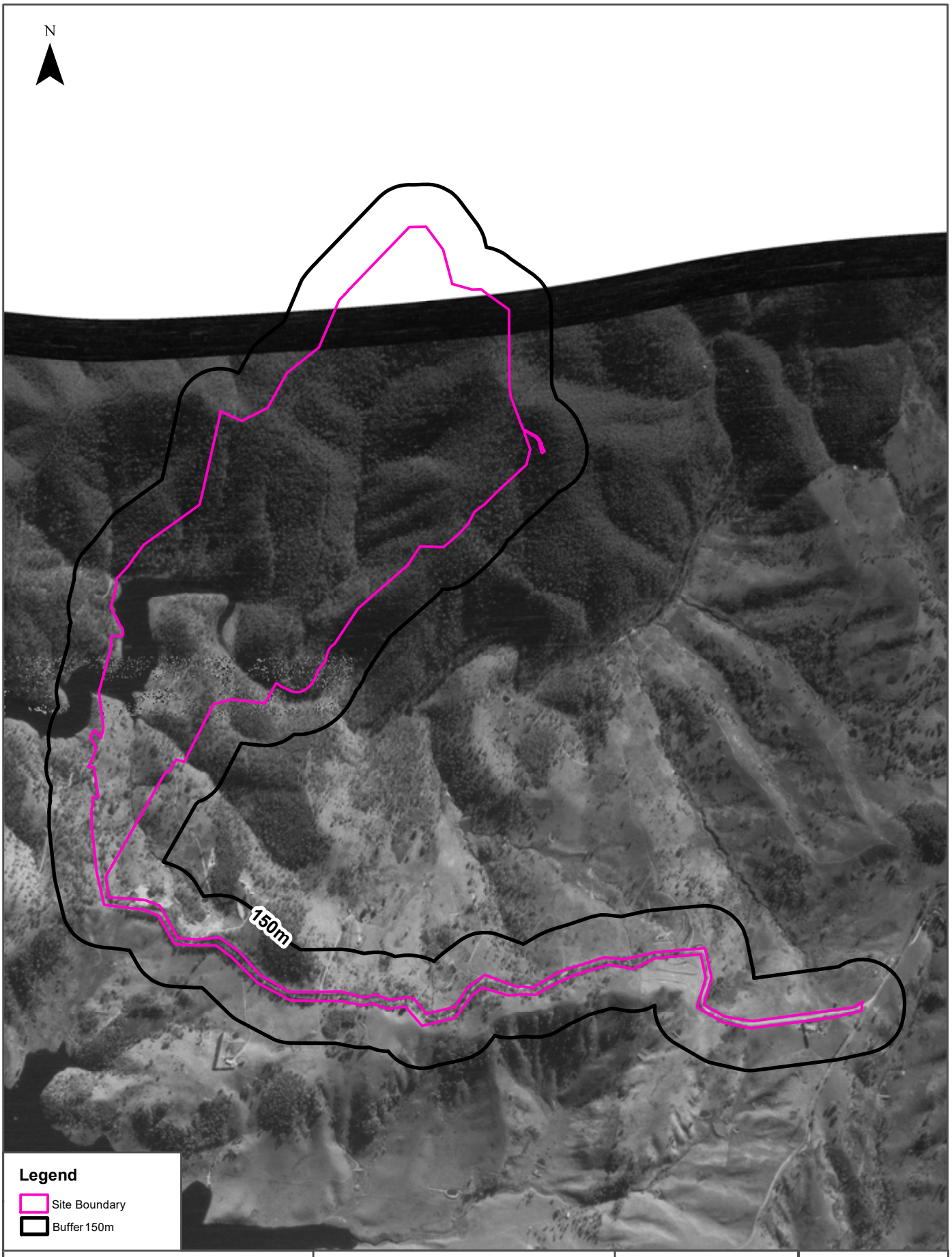
Aerial Imagery 1984

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



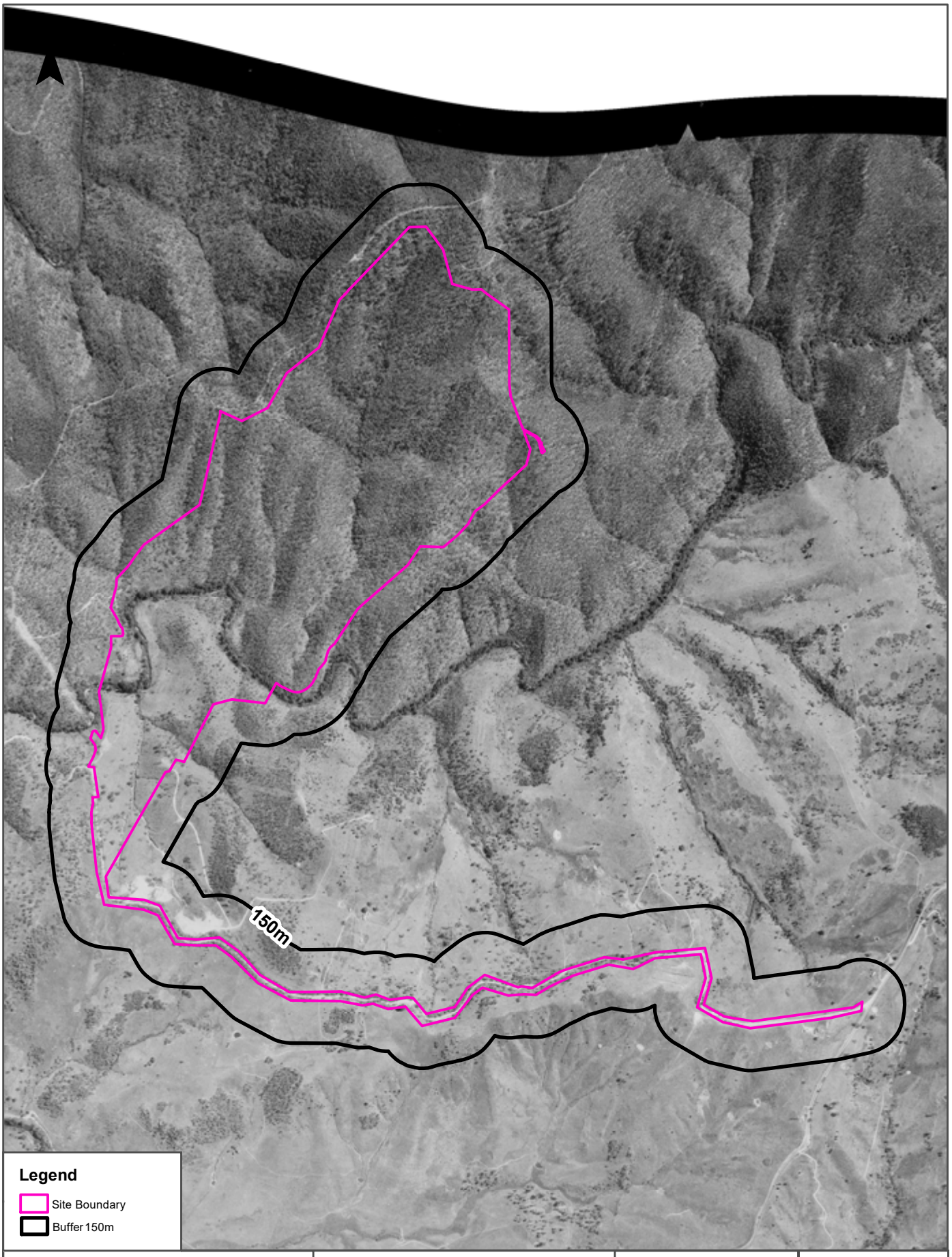
Aerial Imagery 1984

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



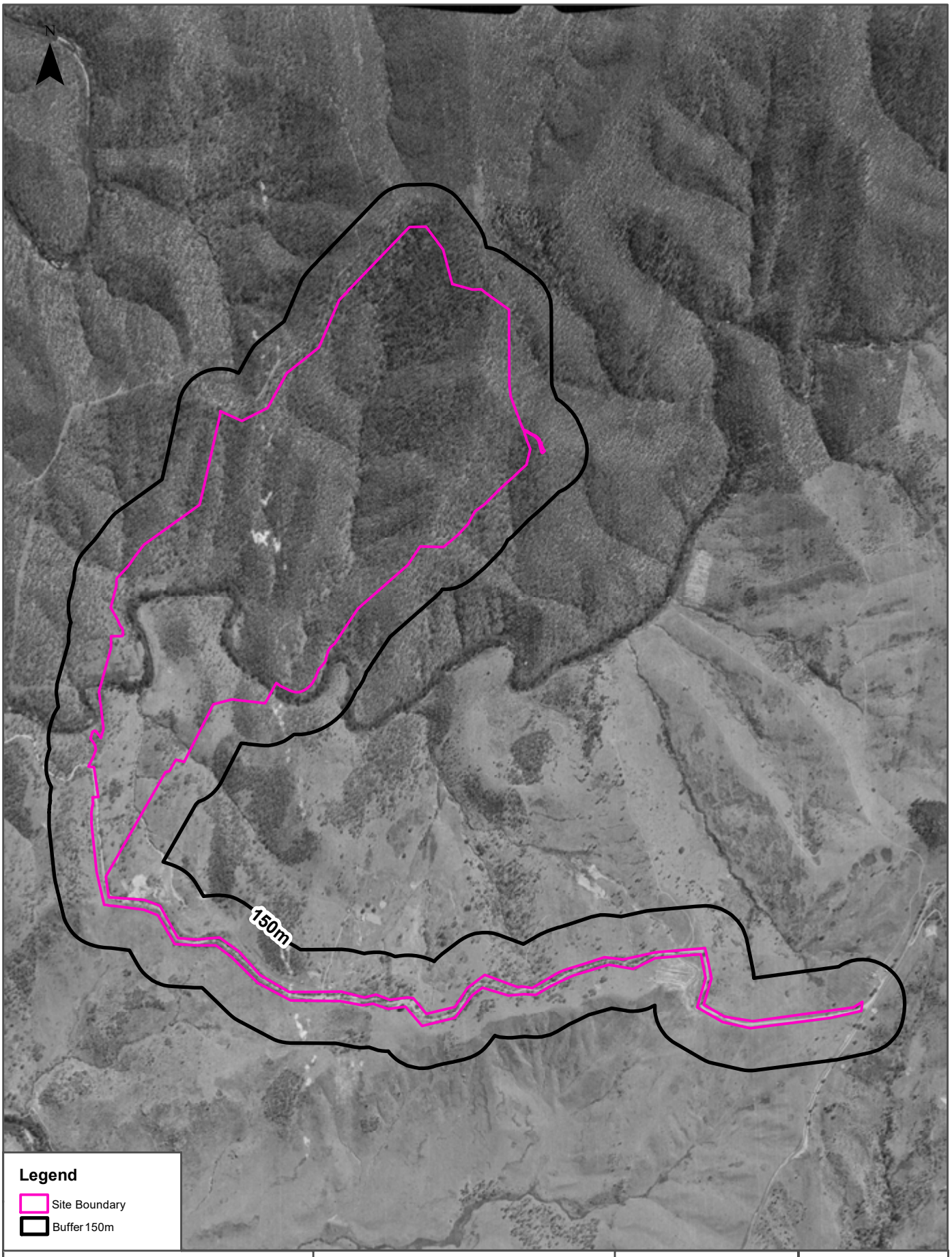
Aerial Imagery 1975

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



Aerial Imagery 1966

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



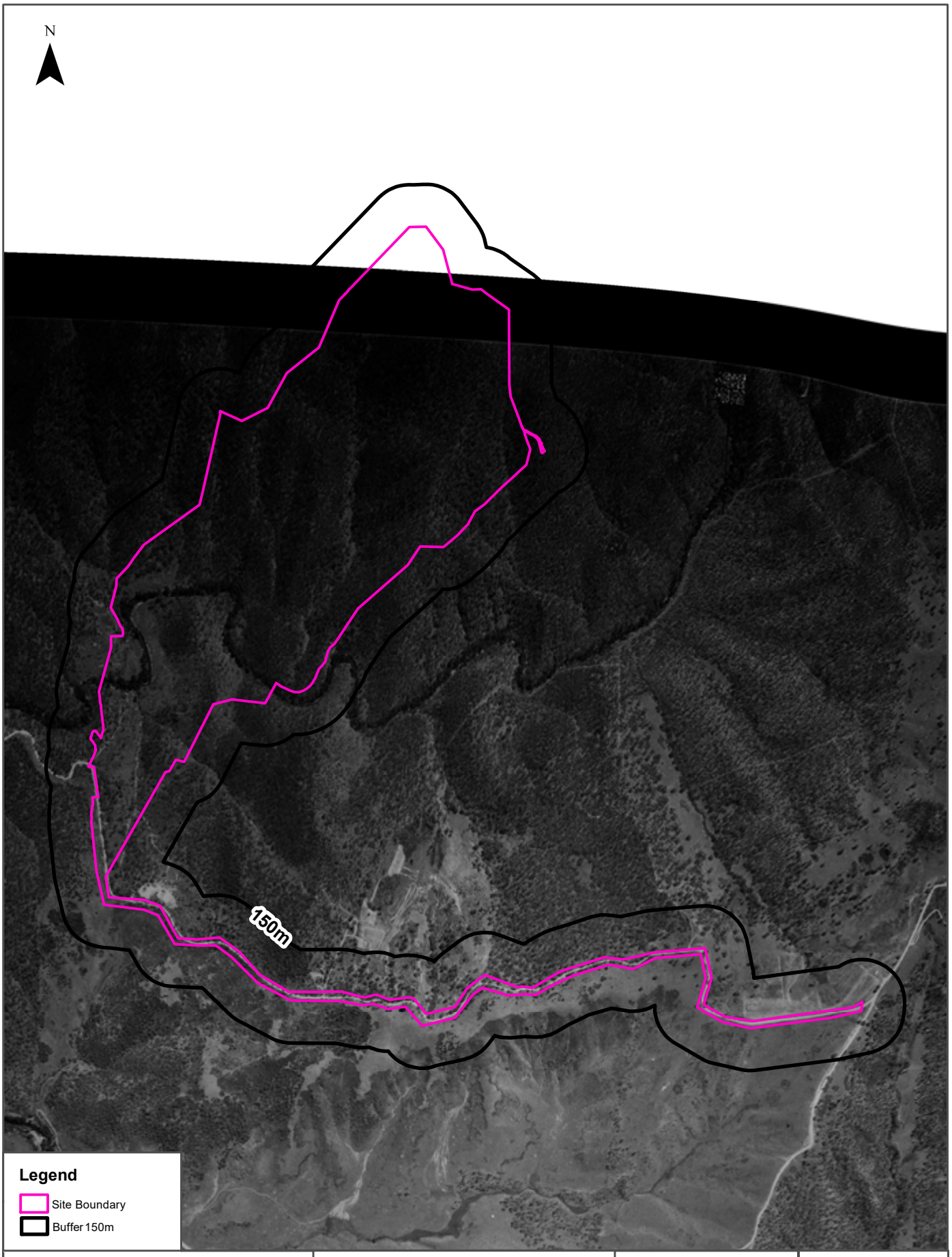
Aerial Imagery 1954

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



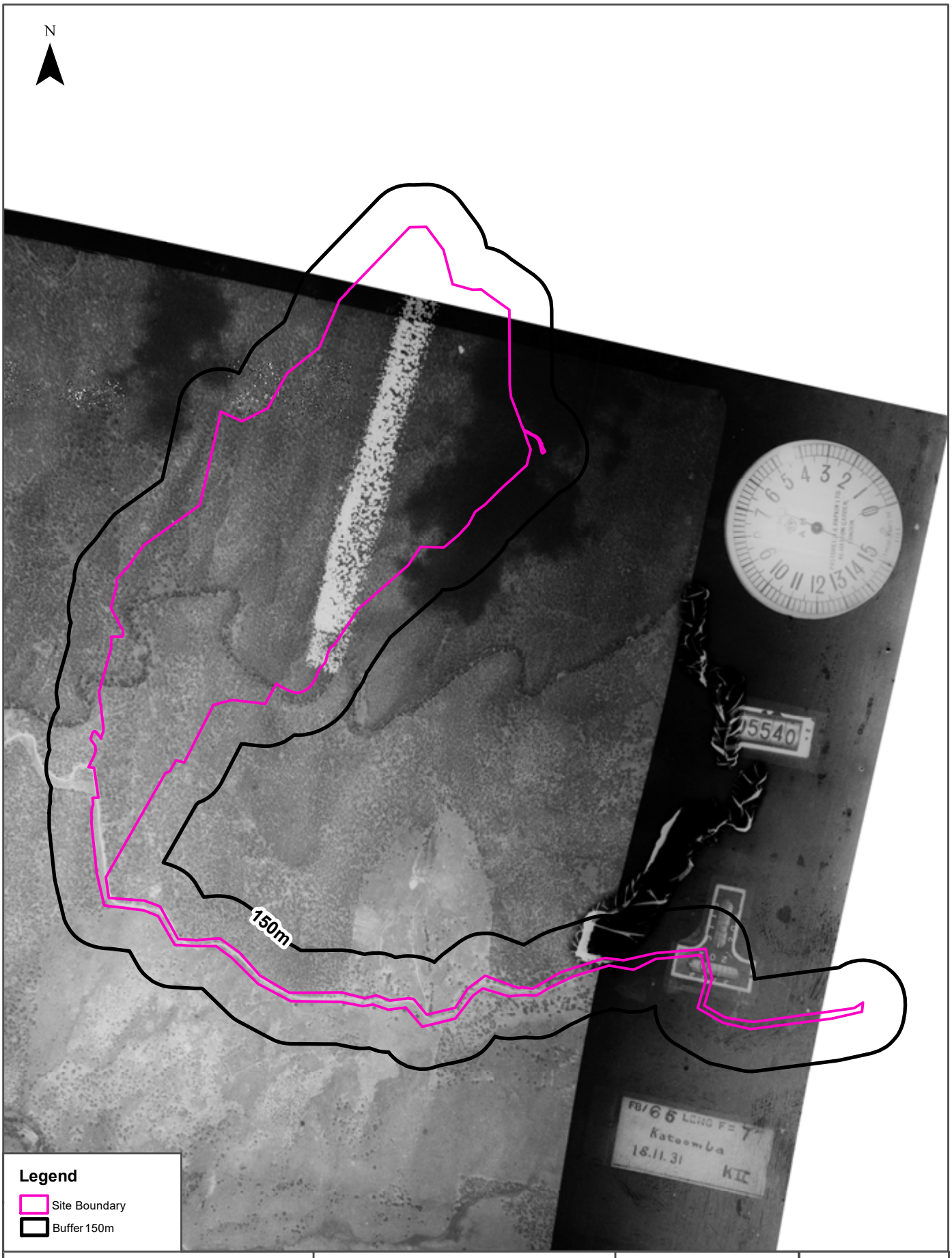
Aerial Imagery 1954

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



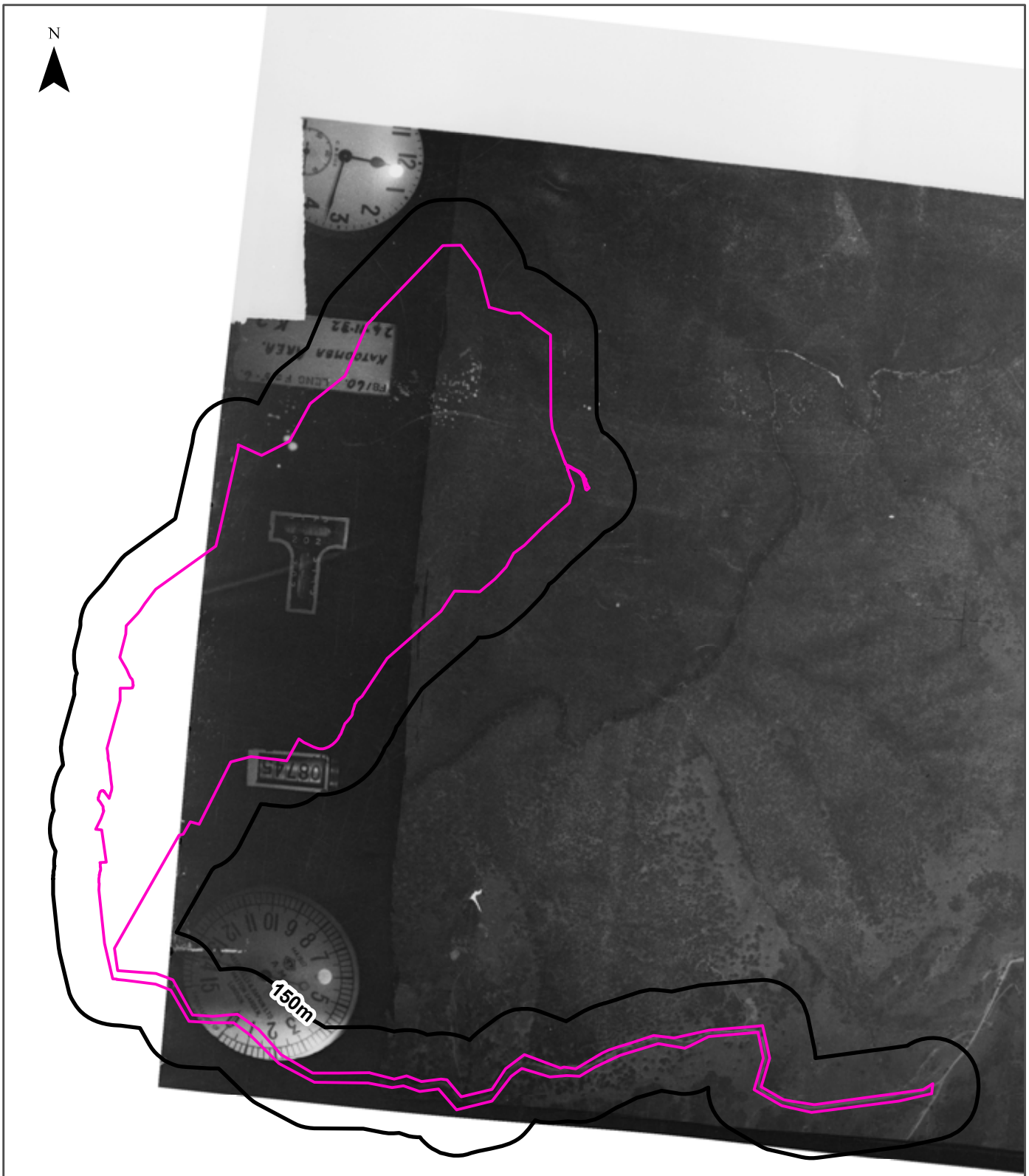
Aerial Imagery 1931

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



Aerial Imagery 1931

South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



Legend

Site Boundary

Buffer 150m

Scale: 0 210 420 630 840 Meters	Data Source Aerial Imagery: © 2025 Geoscience Australia	Coordinate System: GDA 1994 MGA Zone 56	Date: 03 July 2025

Aerial Imagery 1931

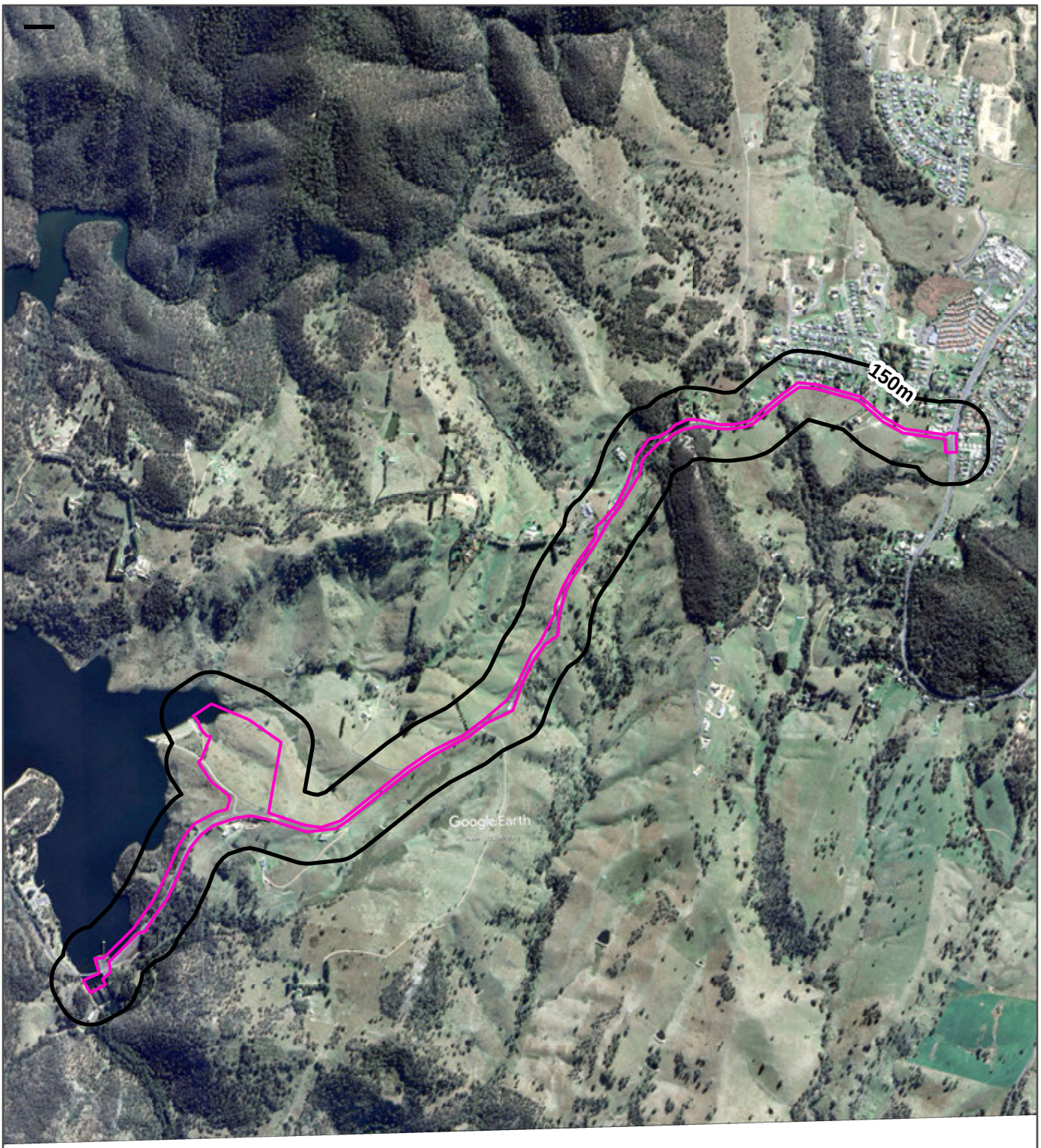
South Bowenfels, Lake Lyell, NSW 2790 (Part 1 of 2)



C.2 Accommodation area option and Magpie Hollow Road

Aerial Imagery 2025

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



Legend

- Site Boundary
- Buffer 150m

Scale:
0 310 620 930 1,240
Meters

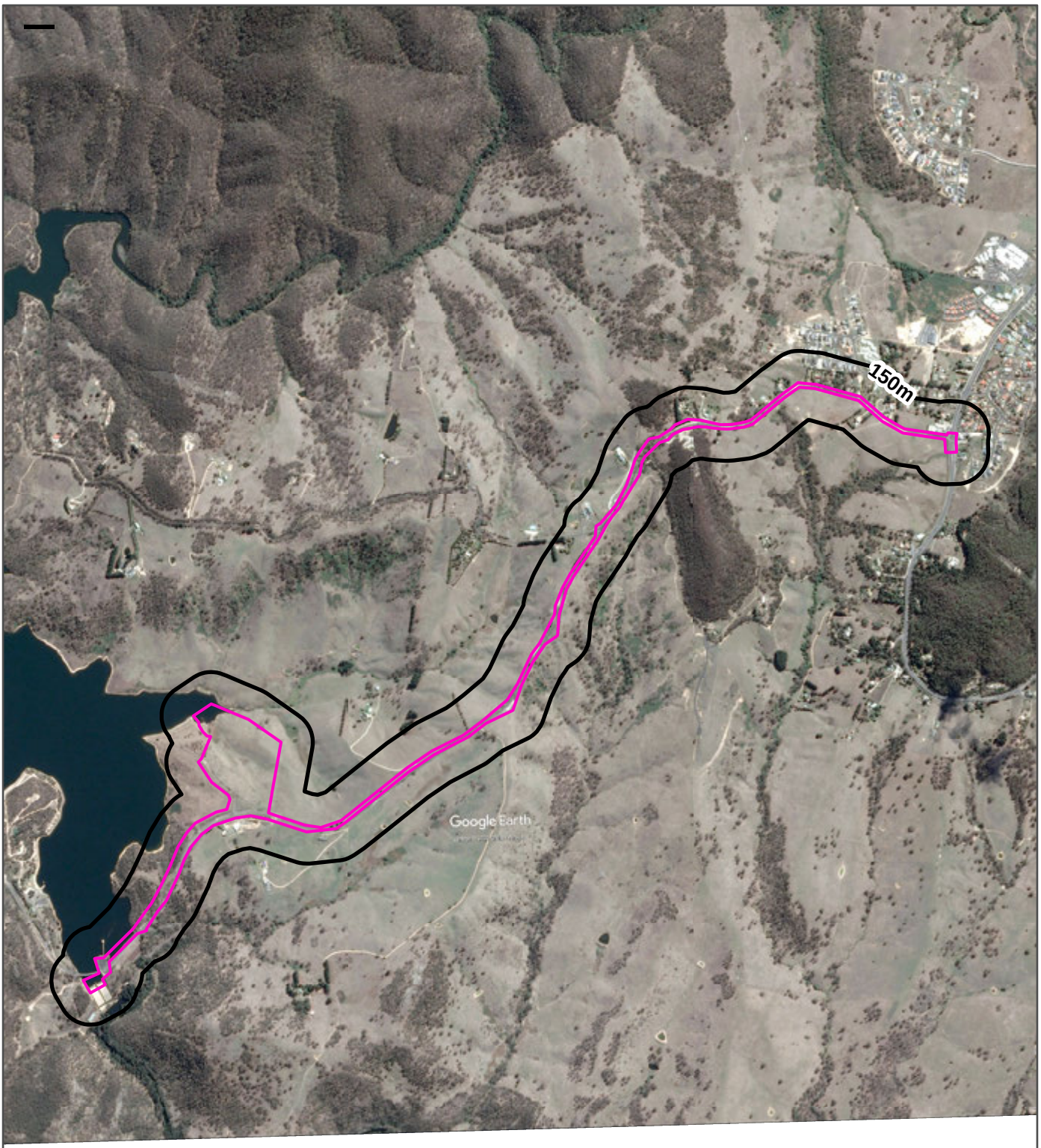
Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 03 July 2025

Aerial Imagery 2014

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



Legend

- Site Boundary
- Buffer 150m

Scale:
0 310 620 930 1,240
Meters

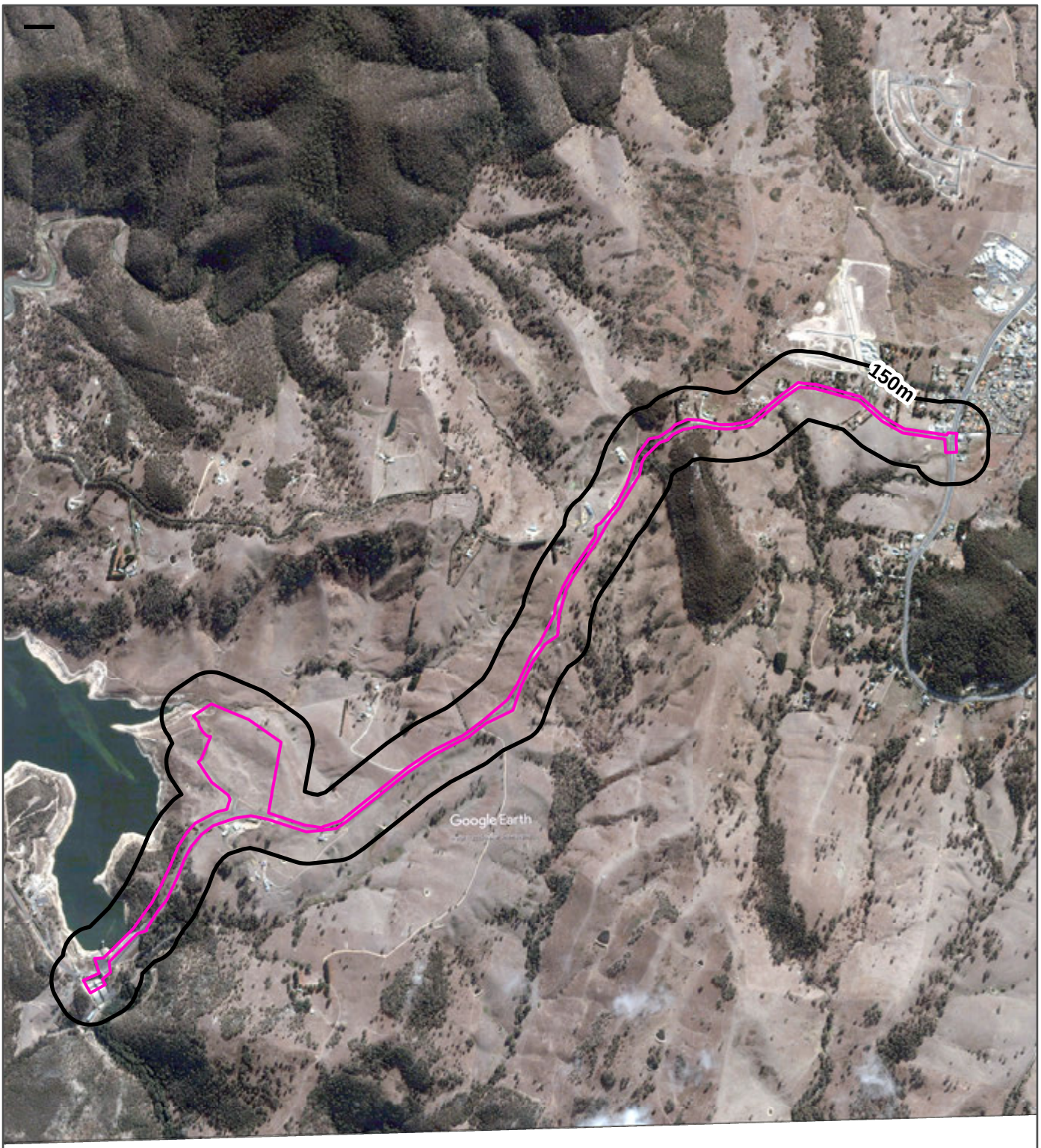
Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 03 July 2025

Aerial Imagery 2006

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



Legend

- Site Boundary
- Buffer 150m

Scale:

0 310 620 930 1,240
Meters

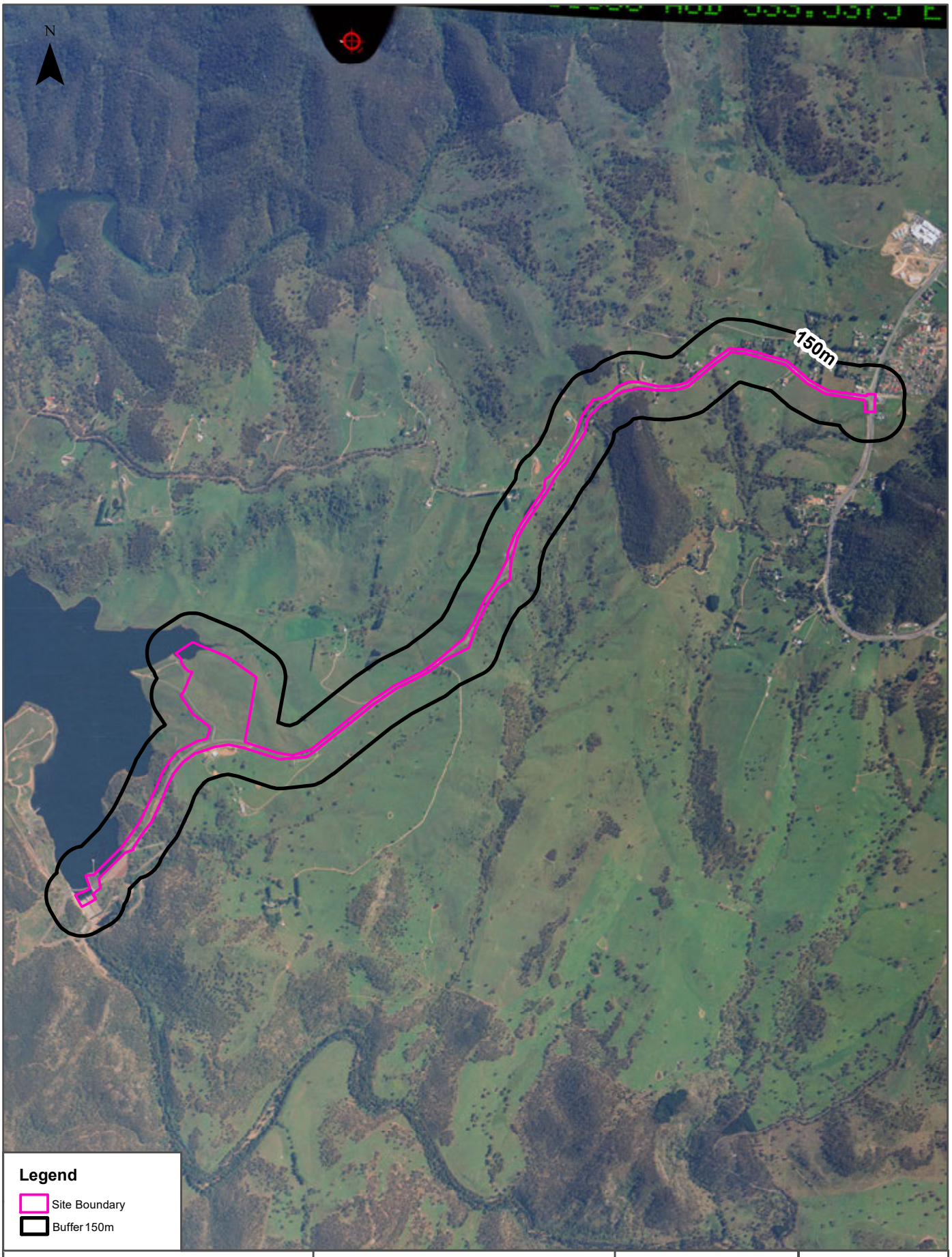
Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 03 July 2025

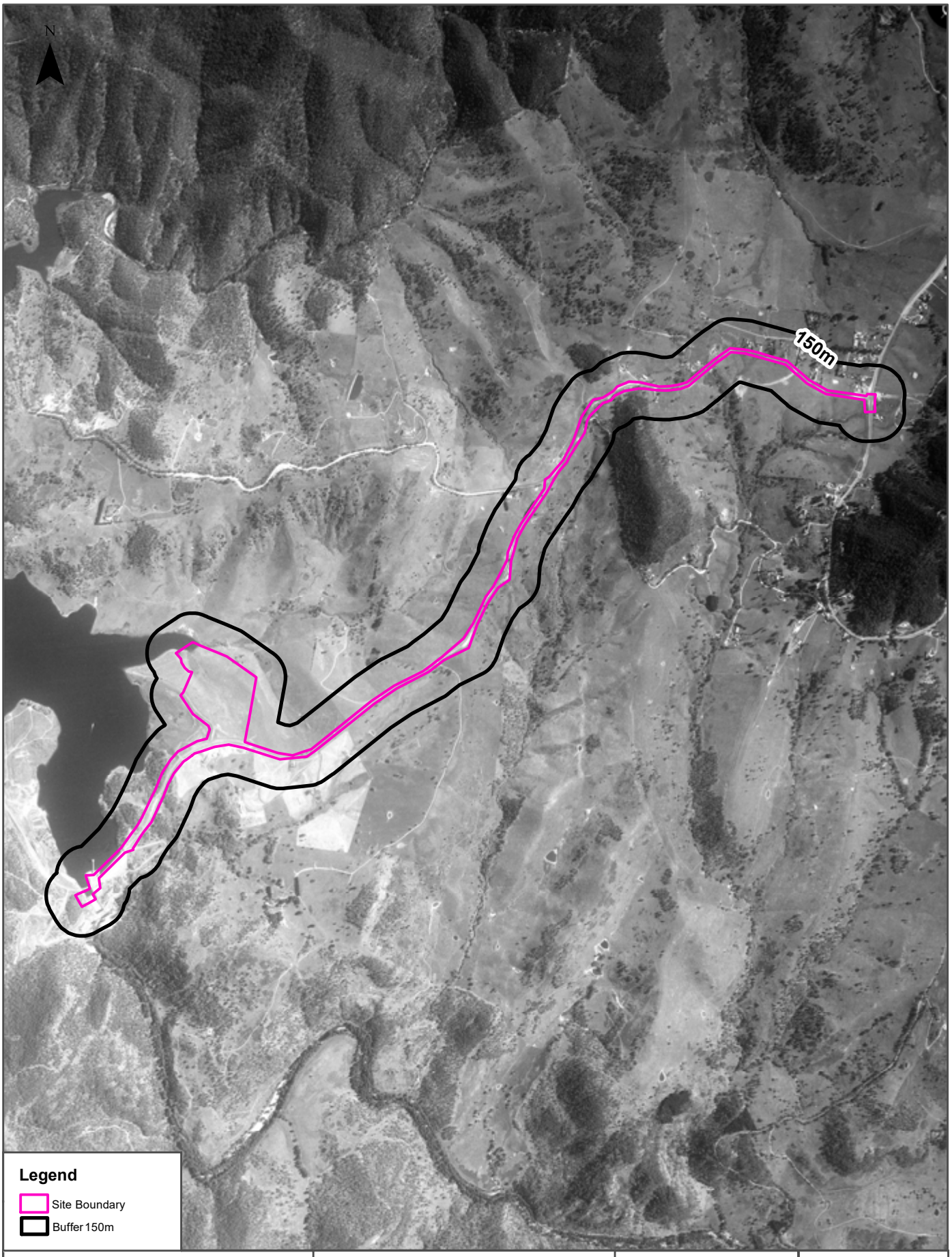
Aerial Imagery 1999

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



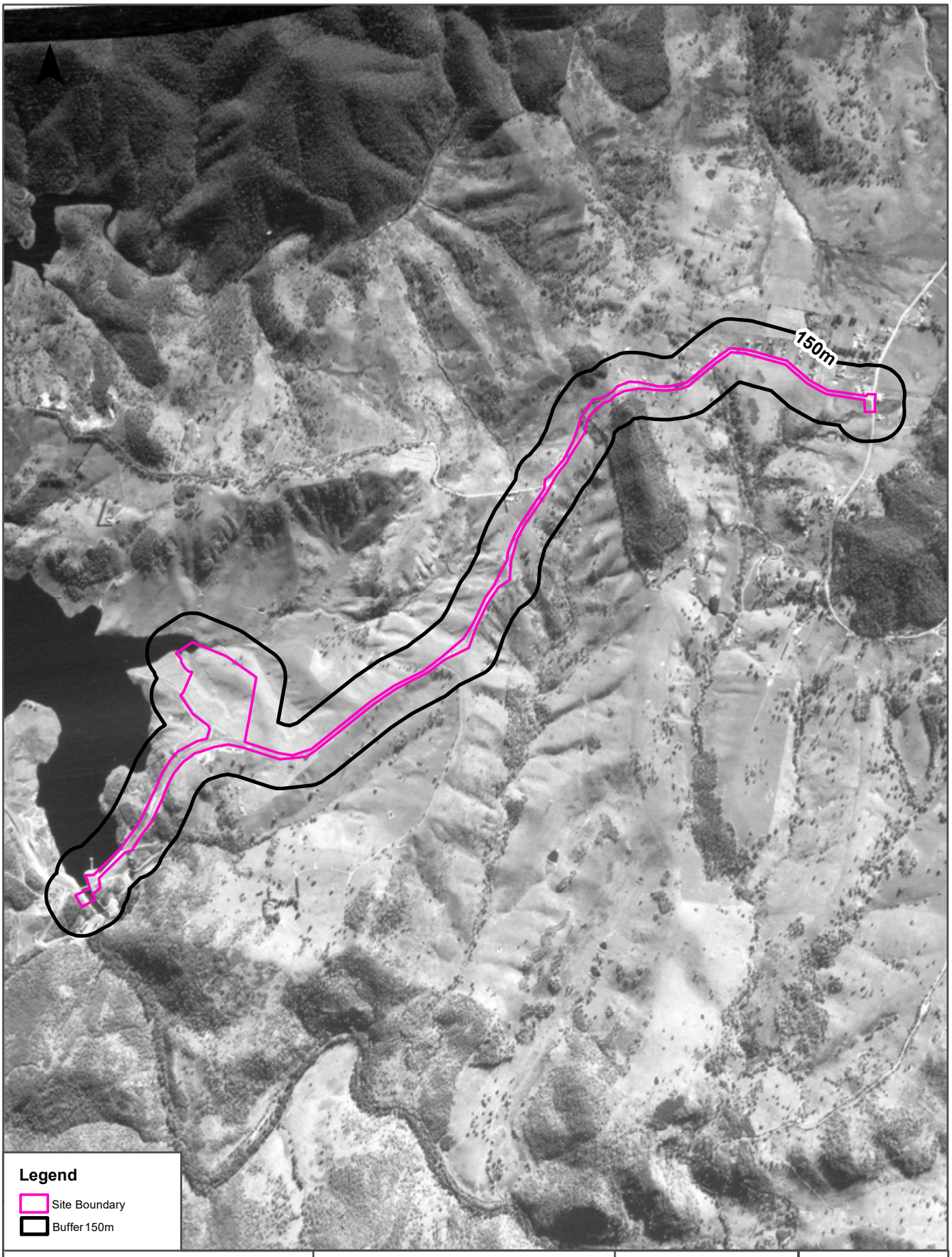
Aerial Imagery 1989

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



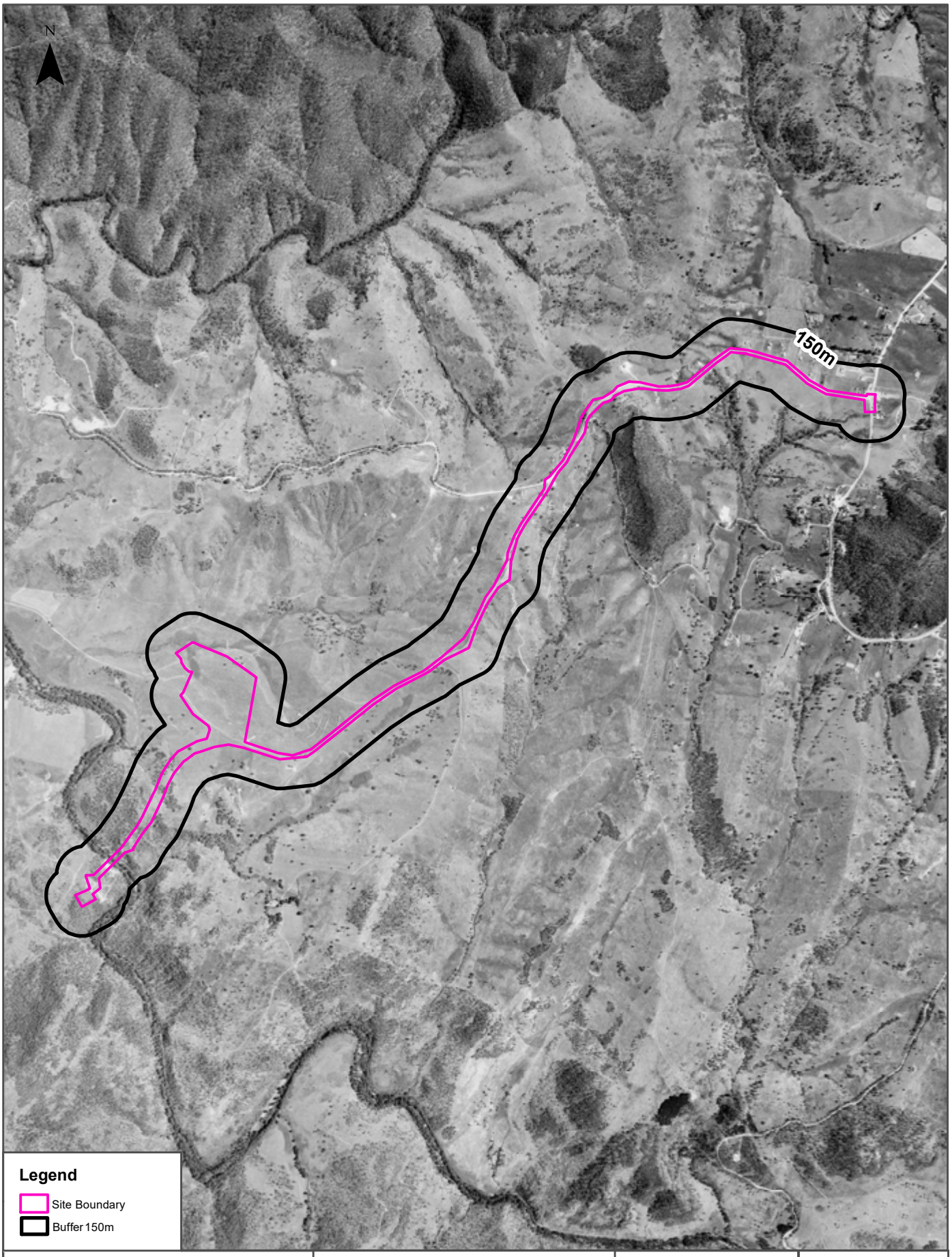
Aerial Imagery 1984

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



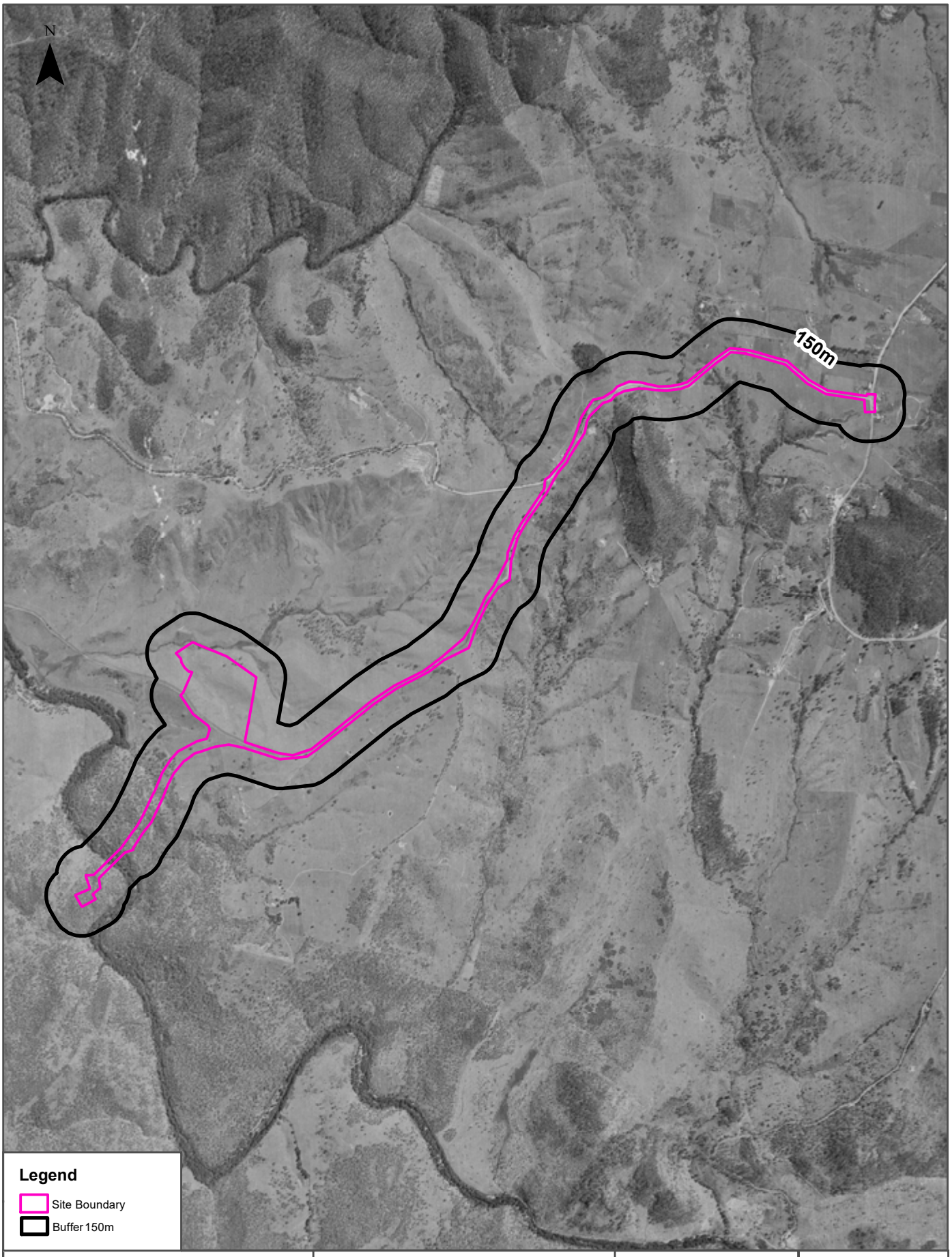
Aerial Imagery 1975

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



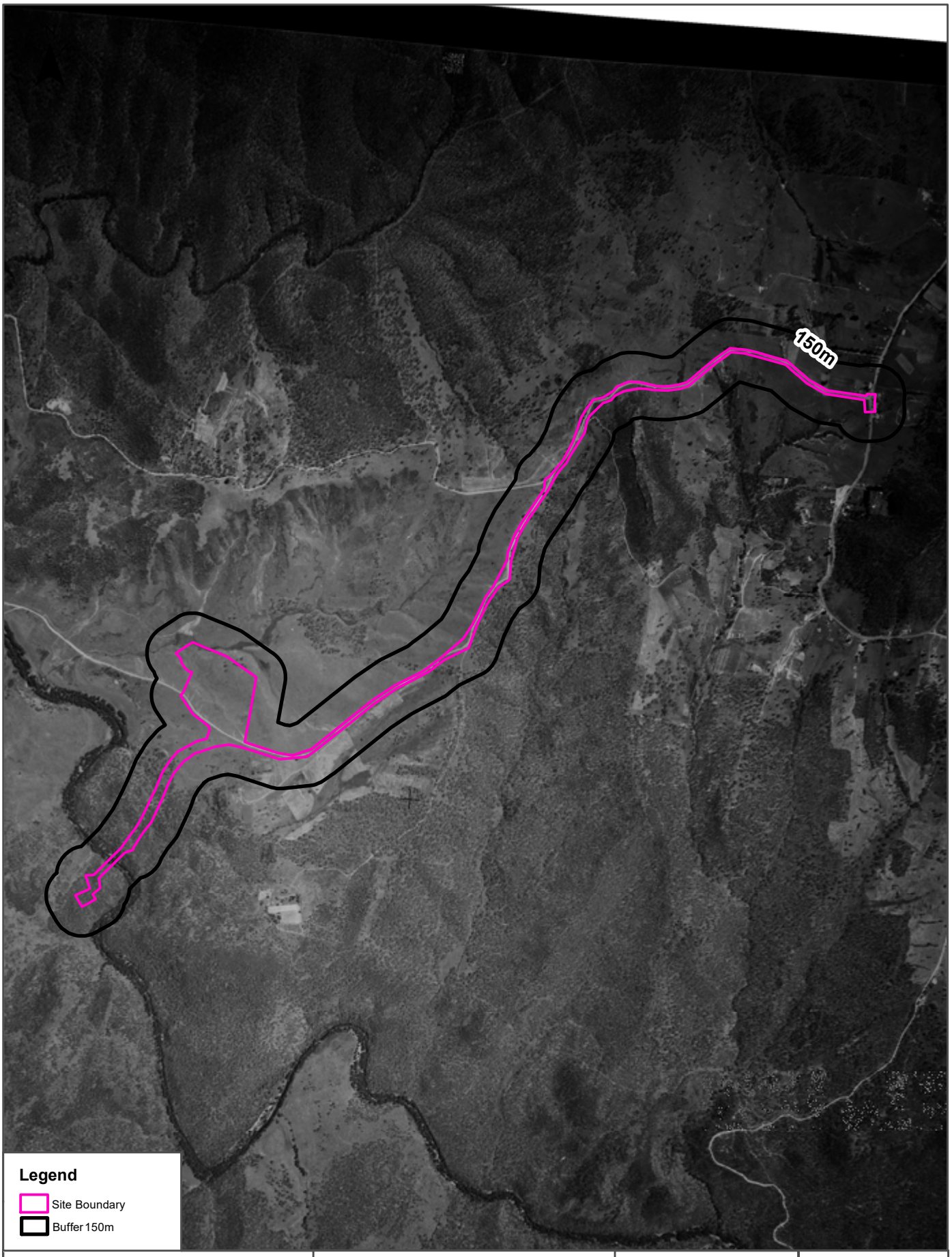
Aerial Imagery 1966

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



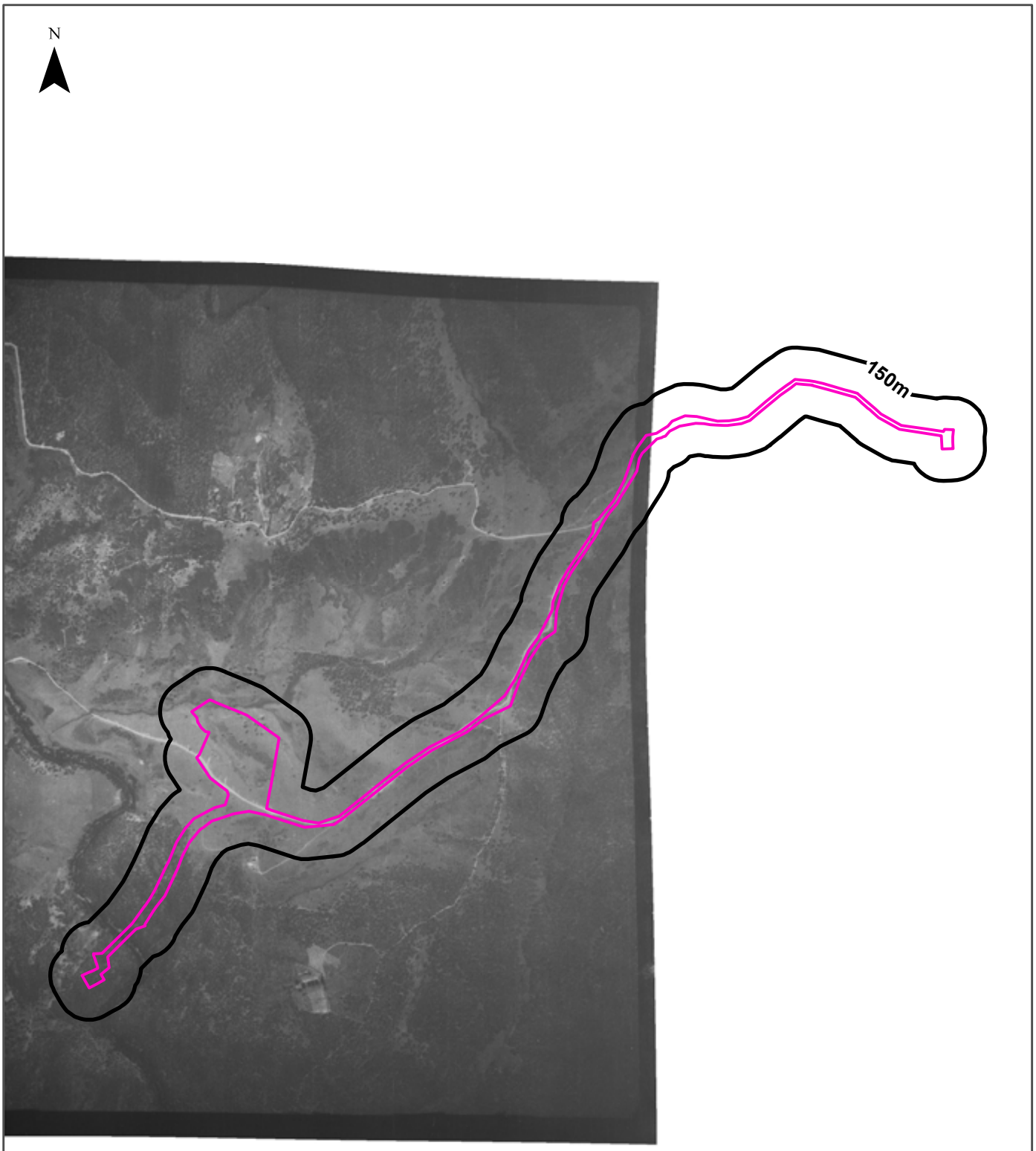
Aerial Imagery 1954

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



Aerial Imagery 1931

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



Legend

Site Boundary

Buffer 150m

Scale:

0 310 620 930 1,240

Meters

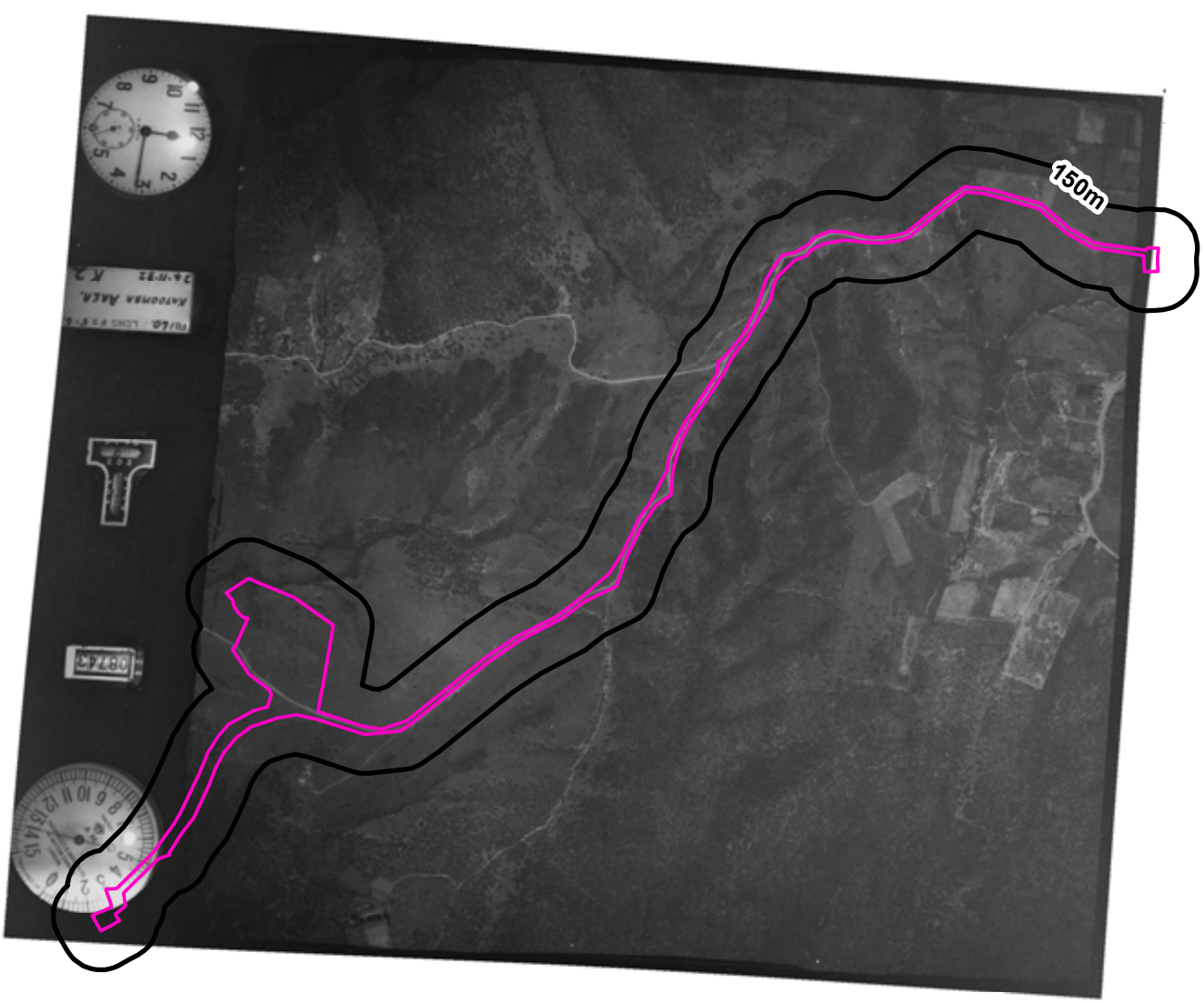
Data Source Aerial Imagery: © 2025 Geoscience Australia

Coordinate System:
GDA 1994 MGA Zone 56

Date: 03 July 2025

Aerial Imagery 1931

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



Legend

- Site Boundary
- Buffer 150m

Scale: 0 310 620 930 1,240 Meters

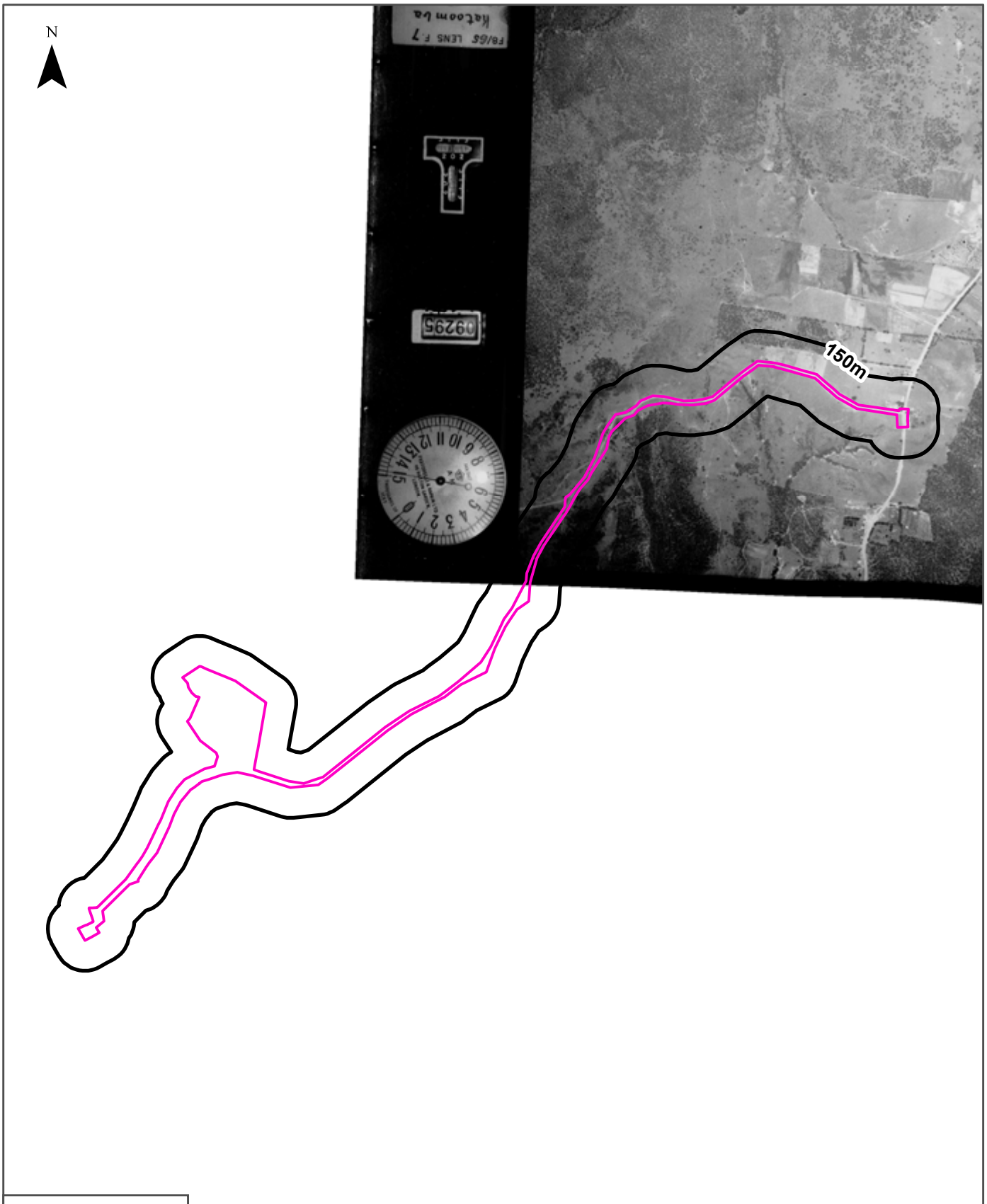
Data Source Aerial Imagery: © 2025 Geoscience Australia

Coordinate System: GDA 1994 MGA Zone 56

Date: 03 July 2025

Aerial Imagery 1931

South Bowenfels, Lake Lyell, NSW 2790 (Part 2 of 2)



C.3 Pottery Estate (Town camp) accommodation area

Aerial Imagery 2025

Pottery Estate, Lake Lyell, NSW 2790



Scale:
0 50 100 150 200
Meters

Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 July 2025

Aerial Imagery 2014

Pottery Estate, Lake Lyell, NSW 2790



Scale:
0 50 100 150 200
Meters

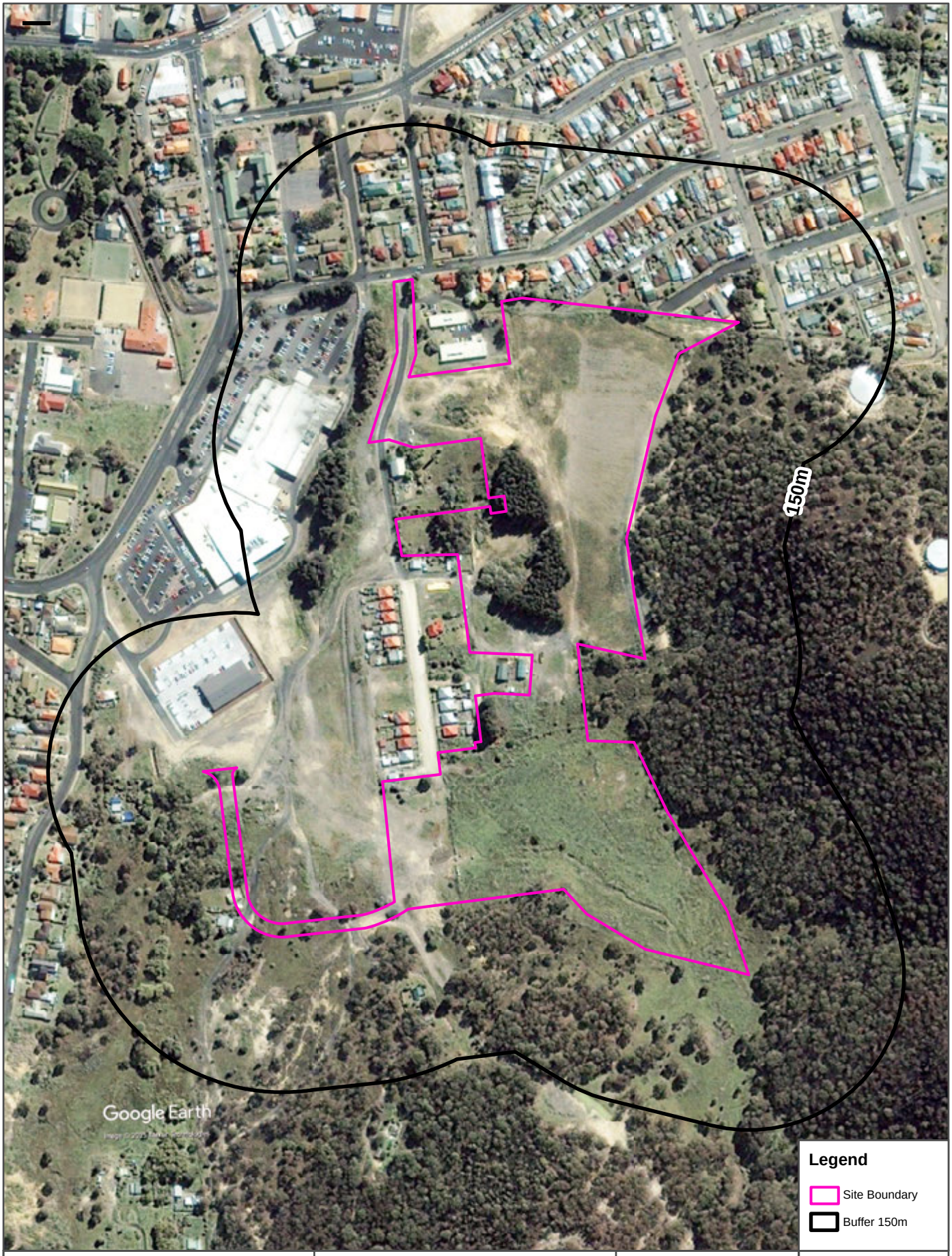
Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 July 2025

Aerial Imagery 2002

Pottery Estate, Lake Lyell, NSW 2790



Scale:
0 50 100 150 200
Meters

Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 July 2025

Aerial Imagery 2025

Pottery Estate, Lake Lyell, NSW 2790



Scale:
0 50 100 150 200
Meters

Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 July 2025

Aerial Imagery 2014

Pottery Estate, Lake Lyell, NSW 2790



Scale:
0 50 100 150 200
Meters

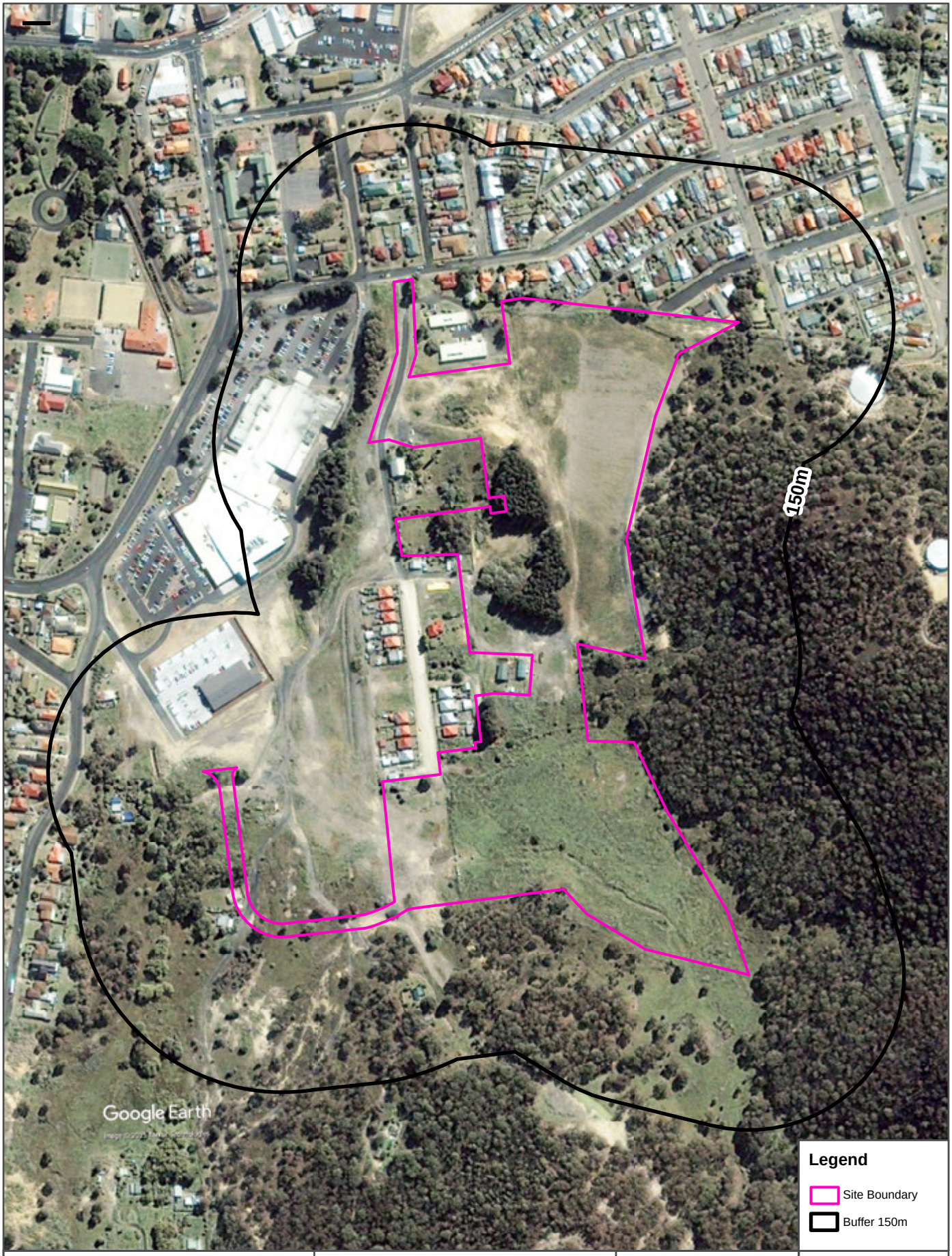
Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 July 2025

Aerial Imagery 2002

Pottery Estate, Lake Lyell, NSW 2790



Scale:
0 50 100 150 200
Meters

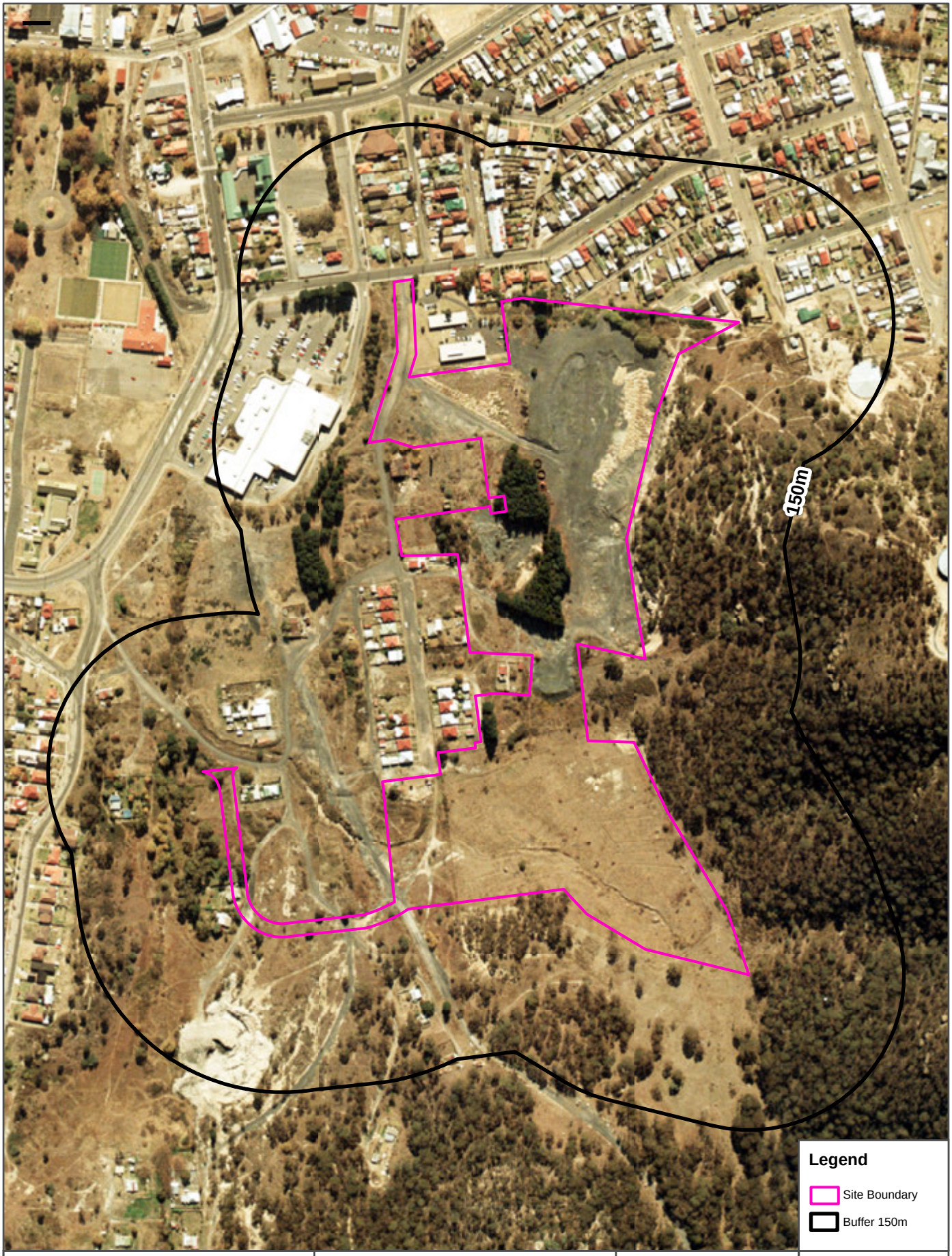
Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 July 2025

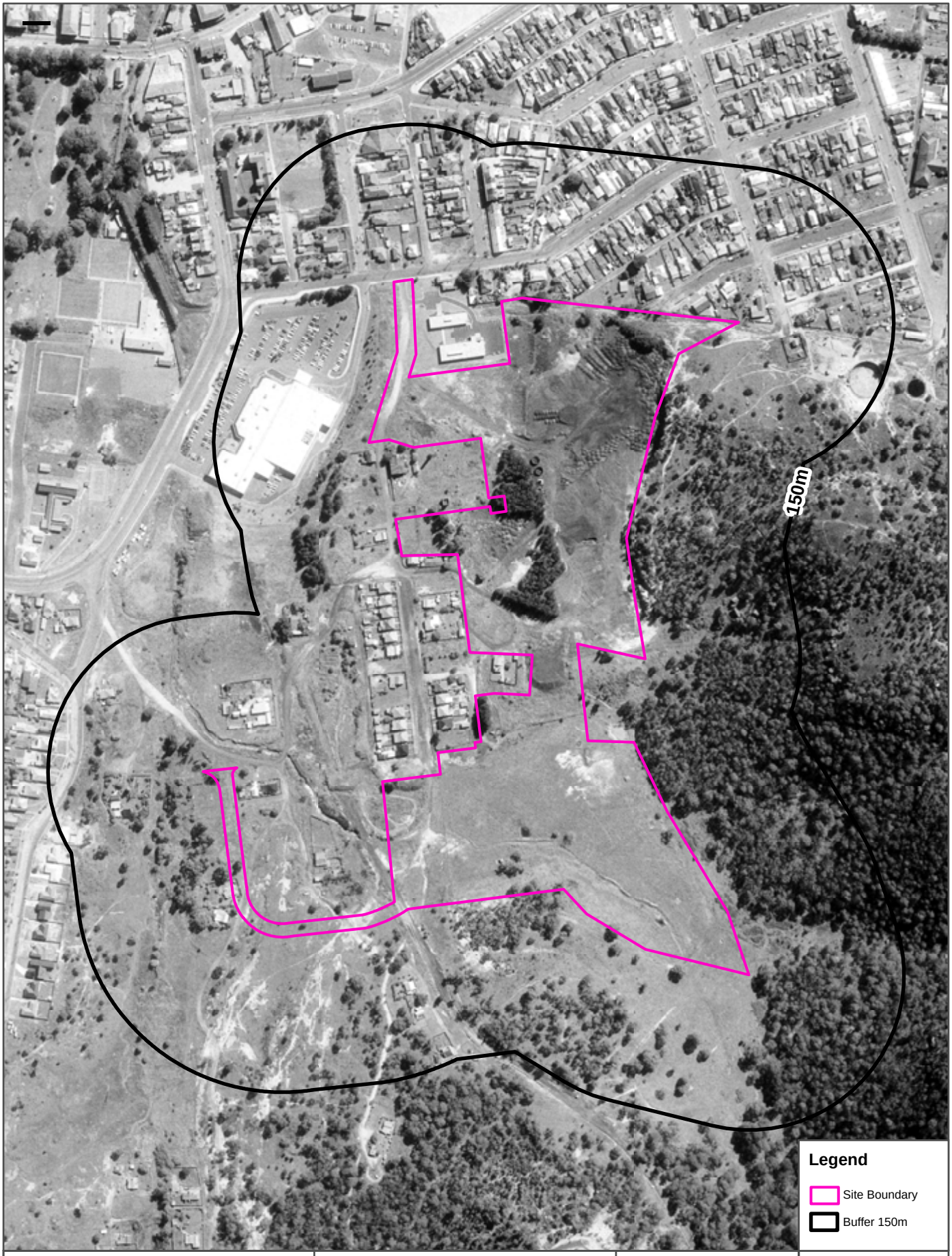
Aerial Imagery 1991

Pottery Estate, Lake Lyell, NSW 2790



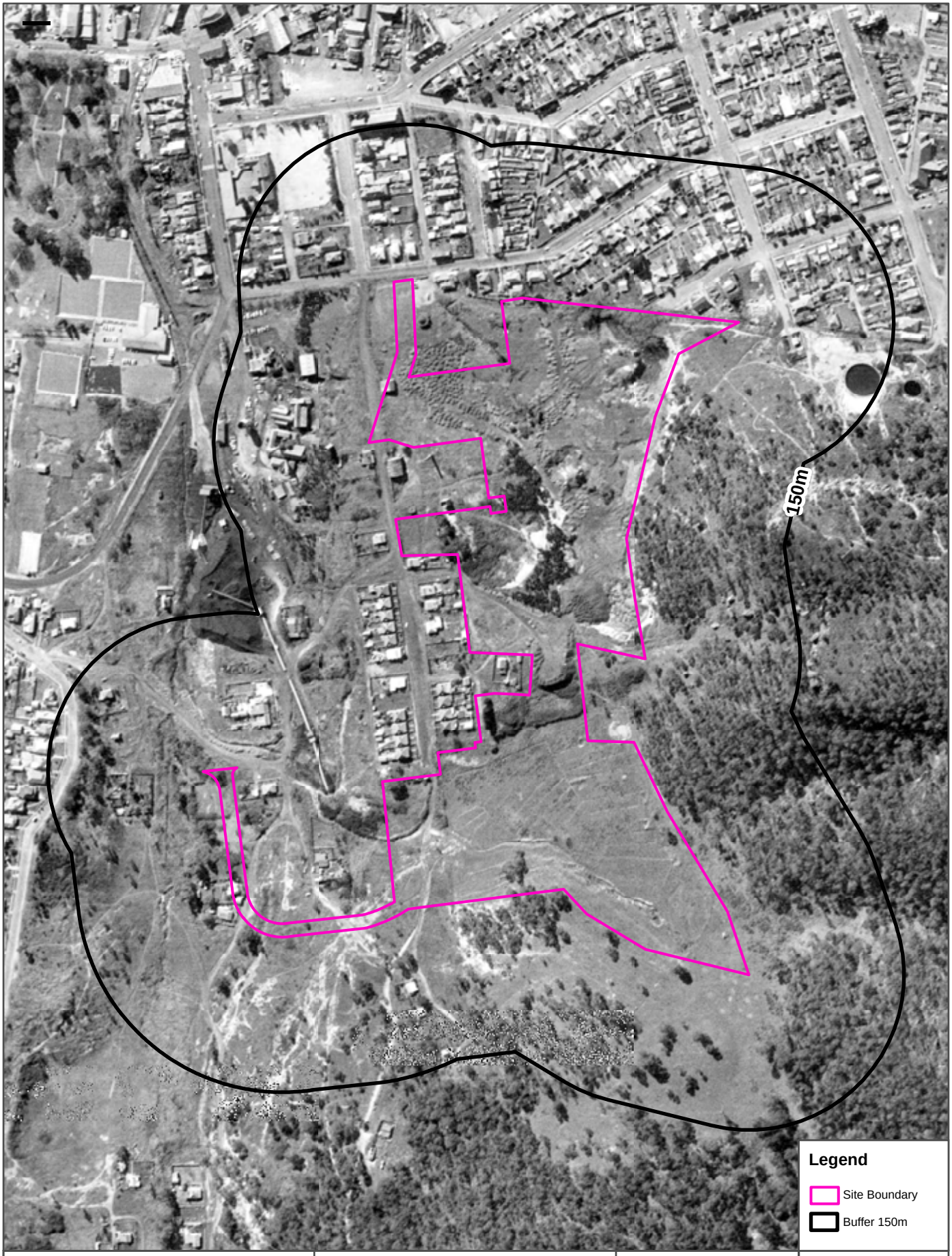
Aerial Imagery 1984

Pottery Estate, Lake Lyell, NSW 2790



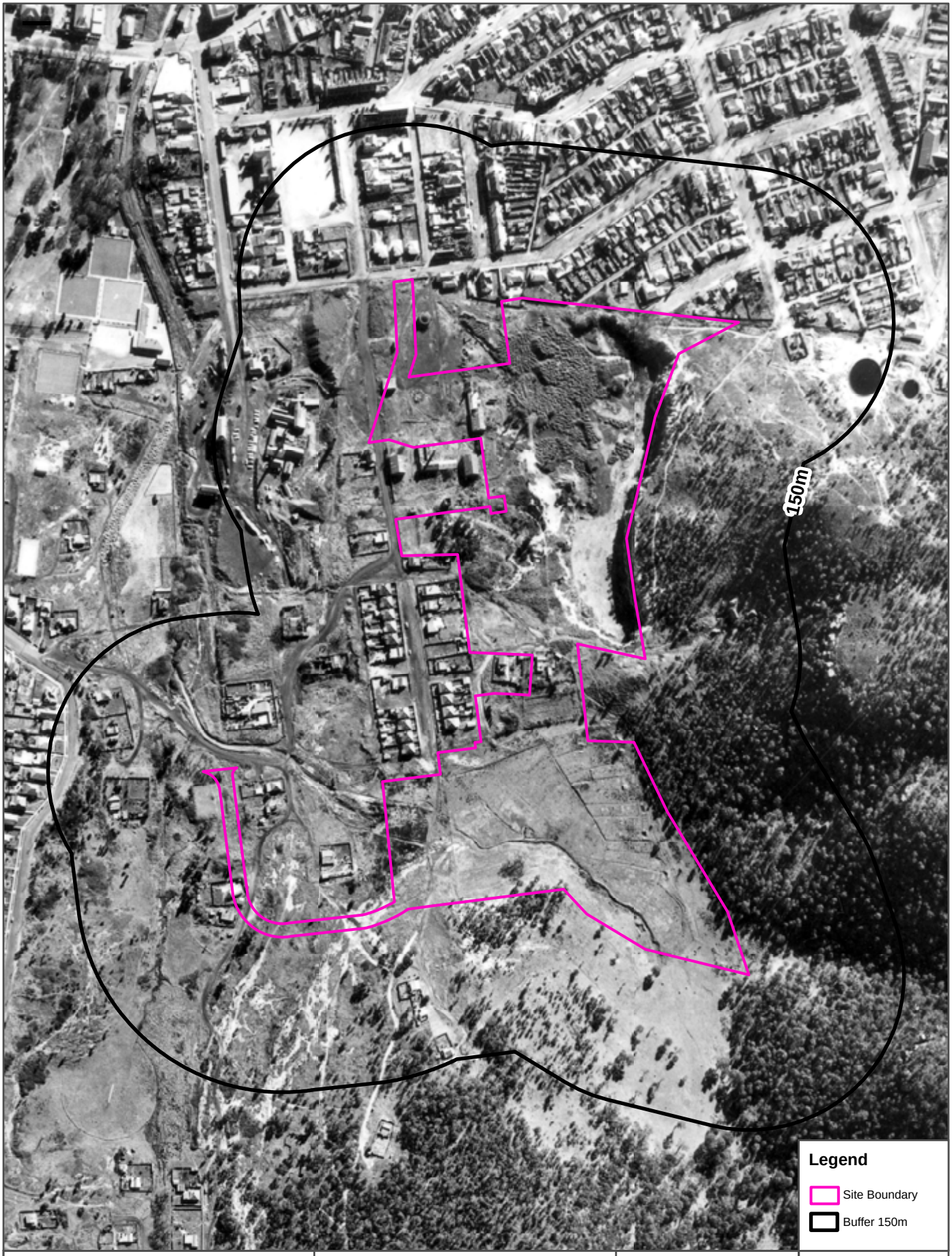
Aerial Imagery 1975

Pottery Estate, Lake Lyell, NSW 2790



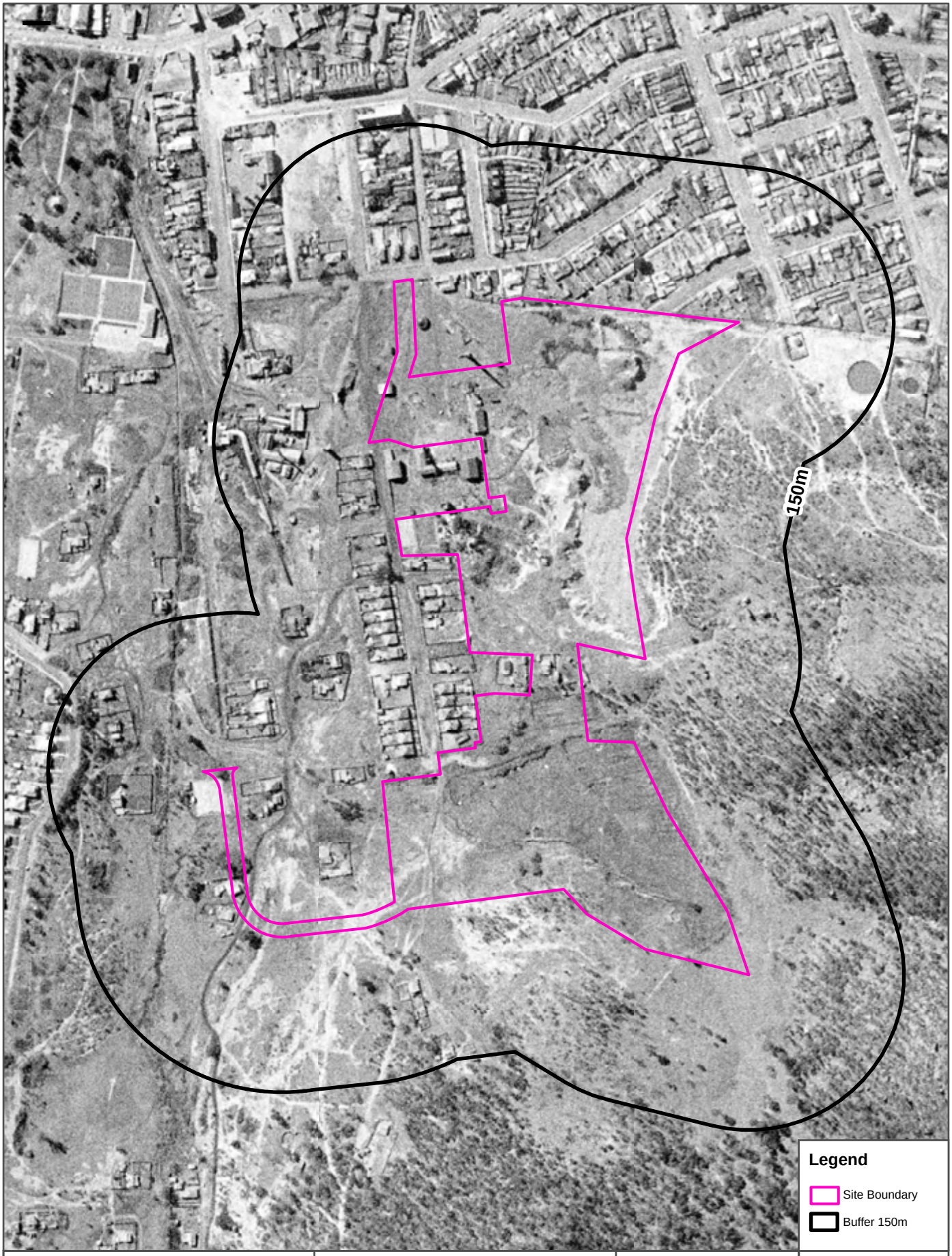
Aerial Imagery 1968

Pottery Estate, Lake Lyell, NSW 2790



Aerial Imagery 1961

Pottery Estate, Lake Lyell, NSW 2790



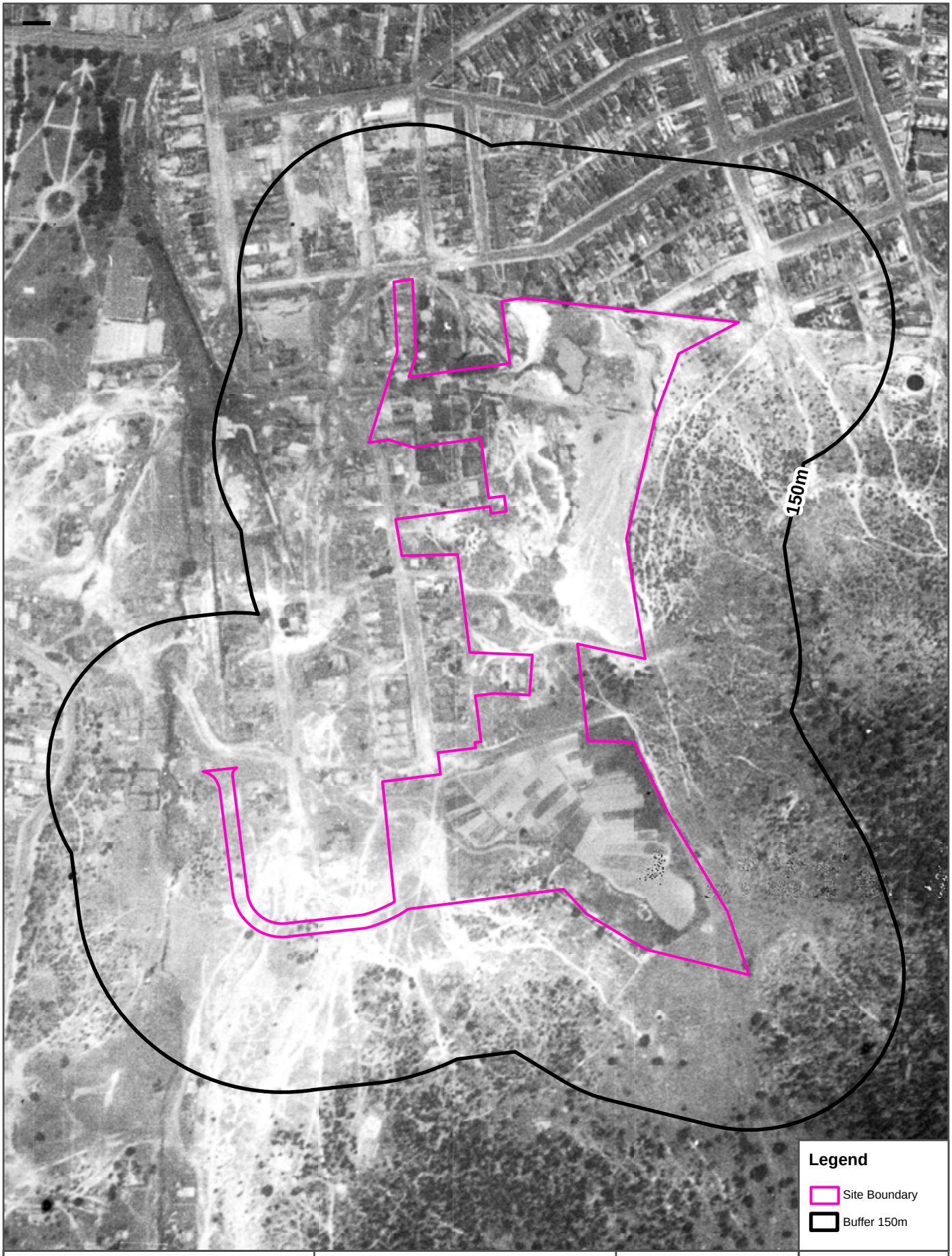
Aerial Imagery 1950

Pottery Estate, Lake Lyell, NSW 2790



Aerial Imagery 1931

Pottery Estate, Lake Lyell, NSW 2790



Annexure D

Archaeological background

EMM
creating opportunities

D.1 Site definitions and recording methods used for this assessment

D.1.1 Aboriginal sites

In the AHIMS database, Aboriginal sites are defined in several ways. At the simplest level, sites are recorded as 'closed' or 'open'. Closed sites are associated with rock shelters and include other evidence of Aboriginal occupation that may be present, such as areas where subsurface Aboriginal objects may occur within the shelter ('potential archaeological deposit' (PAD)), faunal remains, and art on the shelter walls (paintings/engravings). Open sites are broadly defined and encompass all other types of Aboriginal site features that are located in areas where there is no rock shelter. The most common open site features found generally include artefacts, grinding grooves, art, culturally modified trees, and shell deposits (middens) (OEH 2012). The presence or absence of stone artefacts is often a defining factor in site identification, with almost every site likely to have at least some associated artefacts, as discard or loss of this most ubiquitous and practically indestructible marker of past Aboriginal visitation.

Any one site (or group of linked sites described as a 'complex') can contain several different site features. For example, a shelter may have art on the walls, artefacts on the floor surface or outside the shelter, and be predicted to contain faunal remains and further artefacts in the accumulated deposit inside.

A description of terms used to describe different site features known to occur in the vicinity of the project area is provided in Table D.1 and use definitions provided by OEH and those adopted by EMM in their field investigations to ensure consistency in recording. Similarly, there may be places of contemporary significance to Aboriginal people in the region and that will require consultation with this community to identify.

Table D.1 Site definitions and recordings

Site feature	Definition and recording methods
Aboriginal ceremony and Dreaming	Previously referred to as mythological sites these are spiritual/story places where no physical evidence of previous use of the place may occur, e.g. natural unmodified landscape features, ceremonial or spiritual areas, men's/women's sites, dreaming (creation) tracks, marriage places, etc.
Artefact site (open stone artefact site)	Objects such as stone tools, and associated flaked material, spears, manuports, grindstones, discarded stone flakes, modified glass or shell demonstrating evidence of use of the area by Aboriginal people. Open stone artefact sites were defined by the presence of one (isolated find) or more (artefact scatter) stone artefacts visible on the ground surface. The boundaries of a site are limited to the spatial extent of the visible stone artefacts. The mapped site points and/or 'site areas' do not represent the areas of PAD that also apply to some sites (refer to the term 'PAD' below). Open stone artefact sites were recorded by marking each artefact location or each cluster of artefacts within a 5 m radius as a separate waypoint in the GPS. Site boundaries were allocated by drawing a line around the cluster waypoints for each site using ArcGIS software. Stone artefacts more than 50 m apart were recorded as separate sites. EMM acknowledges that the 50 m rule applied here is an arbitrary distinction for site boundaries and is used mainly for efficiencies in site management and to establish consistency in site recording methods.
Burials	A traditional or contemporary (post-contact) burial of an Aboriginal person, which may occur outside designated cemeteries and may not be marked, e.g. in caves, marked by stone cairns, in sand areas, along creek banks, etc.
Fish trap	A modified area on watercourses where fish were trapped for short-term storage and gathering.
Grinding grooves	Grinding grooves were defined as an area of outcropping bedrock containing evidence of one or more grinding grooves where ground-stone hatchets or other grinding practices (i.e. seed grinding) were implemented.

Site feature	Definition and recording methods
Habitation structure	Structures constructed by Aboriginal people for short or long-term shelter. More temporary structures are commonly preserved away from the NSW coastline, may include historic camps of contemporary significance. Smaller structures may make use of natural materials such as branches, logs and bark sheets or manufactured materials such as corrugated iron to form shelters. Archaeological remains of a former structure such as chimney/fireplace, raised earth building platform, excavated pits, rubble mounds, etc.
Modified tree (carved or scarred)	Trees which show the marks of modification as a result of cutting of bark from the trunk for use in the production of shields, canoes, boomerangs, burials shrouds, for medicinal purposes, foot holds, etc., or alternately intentional carving of the heartwood of the tree to form a permanent marker to indicate ceremonial use/significance of a nearby area, again these carvings may also act as territorial or burial markers. Modified trees (either carved or scarred) can be difficult to identify. Scars commonly occur on trees through natural processes such a branch tears, insect damage, storm and fire damage and faunal damage. Scars can also occur from mechanical damage from vehicles or farming equipment. The attributes of potential scarred trees were discussed during the survey amongst archaeologists and RAPs before it was decided if a scar would be recorded or not. A precautionary approach was adopted, whereby some of the more ambiguous examples were recorded anyway. The assessment of scar trees was made from the experience of the survey team and the guideline *Aboriginal scarred trees in New South Wales: a field manual* (DEC 2005). In some of the more ambiguous examples, it cannot be verified whether some scars recorded during the survey are of natural or Aboriginal origin. In such instances, an expert evaluation by a scar tree expert (arborist or other) would be required to determine the status of certain trees.
Potential archaeological deposit (PAD)	An area where Aboriginal objects may occur below the ground surface. The term 'potential archaeological deposit' was first applied in Sydney regional archaeology in the 1980s, and referred to rock shelters that were large enough and contained enough accumulated deposit to allow archaeologists to predict that subsurface cultural material was likely to be present. Since then, the term has come to include open sites where the same prediction can be made. EMM has defined PADs as the predicted extent of concentrated subsurface Aboriginal objects in a particular area. PADs are not technically Aboriginal sites until, and if, subsurface Aboriginal objects are identified, which is typically established through archaeological test excavation. PAD areas have been assigned to landforms that are distinguishable from the surrounding landscape (e.g. elevated areas with good outlook overlooking watercourses) as being likely to retain higher artefact densities than the assumed 'background scatter' of archaeological material in the broader landscape. The identification of PADs associated with Aboriginal open camp sites was partly based on observations in the field and discussions with RAPs, but also related to the predictive model. Although PAD was attributed to areas for a variety of reasons, the main qualifiers were: The presence of surface artefacts or other Aboriginal objects. Ground surface visibility as part of the archaeological survey effort was typically considered high enough in each PAD area to identify at least one or more surface artefacts thereby indicating likelihood of subsurface potential. Notwithstanding, finding no visible surface artefacts in an area would not disqualify an area from being attributed with PAD. Level to gently inclined ground (<10%) indicating suitable camping or activity areas. Contours that distinguish the landforms with PAD from the surrounding landscape (e.g. spur crest, hill crest or knoll). Landform boundaries were also interpreted through observations in the field. Notably, rocky crest landforms that were protected from intensive cultivation were often attributed with PAD. Proximity to water: typically, up to 100 m from 1st and 2nd order streams and up to 200 m from 3rd order streams and above. Elevated landforms at the confluence of higher order streams were also more likely to be attributed with PAD. EMM acknowledges that all PAD areas have been historically cleared of native vegetation and some have been subject to pasture improvements such as ploughing. As such, the term PAD does not assume high subsurface integrity; instead, it is a prediction of potential subsurface artefact concentrations. All stone quarry sites are predicted to have PAD. The assumption is that in most cases the visible surface material at quarries is represented by larger artefacts (such as cores) and that smaller material (e.g. flakes) is likely to be buried.
Restricted	Site information contained in the Aboriginal Heritage Information Management System is available only to certain authorised groups of people, as requested by the Aboriginal community. Detailed information may not be available in search reports.

Site feature	Definition and recording methods
Shell	An accumulation or deposit of shellfish from beach, estuarine, lacustrine or riverine species resulting from Aboriginal gathering or consumption. Usually found in deposits previously referred to as shell middens. Must be found in association with other objects like stone tools, fish bones, charcoal, fireplaces/hearths, and burials. Will vary greatly in size and composition.
Stone quarry	Usually, a source of good quality stone which is quarried and used for the production of stone tools. Stone quarries represent where Aboriginal people gathered raw stone materials for stone tools and/or manufactured stone tools from the adjacent source material. Quarry sites are found at rock outcrops where the material was of suitable quality to have been used to manufacture stone tools. Stone quarries were defined by the presence of outcropping stone material with nearby evidence of the same material type used in the stone tool manufacture process. This was most commonly indicated by large stone cores or stone flakes distributed amongst the same naturally outcropping material. EMM acknowledges that the 'open stone artefact' site type shares some of the same characteristics as 'stone quarries', such as the presence of stone artefacts. However, they have been distinguished from each other because quarries can not only represent open camping activities, but also a fixed location where Aboriginal people needed to visit to extract a resource. In contrast, the location of typical open camp sites was not fixed but chosen by Aboriginal people for their favourable conditions.

D.2 AHIMS search results

This appendix has been redacted from this version of the ACHA due to culturally sensitive information. Please contact EMM if a copy is required.

D.3 AHIMS site cards for sites within the project area

This appendix has been redacted from this version of the ACHA due to culturally sensitive information. Please contact EMM if a copy is required.

Annexure E
Field investigation

EMM
creating opportunities

E.1 Identified Aboriginal sites

Site ID	AHIMS #	Distance from the nearest watercourse (m)	Named watercourse	Site type	Landform	Easting/Northing	Description	Location	Site status
Mount Walker	45-1-2997	1500	Farmers Creek	Aboriginal ceremony and dreaming	Mountain	[redacted]	An Aboriginal ceremony and dreaming site at the top of Mount Walker. There are mixed views among the community including view-lines and men's business' but it is known as a place of significance.	Outside the construction envelope	Valid
Platypus Dreaming story	-	0	Farmers Creek and Coxs River	Aboriginal ceremony and Dreaming	watercourse	-	A gender-restricted (female) story associated with the Coxs River and tributaries, which within the project area have been inundated. The value of the story from Aboriginal participants is focussed on the platypus species itself encountered within the project area, and not specific locations or places. Currently, not proposed as a discrete spatial location.	Inside the construction envelope	Valid
LL IF1	45-1-2974	615	Farmers Creek	Isolated find	Hillslope	[redacted]	LL IF1 is an isolated find recorded in the northeast of the project area, just outside the construction envelope. The site consists of a single quartz flake located on a granite outcrop on an eastern facing steep hillslope. The quartz flake was the only piece of quartz identified in the outcrop. This site is nearby LL ST1. This site is not located in the construction envelope of the project.	Outside construction envelope	Valid
LL IF2	45-4-1810	690	Coxs River	Isolated find	Ridge flat/spur	[redacted]	A single volcanic artefact/ the artefacts is a distal flake and was recovered from a test pit on a hill crest to the southwest of Lake Lyell.	Inside the construction envelope	Valid
LL IF3	45-4-1809	170	Farmers Creek	Isolated find	Ridge flat/spur	[redacted]	A single milky quartz artefact. The artefact is a distal flake and was recovered from a test pit on a ridgeline to the south of Farmer's Creek.	Inside the construction envelope	Valid
LL AS1	45-4-1808	60	Farmers Creek	Artefact scatter	Ridge flat/spur	[redacted]	LL AS 1 is an open site low density artefact scatter that is located on the northern side of hillslope on the southern side of Farmers Creek.	Inside the construction envelope	Valid

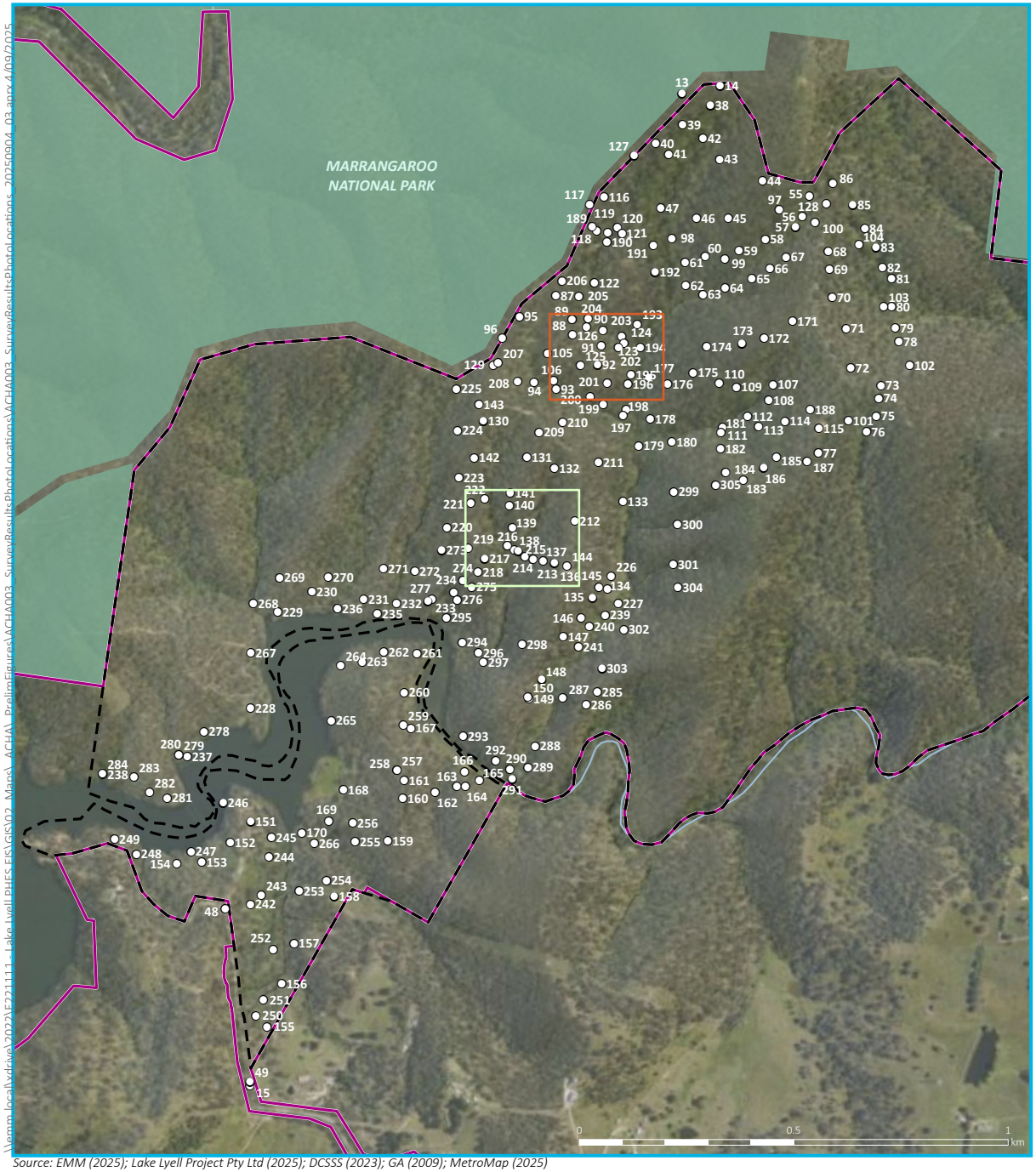
Site ID	AHIMS #	Distance from the nearest watercourse (m)	Named watercourse	Site type	Landform	Easting/Northing	Description	Location	Site status
LL AS2	45-1-2975	60	Farmers Creek	Artefact scatter	Alluvial terrace	[redacted]	LL AS2 is an open site medium density artefact scatter with both a surface and sub-surface expression. The site is located on the current southern bank of Farmers Creek and extends 125 m along the bank of Lake Lyell and 30 metre back from the water's edge.	Inside the construction envelope	Valid
LL AS3	45-1-2976	60	Farmers Creek	Artefact scatter	Alluvial terrace	[redacted]	LL AS 3 is a high-density artefact scatter located on the current northern bank of Lake Lyell. This northern bank likely represented an alluvial terrace prior to the damming of Lake Lyell. The artefacts appear to be eroding out of the terrace, particularly where vehicles have created a 4 x 4 track.	Inside the construction envelope	Valid
LL AS4	45-1-2978	645	Farmers Creek	Artefact scatter	Ridge flat/spur	[redacted]	LL AS4 is a high-density artefact scatter recorded on the mountain ridgeline in line with a dirt track. The primary focal point of the site is the eastern margin where the vast majority of artefacts were recovered from three test pits across an area of roughly 150 m x 25 m. Artefacts are present in in significantly lower densities to the west, as artefacts were likely dispersed through erosion or the installation/maintenance of the dirt track.	Inside the construction envelope	Valid
LL AS5	45-1-2977	35	Farmers Creek	Artefact scatter	Alluvial terrace	[redacted]	LL AS5 is a medium density artefact scatter located on the northern bank of Farmer's Creek at the confluence of an unnamed creek or drainage channel.	Inside the construction envelope	Valid
LL AS6	45-4-1807	400	Coxs River	Artefact scatter	Hillslope	[redacted]	LL AS6 is a low-density artefact scatter located outside the project area to the west of the potential accommodation area. The site was recorded on a well-used previously cleared dirt track, on the southern bank of Lake Lyell. The scatter features quartz artefacts eroding out of the sandy silt banks on either side of the tack. A potential granite hammerstone with pitting evident on the side. Site is highly dispersed from water erosion with artefacts being displaced down the slope.	Outside construction envelope	Valid

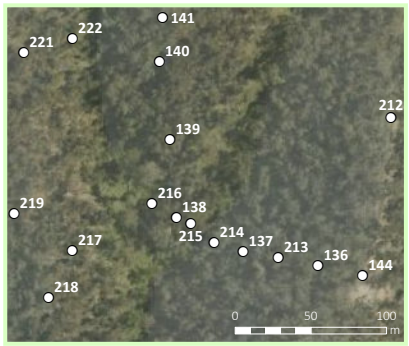
Site ID	AHIMS #	Distance from the nearest watercourse (m)	Named watercourse	Site type	Landform	Easting/Northing	Description	Location	Site status
LD 13	45-4-0916	70	Farmers Creek	Artefact scatter	Alluvial terrace	[redacted]	LD 13 features a high-density artefact scatter located on an alluvial terrace to the south of Farmer's Creek.	Inside the construction envelope	Valid
LD 14	45-4-0915	200	Farmers Creek	Artefact scatter	Ridge flat/spur	[redacted]	LD 14 features a high-density artefact scatter located on a ridgeline to the south of Farmer's Creek.	Inside the construction envelope	Valid
LL ST1	-	630	Farmers Creek	Culturally modified tree	Hillslope	[redacted]	LL ST1 is a potentially culturally modified tree that features an oval scar on the western side of a eucalypt tree. The dimensions of the scar are as follows: length of scar 95 cm, width 24 cm, depth 9 cm, height from ground 24 cm.	Outside construction envelope	Potential
LL ST2	-	120	Farmers Creek	Culturally modified tree	Hillslope	[redacted]	LL ST 2 is a potentially culturally modified tree that features an oval scar on the northern side of a eucalypt tree. The dimensions of the scar are as follows: length of the scar: 220 cm, width 30 cm and depth 20 cm.	Outside construction envelope	Potential
LD1	45-4-0208	300	Coxs River	Artefact scatter		[redacted]	Low density artefact scatter >50, 300 m from former Coxs River. Site has been disturbed from erosion from flooding of Lake Lyell.	Outside construction envelope	Valid
LD2	45-4-0207	200	Coxs River	Artefact scatter		[redacted]	Low density artefact scatter <10 on original banks of Coxs River. On a precipitous slope, extending up to a ridgeline.	Outside construction envelope	Valid
LD3	45-4-0209	400	Coxs River	Artefact scatter		[redacted]	High density artefact scatter (~3 to 4,000 artefacts/m² and continuous background scatter) located on north facing spur of a ridge separating Sandalls Creek and Haystack Creek, 400 m from former Coxs River. This site has had both surface and sub surface salvage, and a block fracture knapping floor was located at this site. NB. These coordinates are ~1 km west of actual site location. Correct coordinates based on map in McDonald and Barton 1995 report - [redacted]	Outside construction envelope	Valid

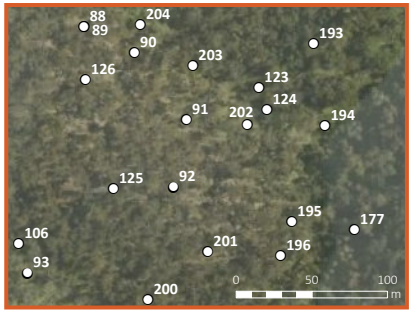
Site ID	AHIMS #	Distance from the nearest watercourse (m)	Named watercourse	Site type	Landform	Easting/Northing	Description	Location	Site status
LD4	45-4-0210	400	Coxs River	Artefact scatter		[redacted]	Low-moderate density artefact scatter (>14 artefacts) located on north facing spur of a ridge separating Sandalls Creek and Haystack Creek, 400 m from former Coxs River. It is likely that in situ archaeological deposit extends upslope. Site is in poor condition from erosion and sheet wash. This site is located within LD3. NB. These coordinates are ~1 km west of actual site location. Correct coordinates based on map in McDonald and Barton 1995 report - [redacted]	Outside construction envelope	Valid
LD5	45-4-0211	250	Coxs River	Artefact scatter		[redacted]	Low density artefact scatter >10, on a vehicle track, 250 m from original Coxs River.	Outside construction envelope	Valid
LD6	45-4-0212	70-100	Coxs River	Artefact scatter		[redacted]	Low density artefact scatter located on spur leading to original Coxs River (70 to 100 m). Deposit likely continues across the top of the spur.	Outside construction envelope	Valid
LD7	45-4-0213	50-100	Coxs River	Artefact scatter		[redacted]	Low density artefact scatter of 7 artefacts located 50 to 100 m from Coxs River. Likely shallow deposit continues across the top of the spur.	Outside construction envelope	Valid
LD8	45-4-0214	95/40	Coxs River/Farmers Creek confluence	Artefact scatter	Alluvial terrace	[redacted]	LD 8 features a medium density artefact scatter featuring >30 artefacts. The artefacts are largely located on sheet wash and on a vehicle track exposure besides Farmer's Creek.	Outside construction envelope	Valid
LD9	45-4-0219	250	Coxs River	Rock shelter with deposit	Alluvial terrace	[redacted]	Low density artefact scatter at the base of two granite boulders, each deposit about 2 m x 3 m. 300 to 400 m from original Coxs River. Disturbed likely from explosives used on boulders.	Outside construction envelope	Valid

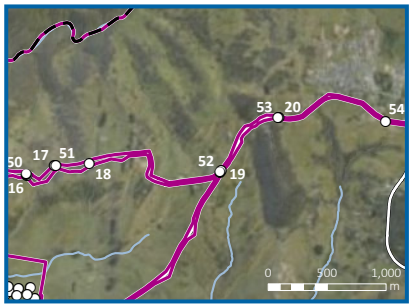
Site ID	AHIMS #	Distance from the nearest watercourse (m)	Named watercourse	Site type	Landform	Easting/Northing	Description	Location	Site status
LD12	45-4-0914	400	Coxs River	Artefact scatter		[redacted]	A moderate density artefact scatter related to LD3 and LD4. It is located on a spur jutting into the Lake, north-east of LD4. A knapping scatter of crystal quartz in gully erosion developed around as vehicle track, with dispersed artefacts of other material upslope and along the lake front. This site was salvaged in 1995, with the bedrock reached at a depth of 1 to 5 cm. NB. These coordinates are ~1 km west of actual site location. Correct coordinates based on map in McDonald and Barton 1995 report - [redacted].	Outside construction envelope	Valid
LD15	45-1-0248	80	Coxs River	Artefact scatter		[redacted]	Low density artefact scatter salvaged on Coxs River of 31 artefacts, including chert and quartz flakes. Potential contact site with possible glass flakes present. Recovered from disturbed context from the Convict Stockade Site.	Outside construction envelope	Valid
LD16	45-1-0249	80	Coxs River	Artefact scatter		[redacted]	Low density artefact scatter salvaged on Coxs River of four artefacts, with three potential quartz flakes. There is another artefact scatter 100 m up slope from here. Recovered from disturbed context from the Convict Stockade Site.	Outside construction envelope	Valid
Lyell's Crossing	45-4-0006	250	Coxs River	Rock shelter with deposit	Alluvial terrace	[redacted]	Artefact scatter of quartz and jasper under eroding beneath overhang of granite boulders and further up the slope. On western bank of Lake Lyell. Correct coordinates are same as LD9[redacted]	Outside construction envelope	Valid
Mount Walker	45-1-2997	1500	Farmers Creek	Aboriginal ceremony and dreaming	Mountain peak	[redacted]	Mount Walker is said to be the subject of traditional taboo and/or avoidance restrictions, possibly due to association with the male ritual domain.	Outside construction envelope	Valid

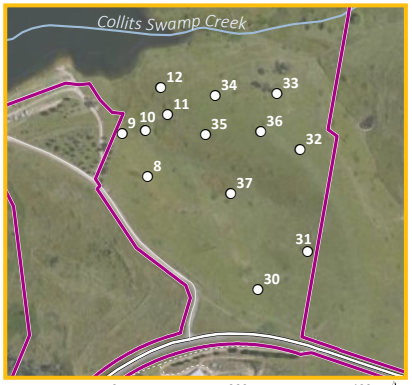
E.2 Photographic catalogue for field survey

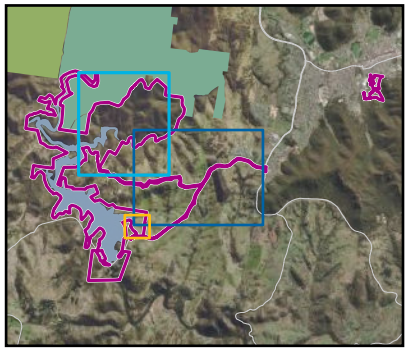












KEY

- Project area
- Main works area
- Photo location

Existing environment

- Named watercourse
- NPWS reserve
- State forest

Survey photo locations

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); GA (2009); MetroMap (2025)

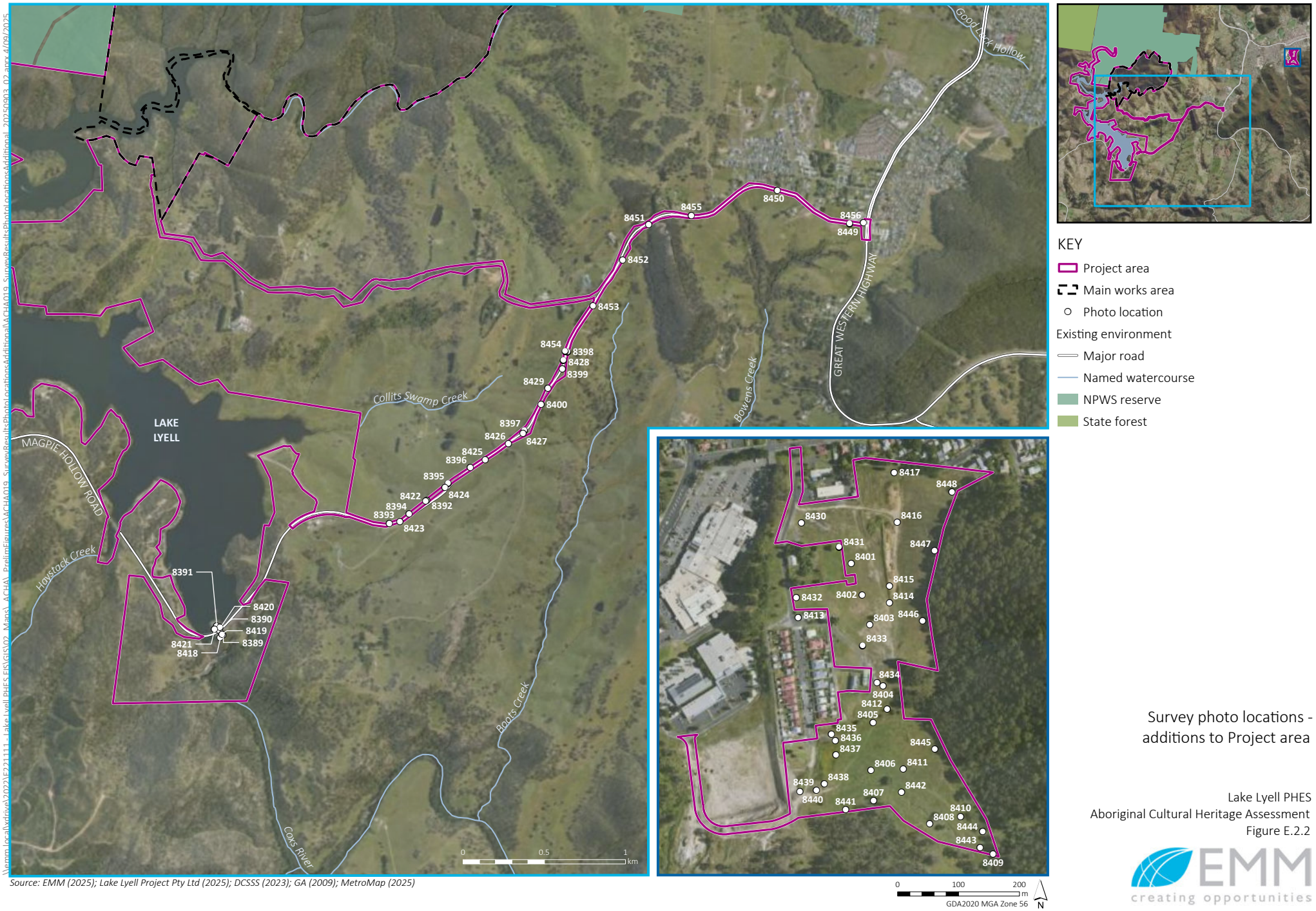
0 200 400 m

GDA2020 MGA Zone 56

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure E.2.1

EMM
creating opportunities

\\emm.local\hydra\2022\E221111_Lake Lyell PHES EIS\GIS\02_Maps_ACHA_PrelimFigures\ACHA003_SurveyResults\PhotoLocations\ACHA003_SurveyResultsPhotoLocations_20250904_03.aprx 4/09/2025



Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); GA (2009); MetroMap (2025)

Survey photo locations - additions to Project area

Lake Lyell PHES
Aboriginal Cultural Heritage Assessment
Figure E.2.2

EMM
creating opportunities

\\emm.local\xdrive\2022\E221111 - Lake Lyell PHES FIS\GIS\02_Maps_ACHA_PrelimFigures\ACHA019_SurveyResults\PhotoLocationsAdditional\ACHA019_SurveyResultsPhotoLocationsAdditional_20250903_02.aprx 4/09/2025

Photo Point ID: 8 - Lake lyell t2

Photo 1: S	Photo 2: N	Photo 3: E
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 9 - Lake lyell t2

Photo 1: NE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 10 - Lake lyell t2

Photo 1: S	Photo 2: N	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 11 - Lake lyell t2

Photo 1: S	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 12 - None

Photo 1: SW	Photo 2: W	Photo 3: NW
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 13 - T3

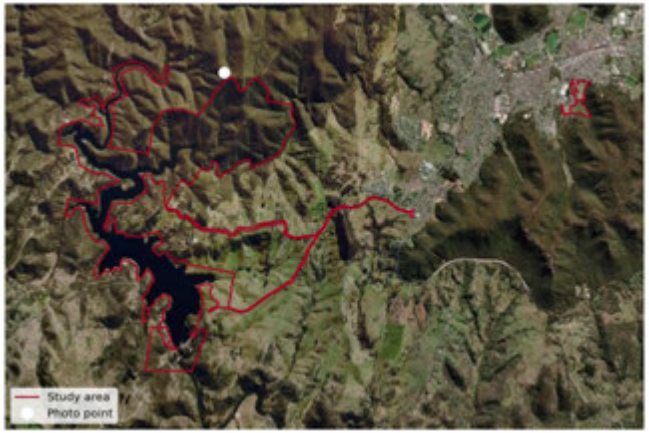
Photo 1: N	Photo 2: E	Photo 3: W
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 14 - T3

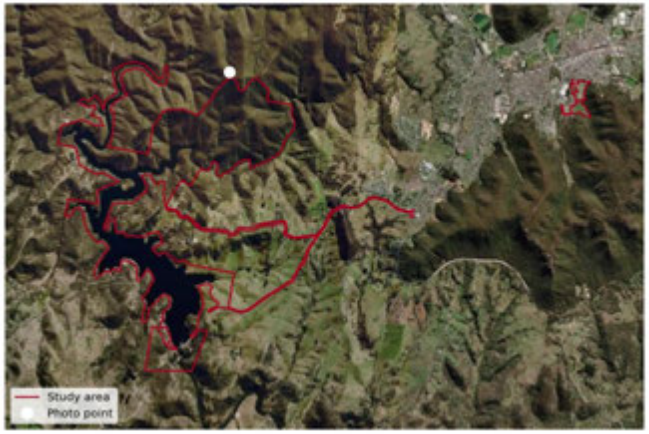
Photo 1: W	Photo 2: E	Photo 3: E
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 15 - T4

Photo 1: SE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 16 - T4

Photo 1: E	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 17 - T4

Photo 1: W	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 18 - T4

Photo 1: W	Photo 2: SE	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 19 - T4

Photo 1: S	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 20 - T4

Photo 1: W	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 30 - 2

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 31 - 2

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 32 - 2

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 33 - 2

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 34 - 2

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 35 - 2

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 36 - 2

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 37 - 2

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 38 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 39 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 40 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 41 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 42 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 43 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 44 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 45 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 46 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 47 - 3

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 48 - 4

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 49 - 4

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 50 - 4

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 51 - 4

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 52 - 4

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 53 - 4

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 54 - 4

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 55 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 56 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 57 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 58 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 59 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 60 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 61 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 62 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 63 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 64 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 65 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 66 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 67 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 68 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 69 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 70 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 71 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 72 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 73 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 74 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 75 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 76 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 77 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 78 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 79 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 80 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 81 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 82 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 83 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 84 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 85 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 86 - 5

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 87 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 88 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 89 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 90 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 91 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 92 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 93 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 94 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 95 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 96 - 6

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 97 - T5

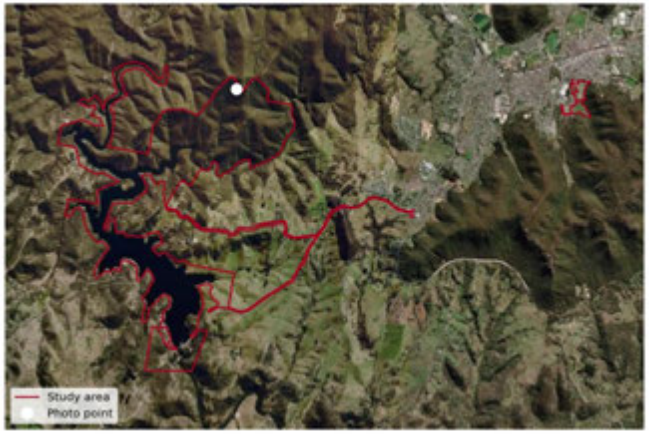
Photo 1: Sw	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 98 - T5

Photo 1: NW	Photo 2: SW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 99 - T5

Photo 1: SE	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 100 - T5

Photo 1: SW	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 101 - T6

Photo 1: W	Photo 2: Se	Photo 3: S
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 102 - T5

Photo 1: E	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 103 - T5

Photo 1: NE	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 104 - T5

Photo 1: S	Photo 2: W	Photo 3: NE
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 105 - T6

Photo 1: NE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 106 - T6

Photo 1: SW	Photo 2: NW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 107 - T7

Photo 1: N	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 108 - T7

Photo 1: SE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 109 - T7

Photo 1: N	Photo 2: SW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 110 - T7

Photo 1: NW	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 111 - T7

Photo 1: SE	Photo 2: SE	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 112 - T7

Photo 1: SE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 113 - T7

Photo 1: S	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 114 - Tp7

Photo 1: E	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 115 - T7

Photo 1: NW	Photo 2: NE	Photo 3: N
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 116 - T8

Photo 1: None	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 117 - T8

Photo 1: SW	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 118 - T8

Photo 1: E	Photo 2: NE	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 119 - T8

Photo 1: SE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 120 - T8

Photo 1: W	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 121 - T8

Photo 1: N	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 122 - T8

Photo 1: NE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 123 - T8

Photo 1: SW	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 124 - T8

Photo 1: SE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 125 - T8

Photo 1: W	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 126 - T8

Photo 1: Nw	Photo 2: Limestone or silcrete	Photo 3: N
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 127 - T8

Photo 1: W	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 128 - T5

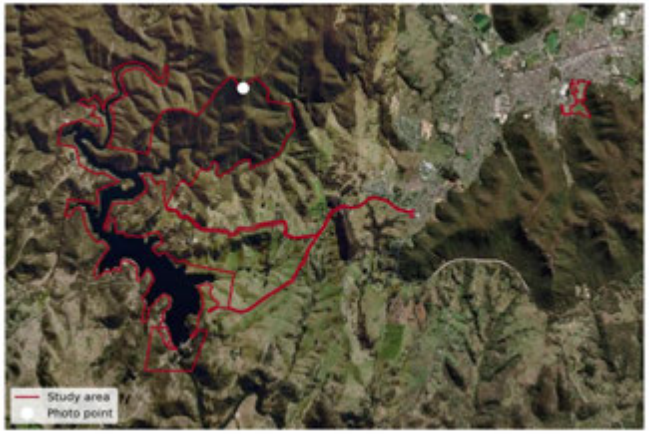
Photo 1: N	Photo 2: N	Photo 3: NE
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 129 - T9

Photo 1: NE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 130 - T9

Photo 1: S	Photo 2: None	Photo 3: S
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 131 - T9

Photo 1: SE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 132 - T9

Photo 1: S	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 133 - T9

Photo 1: NE	Photo 2: SE	Photo 3: NE
		
Photo 4: NE	**Photo 5: None**	**Location:**
		

Photo Point ID: 134 - T9

Photo 1: W	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 135 - T9

Photo 1: N	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 136 - T9

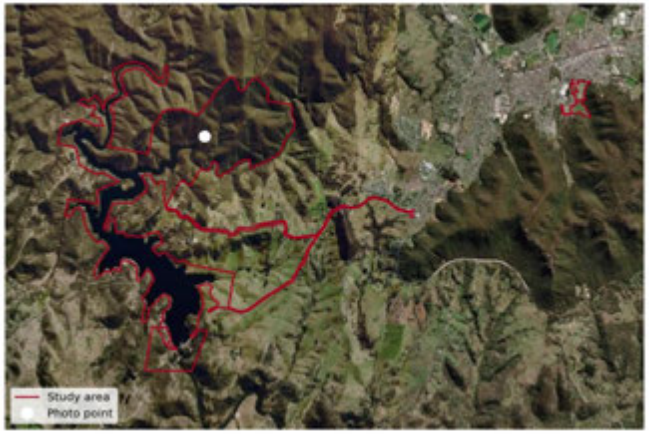
Photo 1: W	Photo 2: W	Photo 3: W
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 137 - T9

Photo 1: E	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 138 - T9

Photo 1: S	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 139 - T9

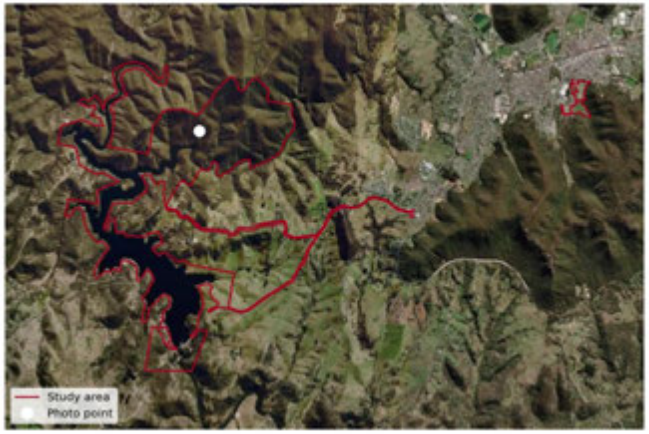
Photo 1: None	Photo 2: N	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 140 - T9

Photo 1: S	Photo 2: S	Photo 3: S
		
Photo 4: N	**Photo 5: N**	**Location:**
		

Photo Point ID: 141 - T9

Photo 1: E	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 142 - T9

Photo 1: N	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 143 - T9

Photo 1: W	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 144 - T9

Photo 1: SW	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 145 - T9

Photo 1: Sw	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 146 - T9

Photo 1: N	Photo 2: SE	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 147 - T9

Photo 1: E	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 148 - T9

Photo 1: E	Photo 2: S	Photo 3: NE
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 149 - T9

Photo 1: N	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 150 - T9

Photo 1: SE	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 151 - T10

Photo 1: N	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 152 - T10

Photo 1: NW	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 153 - T10

Photo 1: S	Photo 2: SW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 154 - T10

Photo 1: N	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 155 - T10

Photo 1: E	Photo 2: NW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 156 - T10

Photo 1: W	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 157 - T10

Photo 1: W	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 158 - T10

Photo 1: SE	Photo 2: NW	Photo 3: W
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 159 - T10

Photo 1: NE	Photo 2: NW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 160 - T10

Photo 1: N	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 161 - T10

Photo 1: NW	Photo 2: NE	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 162 - T10

Photo 1: N	Photo 2: E	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 163 - T10

Photo 1: SE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 164 - T10

Photo 1: E	Photo 2: N	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 165 - T10

Photo 1: E	Photo 2: N	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 166 - T10

Photo 1: None	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 167 - T10

Photo 1: N	Photo 2: E	Photo 3: W
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 168 - T10

Photo 1: E	Photo 2: NW	Photo 3: N
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 169 - T10

Photo 1: NW	Photo 2: N	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 170 - T10

Photo 1: SE	Photo 2: NW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 171 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 172 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 173 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 174 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 175 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 176 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 177 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 178 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 179 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 180 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 181 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 182 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 183 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 184 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 185 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 186 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 187 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 188 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 189 - 7

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 190 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 191 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 192 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 193 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 194 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 195 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 196 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 197 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 198 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 199 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 200 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 201 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 202 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 203 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 204 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 205 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 206 - 8

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 207 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 208 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 209 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 210 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 211 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 212 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 213 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 214 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 215 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 216 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 217 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 218 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 219 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 220 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 221 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 222 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 223 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 224 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 225 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 226 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 227 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 228 - T10

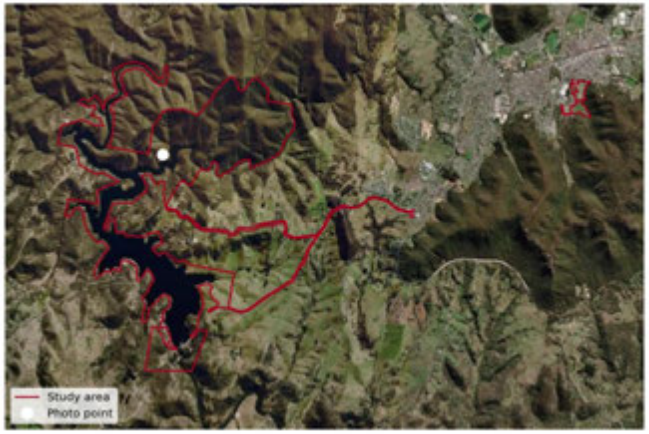
Photo 1: NE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 229 - T11

Photo 1: E	Photo 2: W	Photo 3: SE
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 230 - T11

Photo 1: N	Photo 2: SE	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 231 - T11

Photo 1: W	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 232 - T11

Photo 1: NW	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 233 - T11

Photo 1: SW	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 234 - T11

Photo 1: S	Photo 2: E	Photo 3: SE
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 235 - T11

Photo 1: S	Photo 2: SW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 236 - T11

Photo 1: S	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 237 - T11

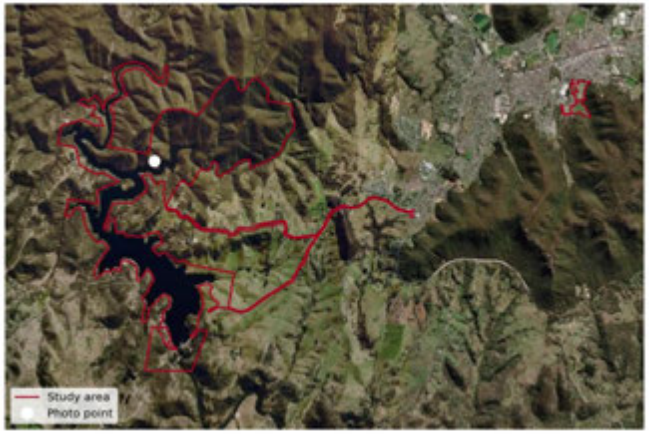
Photo 1: W	Photo 2: N	Photo 3: N
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 238 - T11

Photo 1: N	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 239 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 240 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 241 - 9

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 242 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 243 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 244 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 245 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 246 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 247 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: D	**Photo 5: None**	**Location:**
		

Photo Point ID: 248 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 249 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 250 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 251 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 252 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 253 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 254 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 255 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 256 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 257 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 258 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 259 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 260 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 261 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 262 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 263 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 264 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 265 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 266 - 10

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 267 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 268 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 269 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 270 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 271 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 272 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 273 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 274 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 275 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 276 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 277 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 278 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 279 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 280 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 281 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 282 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 283 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 284 - 11

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 285 - 12

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 286 - 12

Photo 1: North	Photo 2: East	Photo 3: South
		
Photo 4: West	**Photo 5: None**	**Location:**
		

Photo Point ID: 287 - T12

Photo 1: W	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 288 - T12

Photo 1: N	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 289 - T12

Photo 1: N	Photo 2: NW	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 290 - T12

Photo 1: S	Photo 2: S	Photo 3: NW
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 291 - T12

Photo 1: W	Photo 2: W	Photo 3: S
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 292 - T12

Photo 1: S	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 293 - T12

Photo 1: W	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 294 - T12

Photo 1: SW	Photo 2: W	Photo 3: S
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 295 - T12

Photo 1: NW	Photo 2: NW	Photo 3: S
		
Photo 4: SW	**Photo 5: None**	**Location:**
		

Photo Point ID: 296 - T12

Photo 1: S	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 297 - T12

Photo 1: NE	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 298 - T12

Photo 1: N	Photo 2: E	Photo 3: SE
		
Photo 4: S	**Photo 5: None**	**Location:**
		

Photo Point ID: 299 - T13

Photo 1: N	Photo 2: S	Photo 3: S
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 300 - T13

Photo 1: S	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 301 - T13

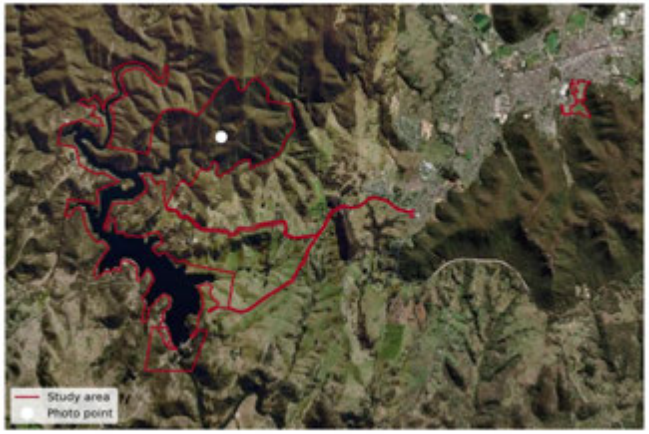
Photo 1: E	Photo 2: S	Photo 3: W
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 302 - T13

Photo 1: S	Photo 2: W	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 303 - T13

Photo 1: E	Photo 2: S	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 304 - T13

Photo 1: N	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 305 - T13

Photo 1: SW	Photo 2: NE	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 306 - T1

Photo 1: S	Photo 2: W	Photo 3: N
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 307 - T1

Photo 1: W	Photo 2: N	Photo 3: E
		
Photo 4: S	**Photo 5: None**	**Location:**
		

Photo Point ID: 308 - T1

Photo 1: W	Photo 2: N	Photo 3: E
		
Photo 4: S	**Photo 5: None**	**Location:**
		

Photo Point ID: 309 - T2

Photo 1: Sw	Photo 2: Se	Photo 3: Ne
		
Photo 4: Nw	**Photo 5: None**	**Location:**
		

Photo Point ID: 310 - T2

Photo 1: W	Photo 2: N	Photo 3: E
		
Photo 4: A	**Photo 5: None**	**Location:**
		

Photo Point ID: 311 - T2

Photo 1: S	Photo 2: E	Photo 3: N
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 312 - T2

Photo 1: Sw	Photo 2: Se	Photo 3: Ne
		
Photo 4: Nw	**Photo 5: None**	**Location:**
		

Photo Point ID: 313 - T2

Photo 1: E	Photo 2: S	Photo 3: W
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 314 - T2

Photo 1: Se	Photo 2: E	Photo 3: N
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 315 - T2

Photo 1: S	Photo 2: W	Photo 3: N
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 316 - T2

Photo 1: S	Photo 2: W	Photo 3: N
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 317 - T2

Photo 1: S	Photo 2: W	Photo 3: N
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 318 - T3

Photo 1: S	Photo 2: E	Photo 3: N
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 319 - T3

Photo 1: S	Photo 2: W	Photo 3: N
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 320 - T3

Photo 1: S	Photo 2: E	Photo 3: N
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 321 - T3

Photo 1: S	Photo 2: E	Photo 3: N
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 322 - T3

Photo 1: S	Photo 2: E	Photo 3: N
		
Photo 4: W towards dam	**Photo 5: None**	**Location:**
		

Photo Point ID: 323 - T3

Photo 1: S	Photo 2: W	Photo 3: N
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 324 - T3

Photo 1: N	Photo 2: W	Photo 3: E
		
Photo 4: S	**Photo 5: None**	**Location:**
		

Photo Point ID: 325 - T3

Photo 1: E	Photo 2: N	Photo 3: W
		
Photo 4: S	**Photo 5: None**	**Location:**
		

Photo Point ID: 326 - T3

Photo 1: W	Photo 2: N	Photo 3: E
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 327 - T3

Photo 1: W	Photo 2: N	Photo 3: S
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 328 - T3

Photo 1: N	Photo 2: W	Photo 3: S
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 329 - T3

Photo 1: N	Photo 2: W	Photo 3: S
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 330 - T3

Photo 1: N	Photo 2: E	Photo 3: W
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 331 - T3

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 332 - T3

Photo 1: S	Photo 2: E	Photo 3: W
		
Photo 4: S	**Photo 5: None**	**Location:**
		

Photo Point ID: 333 - T3

Photo 1: S	Photo 2: E	Photo 3: N
		
Photo 4: E	**Photo 5: None**	**Location:**
		

Photo Point ID: 334 - T3

Photo 1: S	Photo 2: E	Photo 3: N
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 335 - LLT15

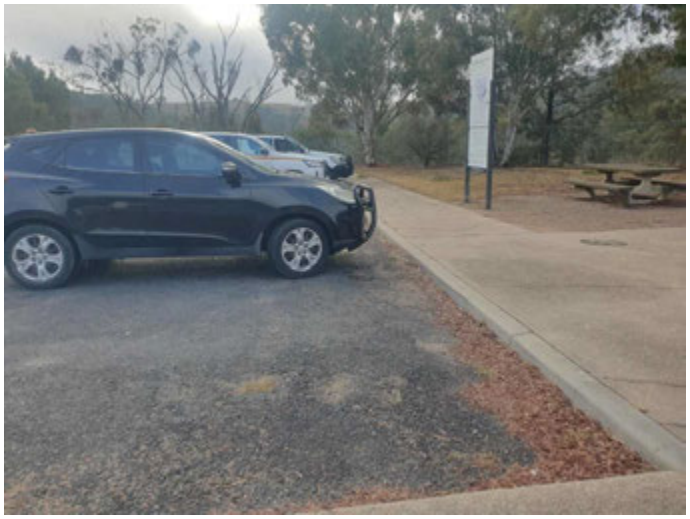
Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 336 - T1

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 337 - T1

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 338 - LLT15

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 339 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 340 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 341 - LLT16

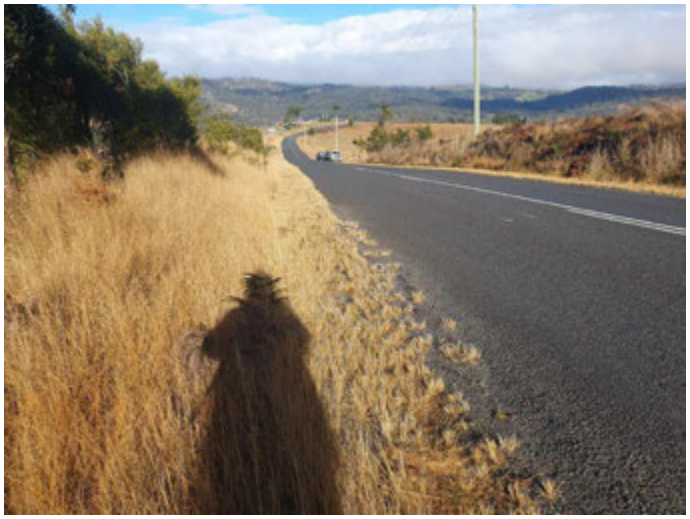
Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 342 - LLT16

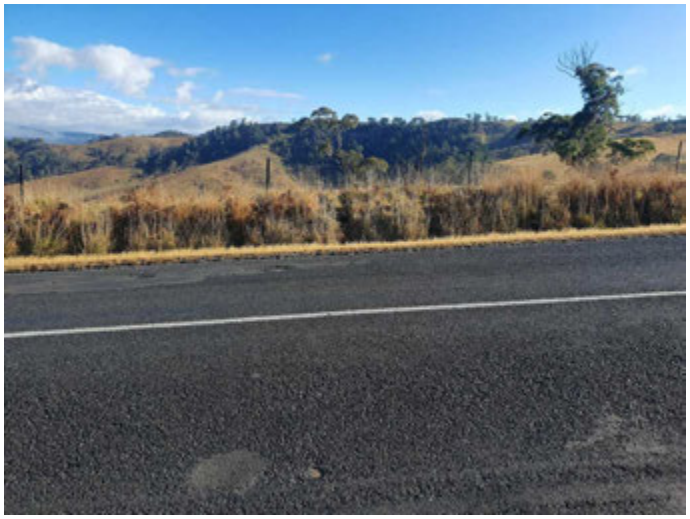
Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 343 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 344 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 345 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 346 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 347 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 348 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 349 - LLT17

Photo 1: None	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 350 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 351 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 352 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 353 - LLT17

Photo 1: S	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 354 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 355 - LLT17

Photo 1: S	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 356 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 357 - LLT17

Photo 1: SW	Photo 2: None	Photo 3: None
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 358 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 359 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 360 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 361 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 362 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 363 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 364 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 365 - LLT17

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 366 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 367 - LLT16

Photo 1: E	Photo 2: S	Photo 3: W
		
Photo 4: None	**Photo 5: None**	**Location:**
		

Photo Point ID: 368 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 369 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 370 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 371 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 372 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID: 373 - LLT16

Photo 1: N	Photo 2: E	Photo 3: S
		
Photo 4: W	**Photo 5: None**	**Location:**
		

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
8	30/10/2023	229431	6287371	56		South	North	East		
9	30/10/2023	229390	6287442	56	Wetland area through the middle of valley, very wet and dense reeds unwalkable	North-east				
10	30/10/2023	229427	6287446	56	View from bottom of hill up through valley	South	North			
11	30/10/2023	229463	6287472	56	Some granite outcropping	South				
12	30/10/2023	229452	6287515	56	View up and down hill to cars, road and lake	South-west	West	North-west		
13	31/10/2023	229544	6291179	56	Near top of mt walker on hill crest. Leaf litter and track. Granite boulders big eucalypts and black box but no scars	North	East	West	East	
14	31/10/2023	229633	6291197	56	Top of mt walker	West	East	East		
15	31/10/2023	228536	6288864	56	Gravel road with steep side slopes	South-east				
16	31/10/2023	229611	6288458	56	Granite outcrop, no good for grinding grooves	East	East			
17	31/10/2023	229843	6288538	56	Drain, erosion, rock outcrop	West	South			
18	31/10/2023	230138	6288559	56	Rock outcrops	West	South-east			
30	30/10/2023	229609	6287189	56		North	East	South	West	
31	30/10/2023	229690	6287250	56		North	East	South	West	
32	30/10/2023	229678	6287415	56		North	East	South	West	
33	30/10/2023	229640	6287505	56		North	East	South	West	
34	30/10/2023	229540	6287502	56		North	East	South	West	
35	30/10/2023	229524	6287440	56		North	East	South	West	
36	30/10/2023	229614	6287445	56		North	East	South	West	

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
37	30/10/2023	229565	6287344	56		North	East	South	West	
38	31/10/2023	229611	6291151	56		North	East	South	West	
39	31/10/2023	229546	6291106	56		North	East	South	West	
40	31/10/2023	229483	6291062	56		North	East	South	West	
41	31/10/2023	229513	6291038	56		North	East	South	West	
42	31/10/2023	229593	6291074	56		North	East	South	West	
43	31/10/2023	229632	6291026	56		North	East	South	West	
44	31/10/2023	229732	6290975	56		North	East	South	West	
45	31/10/2023	229652	6290888	56		North	East	South	West	
46	31/10/2023	229578	6290888	56		North	East	South	West	
47	31/10/2023	229495	6290912	56		North	East	South	West	
48	31/10/2023	228479	6289278	56		North	East	South	West	
49	31/10/2023	228537	6288874	56		North	East	South	West	
50	31/10/2023	229605	6288468	56		North	East	South	West	
51	31/10/2023	229856	6288539	56		North	East	South	West	
55	1/11/2023	229841	6290939	56		North	East	South	West	
56	1/11/2023	229825	6290892	56		North	East	South	West	
57	1/11/2023	229809	6290867	56		North	East	South	West	
58	1/11/2023	229739	6290839	56		North	East	South	West	
59	1/11/2023	229678	6290812	56		North	East	South	West	
60	1/11/2023	229598	6290799	56		North	East	South	West	
61	1/11/2023	229551	6290785	56		North	East	South	West	
62	1/11/2023	229553	6290731	56		North	East	South	West	
63	1/11/2023	229593	6290710	56		North	East	South	West	
64	1/11/2023	229645	6290725	56		North	East	South	West	
65	1/11/2023	229707	6290747	56		North	East	South	West	
66	1/11/2023	229749	6290772	56		North	East	South	West	
67	1/11/2023	229787	6290798	56		North	East	South	West	
68	1/11/2023	229885	6290810	56		North	East	South	West	
69	1/11/2023	229888	6290769	56		North	East	South	West	

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
70	1/11/2023	229895	6290703	56		North	East	South	West	
71	1/11/2023	229927	6290631	56		North	East	South	West	
72	1/11/2023	229938	6290539	56		North	East	South	West	
73	1/11/2023	230008	6290498	56		North	East	South	West	
74	1/11/2023	230003	6290468	56		North	East	South	West	
75	1/11/2023	229998	6290427	56		North	East	South	West	
76	1/11/2023	229975	6290390	56		North	East	South	West	
77	1/11/2023	229862	6290340	56		North	East	South	West	
78	1/11/2023	230050	6290601	56		North	East	South	West	
79	1/11/2023	230042	6290633	56		North	East	South	West	
80	1/11/2023	230033	6290682	56		North	East	South	West	
81	1/11/2023	230033	6290747	56		North	East	South	West	
82	1/11/2023	230012	6290773	56		North	East	South	West	
83	1/11/2023	229997	6290820	56		North	East	South	West	
84	1/11/2023	229971	6290864	56		North	East	South	West	
85	1/11/2023	229943	6290919	56		North	East	South	West	
86	1/11/2023	229896	6290969	56		North	East	South	West	
87	1/11/2023	229250	6290708	56		North	East	South	West	
88	1/11/2023	229288	6290652	56		North	East	South	West	
89	1/11/2023	229288	6290652	56		North	East	South	West	
90	1/11/2023	229321	6290635	56		North	East	South	West	
91	1/11/2023	229356	6290591	56		North	East	South	West	
92	1/11/2023	229347	6290546	56		North	East	South	West	
93	1/11/2023	229251	6290489	56		North	East	South	West	
94	1/11/2023	229199	6290506	56		North	East	South	West	
95	1/11/2023	229166	6290659	56		North	East	South	West	
96	1/11/2023	229125	6290609	56		North	East	South	West	
97	1/11/2023	229771	6290908	56	Pig tracks	South-west				
98	1/11/2023	229521	6290840	56	Gully for flooding	North-west	South-west			
99	1/11/2023	229644	6290793	56		South-east	East			

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
100	1/11/2023	229855	6290879	56		South-west	South			
101	1/11/2023	229932	6290416	56		West	South-east	South		
102	1/11/2023	230075	6290545	56	Rock outcrop - granite, one piece of quartz	East	West			
103	1/11/2023	230014	6290682	56		North-east	East			
104	1/11/2023	229957	6290827	56	Grass changes from dense tall and slippery, to regular lawn grass and spread out individual shrubs. Bigger trees	South	West	North-east	East	
105	1/11/2023	229231	6290573	56	Rocky outcrop granite	North-east				
106	1/11/2023	229245	6290509	56	Gully	South-west	North-west			
107	2/11/2023	229757	6290500	56		North				
108	2/11/2023	229746	6290464	56	Rock outcrop no shelter	South-east				
109	2/11/2023	229672	6290494	56	Limestone pocket. Lemandra holds slope togethet	North	South-west			
110	2/11/2023	229631	6290503	56	Exposure around base of tree	North-west				
111	2/11/2023	229639	6290400	56		South-east	South-east			
112	2/11/2023	229697	6290426	56	Bedrock outcropping all along side of hill	South-east				
113	2/11/2023	229723	6290402	56	South across lake lyell to other hills	South				
114	2/11/2023	229785	6290415	56	Outcrop	East	West			
115	2/11/2023	229863	6290398	56		North-west	North-east	North		
116	2/11/2023	229363	6290937	56	Yam daisy					
117	2/11/2023	229329	6290921	56		South-west				
118	2/11/2023	229346	6290859	56		East	North-east			

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
119	2/11/2023	229371	6290854	56	Geotech track already cleared and marked	South-east				
120	2/11/2023	229393	6290866	56	Pigs	West				
121	2/11/2023	229405	6290853	56	Fence	North				
122	2/11/2023	229340	6290737	56	Pigs	North-east				
123	2/11/2023	229404	6290612	56		South-west				
124	2/11/2023	229409	6290597	56	Meeting of 3 gullies	Souht-east				
125	2/11/2023	229307	6290545	56	Silcrete outcropping. Sharon said this is an area where they would likely have worked. Knoll of potential	West	South			
126	2/11/2023	229289	6290617	56		North-west	Limestone or silcrete	North		
127	2/11/2023	229432	6291034	56		West	East			
128	1/11/2023	229881	6290922	56		North	North	North-east		
129	3/11/2023	229104	6290545	56	Old shack, fence line, esky	North-east				
130	3/11/2023	229081	6290415	56	Fenceline, uprooted trer	South		South		
131	3/11/2023	229182	6290331	56	Rocky outcrop at top of hill	South-east				
132	3/11/2023	229247	6290305	56	Gully	South				
133	3/11/2023	229407	6290228	56	Very steep downhill, too steep to cross valley here and too steep to walk much of the other side	North-east	South-east	North-east	North-east	
134	3/11/2023	229371	6290023	56	Starts to level out	West	East			
135	3/11/2023	229336	6290003	56	Old track	North	South			
136	3/11/2023	229246	6290084	56		West	West	West		
137	3/11/2023	229197	6290093	56	Disused wlmbat burrow	East				

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
138	3/11/2023	229153	6290115	56	Flat area down near creek line. Potential camp?	South				
139	3/11/2023	229149	6290167	56	Geebung(?) Tree		North			
140	3/11/2023	229142	6290219	56	Rocky outcrop on ridge	South	South	South	North	North
141	3/11/2023	229144	6290247	56		East	West			
142	3/11/2023	229060	6290330	56	Fence line	North	South			
143	3/11/2023	229071	6290453	56	View from top to lake lyell	West	South			
144	3/11/2023	229276	6290077	56		South-west				
145	3/11/2023	229350	6290028	56		Souht-west	East			
146	3/11/2023	229309	6289956	56		North	South-east			
147	3/11/2023	229267	6289912	56	Flattens out and clears	East				
148	3/11/2023	229217	6289812	56		East	South	North-east		
149	3/11/2023	229187	6289767	56	Turn around point	North				
150	3/11/2023	229185	6289771	56		South-east	East			
151	6/11/2023	228539	6289481	56		North				
152	6/11/2023	228491	6289432	56		North-west				
153	6/11/2023	228424	6289386	56		South	South-west			
154	6/11/2023	228366	6289382	56	Granite outcrop	North				
155	6/11/2023	228576	6289003	56		East	North-west			
156	6/11/2023	228611	6289102	56		West				
157	6/11/2023	228639	6289197	56		West	West			
158	6/11/2023	228733	6289306	56		South-west	North-west	West		
159	6/11/2023	228858	6289436	56	Rocky outcrop	North-east	North-west			
160	6/11/2023	228893	6289535	56		North				
161	6/11/2023	228896	6289577	56	Couls nof relocate prev recorded site 0915. Too much leaf litter	North-west	North-east			
162	6/11/2023	228968	6289548	56		North	East			
163	6/11/2023	229019	6289564	56	Rocky out	South-east				
164	6/11/2023	229039	6289563	56		East	North			

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
165	6/11/2023	229072	6289578	56	River crossing	East	North			
166	6/11/2023	229037	6289597	56	Quartz outcrop					
167	6/11/2023	228912	6289699	56	Old track	North	East	West		
168	6/11/2023	228754	6289555	56	Potential PAD?	East	North-west	North		
169	6/11/2023	228720	6289481	56	Could not relocate 0916 but looks like a good pad	North-west	North			
170	6/11/2023	228657	6289455	56		South-east	North-west			
171	2/11/2023	229803	6290648	56		North	East	South	West	
172	2/11/2023	229736	6290609	56		North	East	South	West	
173	2/11/2023	229684	6290596	56		North	East	South	West	
174	2/11/2023	229602	6290588	56		North	East	South	West	
175	2/11/2023	229570	6290528	56		North	East	South	West	
176	2/11/2023	229511	6290501	56		North	East	South	West	
177	2/11/2023	229467	6290518	56		North	East	South	West	
178	2/11/2023	229471	6290420	56		North	East	South	West	
179	2/11/2023	229443	6290357	56		North	East	South	West	
180	2/11/2023	229520	6290366	56		North	East	South	West	
181	2/11/2023	229635	6290389	56		North	East	South	West	
182	2/11/2023	229634	6290350	56		North	East	South	West	
183	2/11/2023	229646	6290296	56		North	East	South	West	
184	2/11/2023	229687	6290277	56		North	East	South	West	
185	2/11/2023	229735	6290306	56		North	East	South	West	
186	2/11/2023	229765	6290330	56		North	East	South	West	
187	2/11/2023	229836	6290322	56		North	East	South	West	
188	2/11/2023	229843	6290441	56		North	East	South	West	
189	2/11/2023	229334	6290868	56		North	East	South	West	
190	2/11/2023	229369	6290833	56		North	East	South	West	
191	2/11/2023	229477	6290824	56		North	East	South	West	
192	2/11/2023	229481	6290762	56		North	East	South	West	
193	2/11/2023	229440	6290641	56		North	East	South	West	

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
194	2/11/2023	229447	6290587	56		North	East	South	West	
195	2/11/2023	229425	6290523	56		North	East	South	West	
196	2/11/2023	229418	6290501	56		North	East	South	West	
197	2/11/2023	229414	6290442	56		North	East	South	West	
198	2/11/2023	229407	6290428	56		North	East	South	West	
199	2/11/2023	229361	6290454	56		North	East	South	West	
200	2/11/2023	229330	6290472	56		North	East	South	West	
201	2/11/2023	229370	6290503	56		North	East	South	West	
202	2/11/2023	229396	6290587	56		North	East	South	West	
203	2/11/2023	229360	6290626	56		North	East	South	West	
204	2/11/2023	229325	6290654	56		North	East	South	West	
205	2/11/2023	229304	6290706	56		North	East	South	West	
206	2/11/2023	229264	6290742	56		North	East	South	West	
207	3/11/2023	229115	6290551	56		North	East	South	West	
208	3/11/2023	229161	6290508	56		North	East	South	West	
209	3/11/2023	229211	6290389	56		North	East	South	West	
210	3/11/2023	229266	6290412	56		North	East	South	West	
211	3/11/2023	229349	6290319	56		North	East	South	West	
212	3/11/2023	229295	6290181	56		North	East	South	West	
213	3/11/2023	229220	6290089	56		North	East	South	West	
214	3/11/2023	229178	6290099	56		North	East	South	West	
215	3/11/2023	229162	6290112	56		North	East	South	West	
216	3/11/2023	229137	6290125	56		North	East	South	West	
217	3/11/2023	229084	6290094	56		North	East	South	West	
218	3/11/2023	229068	6290062	56		North	East	South	West	
219	3/11/2023	229045	6290118	56		North	East	South	West	
220	3/11/2023	228996	6290167	56		North	East	South	West	
221	3/11/2023	229052	6290224	56		North	East	South	West	
222	3/11/2023	229084	6290234	56		North	East	South	West	
223	3/11/2023	229024	6290283	56		North	East	South	West	

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
224	3/11/2023	229021	6290393	56		North	East	South	West	
225	3/11/2023	229018	6290490	56		North	East	South	West	
226	3/11/2023	229379	6290052	56		North	East	South	West	
227	3/11/2023	229396	6289990	56		North	East	South	West	
228	7/11/2023	228538	6289746	56	AS3 artefact location	North-east				
229	8/11/2023	228601	6289969	56		East	West	South-east		
230	9/11/2023	228681	6290017	56		North	South-east			
231	10/11/2023	228802	6289999	56	Soil profile, silty sand with common gravel inclusions	West				
232	11/11/2023	228879	6289990	56		North-west				
233	12/11/2023	228961	6290000	56		South-west	South			
234	13/11/2023	229012	6290015	56		South	East	South-east		
235	14/11/2023	228834	6289965	56		South	South-west			
236	15/11/2023	228741	6289977	56		South				
237	16/11/2023	228390	6289633	56		West	North	North		
238	17/11/2023	228194	6289591	56		North	West			
239	3/11/2023	229365	6289963	56		North	East	South	West	
240	3/11/2023	229328	6289935	56		North	East	South	West	
241	3/11/2023	229303	6289888	56		North	East	South	West	
242	6/11/2023	228538	6289288	56		North	East	South	West	
243	6/11/2023	228563	6289309	56		North	East	South	West	
244	6/11/2023	228581	6289398	56		North	East	South	West	
245	6/11/2023	228586	6289444	56		North	East	South	West	
246	6/11/2023	228474	6289524	56		North	East	South	West	
247	6/11/2023	228399	6289411	56		North	East	South	D	
248	6/11/2023	228272	6289405	56		North	East	South	West	
249	6/11/2023	228221	6289439	56		North	East	South	West	
250	6/11/2023	228550	6289027	56		North	East	South	West	
251	6/11/2023	228568	6289066	56		North	East	South	West	
252	6/11/2023	228591	6289181	56		North	East	South	West	

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
253	6/11/2023	228651	6289319	56		North	East	South	West	
254	6/11/2023	228715	6289344	56		North	East	South	West	
255	6/11/2023	228782	6289434	56		North	East	South	West	
256	6/11/2023	228776	6289478	56		North	East	South	West	
257	6/11/2023	228880	6289600	56		North	East	South	West	
258	6/11/2023	228880	6289600	56		North	East	South	West	
259	6/11/2023	228894	6289706	56		North	East	South	West	
260	6/11/2023	228896	6289782	56		North	East	South	West	
261	6/11/2023	228926	6289873	56		North	East	South	West	
262	6/11/2023	228849	6289876	56		North	East	South	West	
263	6/11/2023	228799	6289853	56		North	East	South	West	
264	6/11/2023	228748	6289845	56		North	East	South	West	
265	6/11/2023	228726	6289716	56		North	East	South	West	
266	6/11/2023	228687	6289430	56		North	East	South	West	
267	7/11/2023	228539	6289874	56		North	East	South	West	
268	7/11/2023	228544	6289989	56		North	East	South	West	
269	7/11/2023	228606	6290050	56		North	East	South	West	
270	7/11/2023	228719	6290051	56		North	East	South	West	
271	7/11/2023	228848	6290071	56		North	East	South	West	
272	7/11/2023	228921	6290064	56		North	East	South	West	
273	7/11/2023	228984	6290114	56		North	East	South	West	
274	7/11/2023	229033	6290043	56		North	East	South	West	
275	7/11/2023	229054	6290028	56		North	East	South	West	
276	7/11/2023	229020	6289998	56		North	East	South	West	
277	7/11/2023	228952	6289995	56		North	East	South	West	
278	7/11/2023	228430	6289691	56		North	East	South	West	
279	7/11/2023	228370	6289636	56		North	East	South	West	
280	7/11/2023	228370	6289636	56		North	East	South	West	
281	7/11/2023	228343	6289536	56		North	East	South	West	
282	7/11/2023	228303	6289550	56		North	East	South	West	

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
283	7/11/2023	228266	6289585	56		North	East	South	West	
284	7/11/2023	228193	6289593	56		North	East	South	West	
285	8/11/2023	229347	6289783	56		North	East	South	West	
286	8/11/2023	229321	6289753	56		North	East	South	West	
287	8/11/2023	229266	6289769	56		West	South			
288	8/11/2023	229202	6289657	56		North	West			
289	8/11/2023	229185	6289607	56		North	North-west			
290	8/11/2023	229143	6289603	56		South	South	North-west		
291	8/11/2023	229148	6289580	56		West	West	South		
292	8/11/2023	229110	6289623	56		South	West			
293	8/11/2023	229034	6289680	56		West				
294	8/11/2023	229032	6289899	56		South-west	West	South		
295	8/11/2023	228995	6289957	56		North-west	North-west	South	Souht-west	
296	8/11/2023	229069	6289874	56		South				
297	8/11/2023	229081	6289852	56	Rock outcrop north east either side of gully	North-east				
298	8/11/2023	229171	6289894	56		North	East	South-east	Souht	
299	9/11/2023	229525	6290250	56		North	South	South		
300	9/11/2023	229534	6290174	56		South	West			
301	9/11/2023	229524	6290080	56		East	South	West		
302	9/11/2023	229409	6289929	56		South	West			
303	9/11/2023	229358	6289838	56		East	South			
304	9/11/2023	229534	6290027	56	Outcrop	North				
305	9/11/2023	229623	6290266	56		South-west	North-east			
306	8/11/2023	229321	6289753	56		North	East	South	West	
307	8/11/2023	229295	6289697	56		North	East	South	West	
308	8/11/2023	229209	6289569	56		North	East	South	West	
309	8/11/2023	229127	6289759	56	Very flat outcrop, saddle	North	East	South	West	
310	8/11/2023	229063	6289765	56		North	East	South	West	
311	8/11/2023	229102	6289827	56		North	East	South	West	

Photo Point ID:	Date:	Easting:	Northing:	UTM zone:	Comments:	Photo 1 direction:	Photo 2 direction:	Photo 3 direction:	Photo 4 direction:	Photo 5 direction:
312	8/11/2023	229137	6289880	56		North	East	South	West	
313	8/11/2023	229128	6289910	56		North	East	South	West	
314	8/11/2023	229108	6289912	56		North	East	South	West	
315	8/11/2023	229123	6290028	56		North	East	South	West	
316	8/11/2023	229168	6289993	56		North	East	South	West	
317	8/11/2023	229235	6289988	56		North	East	South	West	
318	8/11/2023	229230	6290084	56		North	East	South	West	
319	9/11/2023	229480	6290228	56		North	East	South	West	
320	9/11/2023	229486	6290163	56		North	East	South	West	
321	9/11/2023	229470	6290129	56		North	East	South	West	
322	9/11/2023	229480	6290084	56		North	East	South	West	
323	9/11/2023	229487	6290064	56		North	East	South	West	
324	9/11/2023	229452	6290010	56		North	East	South	West	
325	9/11/2023	229416	6289952	56		North	East	South	West	
326	9/11/2023	229390	6289939	56		North	East	South	West	
327	9/11/2023	229351	6289841	56		North	East	South	West	
328	9/11/2023	229423	6289855	56		North	East	South	West	
329	9/11/2023	229545	6290009	56		North	East	South	West	
330	9/11/2023	229599	6290094	56		North	East	South	West	
331	9/11/2023	229602	6290146	56		North	East	South	West	
332	9/11/2023	229661	6290264	56		North	East	South	West	
333	4/03/2024	228894	6289499	56		North				
341	15/03/2024	228537	6289761	56	Mudstone core					
345	26/03/2024	228975	6290451	56		North	East	South	West	
346	27/03/2024	228954	6290374	56 14		North	East	South	West	
347	28/03/2024	228907	6290231	56 14		North	East	South	West	
348	29/03/2024	228910	6290259	56 14		North	East	South	West	
349	30/03/2024	228883	6290298	56		North	East	South	West	
350	31/03/2024	228916	6290455	56		North	East	South	West	
351	1/04/2024	228954	6290539	56 14		North	East	South	West	

E.3 Test pit data

Test pit	Landform	Easting/Northing	Distance from the nearest watercourse (m)	Strahler order	Named watercourse	Depth (m)	Size (m²)	Artefact count (n)	Extrapolated artefact density (n/m²)	Associated with identified site	Top of pit (m AHD)	Base of pit (m AHD)
1	Ridge flat/ spur	[redacted]	840	4	Farmers Creek	0.3	1	49	49	LL AS4	NA	NA
2	Ridge flat/ spur	[redacted]	777	4	Farmers Creek	0.5	0.25	0	0	LL AS4	NA	NA
3	Ridge flat/ spur	[redacted]	792	4	Farmers Creek	0.3	1	177	177	LL AS4	NA	NA
5	Hillslope	[redacted]	713	4	Farmers Creek	0.3	0.25	2	2	LL AS4	NA	NA
6	Hillslope	[redacted]	728	4	Farmers Creek	0.35	0.25	0	0	LL AS4	NA	NA
7	Ridge flat/ spur	[redacted]	752	4	Farmers Creek	0.4	1	118	118	LL AS4	NA	NA
8	Ridge flat/ spur	[redacted]	650	4	Farmers Creek	0.52	0.25	0	0	LL AS4	NA	NA
12	Hillslope	[redacted]	604	4	Farmers Creek	0.52	0.25	2	8	LL AS4	NA	NA
16	Alluvial terrace	[redacted]	25	4	Farmers Creek	1.28	1	27	27	LL AS5	792.79	791.51
17	Alluvial terrace	[redacted]	27	4	Farmers Creek	0.5	0.25	0	0	LL AS5	791.01	790.51
18	Alluvial terrace	[redacted]	50	4	Farmers Creek	0.85	0.25	2	8	LL AS5	798.5	797.65
19	Alluvial terrace	[redacted]	42	4	Farmers Creek	0.8	0.25	3	12	LL AS5	793.58	792.78
20	Alluvial terrace	[redacted]	32	4	Farmers Creek	0.4	0.25	3	12	LL AS5	795.72	795.32

Test pit	Landform	Easting/Northing	Distance from the nearest watercourse (m)	Strahler order	Named watercourse	Depth (m)	Size (m²)	Artefact count (n)	Extrapolated artefact density (n/m²)	Associated with identified site	Top of pit (m AHD)	Base of pit (m AHD)
24	Alluvial terrace	[redacted]	34	4	Farmers Creek	1.07	0.25	19	19	LL AS2	791.43	790.36
25	Alluvial terrace	[redacted]	35	4	Farmers Creek	0.4	0.25	2	8	LL AS2	792.1	791.7
33	Alluvial terrace	[redacted]	61	4	Farmers Creek	0.8	0.25	5	20	LL AS2	790.94	790.14
36	Ridge flat/ spur	[redacted]	41	4	Farmers Creek	0.22	0.25	1	4	45-4-0915	NA	NA
37	Alluvial terrace	[redacted]	80	4	Farmers Creek	1.29	1	27	27	LL AS2	790.74	789.45
39	Alluvial terrace	[redacted]	95	4	Farmers Creek	0.8	0.25	0	0	LL AS2	790.65	789.85
46	Alluvial terrace	[redacted]	33	4	Farmers Creek	0.7	0.25	0	0	LL AS3	788.81	788.11
47	Alluvial terrace	[redacted]	38	4	Farmers Creek	0.44	1	21	21	LL AS3	790.61	790.17
48	Alluvial terrace	[redacted]	48	4	Farmers Creek	0.32	1	37	37	LL AS3	791.06	790.74
49	Alluvial terrace	[redacted]	28	4	Farmers Creek	0.37	1	55	55	LL AS3	788.72	788.35
50	Alluvial terrace	[redacted]	65	4	Farmers Creek	0.27	1	76	76	LL AS3	790.69	790.42
51	Alluvial terrace	[redacted]	45	4	Farmers Creek	0.4	0.25	0	0	LL AS3	787.46	787.06
52	Alluvial terrace	[redacted]	79	4	Farmers Creek	0.69	1	110	110	LL AS3	792.03	791.34

Test pit	Landform	Easting/Northing	Distance from the nearest watercourse (m)	Strahler order	Named watercourse	Depth (m)	Size (m²)	Artefact count (n)	Extrapolated artefact density (n/m²)	Associated with identified site	Top of pit (m AHD)	Base of pit (m AHD)
53	Alluvial terrace	[redacted]	55	4	Farmers Creek	0.4	0.25	8	32	LL AS3	788.04	787.64
54	Alluvial terrace	[redacted]	83	4	Farmers Creek	0.71	1	46	46	LL AS3	789.77	789.06
55	Alluvial terrace	[redacted]	61	4	Farmers Creek	0.68	1	11	11	LL AS3	788.18	787.5
56	Alluvial terrace	[redacted]	88	4	Farmers Creek	0.7	0.25	1	4	LL AS3	NA	NA
57	Alluvial terrace	[redacted]	52	4	Farmers Creek	0.3	0.25	4	16	45-4-0916	790.75	790.45
59	Alluvial terrace	[redacted]	102	4	Farmers Creek	0.7	0.25	0	0	45-4-0916	790.75	790.05
61	Alluvial terrace	[redacted]	58	4	Farmers Creek	0.63	1	55	55	45-4-0916	789.79	789.16
62	Alluvial terrace	[redacted]	80	4	Farmers Creek	0.65	1	215	215	45-4-0916	788.64	788.01
65	Alluvial terrace	[redacted]	61	4	Farmers Creek	0.6	0.25	0	0	45-4-0916	787.96	787.36
66	Alluvial terrace	[redacted]	83	4	Farmers Creek	0.63	0.25	3	12	45-4-0916	789.06	788.43
67	Alluvial terrace	[redacted]	109	4	Farmers Creek	0.6	0.25	0	0	45-4-0916	791.42	790.82
69	Alluvial terrace	[redacted]	61	4	Farmers Creek	0	0.25	1	4	45-4-0916	NA	NA
70	Alluvial terrace	[redacted]	77	4	Farmers Creek	0.4	1	30	30	45-4-0916	789.75	789.35

Test pit	Landform	Easting/Northing	Distance from the nearest watercourse (m)	Strahler order	Named watercourse	Depth (m)	Size (m²)	Artefact count (n)	Extrapolated artefact density (n/m²)	Associated with identified site	Top of pit (m AHD)	Base of pit (m AHD)
71	Alluvial terrace	[redacted]	99	4	Farmers Creek	0.55	0.25	0	0	45-4-0916	791.25	790.7
72	Alluvial terrace	[redacted]	118	4	Farmers Creek	0.6	0.25	0	0	45-4-0916	795.07	794.47
73	Alluvial terrace	[redacted]	83	4	Farmers Creek	0.64	1	96	96	45-4-0916	789.68	789.04
74	Alluvial terrace	[redacted]	97	4	Farmers Creek	1.3	1	79	79	45-4-0916	792.97	791.67
77	Alluvial terrace	[redacted]	106	4	Farmers Creek	0.5	1	41	41	45-4-0916	791.06	790.43
78	Alluvial terrace	[redacted]	117	4	Farmers Creek	0.8	0.25	0	0	45-4-0916	NA	NA
80	Alluvial terrace	[redacted]	132	4	Farmers Creek	0.8	0.25	0	0	45-4-0916	NA	NA
81	Hillslope	[redacted]	151	4	Farmers Creek	0.8	0.25	0	0	45-4-0916	NA	NA
82	Ridge flat/ spur	[redacted]	161	4	Farmers Creek	0.25	0.25	0	0	45-4-0916	NA	NA
83	Ridge flat/ spur	[redacted]	183	4	Farmers Creek	0.52	0.25	0	0	45-4-0916	NA	NA
84	Ridge flat/ spur	[redacted]	145	4	Farmers Creek	0.28	0.25	0	0	45-4-0916	NA	NA
89	Ridge flat/ spur	[redacted]	70	4	Farmers Creek	0.15	0.25	1	4	45-4-0915	NA	NA
90	Ridge flat/ spur	[redacted]	121	4	Farmers Creek	0.43	0.25	4	16	45-4-0915	NA	NA
91	Ridge flat/ spur	[redacted]	53	4	Farmers Creek	0.55	0.25	4	16	45-4-0915	NA	NA

Test pit	Landform	Easting/Northing	Distance from the nearest watercourse (m)	Strahler order	Named watercourse	Depth (m)	Size (m²)	Artefact count (n)	Extrapolated artefact density (n/m²)	Associated with identified site	Top of pit (m AHD)	Base of pit (m AHD)
92	Ridge flat/ spur	[redacted]	100	4	Farmers Creek	0.4	0.25	1	4	45-4-0915	NA	NA
94	Ridge flat/ spur	[redacted]	92	4	Farmers Creek	0.2	0.25	4	16	45-4-0915	NA	NA
95	Ridge flat/ spur	[redacted]	89	4	Farmers Creek	0.3	0.25	1	4	45-4-0915	NA	NA
96	Ridge flat/ spur	[redacted]	106	4	Farmers Creek	0.3	0.25	1	4	45-4-0915	NA	NA
98	Ridge flat/ spur	[redacted]	145	4	Farmers Creek	0.6	0.25	0	0	45-4-0915	NA	NA
101	Ridge flat/ spur	[redacted]	196	4	Farmers Creek	0.4	0.25	0	0	45-4-0915	NA	NA
105	Ridge flat/ spur	[redacted]	50	4	Farmers Creek	0.2	0.25	0	0	LL AS1	NA	NA
106	Ridge flat/ spur	[redacted]	82	4	Farmers Creek	0.3	0.25	0	0	LL AS1	NA	NA
109	Ridge flat/ spur	[redacted]	102	4	Farmers Creek	0.15	0.25	0	0	LL AS1	NA	NA
111	Ridge flat/ spur	[redacted]	151	4	Farmers Creek	0.4	0.25	2	8	LL AS1	NA	NA
115	Ridge flat/ spur	[redacted]	643	6	Coxs River	0.6	0.25	0	0	LL IF2	NA	NA
116	Ridge flat/ spur	[redacted]	664	6	Coxs River	0.5	0.25	1	4	LL IF2	NA	NA
121	Ridge flat/ spur	[redacted]	169	4	Farmers Creek	0.3	0.25	0	0	LL IF3	NA	NA

Test pit	Landform	Easting/Northing	Distance from the nearest watercourse (m)	Strahler order	Named watercourse	Depth (m)	Size (m²)	Artefact count (n)	Extrapolated artefact density (n/m²)	Associated with identified site	Top of pit (m AHD)	Base of pit (m AHD)
122	Ridge flat/ spur	[redacted]	180	4	Farmers Creek	0.32	0.25	1	4	LL IF3	NA	NA
Average	**-**	**-**	***180***	**-**	**-**	***0.52***	***0.45***	***20.90***	***22.89***	**-**	***790.94***	***790.29***
Total	**-**	**-**	**-**	**-**	**-**	**-**	**30.25**	**1,344**	**1,511**	**-**	**-**	**-**

E.4 Photographic catalogue for test excavation

Test pit ID: 1

Context North	Base of pit - north	North section
		
image1-20240326-144444.jpg	image2-20240326-144505.jpg	image1-20240326-144445.jpg
East section	**South section**	**West section**
		
image3-20240326-144517.jpg	image4-20240326-1445.jpg	image5-20240326-14453.jpg

Test pit ID: 2

Context North	Base of pit - north	North section
		
image1-20240325-221827.jpg	image2-20240325-221835.jpg	image3-20240325-221846.jpg
East section	**South section**	**West section**

Test pit ID: 3

Context North	Base of pit - north	North section
		
image1-20240326-141411.jpg	image2-20240326-141416.jpg	image3-20240326-141427.jpg
East section	**South section**	**West section**
		
image4-20240326-141431.jpg	image5-20240326-141435.jpg	image6-20240326-141441.jpg

Test pit ID: 5

Context North	Base of pit - north	North section
 image1-20240325-224514.jpg	 image2-20240325-224541.jpg	 image3-20240325-224551.jpg
East section	**South section**	**West section**

Test pit ID: 6

Context North	Base of pit - north	North section
		
image1-20240325-222943.jpg	image2-20240325-222954.jpg	image3-20240325-223003.jpg
East section	**South section**	**West section**

Test pit ID: 7

Context North	Base of pit - north	North section
		
image1-20240326-150142.jpg	image2-20240326-150157.jpg	image3-20240326-150210.jpg
East section	**South section**	**West section**
		
image4-20240326-150214.jpg	image5-20240326-150222.jpg	image6-20240326-150231.jpg

Test pit ID: 8

Context North	Base of pit - north	North section
		
image1-20240325-225125.jpg	image2-20240325-225145.jpg	image3-20240325-225158.jpg
East section	**South section**	**West section**

Test pit ID: 12

Context North	Base of pit - north	North section
		
image1-20240325-230743.jpg	image2-20240325-230801.jpg	image3-20240325-230817.jpg
East section	**South section**	**West section**

Test pit ID: 16

Context North	Base of pit - north	North section
		
image1-20240314-095055.jpg	image2-20240314-095101.jpg	image3-20240314-095113.jpg
East section	**South section**	**West section**
		
image4-20240314-095120.jpg	image5-20240314-095130.jpg	image6-20240314-095134.jpg

Test pit ID: 17

Context North	Base of pit - north	North section
		
image1-20240312-154339.jpg	image2-20240312-154343.jpg	image3-20240312-154359.jpg
East section	**South section**	**West section**

Test pit ID: 18

Context North	Base of pit - north	North section
		
image1-20240312-150157.jpg	image2-20240312-150255.jpg	image3-20240312-150304.jpg
East section	**South section**	**West section**

Test pit ID: 19

Context North	Base of pit - north	North section
		
image1-20240313-141752.jpg	image2-20240313-141759.jpg	image3-20240313-141810.jpg
East section	**South section**	**West section**

Test pit ID: 20

Context North	Base of pit - north	North section
		
image1-20240313-114443.jpg	image2-20240313-114448.jpg	image3-20240313-114454.jpg
East section	**South section**	**West section**

Test pit ID: 24

Context North	Base of pit - north	North section
		
image1-20240321-111456.jpg	image2-20240321-111502.jpg	image3-20240321-111515.jpg
East section	**South section**	**West section**
		
image4-20240321-111521.jpg	image5-20240321-111536.jpg	image6-20240321-111541.jpg

Test pit ID: 25

Context North	Base of pit - north	North section
		
image1-20240311-125810.jpg	image2-20240311-125813.jpg	image3-20240311-125819.jpg
East section	**South section**	**West section**

Test pit ID: 33

Context North	Base of pit - north	North section
		
image1-20240311-143301.jpg	image2-20240311-143309.jpg	image5-20240311-143402.jpg
East section	**South section**	**West section**

Test pit ID: 36

Context North	Base of pit - north	North section
		
image1-20240308-002624.jpg	image2-20240308-002648.jpg	image3-20240308-002659.jpg
East section	**South section**	**West section**

Test pit ID: 37

Context North	Base of pit - north	North section
		
image1-20240314-151506.jpg	image2-20240314-151537.jpg	image3-20240314-151523.jpg
East section	**South section**	**West section**
		
image4-20240314-151547.jpg	image5-20240314-151604.jpg	image6-20240314-151614.jpg

Test pit ID: 39

Context North	Base of pit - north	North section
		
image1-20240312-092205.jpg	image2-20240312-092210.jpg	image3-20240312-092216.jpg
East section	**South section**	**West section**

Test pit ID: 46

Context North	Base of pit - north	North section
		
image1-20240315-111301.jpg	image2-20240315-111307.jpg	image3-20240315-111323.jpg
East section	**South section**	**West section**

Test pit ID: 47

Context North	Base of pit - north	North section
		
image1-20240321-142346.jpg	image2-20240321-142350.jpg	image3-20240321-142357.jpg
East section	**South section**	**West section**
		
image4-20240321-142415.jpg	image5-20240321-142418.jpg	image6-20240321-142421.jpg

Test pit ID: 48

Context North	Base of pit - north	North section
		
image1-20240321-133108.jpg	image2-20240321-133112.jpg	image3-20240321-133124.jpg
East section	**South section**	**West section**
		
image4-20240321-133132.jpg	image5-20240321-133325.jpg	image6-20240321-133332.jpg

Test pit ID: 49

Context North	Base of pit - north	North section
		
image1-20240319-152050.jpg	image2-20240319-152112.jpg	image3-20240319-152100.jpg
East section	**South section**	**West section**
		
image4-20240319-152118.jpg	image5-20240319-152122.jpg	image6-20240319-152126.jpg

Test pit ID: 50

Context North	Base of pit - north	North section
		
image1-20240321-111456.jpg	image2-20240321-111502.jpg	image3-20240321-111515.jpg
East section	**South section**	**West section**
		
image4-20240321-111521.jpg	image5-20240321-111536.jpg	image6-20240321-111541.jpg

Test pit ID: 51

Context North	Base of pit - north	North section
		
image1-20240315-095001.jpg	image2-20240315-095020.jpg	image3-20240315-095027.jpg
East section	**South section**	**West section**

Test pit ID: 52

Context North	Base of pit - north	North section
		
image1-20240320-131117.jpg	image2-20240320-131124.jpg	image3-20240320-131140.jpg
East section	**South section**	**West section**
		
image4-20240320-131150.jpg	image5-20240320-131216.jpg	image6-20240320-131225.jpg

Test pit ID: 53

Context North	Base of pit - north	North section
		
image1-20240320-133236.jpg	image2-20240320-133247.jpg	image3-20240320-133249.jpg
East section	**South section**	**West section**

Test pit ID: 54

Context North	Base of pit - north	North section
		
image1-20240321-152513.jpg	image2-20240321-152517.jpg	image3-20240321-152525.jpg
East section	**South section**	**West section**
		
image4-20240321-152529.jpg	image5-20240321-152533.jpg	image6-20240321-152536.jpg

Test pit ID: 55

Context North	Base of pit - north	North section
		
image1-20240322-105053.jpg	image2-20240322-105059.jpg	image3-20240322-105108.jpg
East section	**South section**	**West section**
		
image4-20240322-105112.jpg	image5-20240322-105117.jpg	image6-20240322-105121.jpg

Test pit ID: 56

Context North	Base of pit - north	North section
		
image1-20240319-153647.jpg	image2-20240319-153736.jpg	image3-20240319-153741.jpg
East section	**South section**	**West section**

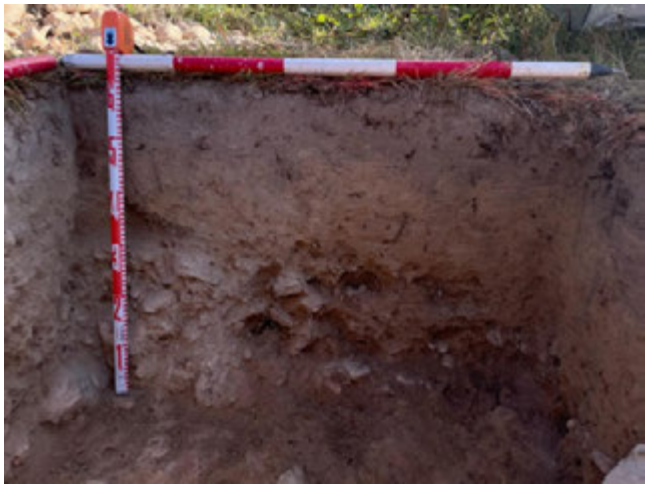
Test pit ID: 57

Context North	Base of pit - north	North section
		
image1-20240305-125647.jpg	image2-20240305-125650.jpg	image3-20240305-125700.jpg
East section	**South section**	**West section**

Test pit ID: 59

Context North	Base of pit - north	North section
		
image1-20240305-144325.jpg	image2-20240305-144333.jpg	image3-20240305-144345.jpg
East section	**South section**	**West section**

Test pit ID: 61

Context North	Base of pit - north	North section
		
image1-20240307-091826.jpg	image2-20240307-092213.jpg	image3-20240307-091836.jpg
East section	**South section**	**West section**
		
image4-20240307-091849.jpg	image5-20240307-091945.jpg	image6-20240307-091903.jpg

Test pit ID: 62

Context North	Base of pit - north	North section
		
image1-20240306-154909.jpg	image2-20240306-154915.jpg	image3-20240306-154923.jpg
East section	**South section**	**West section**
		
image4-20240306-154929.jpg	image5-20240306-154937.jpg	image6-20240306-154944.jpg

Test pit ID: 65

Context North	Base of pit - north	North section
		
image1-20240301-113420.jpg	image2-20240301-113426.jpg	image3-20240301-113440.jpg
East section	**South section**	**West section**

Test pit ID: 66

Context North	Base of pit - north	North section
		
image1-20240306-152713.jpg	image2-20240306-152717.jpg	image3-20240306-152723.jpg
East section	**South section**	**West section**

Test pit ID: 67

Context North	Base of pit - north	North section
		
image1-20240301-121839.jpg	image2-20240301-122004.jpg	image3-20240301-122010.jpg
East section	**South section**	**West section**

Test pit ID: 69

Context North	Base of pit - north	North section
		
image1-20240301-125728.jpg	image2-20240301-125731.jpg	image3-20240301-125737.jpg
East section	**South section**	**West section**

Test pit ID: 70

Context North	Base of pit - north	North section
		
image1-20240305-152403.jpg	image2-20240305-154255.jpg	image3-20240305-154308.jpg
East section	**South section**	**West section**
		
image4-20240305-154325.jpg	image5-20240305-154334.jpg	image6-20240305-154342.jpg

Test pit ID: 71

Context North	Base of pit - north	North section
		
image1-20240229-144850.jpg	image2-20240229-144857.jpg	image3-20240229-144909.jpg
East section	**South section**	**West section**
		
image5-20240229-145433.jpg		

Test pit ID: 72

Context North	Base of pit - north	North section
		
image1-20240229-152302.jpg	image2-20240229-152308.jpg	image3-20240229-152312.jpg
East section	**South section**	**West section**

Test pit ID: 73

Context North	Base of pit - north	North section
		
image1-20240306-131110.jpg	image2-20240306-130847.jpg	image3-20240306-131119.jpg
East section	**South section**	**West section**
		
image4-20240306-131150.jpg	image5-20240306-131204.jpg	image6-20240306-131213.jpg

Test pit ID: 74

Context North	Base of pit - north	North section
		
image1-20240306-120513.jpg	image2-20240306-120528.jpg	image3-20240306-120534.jpg
East section	**South section**	**West section**
		
image4-20240306-120544.jpg	image5-20240306-120556.jpg	image5-20240306-120558.jpg

Test pit ID: 77

Context North	Base of pit - north	North section
		
image1-20240306-122956.jpg	image2-20240306-123002.jpg	image3-20240306-123006.jpg
East section	**South section**	**West section**
		
image4-20240306-123015.jpg	image5-20240306-123024.jpg	image5-20240306-123025.jpg

Test pit ID: 78

Context North	Base of pit - north	North section
		
image1-20240228-120403.jpg	image2-20240228-120411.jpg	image3-20240228-120420.jpg
East section	**South section**	**West section**

Test pit ID: 80

Context North	Base of pit - north	North section
		
image1-20240228-143436.jpg	image2-20240228-143441.jpg	image3-20240228-143450.jpg
East section	**South section**	**West section**

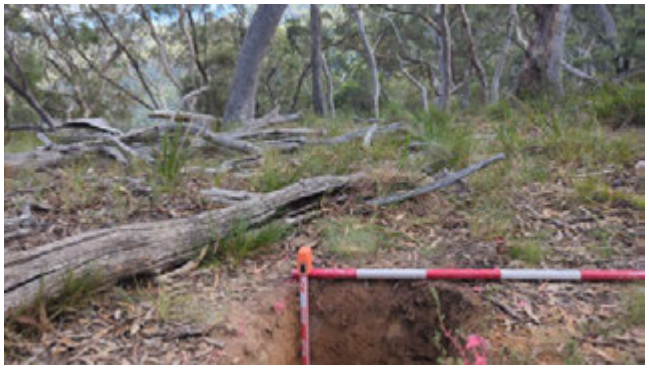
Test pit ID: 81

Context North	Base of pit - north	North section
		
image1-20240227-154234.jpg	image2-20240227-154238.jpg	image3-20240227-154242.jpg
East section	**South section**	**West section**

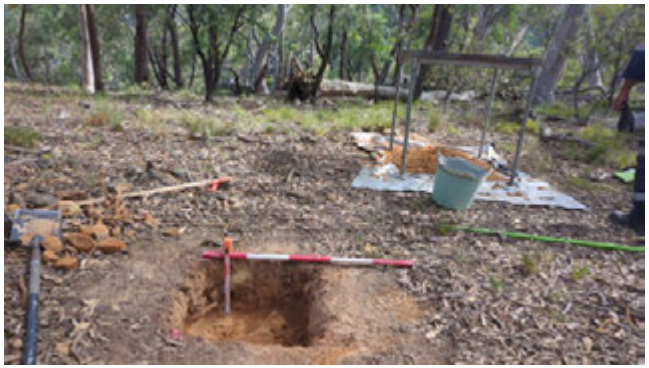
Test pit ID: 82

Context North	Base of pit - north	North section
		
image1-20240326-235016.jpg	image2-20240326-235028.jpg	image3-20240326-235034.jpg
East section	**South section**	**West section**

Test pit ID: 83

Context North	Base of pit - north	North section
		
image1-20240326-230402.jpg	image2-20240326-230409.jpg	image3-20240326-230419.jpg
East section	**South section**	**West section**

Test pit ID: 84

Context North	Base of pit - north	North section
		
image1-20240326-233159.jpg	image2-20240326-233205.jpg	image3-20240326-233212.jpg
East section	**South section**	**West section**

Test pit ID: 89

Context North	Base of pit - north	North section
		
image1-20240307-040322.jpg	image2-20240307-040331.jpg	image3-20240307-040341.jpg
East section	**South section**	**West section**

Test pit ID: 90

Context North	Base of pit - north	North section
		
image1-20240307-233327.jpg	image2-20240307-233345.jpg	image3-20240307-233407.jpg
East section	**South section**	**West section**

Test pit ID: 91

Context North	Base of pit - north	North section
		
image1-20240308-000749.jpg	image2-20240308-000833.jpg	image3-20240308-000900.jpg
East section	**South section**	**West section**

Test pit ID: 92

Context North	Base of pit - north	North section
		
image1-20240307-033441.jpg	image2-20240307-033449.jpg	image3-20240307-033457.jpg
East section	**South section**	**West section**

Test pit ID: 94

Context North	Base of pit - north	North section
		
image1-20240307-030536.jpg	image2-20240307-030548.jpg	image3-20240307-030555.jpg
East section	**South section**	**West section**

Test pit ID: 95

Context North	Base of pit - north	North section
		
image1-20240307-032405.jpg	image2-20240307-032415.jpg	image3-20240307-032422.jpg
East section	**South section**	**West section**

Test pit ID: 96

Context North	Base of pit - north	North section
		
image1-20240307-015523.jpg	image2-20240307-015614.jpg	image3-20240307-015633.jpg
East section	**South section**	**West section**

Test pit ID: 98

Context North	Base of pit - north	North section
		
image1-20240307-011646.jpg	image2-20240307-011721.jpg	image3-20240307-011742.jpg
East section	**South section**	**West section**

Test pit ID: 101

Context North	Base of pit - north	North section
		
image1-20240307-004901.jpg	image2-20240307-005316.jpg	image3-20240307-005352.jpg
East section	**South section**	**West section**

Test pit ID: 105

Context North	Base of pit - north	North section
		
image1-20240322-094630.jpg	image2-20240322-094635.jpg	image3-20240322-094641.jpg
East section	**South section**	**West section**

Test pit ID: 106

Context North	Base of pit - north	North section
		
image1-20240322-093439.jpg	image2-20240322-093445.jpg	image3-20240322-093450.jpg
East section	**South section**	**West section**

Test pit ID: 109

Context North	Base of pit - north	North section
		
image1-20240322-112942.jpg	image2-20240322-112947.jpg	image3-20240322-112952.jpg
East section	**South section**	**West section**

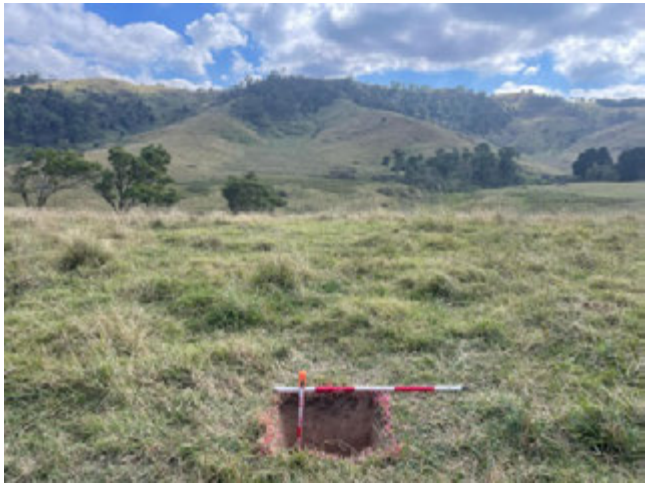
Test pit ID: 111

Context North	Base of pit - north	North section
		
image1-20240322-130302.jpg	image2-20240322-130315.jpg	image3-20240322-130329.jpg
East section	**South section**	**West section**

Test pit ID: 115

Context North	Base of pit - north	North section
		
image1-20240327-121201.jpg	image2-20240327-121209.jpg	image3-20240327-121220.jpg
East section	**South section**	**West section**

Test pit ID: 116

Context North	Base of pit - north	North section
		
image1-20240327-105323.jpg	image2-20240327-105337.jpg	image3-20240327-105346.jpg
East section	**South section**	**West section**

Test pit ID: 121

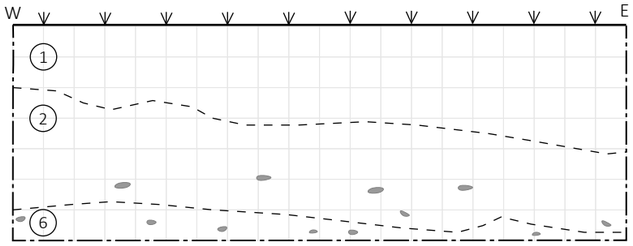
Context North	Base of pit - north	North section
		
image1-20240228-094609.jpg	image2-20240228-094620.jpg	image3-20240228-094627.jpg
East section	**South section**	**West section**

Test pit ID: 122

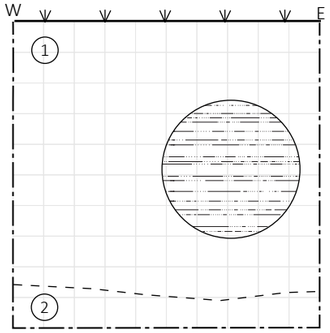
Context North	Base of pit - north	North section
		
image1-20240228-101904.jpg	image2-20240228-101908.jpg	image3-20240228-101911.jpg
East section	**South section**	**West section**

E.5 Scale drawings of excavated test pits

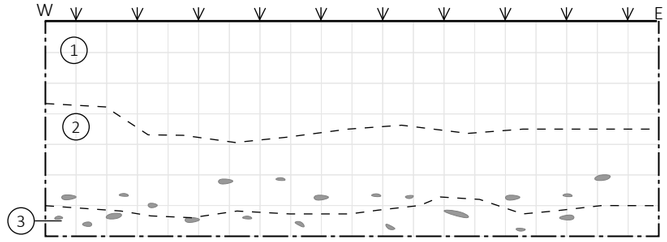
TP 1
NORTH SECTION



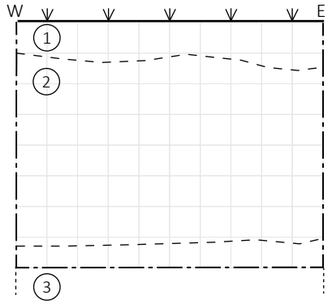
TP 2
NORTH SECTION



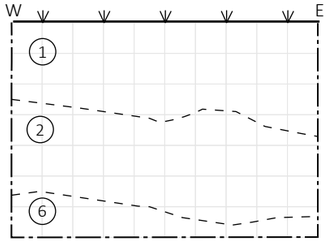
TP 3
NORTH SECTION



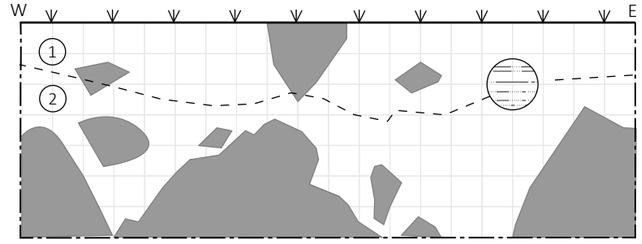
TP 5
NORTH SECTION



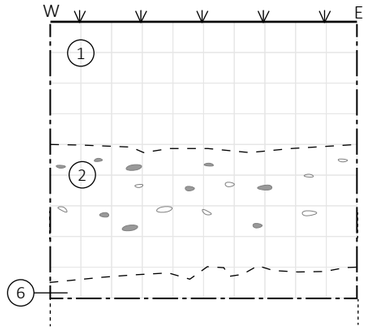
TP 6
NORTH SECTION



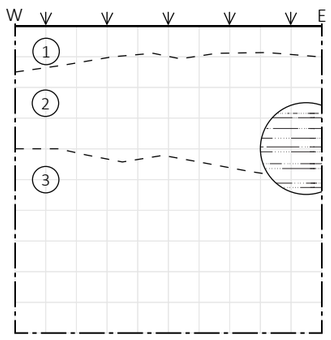
TP 7
NORTH SECTION



TP 8
NORTH SECTION



TP 12
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

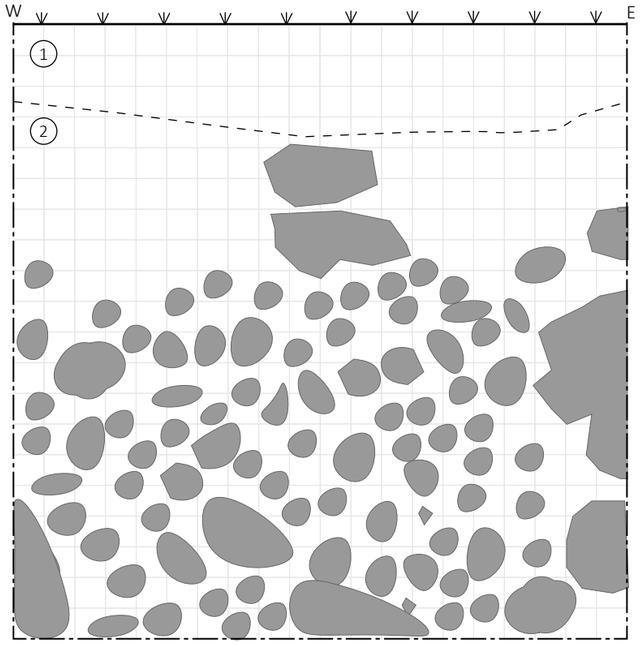
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

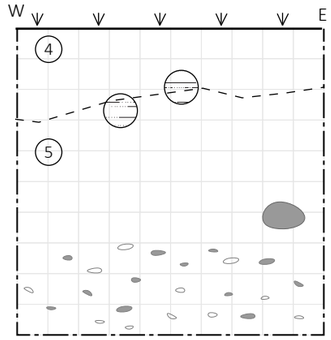
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	001
PROJECT NO.	VERSION	
E221111	1.0	

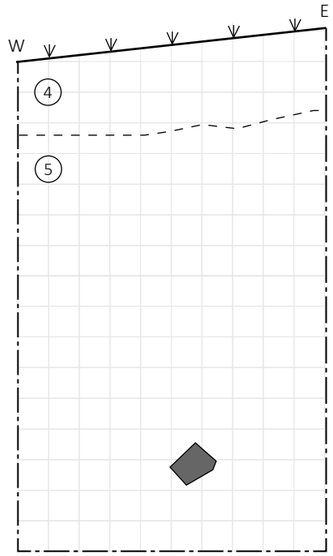
TP 16
NORTH SECTION



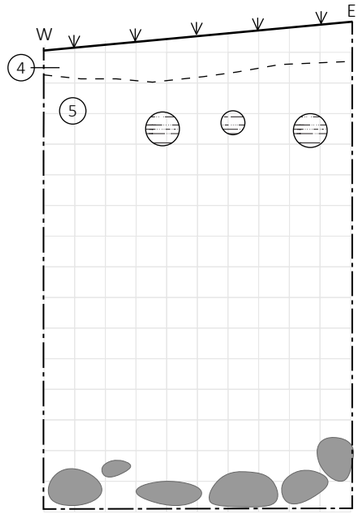
TP 17
NORTH SECTION



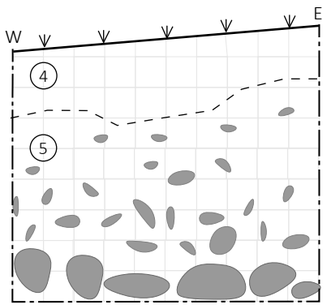
TP 18
NORTH SECTION



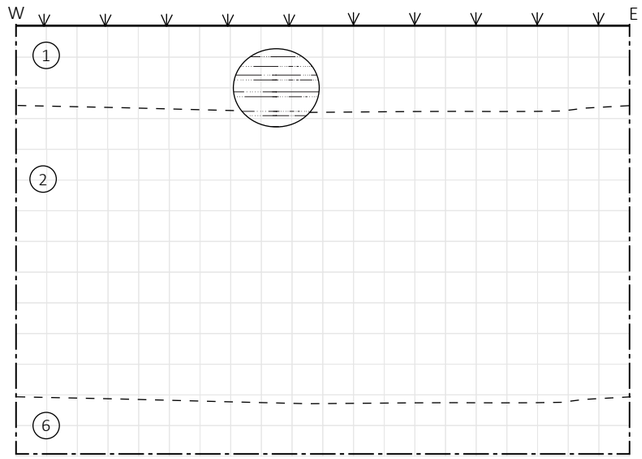
TP 19
NORTH SECTION



TP 20
NORTH SECTION



TP 24
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

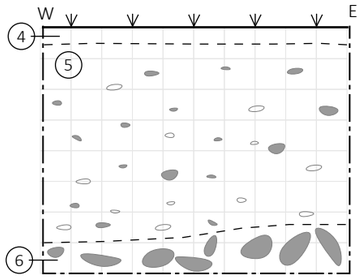
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

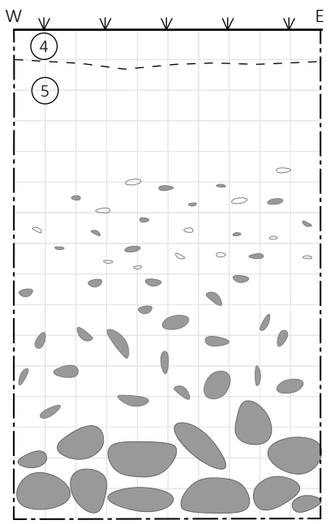
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	002
PROJECT NO.	**VERSION**	
E221111	1.0	

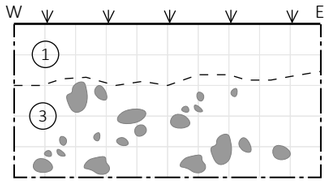
TP 25
NORTH SECTION



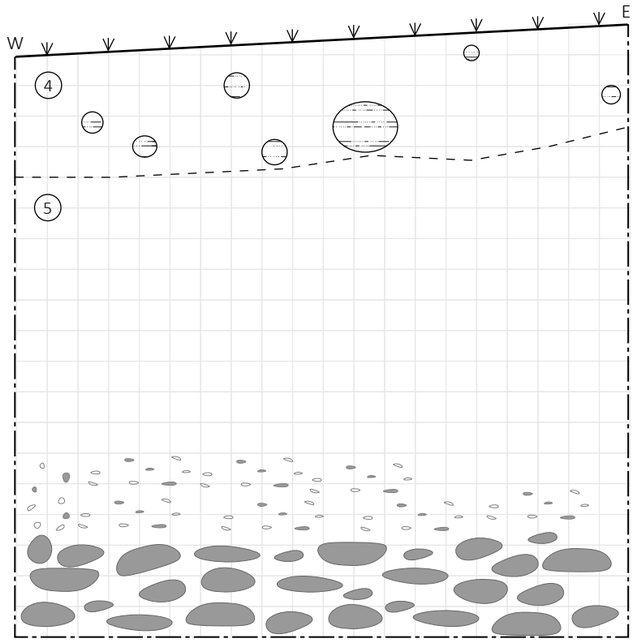
TP 33
NORTH SECTION



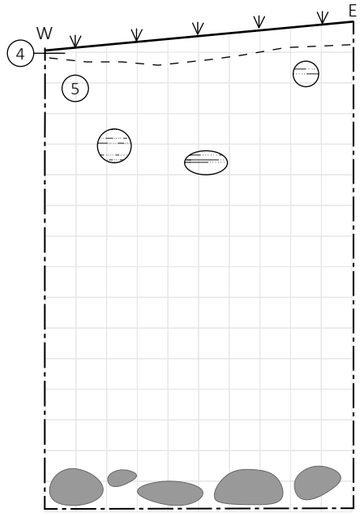
TP 36
NORTH SECTION



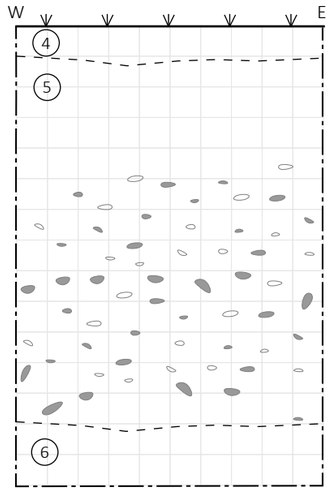
TP 37
NORTH SECTION



TP 39
NORTH SECTION



TP 46
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

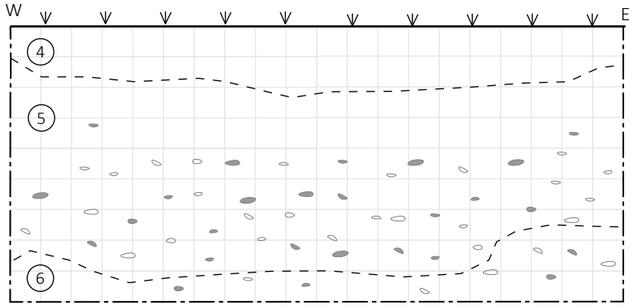
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

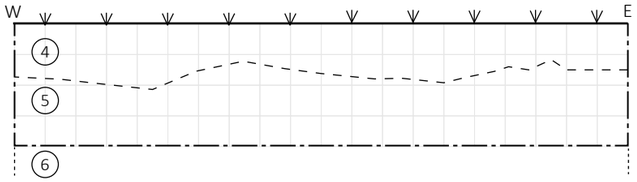
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	003
PROJECT NO.	VERSION	
E221111	1.0	

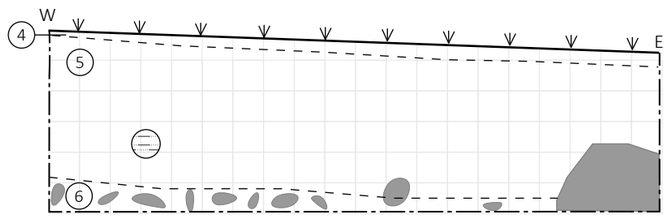
TP 47
NORTH SECTION



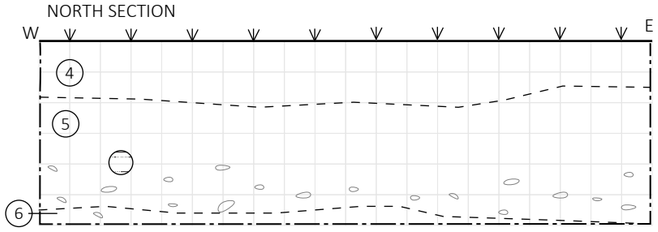
TP 48
NORTH SECTION



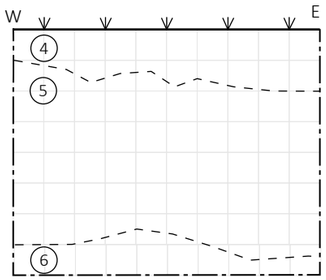
TP 49
WEST SECTION



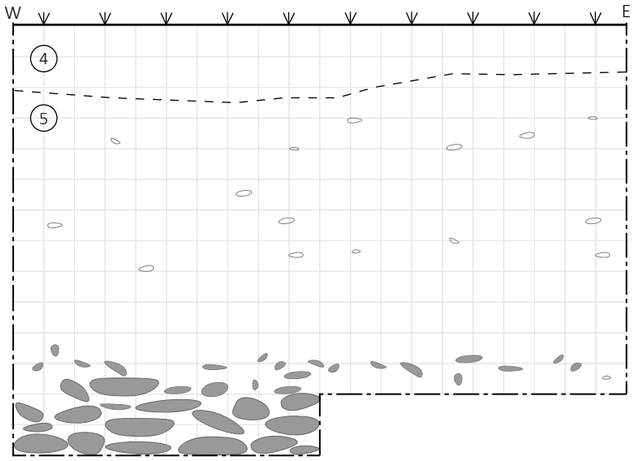
TP 50
NORTH SECTION



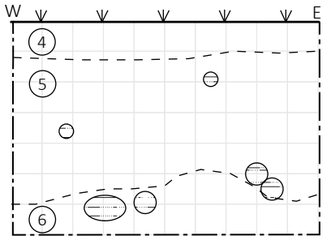
TP 51
NORTH SECTION



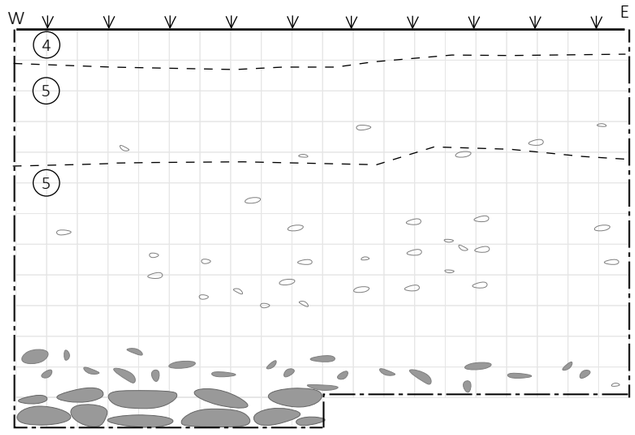
TP 52
NORTH SECTION



TP 53
NORTH SECTION



TP 54
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

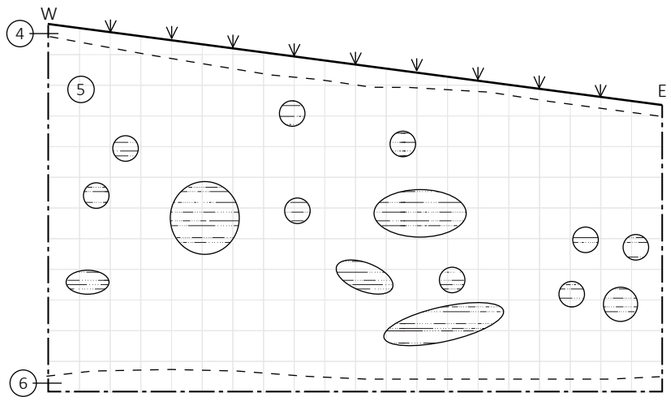
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

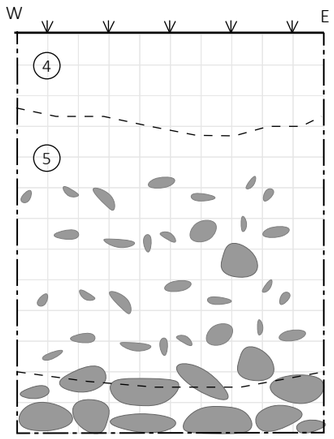
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	004
PROJECT NO.	**VERSION**	
E221111	1.0	

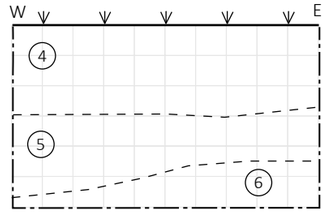
TP 55
NORTH SECTION



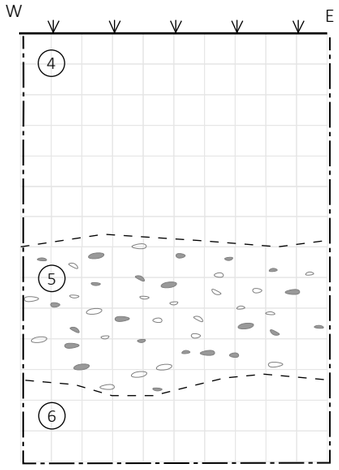
TP 56
NORTH SECTION



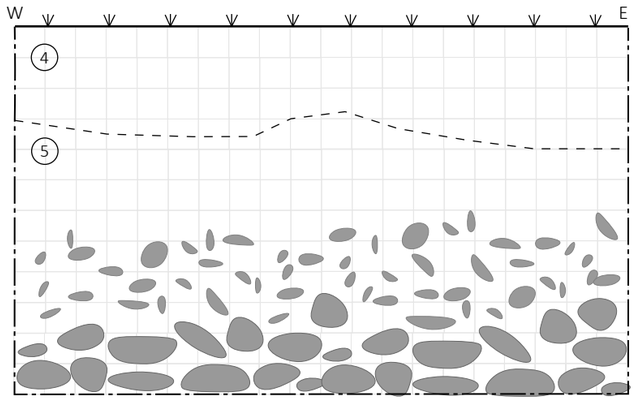
TP 57
NORTH SECTION



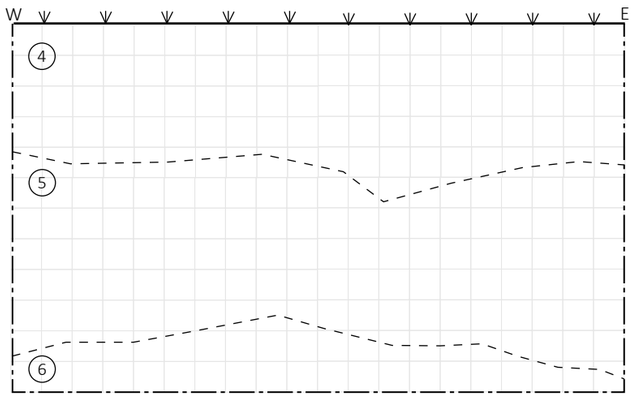
TP 59
NORTH SECTION



TP 61
NORTH SECTION



TP 62
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

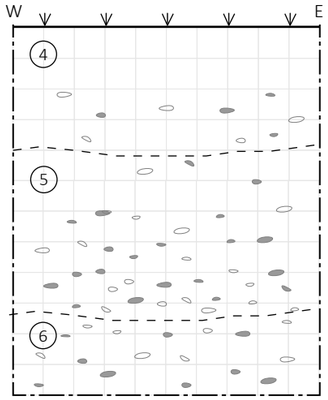
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

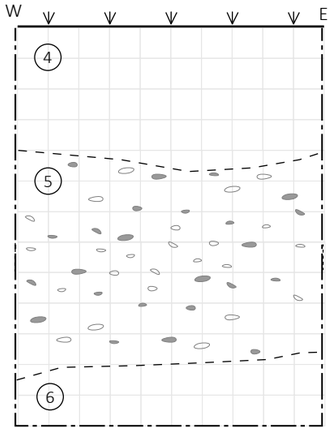
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	005
PROJECT NO.	**VERSION**	
E221111	1.0	

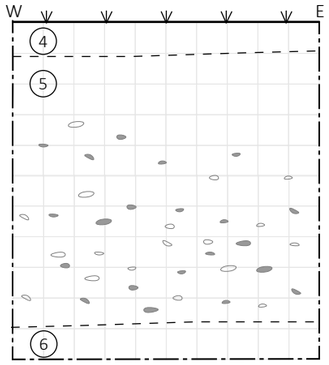
TP 65
NORTH SECTION



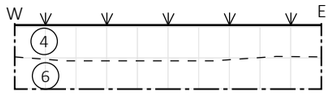
TP 66
NORTH SECTION



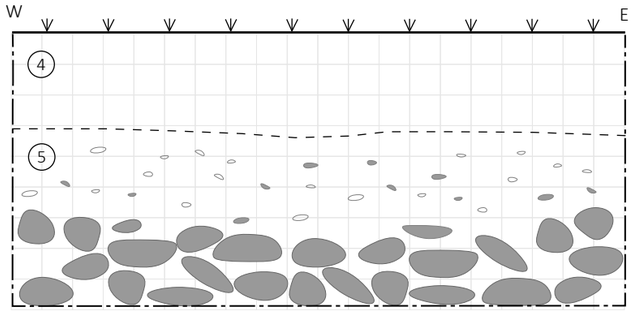
TP 67
NORTH SECTION



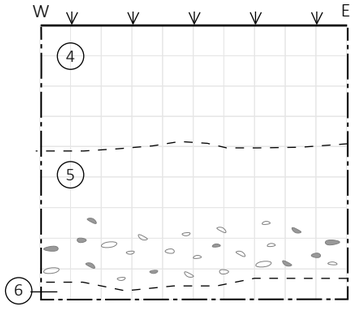
TP 69
NORTH SECTION



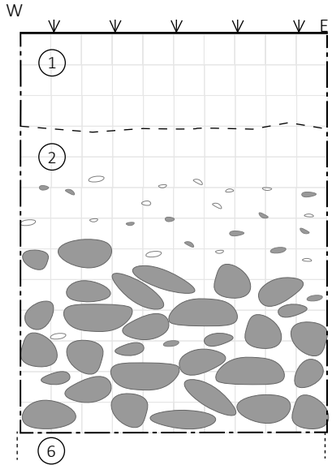
TP 70
NORTH SECTION



TP 71
NORTH SECTION



TP 72
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

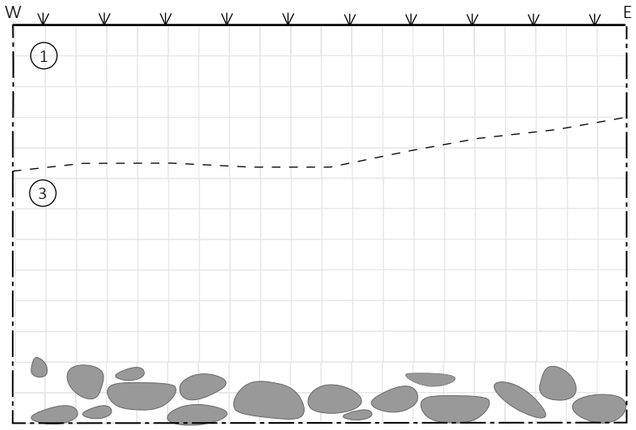
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

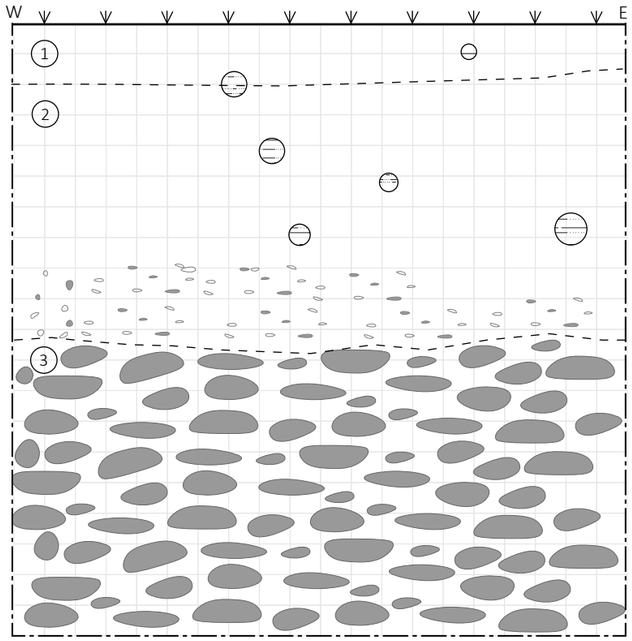
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	006
PROJECT NO.	**VERSION**	
E221111	1.0	

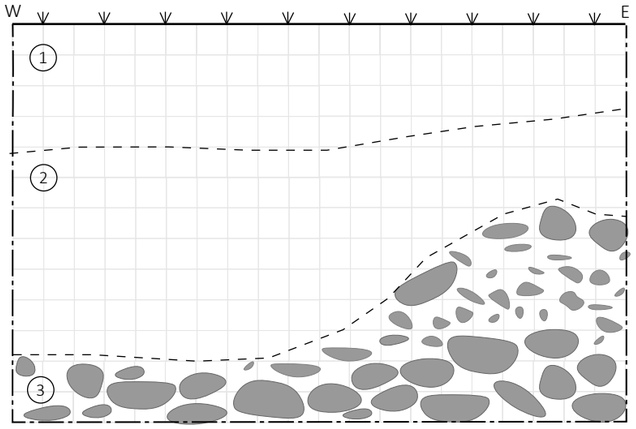
TP 73
NORTH SECTION



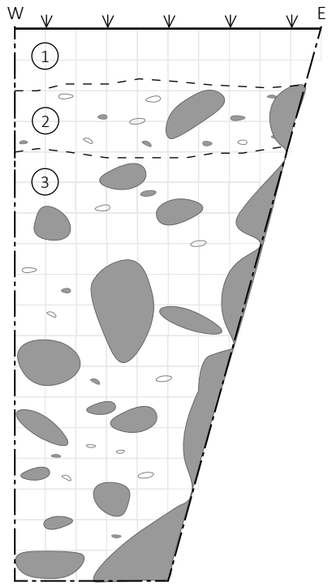
TP 74
NORTH SECTION



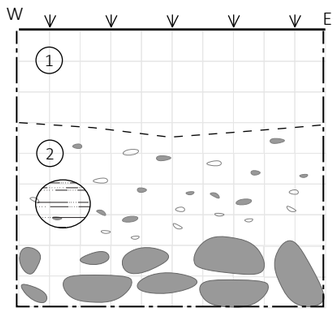
TP 77
NORTH SECTION



TP 78
NORTH SECTION



TP 80
NORTH SECTION



TP 81
NORTH SECTION



(1) DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

(2) BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

(3) ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

(4) DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

(5) PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

(6) COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

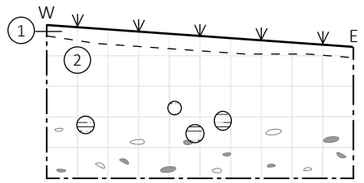
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

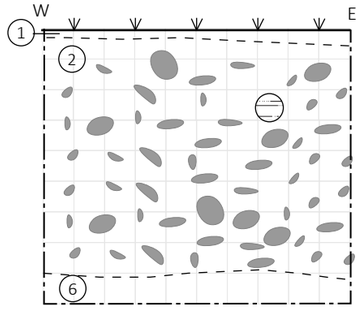
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	007
PROJECT NO.	**VERSION**	
E221111	1.0	

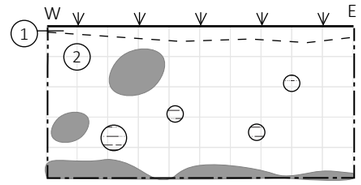
TP 82
NORTH SECTION



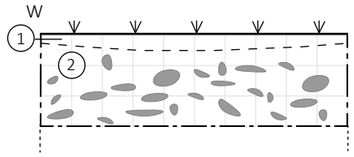
TP 83
NORTH SECTION



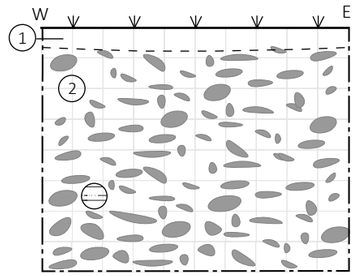
TP 84
NORTH SECTION



TP 89
NORTH SECTION

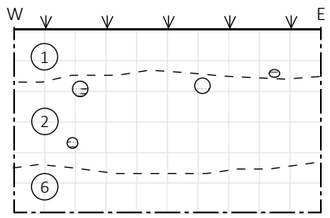


TP 90
NORTH SECTION

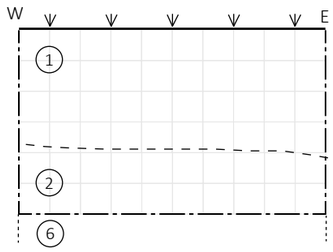


TP 91
NORTH SECTION

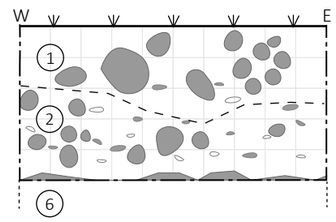
TP 92
NORTH SECTION



TP 94
NORTH SECTION



TP 95
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

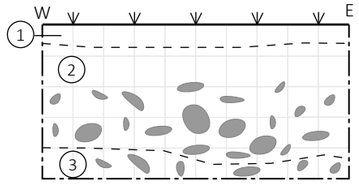
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

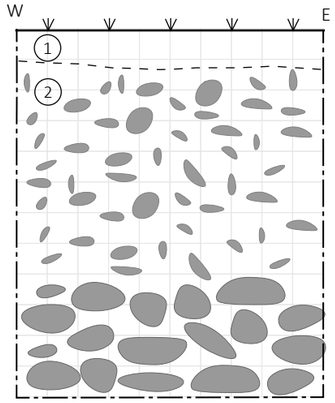
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	008
PROJECT NO.	VERSION	
E221111	1.0	

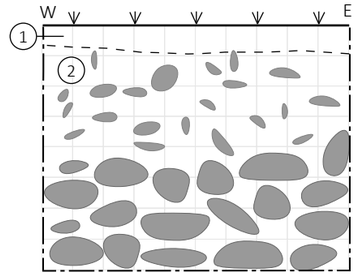
TP 96
NORTH SECTION



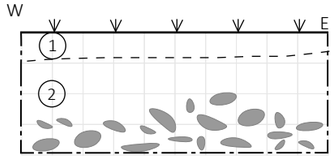
TP 98
NORTH SECTION



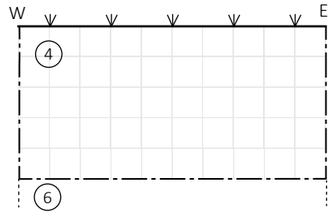
TP 101
NORTH SECTION



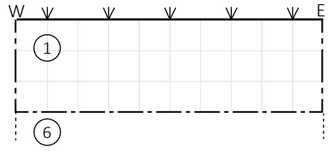
TP 105
NORTH SECTION



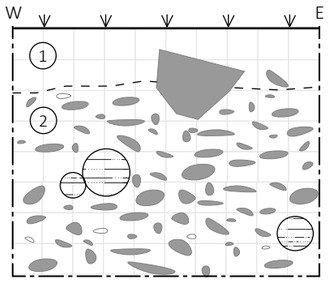
TP 106
NORTH SECTION



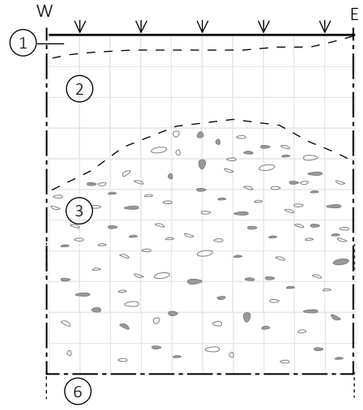
TP 109
NORTH SECTION



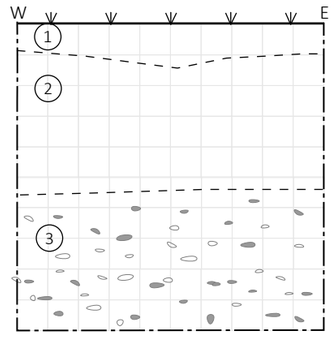
TP 111
NORTH SECTION



TP 115
NORTH SECTION



TP 116
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

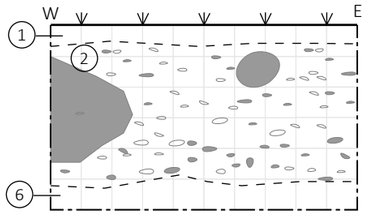
PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

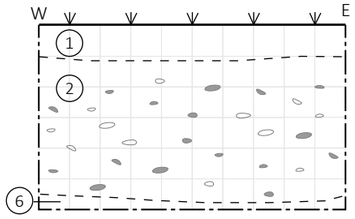
TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	009
PROJECT NO.	**VERSION**	
E221111	1.0	

TP 121
NORTH SECTION



TP 122
NORTH SECTION



1 DARK GREY-BROWN SANDY LOAM TO CLAY LOAM WITH FREQUENT ROOTS, ROOTLETS AND GRAVELS (A1 HORIZON)

2 BROWNISH GREY TO PALE YELLOW SANDY CLAY LOAM WITH FREQUENT ROCKS AND COBBLES (A2 HORIZON)

3 ORANGE SANDY LOAM WITH FREQUENT IRONSTONE/SANDSTONE COBBLES AT THE BASE OF THE EXCAVATIONS (B2 AND/OR C HORIZON)

4 DARK GREY-BROWN SANDY LOAM WITH FREQUENT ROOTS AND ROOTLETS (A1 HORIZON)

5 PALE YELLOW TO LIGHT GREY FINE SANDY LOAM (A2 HORIZON) WITH FREQUENT ROCK AND COBBLE INCLUSIONS

6 COMPACTED YELLOW TO ORANGE CLAY (B HORIZON)

EMM CONSULTANTS PTY LTD
Ground floor, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500
E info@emmconsulting.com.au
www.emmconsulting.com.au

VERSION	DESCRIPTION	DATE
1.0	DRAFT	06/05/2024

LEGEND
- PIT BOUNDARY
- SOIL PROFILE BOUNDARY
- DIFFUSE SOIL PROFILE BOUNDARY
- ROOTS
- GRAVEL INCLUSIONS
- IRONSTONE INCLUSIONS

CLIENT
ENERGY AUSTRALIA

PROJECT
LAKE LYELL

TITLE
TEST PIT SECTION DRAWINGS

TP SECTION DRAWINGS

SCALE	DRAWN/CHECK	DRAWING NO.
1:10	AM/MSB	010
PROJECT NO.	**VERSION**	
E221111	1.0	

E.6 Lithics analysis report

ARTEFACT ANALYSIS OF LAKE LYELL TEST EXCAVATIONS

May 2024

Dr Trudy Doelman

Introduction

The analysis of lithic assemblages from the test excavations along the Lake Lyell addresses a series of research questions which can broadly be divided into seven main categories:

1. **Site occupation/chronology**. When was the site/s occupied? Was the assemblage the product of repeated occupations or a single event? Do the characteristics of the assemblage change with time (sub-surface excavation)? How intensive was the occupation? Is there potential for a Pleistocene occupation?
2. **Lithic Source Procurement**. Which raw material resources were used? What types of raw material sources were used (primary and secondary)? Does a preference for a raw material occur? Can we infer the distance from the sources based on artefact size and the frequency and amount of cortex?
3. **Stone reduction technology**. How were cores prepared and worked? Were systematic core reduction strategies employed? The analysis will be broken down into descriptions of the:
    a. Core attributes
    b. Flake attributes
    c. Tool attributes
4. **Site Function**. What types of activities occurred on-site/s? Do discrete areas of stone working occur? Can site function be related to environmental factors i.e. distance to water?
    a. This analysis includes comparisons of the artefact density by location, the assemblage composition (number of cores, complete flakes, split flakes, broken flakes, tools and other artefact types e.g. grinding stone, axes, hammerstones) and frequencies of artefact types (represented by ratios of cores: complete flakes, complete flakes: broken flakes etc).
5. What post-depositional influences have impacted on the assemblage (e.g. size-sorting)?
6. **Spatial patterning**. Data from the technological analysis will be presented by site which will allow a spatial analysis of the artefact attributes. A further analysis was undertaken on the excavated assemblage to assess the nature and integrity of the sub-surface deposit.
7. **Regional Comparisons**. How does this site compare with others in the surrounding region? Comparisons can be made with the results from O'Driscoll and Kuskie (2015:135-139) and Doelman (2017, 2018, 2023, 2024).

Analysis Methodology

The selection of the artefact attributes addresses the above research questions. The analysis will follow those attributes initially recorded by O'Driscoll and Kuskie (2015) and extended here to include other attributes relevant to a technological and/or spatial analysis (Table 1).

The attributes recorded for each artefact are dependent on the technological class (i.e. if a complete flake, core or tool etc). Artefacts such as cores and tools generally represent a small fraction of an assemblage but can offer the greatest amount of information. These additional attributes provide

further information to examine the types of technological strategies used to prepare and reduce cores, the intensity of core reduction (curation) and can contribute to an understanding of the product/s manufactured, patterns of mobility and the transportation of artefacts (Table 1).

Term	Attributes
Technological class	Artefact type (e.g. core, complete flake, longitudinal split, flake fragmentation, retouch, angular fragments/lithic fragments, other (axe, grindstone etc)
Material	Raw Material type (silcrete indurated mudstone, chert, quartz, quartzite etc)
Colour	Raw Material colour
Translucency	Opaque, semi-translucent, translucent
Cortex	Percentage of cortex (if on a flake – amount on the dorsal surface of a flake)
Cortex Type	Type of cortex (rough/terrestrial, water-rolled/tabular)
Platform Type	unifacial, crushing/missing, Flaked (>2 flake scars), Facetted (3 or more small, systematic flake removals), Cortical (with cortex), n/a
Initiation Type	Bending, heritzan, bipolar, wedging, unclear
Termination Type	Feather, hinge, step, overshot
Tool Type	Select the type of tool – usewear, concave scraper, convex scraper, straight scraper, elouera (backed artefact), notched scraper, endscraper, saw, stepped scraper, drill, backed (generic), bondi point, thumbnail scraper, denticulate, burin, geometric microlith, nosed scraper
Maximum Dimension	All artefacts (in size groupings)
Complete and Broken Flakes	
Form	Form of the flake – Indeterminate, Expanding, Block (angular Fragment), Blade, N/A, Platform Rejuvenation Flake (tablet), Bipolar, Errailure, Ridge straightening flake, elongated flake. These attributes reflect core reduction strategies.
Complete Flakes	Showing intensity of retouch or systematic core preparation
Overhang removal	Exterior platform preparation indicates systematic core reduction (complete flakes and proximal flakes)
Scar Direction	The direction of the dorsal flake scars – 1 (initiated from the platform only), 90 (initiated at right angles to the platform), 180 (initiated at the distal end of the flake), radial (initiated from 90 and 270 degrees from the platform)
Complete Tools	(examines measures of curation)
Retouch Edge	The number of retouched quadrants (on complete tools only)
Retouch Type 1, 2, 3, 4	Select the retouch type for quadrants 1, 2, 3 and 4
Cores	Identifying technological strategies and intensity of reduction
Core Type	Unidirectional, bidirectional, bifacial, multiplatform, prismatic, burin-blade core, test, bipolar, alternate-blade, atypical burin-blade
Core Body	Core body form – block, flake, nodule, non-diagnostic
Scar Form	Primary scar form? – elongated, expanding, blade, mixed
Core Platform No.	Number of platforms on the core
Step Termination	Number of step terminations on the core
Hinge Termination	Number of hinge terminations on the core
Number of Core Scars	Number of core scars
Metrical Attributes	(in mm to 1 dp)
Width	Maximum width of the complete flake/tool/core
Thickness	Maximum thickness of the complete flake/tool/core at mid-point
Core Length	Maximum length from the working platform
Platform width	Platform width – proximal and complete flakes and tools
Platform Thickness	Platform thickness – proximal and complete flakes and tools (and complete splits)
Weight	Weight of the artefact in grams to 1dp

Table 1 Attributes recorded for the assemblage

Artefacts were cleaned, sorted, given a unique ID number (if required), individually analysed and entered into the software program E4 loaded with a configuration file written for this specific purpose. This program prompts the user to record all relevant attributes through a series of menus based on the artefact type (e.g. core, complete flake, complete tool etc) which is then stored in a Microsoft Access database. In this way a comprehensive typological, technological and metrical analysis of the excavated assemblage was undertaken. The location of the excavated artefacts was also recorded by waterway, spit/depth and excavation square. Analysis was aided using a 15x hand lens and a standard digital vernier calliper. Measurements were made in millimetres to one decimal place. A definition of the terms used for the artefact types and their attributes can be found in Appendix B of this report.

Assemblage Distribution

A series of test pits were excavated in three locations: Mt Walker (TPs 1-15), Farmers Creek (TPs 16-114) and south of Lake Lyell (TPs 115-120) (Table 2). A total of 1344 artefacts were recovered from 67 test pits. Most of the artefacts (n=994, 74.0%) were from Farmers Creek. Along this creek line two major concentrations of artefacts were found at TPs 46-56 and TPs 57-81 (Table 2). These concentrations were found opposite each other on east and west sides of the creek. Within these locations three test pits have the highest concentration of artefacts: TP62 (n=215, 16.0%) and the highest weight (308.7g, 13.2%), TP52 (n=110, 8.2%) although by weight the proportion was lower (134.6g, 5.8%) and TP73 (n=96, 7.1%) and by weight (212.4g, 9.1%). The highest concentration at Mt Walker was in TP3 (n=177, 13.2%) and TP7 (n=118, 8.85). Few artefacts were found elsewhere.

TP	*Count*	*%*	*Weight (g)*	*%*	*TP*	*Count*	*%*	*Weight (g)*	*%*
Mt Walker					56	1	0.1	0.3	0
1	49	3.6	73.2	3.1	57	4	0.3	12.3	0.5
3	177	13.2	137.6	5.9	61	55	4.1	51.1	2.2
5	2	0.1	3.6	0.2	62	215	16	308.7	13.2
7	118	8.8	194.1	8.3	66	3	0.2	9.7	0.4
12	2	0.1	4.9	0.2	69	1	0.1	0.7	0
Sub-total	348	25.9	413.4	17.7	70	30	2.2	30.4	1.3
Farmers Creek					73	96	7.1	212.4	9.1
16	27	2	78.7	3.4	74	79	5.9	150.5	6.5
19	3	0.2	4.1	0.2	77	41	3.1	189.6	8.1
20	3	0.2	0.6	0	89	1	0.1	0.5	0
24	19	1.4	64	2.7	90	4	0.3	2.3	0.1
25	2	0.1	10.1	0.4	91	4	0.3	6.6	0.3
33	5	0.4	2.9	0.1	92	1	0.1	1	0
36	1	0.1	0.9	0	94	4	0.3	8.7	0.4
37	27	2	57.2	2.5	95	1	0.1	0.7	0
47	21	1.6	55.5	2.4	96	1	0.1	0.4	0
48	37	2.8	77.3	3.3	111	2	0.1	2.1	0.1
49	55	4.1	155	6.6	Sub-total	994	74	1918.2	82.2
50	76	5.7	163.9	7	South of Lake Lyell				
52	110	8.2	134.6	5.8	116	1	0.1	0.5	0.02
53	8	0.6	15.4	0.7	122	1	0.1	0.3	0.01
54	46	3.4	96.2	4.1	Sub-total	2	0.1	0.9	0.04
55	11	0.8	13.8	0.6	Total	1344		2332.4	

Table 2 The counts and weight of artefacts by test pits

The Farmers Creek test pits were sub-divided by location and compared to TPs 1-15 at Mt Walker and TPs 115-120, south of Lake Lyell. As already noted the results show that two locations TPs 46-56 and

TPs 57-81 had the highest artefact densities at Farmers Creek and the area excavated at Mt Walker also contains a high artefact density (Table 3).

Location	*No. TPs*	*Density Per m²*	*Count*	*Total Weight (g)*	*Average Weight (g)*
Mt Walker	15	23.2	348	413.4	1.2
Farmers Creek					
16-21	5	6.6	33	83.4	2.5
22-45	23	2.3	54	135.1	2.5
46-56	10	36.5	365	712	2.0
57-81	24	21.8	524	965.5	1.8
82-87	5	0.0	0	0	
88-104	16	1.0	16	20.2	1.3
104-114	10	0.2	2	2.1	1.1
South of Lake Lyell					
115-120	5	0.4	2	0.9	0.5

Table 3 The counts and weight of artefacts by location

Table 4 shows the number of artefacts from each spit, the mean maximum length and total weights. AllE artefacts, independent of raw material type, concentrate in spits 1 and 2 at Mt Walker. In general, a decrease in the number and weights of artefacts with depth suggests a degree of size-sorting. However, at Farmers Creek high artefact numbers and weights continues into spit 4. To further explore this trend a comparison of the test pits (TP52 & TP62), with a high artefact density, was undertaken. The results show that artefacts in TP52 concentrate in spits 1 and 2 whereas in TP62 more artefacts were found in spit 4. This result may indicate two occupations.

Mt Walker					*Farmers Creek*				
Spit	Count	Mean Weight (g)	Std Dev.	Total Weight (g)	Spit	Count	Mean Weight (g)	Std Dev.	Total Weight (g)
1	123	1.5	3.2	182.0	1	210	1.8	3.5	372.7
2	173	1.0	2.1	181.2	2	217	1.7	5.0	376.0
3	51	1.0	1.8	49.2	20-35	18	1.5	2.6	26.9
4	1	1.1		1.1	3	211	2.6	7.7	550.9
					35-40	4	0.3	0.2	1.2
					4	214	1.7	4.6	354.8
					5	84	0.8	1.3	66.9
					6	20	3.0	4.1	59.4
					7	5	5.9	8.7	29.3
					8	3	20.5	24.9	61.5
					9	2	1.0	0.5	2.0
				TP52	1	38	1.2	1.8	45.9
					2	41	1.2	1.3	49.3
					3	29	1.3	2.0	38.9
					4	1	0.3		0.3
					5	1	0.2		0.2
				TP62	1	1	1.3		1.3
					2	2	1.1	0.3	2.2
					3	38	1.8	3.4	67.2
					4	134	1.3	2.7	169.6
					5	28	0.8	1.2	21.9
					6	12	3.9	4.7	46.6

Table 4 Distribution of the artefacts by spits

Site Chronology/Occupation

A useful guide for assessing site age is the presence or absence of backed artefacts. These artefacts are typically only found in mid to late Holocene sites (<5000 years bp) throughout most of eastern Australia (Attenbrow 2002: 115-159*,* Hiscock 2008). The presence of backed artefacts is compared with depth to establish the timing of occupation in the Lake Lyell assemblage (Table 5). The results are used to identify whether the assemblage should be analysed as a whole or as a series of discrete occupations discarded over time. Table 5 shows that backed artefacts occur in spits 1-5 with most found in spit 2 (n=12). Backed artefacts were only found in three test pits at Mt Walker and in eight test pits at Farmers Creek. In TP62 backed artefacts were found in spit 4 indicating a late Holocene occupation.

	Spit	*TP*	*Backed Artefacts*
Mt Walker	1	1	1
	2	3	5
	1	7	2
	2	7	2
	3	7	1
Farmers Creek	4	24	1
	2	48	1
	2	50	1
	2	52	1
	3	52	1
	4	62	2
	2	73	1
	3	73	1
	5	74	1
	3	74	2
	4	74	1
	1	77	1
	2	77	1

Table 5 The number of backed artefacts by spit and location

Stone Procurement

Firstly, the dominant raw material types found in the assemblage are defined.

Quartz

Quartz is a mineral composed of silicon dioxide (SiO_2) and is the second most abundant mineral in the Earth's crust (after feldspar); it is common in igneous, metamorphic, and sedimentary rocks (Lapidius 1990:429). Due to its abundance, hardness and often excellent flaking properties, quartz varieties are frequently found in archaeological sites throughout the world (Seong 2004:76-77).

Quartz can occur in small to very large crystal form (macro*crystalline)* or as a fine-grained material with crystals invisible to the unaided eye (*microcrystalline/cryptocrystalline quartz).* Macrocrystalline quartz is extremely smooth and reflects enough light to have a vitreous lustre it is commonly divided into crystal and milky quartz categories. Here, the milky quartz artefacts were also classified by the degree of translucency as this characteristic equates to the quality/flake-ability of quartz. For example,

translucent quartz flakes more conchoidally and hence is better quality. The surface of microcrystalline quartz scatters more light and has a dull or sub-vitreous lustre. Microcrystalline quartz can be divided into a number of varieties distinguished by colour, banding or degree of translucency. Flint, chert, and jasper are names commonly used for opaque specimens of microcrystalline quartz (Andrefsky 1998: 41; Odell 2004: 19). Other varieties are translucent e.g. agate, prase and carnelian. Chalcedony is a term used collectively to distinguish translucent, monochromatic varieties of microcrystalline quartz. Below is a useful way to classify crystalline and cryptocrystalline quartz varieties:

A) If it has a vitreous lustre on conchoidal surfaces, it is coarsely crystalline quartz (crystalline quartz)
B) If it has a dull lustre on conchoidal surfaces, it is a variety of microcrystalline/cryptocrystalline quartz.
C) If it is opaque, it is jasper, a microcrystalline/cryptocrystalline quartz.
D) If it is translucent and banded, it is agate, a variety of chalcedony.
E) If it is translucent, and not banded, the name chalcedony/CCQ is used.

Chert

The name chert is used to describe an opaque, microcrystalline quartz. It can range in colour from grey, yellow, black, blue/grey or orange/yellow. The texture is smooth to feel.

CCQ/Chalcedony

Chalcedony is often used specifically to describe the white, grey, or blue translucent raw material. It has a porous structure which readily accepts impurities giving it a range of colours e.g. carnelian is a red/amber translucent variety of chalcedony.

These forms of crystalline and microcrystalline/cryptocrystalline quartz are formed in veins when SiO_2 carried in solution is precipitated in cracks in the bedrock. If a variety of cryptocrystalline quartz cannot be identified it is called CCQ.

Indurated Mudstone

Mudstone is a sedimentary rock composed primarily of clay- or silt-sized particles (less than 0.063 mm in diameter) whereas a siltstone must contain over 50% silt-sized material. Silt is any particle smaller than sand, 0.06 mm, and larger than clay, > 0.0039 mm. A simple test to determine whether a rock is a mudstone is to see if it feels gritty or chalky.

Siliceous or indurated rocks are sedimentary rocks that have silica (SiO_2) as the principal constituent. A siliceous siltstone/mudstone has silica precipitated throughout the rock making it hard and able to flake conchoidally. The size of the grains distinguishes between mudstone and siltstone. It can be from microscopic, with a smooth feel, to fine-grained with a visible matrix. If the indurated mudstone is highly silicified it becomes chert-like and it appears that this raw material type can be grade towards chert in the project area but retains a chalky texture.

Stone Sources

Over 80% of the artefacts in the excavated assemblage were made from crystal or milky quartz (Table 6). These raw material types together dominate by number and weight (Table 6). Tuff (6.0%) and chert (5.7%) were the next most common raw materials.

Material	*Count*	*%*	*Mean Length (g)*	*Std Dev.*	*Total Weight (g)*	*%*
CCQ	8	0.6	20.7	7.2	15.3	0.4
Chert	76	5.7	18.5	9.3	80.8	1.9
Crystal Quartz	166	12.4	13.1	3.8	69.1	1.6
Milky Quartz	974	72.5	17.1	8.1	1832.7	42.8
Sub-Total	1140	84.8			1901.9	44.4
Quartzite	32	2.4	32.2	22.2	1077.7	25.1
Rhyolite	1	0.1	11.7		0.1	0.0
Indurated mudstone	80	6.0	16.9	6.8	55.7	1.3
Volcanic	2	0.1	95.8	111.1	1150.5	26.8
Matrix-Dominated Silcrete	5	0.4	19.3	5.9	3.4	0.1

Table 6 The counts and lengths of artefacts by the raw material types in the excavated assemblages

The cortex (or weathered exterior of the parent rock) provides information about the type of stone sources used (i.e. a primary or secondary source). Artefacts with a rough (also called terrestrial) cortex were acquired from a primary source (or an *in-situ* outcrop). Artefacts with a smooth or water-rolled cortex originate from a secondary source (e.g. a cobble from a waterway, having a smooth surface, Figure 1). These sources are also considered secondary. A vein cortex was also included to indicate mineral growth within a vein e.g. quartz (Figure 1). These two types of cortex can still be considered from primary/terrestrial exposures. Weathered, also obtained from an outcrop, was also included. A distinctive orange cortex represents a fracture along am internal flaw (Figure 1). This type of cortex is only found on quartz artefacts and is also associated with an outcrop. At times a crystal facet forms the exterior of a flake.

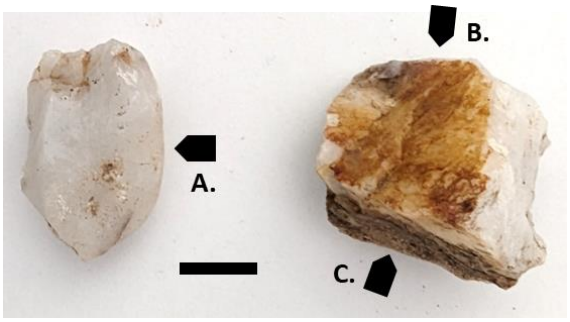


Figure 1 Types of cortex found on milky quartz artefacts. A. Highly rounded, water-rolled, B. Orange, fractured, C. vein (scale=1 cm)

The amount of cortex on an artefact often indicates the distance artefacts were transported from the source (Hiscock and Mitchell 1993:12-17). A high percentage of cortex on an artefact indicates that the source of stone was nearby while artefacts with less cortex or no cortex were typically transported further from the source. Equally, as cores are transported away from the source they are reduced further, and the resulting flakes are also smaller.

To understand the use of stone sources in the Lake Lyell assemblage the raw material types and their characteristics were compared. A variety of raw material sources were used and most of these artefacts have no cortex (Table 7). However, quartzite and silcrete artefacts have a higher frequency of cortex. Sources were also compared by raw material type to identify whether differences occur in

the place of procurement. Artefacts made from CCQ, milky quartz, quartzite, chert and indurated mudstone all have a water-rolled or terrestrial cortex. High numbers of milky quartz and crystal quartz artefacts were acquired from a terrestrial source (Table 7). This result and the unusually high number of quartz artefacts with no cortex suggests a nearby outcropping source.

Material	*0% Cortex Count*	*%*	*Water-Rolled*	*Outcrop*
CCQ	6	75.0	1	1
Chert	55	72.4	12	9
Crystal Quartz	153	92.2	0	13
Matrix-Dominated Silcrete	2	40.0	0	3
Milky Quartz	824	84.6	19	131
Quartzite	12	37.5	19	1
Indurated mudstone	60	75.0	11	9
Volcanic	1	50.0	1	0
Rhyolite			1	

Table 7 The type of cortex on the raw material types in the excavated assemblages

As already noted, milky/crystal quartz artefacts dominate the assemblage by count and weight in all locations. However, some differences do occur. Indurated mudstone/chert/CCQ artefacts concentrate in TPs 22-45 (Figure 2). These test pits, although still dominated by milky quartz, also have a higher proportion by weight of artefacts made from these material types. These differences reflect time at place i.e. the richness and diversity of an assemblage increases with increased occupation.

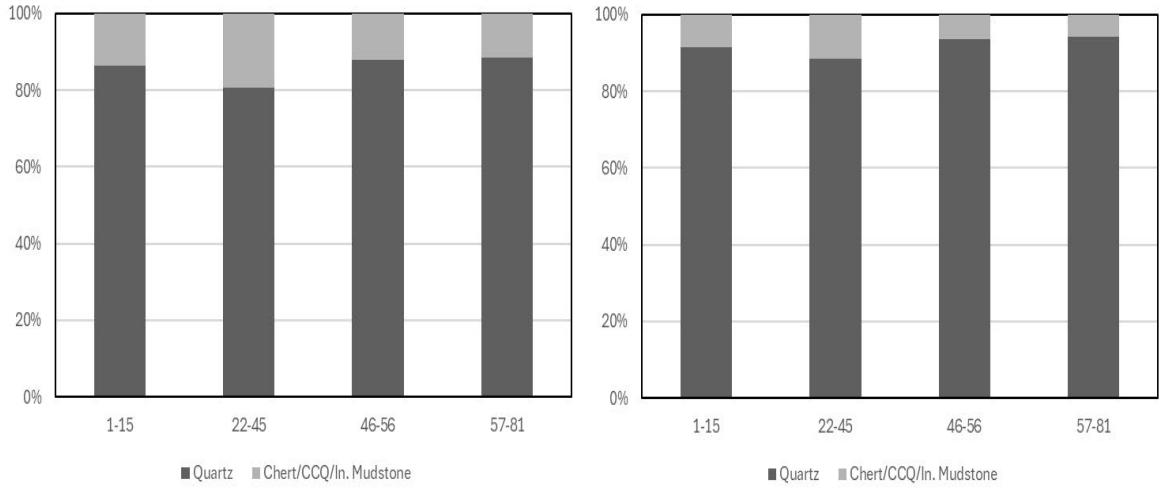


Figure 2 Raw material type by location. Right, count and left, weight (g)

The mean sizes of all the complete flakes by raw material types are small (Table 8). The largest mean size of the complete flakes was made from quartzite and matrix-dominated silcrete. The largest maximum axial length of the complete flakes was made of milky quartz, chert and indurated mudstone (Table 8).

Material	*Count*	*Mean Length (mm)*	*Std Dev.*	*Maximum Axial Length (mm)*
CCQ	3	18.9	12.3	32.9
Chert	30	14.9	10.7	42.8
Crystal Quartz	41	11.8	4.1	20.6
Matrix-Dominated Silcrete	1	21.3		21.3
Milky Quartz	197	17.4	8.0	45.8
Quartzite	10	21.0	11.3	38
Rhyolite	1	10.9		10.9
Indurated mudstone	24	17.5	9.1	43.7

Table 8 Axial length of all complete flakes and standard deviations (mm) by raw material type

Stone Reduction Technology

The types of artefacts and their characteristics are used to establish how sources were worked, used and discarded on-site. Artefacts were classified as cores or flakes, broken or complete and retouched (tools) or non-retouched (Table 9). Artefacts that were shattered through extreme heat/or weathering and could not be identified by type but had a flaked surface were called a heat-shattered artefact (HSA). By-products of flaking also include angular fragments (blocks). The composition of the assemblage will firstly be compared followed by an analysis of the cores, flakes and tools.

Assemblage Composition

Milky & Crystal Quartz

The assemblage of milky quartz is dominated by broken flakes (including unretouched proximal, broken and distal flakes) which account for 56.2% (n=641) of the assemblage (Table 9). The main reason for this result is the inherent tendency of quartz flakes to shatter during manufacture (Tallavaara et al. 2010). This factor also explains the large number of angular fragments (12.2%, n=139) seen in the assemblage.

Using a MNF (Minimum Number of Flakes) Index (Hiscock 2002: 254) which takes into account the number of proximal fragments, complete flakes and half the complete splits a MNF of 344 complete flakes of milky quartz occur in the assemblage. A total of 33 cores and 10 core fragments were also found (Table 9). Only 39 (3.4%) milky quartz tools were found in the assemblage, and most were made on complete flakes (n=20, 1.8%). Fewer artefacts of crystal quartz were found in the assemblage, reflecting its scarcity in the environment compared to milky quartz (n=166). Only 164 artefacts were made from indurated mudstone, CCQ and Chert (Table 9). A MNF of 90 complete flakes of these raw materials occur in the assemblage.

Type	*Quartz*	*%*	*Indurated Mudstone/Chert/CCQ*	*%*	*Total*	*%*
Core	33	2.9			33	2.5
Core Fragment	10	0.9	5	3.0	17	1.3
Complete Flake	238	20.9	57	34.8	307	22.8
Complete Split	40	3.5	3	1.8	44	3.3
Broken Flake	352	30.9	33	20.1	389	28.9
Distal Flake	209	18.3	23	14.0	238	17.7
Proximal Flake	80	7.0	16	9.8	98	7.3
Sub-total	641	56.2	72	43.9	725	53.9
Complete Tool	20	1.8	14	8.5	38	2.8
Distal Tool	9	0.8	4	2.4	13	1.0
Proximal Tool	4	0.4	2	1.2	6	0.4
Block Tool	1	0.1			1	0.1
Broken Tool	5	0.4	2	1.2	7	0.5
Sub-total	39	3.4	22	13.4	65	4.8
Block	139	12.2	3	1.8	147	10.9
Grindstone					1	0.1
Heat Fracture					1	0.1
HFA			2	1.2	2	0.1
Mortar					2	0.1

Table 9 Composition of the assemblage

Broken flakes may be a result of breakage during manufacture, post-depositional breakage (e.g., ploughing, treadage, weathering, heat-shattering) or the deliberate snapping of complete flakes during the manufacture of particular tools, such as geometric microliths (Boot 1987: 10-15; Holdaway and Stern 2004: 133-135). However, milky quartz and crystal quartz is more likely to shatter along cleavage lines during manufacture resulting in more breakages.

Other Raw Material Types (CCQ, Indurated Mudstone & Chert)

A comparison is made between milky quartz artefacts and other raw material types (Table 9). The results show that fewer blocks a broken flakes and more tools occur in this component of the assemblage.

No cores were found while a high frequency of tools which may reflect the transportation of tools, a preference for the manufacture of retouched tools and the lack of retouch found on quartz artefacts.

Cores

A total of 33 cores and 17 core fragments were found in the assemblage. All cores were made from milky quartz. (Table 10). Most of the cores were found at Farmers Creek (n=24).

All the cores have a relatively small mean size (Table 11). The largest is a milky quartz core with a maximum length of 51.3 mm. Many of the cores have obvious internal flaws and fractures and were discarded during core reduction (e.g., 564). The bipolar technique is employed to maximise the use of raw material i.e., when the core is small and heavily reduced or used to remove flakes from a flake body (Andrefsky 1998:227). Differences in the maximum size of the cores varies between excavation areas possibly reflecting the distance from the source (Table 11).

Id	*TP*	*Core Type*	*Core Body*	*Scar Form*	*Platform No.*	*Core Scar*	*Length (mm)*
978	1	Radial-Bifacial	Flake	Expanding	3	3-5	20.7
990	1	Atypical Burin-Blade	unknown	Elongated	2	1-2	24.2
1163	3	Uni-Directional	unknown	Expanding	1	1-2	28.6
1090	3	Burin-Blade	Flake	Elongated	1	1-2	24
1283	7	Multi-Directional	Flake	Mixed	4	3-5	33.4
1313	7	Bipolar	unknown	Elongated	1	1-2	22.3
1268	7	Alternate-Blade	Block	Elongated	2	3-5	27.8
1265	7	Alternate-Blade	Block	Mixed	2	3-5	30.7
971	7	Burin-Blade	Flake	Elongated	1	1-2	37.3
1333	16	Uni-Directional	Flake	Expanding	1	1-2	30.4
1346	16	Bipolar	Block	Mixed	1	1-2	25.1
1207	16	Bi-Directional	Block	Expanding	2	1-2	48.3
1331	24	Bi-Directional	Block	Mixed	2	1-2	34.9
1323	24	Burin-Blade	Flake	Elongated	1	1-2	31.9
1340	24	Multi-Directional	Block	Mixed	3	3-5	37.3
564	48	Atypical Burin-Blade	Block	Elongated	1	1-2	45.8
616	49	Bipolar	Nodule	Elongated	1	1-2	28.5
557	49	Uni-Directional	Flake	Mixed	1	3-5	28.4
595	49	Bi-Directional	Block	Expanding	2	3-5	33.3
566	49	Uni-Directional	unknown	Expanding	1	3-5	33
461	50	Uni-Directional	Block	Expanding	1	1-2	30.9
341	50	Bi-Directional	Block	Mixed	2	3-5	34.6
460	50	Uni-Directional	Slab	Expanding	1	1-2	51.3
482	50	Uni-Directional	Block	Expanding	1	1-2	27.1
344	50	Uni-Directional	Flake	Expanding	1	1-2	46.8
939	53	Multi-Directional	Block	Expanding	3	3-5	29.2
211	62	Atypical Burin-Blade	Block	Mixed	2	1-2	38.4
280	66	Bipolar	unknown	Elongated	1	1-2	32.3
691	73	Bi-Directional	unknown	Mixed	28	3-5	28.2
715	73	Multi-Directional	Block	Mixed	3	3-5	25.4
725	73	Uni-Directional	Block	Elongated	1	1-2	33.9
767	73	Uni-Directional	Block	Expanding	1	1-2	49.1
678	77	Multi-Directional	Block	Mixed	3	3-5	33.6

Table 10 Characteristics of the cores in the assemblage

TP	*Count*	*Length (mm)*	*Std Dev.*	*Maximum Length (mm)*
1-15	9	27.7	5.5	37.3
22-45	3	34.7	2.7	37.3
46-56	11	35.4	8.5	51.3
57-81	7	34.4	7.7	49.1

Table 11 Size of the cores by location in the assemblage

The cores have elongated (n=10), expanding (n=12) or mixed flake scars (n=11) and show no evidence of platform preparation i.e. overhang removal or faceting. Cores were exhausted due to their small size and/or platform angle or failed after attempts to remove flakes resulted in step or hinge terminations. Cores were also discarded due to internal flaws. Eight of the cores were made on flake bodies. Most of the milky quartz cores were made from angular blocks (n=17, Table 11). Only one core was made on a waterborne nodule. Sometimes cores were rotated more than twice with five multi-

directional cores present in the assemblage. The number of core platforms is possibly associated with larger core sizes and tend to have expanding rather than elongated flake scars. However, there appears to be a size threshold of ~30 mm when cores were discarded. In general, few flakes removed from the cores i.e. no cores have more than ten flake scars (Table 11).

One core fragment of yellow chert (id=1128) was found in TP3, spit 2. This core was weathered and fractured but still retained a faceted platform and blade scars.

Systematic Core Reduction Strategies

The analysis of the cores indicates that a number of strategies were employed to systematically prepare and reduce the cores which are represented by four technological strategies.

1. Burin-Blade Cores (on flake body). Three typical burin-blade cores were identified (Figure 3). These cores were made on large milky quartz flakes. Id=1323 was flaked across the termination.

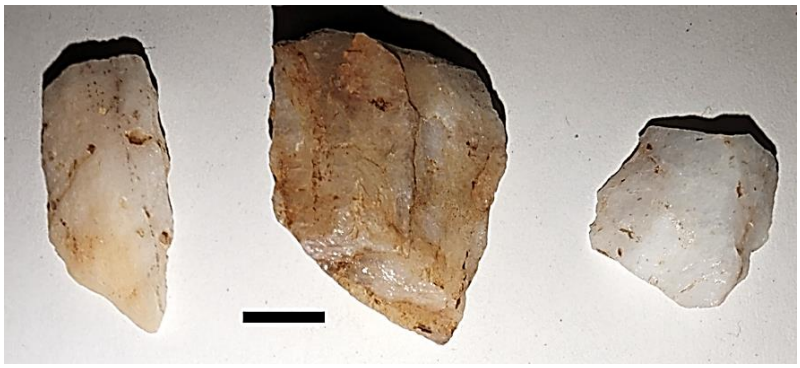


Figure 3 Examples of burin-blade cores in the assemblage.
Left to right. Id=1323, id=971, id=1090 (scale= 1 cm)

2. Atypical Burin-Blade Cores. Three examples of atypical burin-blade core were found in the excavated assemblage (ids=564, 211, 990; Figure 4). The cores were anvil rested and flaked using a bipolar technique along one lateral margin of an angular fragment to allow the production of elongated flakes. Id=990 was also flaked from alternate platforms.

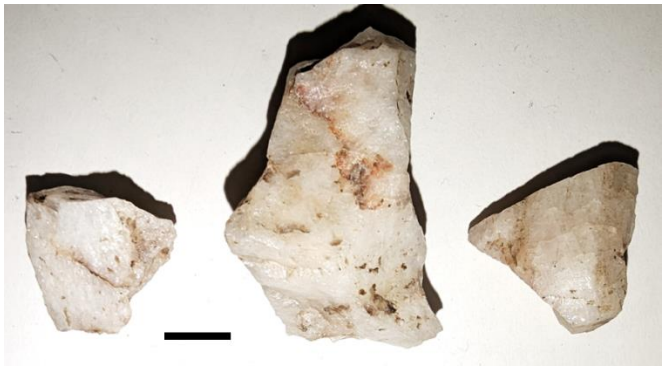


Figure 4 Examples of atypical burin-blade cores in the assemblage.
Left id=443; right Id=532 (scale=1 cm)

3. Alternate-blade/elongated core. These cores were flaked across the same core face form opposite directions (Figure 5). The core shows the 180° rotation and the use of established elongated flake scars to extend the life of the core e.g., id=862.



Figure 5 Example of alternate-blade core in the assemblage. Left Id=1268, Right id=1265 (scale=1 cm)

4. Bifacial, Radial Core. This core was bifacially flaked in a radial fashion across a core body using a bipolar technique (e.g. 978, Figure 6). Although defined as core, similar artefacts were described by McCarthy (1976:23) as a discoid tool or Kodja.



Figure 6 Example of a radial-bifacial core in the assemblage. Id=978 (scale=1 cm)

Flakes

The characteristics of the complete flakes made from milky quartz are used to support and further enhance the results of the core analysis. Other raw material types will be used as a comparison.

The form of the complete flakes is used to determine how cores were reduced and what was manufactured on site. Table 13 compares the form of the complete flakes. Over 25% of the complete flakes made from indurated mudstone, chert or CCQ have an elongated form (Table 13). As a proportion of the assemblage more flakes of indurated mudstone have an elongated form (Table 14). Few blades are seen in the assemblage with more made from CCQ, chert or indurated mudstone

(Figure 7). A blade is defined strictly as having a length x2 longer than the width with parallel dorsal scaring (Flenniken and White 1985; Holdaway and Stern 2004:149). In total, including broken and complete flakes, only 28 blades were found in the assemblage (Table 14). Most of these blades were made from milky quartz (n=11) and indurated mudstone (n=9). Artefacts with a blocky form are generally associated with early core reduction but also reflects the nature of the raw material i.e., milky quartz shatters along cleavage lines during manufacture. Only two flakes with a blocky form were made from indurated mudstone, chert or CCQ. Of interest is the axial lengths of the elongated and expanding flakes (Table 13). The size of the expanding flakes is significantly smaller than the elongated flakes (t=3.556, df=88, p=0.0006) indicating that expanding flakes were manufactured later in core reduction or resulted from core preparation. This result correlates with the form of the flake scars on the milky quartz cores.

Form	*Quartz*	*%*	*Axial Length (mm)*	*Std Dev.*	*CCQ/Chert/Tuff*	*%*
Blade	12	1.3	22.4	1.2	15	9.7
Block	50	5.2	25.5	8.5	2	1.3
Elongated	138	14.4	17.5	5.4	25	16.1
Expanding	175	18.3	12.9	6.5	40	25.8
Indeterminate	565	59.1	16.4	6.5	66	42.6
Platform Rejuvenation	15	1.6	25.4	11.9	3	1.9
Split Pebble	1	0.1	22.4	1.2		0.0
Point			25.5	8.5	1	0.6
Ridge Straightening			17.5	5.4	3	1.9
Total	956				155	

Table 13 Form of the milky quartz complete flakes in the excavated assemblage

	Chert	*Indurated Mudstone*	*Milky Quartz*	*Crystal Quartz*
%	33.3	45.8	30.3	29.3
= or >2	10	11	59	12
Total	30	24	195	41

Table 14 Elongation of complete flakes by material type in the excavated assemblage

The presence of broken and complete platform rejuvenation flakes of quartz (n=15) and other raw material types (n=3) indicates that the uselife of cores was sometimes extended on-site. Platform rejuvenation flakes (also known as a core rejuvenation flake) were used to both create a new platform and to limit flaking mistakes by reducing the angle of the striking platform thereby extending the life of a core (Odell 2003: 121). There are three examples of platform rejuvenation flakes from alternate-blade cores. The flakes (id=392, 1175, 392), made from chert or indurated mudstone, have platform terminations and parallel dorsal scars from the old platform (now a termination). These flakes show the intensive use of high-quality material, presumably from a more distant source, and hint at the absence of cores from these raw material types. Ridge-straightening flakes were also identified (Figure 7). These flakes, sometimes called a crested blade, were used to form ridge prior to blade manufacture and were also made from chert and indurated mudstone (Holdaway and Stem 2004: 150).



Figure 7 Examples of ridge-straightening flakes and blades in the assemblage. Left to right Ids=525, 1228, 946, 103, 104, 1231 (scale=1 cm)

The additional presence of relatively high numbers (n=40) of complete split flakes made from milky quartz (which only occur during flaking) also shows that core reduction occurred on-site (Table 9). Only three complete splits of indurated mudstone, chert or CCQ occur in the assemblage and no cores of these raw material types. The highest density of these flakes was found in TP62 (n=7) and TP3 (n=8). These types of flakes usually occur early in core reduction when the aim is to remove a large flake and can be considered a flaking error produced when the force used to strike the core is too great and at the incorrect angle. Given the generally small size of these flakes (15.1±4.1 mm) in TP3, however, it is more likely that these also represent a flaking error due to the size of the cores and/or difficulty of flaking milky quartz. The larger size of the split flakes in TP62 (22.7±4.1 mm) may indicate the larger core size and the distance to the source. It is also likely that bipolar flaking resulted in more split flakes. The largest complete split of milky quartz is 38.4 mm whereas the largest split flake of crystal quartz is 15.3 mm and indurated mudstone in 9.2 mm.

Milky quartz and indurated mudstone flakes share a similar mean length (Table 8). In comparison, flakes of CCQ and silcrete are larger than the other raw material types and more elongated (Table 14). Larger flakes of less common raw materials were also found e.g. quartzite. This result suggests that large flakes of high-quality material were selected for transportation.

There are also numerous examples of snapped proximal or broken flakes (e.g., 896, 753, 488). The flakes were probably deliberately snapped to manufacture geometric microliths.

Core rotation is shown by the dorsal scars of the complete flakes (Table 15). Most of the cores were flaked in one direction, however, a relatively high number of flakes made from milky quartz were from rotated cores shown by the presence of scars from 90^{o}, 180^{o} and the radial patterns (Table 15). This result is reflected in the numbers of flaked platform types (n=20, 8.4%). In the quartz assemblage only two complete flakes (0.8%) have a facetted platform. In contrast, five complete of indurated mudstone, chert or CCQ have facetted platforms (8.8%). The presence of facetted platforms and exterior platform preparation (such as overhang removal) indicates a more systematic core reduction. Little evidence of exterior platform preparation was found on the milky quartz (Table 15). Attempts were made to remove thin flakes shown by the platforms that were crushed during removal, although this also occurs during bipolar flaking and the difficulties of flaking quartz or attempting to remove elongated flakes (Table 15).

Quartz					
Distal End	Count	%	Platform Type	Count	%
Abrupt	28	11.8	Cortical	16	6.7
Cortical	4	1.7	Crushed	34	14.3
Crushed	16	6.7	Faceted	2	0.8
Feather	175	73.5	Flaked	20	8.4
N/A	1	0.4	Missing	23	9.7
Platform	4	1.7	Unifacial	143	60.1
Plunge	1	0.4			
Step	9	3.8			
Exterior Platform			Dorsal Scar Direction		
			0	122	51.3
N/A	234	98.3	180	36	15.1
Step	3	1.3	90	61	25.6
Trimming	1	0.4	N/A	14	5.9
			Radial	5	2.1
Indurated Mudstone/Chert/CCQ					
Distal End			Platform Type		
Abrupt	1	1.8	Cortical	6	10.5
Cortical	2	3.5	Crushed	12	21.1
Crushed	1	1.8	Faceted	5	8.8
Feather	29	50.9	Flaked	5	8.8
Hinge	19	33.3	Missing	6	10.5
Platform	1	1.8	Unifacial	23	40.4
Step	4	7.0			
Exterior Platform			Dorsal Scar Direction		
N/A	48	84.2	0	34	59.6
Step	3	5.3	180	4	7.0
Trimming	6	10.5	90	14	24.6
			N/A	4	7.0
			Radial	1	1.8

Table 15 Characteristics of the complete flakes made from milky quartz in the assemblage

Tools

Only 65 tools were found in the Lake Lyell assemblage (Table 16). This figure represents a relatively low proportion of the assemblage (4.8%). Most of the tools were made on complete flakes (n=38, 53.8%). These complete tools are larger than the unretouched complete flakes indicating a selection for size (complete flakes=16.4±7.8 mm, complete tools=20.6±9.9). It must be noted that due to hardness of milky quartz artefacts are rarely retouched and edge-damage from use is more common but difficult to identify. It is likely that the frequency of tool use in the assemblage is much higher than identified.

Tool Type		*CCQ*	*Chert*	*Crystal quartz*	*Milky quartz*	*Indurated Mudstone*	*Quartzite*	*Silcrete*	*Total*	*%*
Backed	Backed Fragment	1	1	3	7				12	18.5
	Bondi Point		5		1	1		2	9	13.8
	Geometric microlith		1	1	3				5	7.7
	Sub-total	1	7	4	11	1		2	26	40.0
Scraper	Nosed-scraper				1				1	1.5
	Step-scraper				2				2	3.1
	Convex-scraper			1	5	1			7	10.8
	Straight-scraper		1		2	3			6	9.2
	Sub-total		1	1	10	4			16	24.6
Notch	Notch				1				1	1.5
	Denticulate			1	3		1		5	7.7
	Sub-total			1	4		1		6	9.2
Drill			1						1	1.5
Usewear		1	3		8	3	1		16	24.6
Total		2	12	6	33	8	2	2	65	
%		3.1	18.5	9.2	50.8	12.3	3.1	3.1		

Table 16 Tools found in the assemblage

The backed artefacts are complete, broken or unfinished Bondi points and geometric microliths (Figures 8 & 9). These tools account for 40.0% of the tool assemblage. Three Bondi points have evidence of use (id=665, 1338, 1097, Table 17). These tools may have been hafted, used, discarded and subsequently replaced. However, for id=1097 an attempt was made to rework the tip. A similar scenario occurs on id=832. There is also an example of an indurated mudstone Bondi point with a missing tip and an impact scar (id=865, Figure 8). This tool failed on impact and was replaced after use. In contrast, id=879 is a proximal backed tool of milky quartz which broke during manufacture (Figure 8). Ids=468, 732, 1091 and 840 appear to be random losses of complete Bondi points. Most of the Bondi points were made from chert (n=6).

Id	*TP*	*Class*	*Material*	*Colour*	*Form*	*Platform Type*	*Axial Length (mm)*	*Discard*
468	52	complete	chert	brown	point	faceted	32.6	loss
865	74	complete	indurated mudstone	Dark grey	elongated	backed	23.9	broken on impact (scar) and broken tip
832	74	complete	chert	brown	elongated	flaked	14.7	broken Bondi point reworked tip to attempt to manufacture geo?
700	77	proximal	Milky quartz	white	elongated	faceted	0	unknown
732	73	complete	chert	grey	elongated	unifacial	24.5	loss
1091	3	complete	chert	grey	elongated	faceted	21.3	loss
840	74	complete	Silcrete	pink/ grey	elongated	flaked	26.1	loss
1338	24	complete	Silcrete	pink	blade	backed	15.2	use in q4
1097	3	complete	chert	yellow/ grey	blade	backed	40.6	used and broken, attempt to rework
Backed								
879	74	distal	chert	brown	elongated	n/a	n/a	unfinished Bondi
638	50	proximal	Milky quartz	white	blade	unifacial	n/a	broken Bondi
1109	3	proximal	Milky quartz	white	elongated	unifacial	n/a	broken Bondi

Table 17 Bondi points found in the assemblage

Five geometric microliths were also identified (Figure 9). Four were made on milky quartz and one on crystal quartz. A large geometric microlith (25.9 mm), possibly an Elourea, was also made on chert (id=224). Id=216 was an unfinished attempt at the manufacture of a geometric microlith. Id=1288 has use damage while ids=224, 1304 and 1301 have no evidence of use. The geometric microliths made from quartz are small ranging in length from 9.8 to 12.8 mm. Three geometric microliths were found in TP77 and two in TP62. Two backed artefacts (ids=612, 962) are possible geometric microliths. Id=612 is a lateral break while id=962 has the correct shape but is only partly backed but has use damage.

Typically, geometric microliths are backed in three quadrants (1, 2 and 3) (Figure 9). However, milky quartz geometrics are sometimes backed in one or two quadrant or partly along one or more quadrant. Rather than these being defined as being unfinished (discarded during manufacture) it seems likely that backing occurred on quartz to shape the tool and if this was not needed (i.e. the shape was present without backing) some quadrants remained unretouched. This would not affect its performance as a tool. Equally, it is likely that unretouched quartz fragments were also hafted. An excellent example of unretouched, hafted quartz flakes was observed in a waterlogged assemblage found along the Hoko River of northwest America which preserved quartz flakes still embedded in the wooden hafts (Flenniken 1981). Flenniken noted that these flakes, if found alone, would never have been interpreted as hafted or even utilised tools. A similar scenario was observed in Australia. Hayden

(1973: 125) found that both modified and suitable unmodified quartz flakes were hafted in a taap knife and by analogy the death spear.



Figure 8 Examples of complete and broken Bondi points, Left to right, Ids=732,468, 1091, 1097, 865, 840, 1326,832, 700, 879, 310, 459, 68, 92, 355, 414 (scale 1cm)



Figure 9 Examples of broken and complete geometric microliths in the assemblage. Top, left to right, Ids=244, 224, 1304, 1301, 1288, bottom ids=962, 612 (scale 1cm)

There are a number of scrapers, with scalar or step retouch, found in the assemblage and these were made from a variety of raw materials (Table 17, Figure 10). Scrapers make up 24.6% of the tool assemblage (n=16). Most of the scrapers were made from quartz (n=11). Other, rarer and non-local raw material types, such as chert or indurated mudstones, were used in scraper manufacture (Table 17). These tools are more likely to be curated and transported maintaining a longer uselife. Most of the scrapers, as a proportion of the assemblage, were found at Mt Walker (n=8, 2.3%) whereas at Farmers Creek this frequency is less (n=8, 1.3%).



Figure 10 Examples large scrapers and denticulate tools in the assemblage. Top, id=781. Bottom ids=1339, 1118, 729, 430 (scale=1cm)

Denticulate and notched tools were also found in addition to unmodified flakes with usewear damage (Table 17, Figure 10). One drill was also identified on chert flake in TP52 (id=430, Figure 10).

As already noted, Figure 11 shows the number and types of tools found in the different areas. Of interest is the higher numbers of backed artefacts at Mt Walker (TPs 1-15) and in TPs 57-81 at Farmers Creek. High numbers of scrapers and flakes with usewear also occur at Mt Walker.

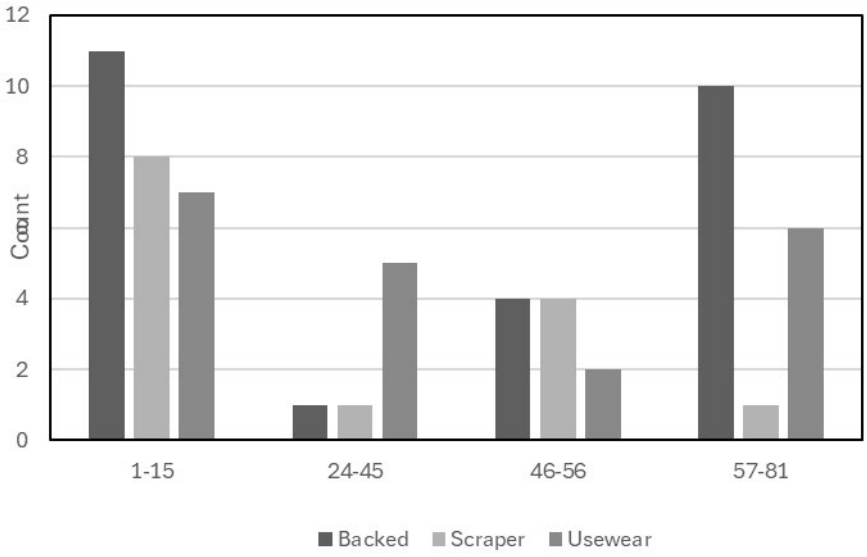


Figure 11 Types and counts of tools found along by location

Two mortars were found at Farmers Creek. One in spit 4 of TP61 (id=295) and the other in spit 1 of TP54 (id=1350). A possible grinding tool (file) in TP48, spit 1 (id=523). Id=295 was also used as an anvil on both sides. The dashed line shows a circular depression, possibly for pounding seeds (Figure 12).

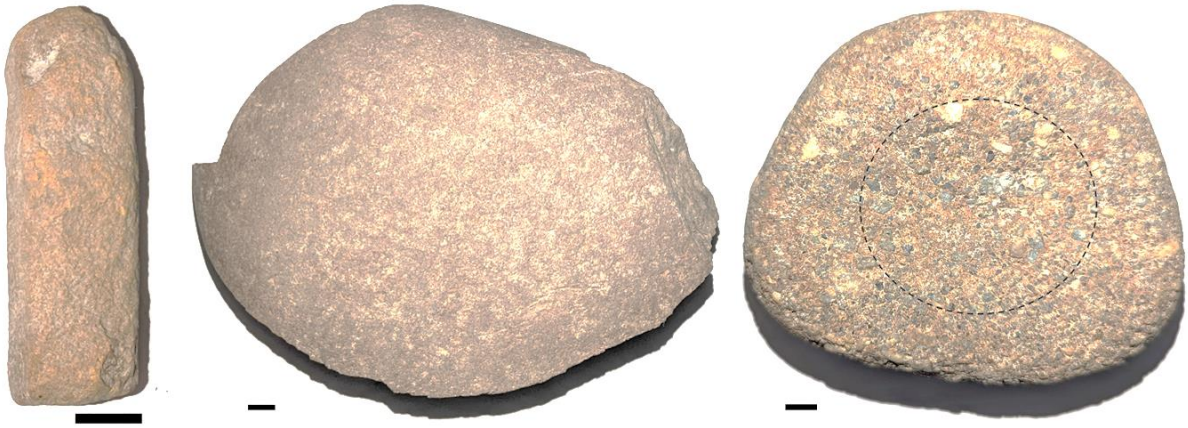


Figure 12 Grinding tools in the assemblage. Left to right, Ids=523, 1350, 295 (scale=1cm)

Post-Depositional Influences

Many processes affect archaeological remains after their initial discard. In this report the influence of heat and chemical weathering damage are considered for the excavated assemblage. An assessment of site disturbance will be made using the presence of heat damage, conjoins, weathering, water movement and artefact displacement.

Heat Damage/Treatment

Only seven artefacts have evidence of being burnt. These include indurated mudstone, silcrete and chert artefacts. Most were in TP3 (n=3). Some evidence of heat treatment was observed on the silcrete artefacts e.g., id=1338 was found in TP24 and id=840 was found in TP74.

Water Movement

Three examples of water-rolled artefacts were found in TP74 (id=790) and TP19 (ids=955, 922). This result suggests the movement and redeposition of artefacts in this area.

Chemical Weathering of Tuff

A process which may account for the fragmentation of indurated mudstone artefacts is chemical weathering which is caused by rainwater reacting with the mineral grains to cause internal fractures in the rock and breaks them apart (Allaby 2013). Smaller rocks (i.e. artefacts) found in humid climatic conditions are more susceptible to this process. During the analysis external damage was observed on 10 indurated mudstone artefacts. These artefacts have internal cracks and fractured edges. Figure 7 shows a fractured indurated mudstone blade (id=1231).

Vertical Distribution of Artefacts

Typically, a variety of post-depositional processes (e.g. trampling and bioturbation) can lead to the downwards displacement of artefacts through sediments especially in a sandy environment (Richardson 1992). Small artefacts are more likely to be affected by size sorting i.e. larger numbers of smaller artefacts will occur at the base of an excavation (Baker 1978). Table 4 shows the size and weight of all artefacts in the assemblage. These results suggest size sorting between spits 1-3 within

some test pits (e.g. Mt Walker) but also hints at two occupations within the Farmers Creek test pits seen in TP62 and TP52.

Conjoining Artefacts

Conjoining (or refitting artefacts) was not systematically undertaken across the excavated or surfaces assemblages but sometimes recognised during the analysis. These indicate specific core reduction areas. Three sets of conjoining artefacts were observed in the assemblage. One set was found in TP3 (id=1101 & 1113) at Mt Walker, and two sets in TP62 at Farmers Creek (Table 19). Table 19 also shows the location of distinctive raw material types by test pit and spit and again indicates the downwards movement of artefacts in profile.

Id	*Location*	*Type*
1101 & 1114	TP62, spit 2	Proximal and distal flakes of grey chert, break
136 & 124	TP62, spit 3	Proximal and distal flakes of milky quartz, break
232 & 208	TP3, spit 2	Proximal and distal flakes of grey indurated mudstone,
Raw Material Concentrations		
	TP3, spits 1-3	Yellow/grey chert (n=12)
	TP62, spits 3-6	Brown chert (n=7)
	TP62, spits 3-6	White/yellow milky quartz (n=37, 23 in spit 4)
	TP77, spits 3-5	Yellow/brown chert (n=6)
	TP74, spits 3-5	Brown/brown chert (n=10)

Table 19 Mean maximum length of complete flakes made from milky quartz in the assemblage by spit.

Archaeological Potential

The results from the Lake Lyell excavations are compared against similar sites in the region to better understand the significance of the archaeological deposit.

Site Function & Spatial Distribution

O'Driscoll and Kuskie (2015) interpreted the sites in the Stage 1 survey at Moolarben as either:

1. Transitory movement (without camping) but having evidence of minor food processing/equipment maintenance undertaken in multiple episodes each of short duration (very low, low, moderate or high intensity of use)
    - Isolated find =very low intensity of use
    - <200 artefacts = low intensity of use
    - ~1000 artefacts = moderate intensity
2. Transitory movement (without camping) but having no evidence of minor food processing/equipment maintenance undertaken in multiple episodes each of short duration.
3. Transitory movement (without camping) but having no evidence of minor food processing/equipment maintenance undertaken in multiple episodes each of short duration but with task specific locations (e.g. axe grinding grooves).

4. Transitory movement (camping) an having evidence of minor food processing/equipment maintenance undertaken in multiple episodes (e.g. grinding equipment, hearths).

Based on the definitions proposed by O'Driscoll and Kuskie (2015) all the sites in the Lake Lyell assessment are short-term transitory without camping ranging from very low to moderate intensity, with one possible exception of TP 62 (and surrounding area).

The four main foci of occupation which occur at Lake Lyell include TP62, TP52 and TP73 at Farmers Creek and TPs 3 & 7 at Mt Walker. The test pits around each are compared (Figure 13 & 14, Table 20).

TP52 (north west side of Farmers Creek) has no cores but does have split flakes and the highest number of blocky fragments associated with fewer broken flakes. This location also has fewer blades or elongated flakes. It is possible this location is associated with an outcrop of quartz with cores removed from the area for later use.

TP62 (south east side of Farmers Creek) is characterised by the high artefact numbers (215 per m^2), high diversity of material types, including CCQ, chalcedony, and indurated mudstone with few tool types (backed and scrapers). Located nearby in spit 4 of TP61 is a mortar. The high artefact number and frequency of broken flakes indicates more time at place. Increased trampling results in higher number of broken flakes and is directly associated with an increased time at place.

At *TP73 (south east side of Farmers Creek)* has a variety of raw material types including quartzite, indurated mudstone and chert but is solely dominated by quartz artefacts. A high frequency of cores, elongated/blade flakes, split flakes and backed artefacts indicating a task-specific area to manufacture backed artefacts. This test pit also has a relatively high frequency of processing tools (scrapers, usewear and notched tools).

TP 3 (Mt Walker) has a variety of raw material types including indurated mudstone and chert but is solely dominated by small quartz artefacts. A high frequency of elongated/blade flakes and backed artefacts indicating a transient, task-specific area to manufacture backed artefacts and maintain weaponry. This test pit also has the highest frequency of processing tools (scrapers, usewear and notched tools). The highest frequency of indurated mudstone and chert artefacts was found in TP3. These artefacts include blades/elongated flakes, ridge-straightening flakes and platform rejuvenation flakes.

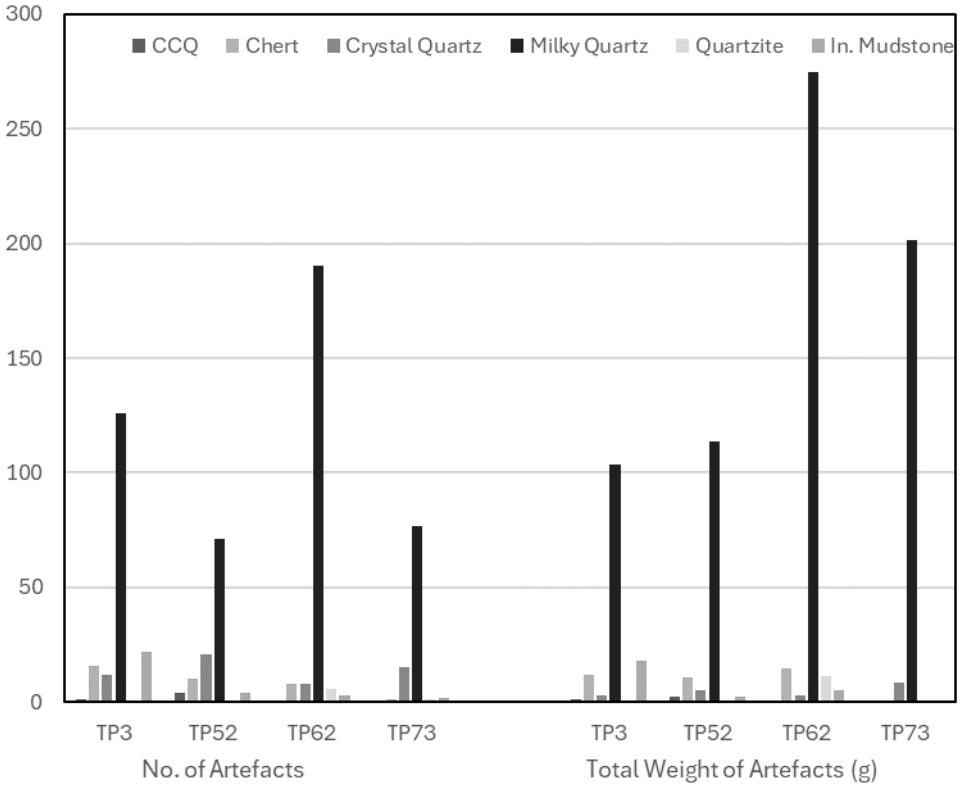


Figure 13 Counts and weights of artefacts in the test pits

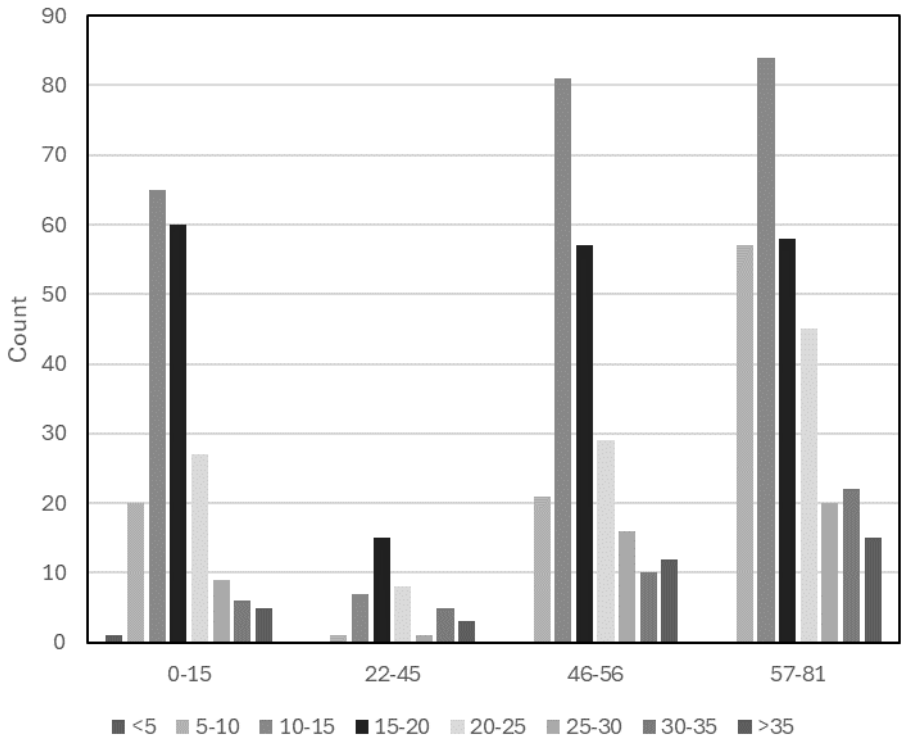


Figure 14 Size distribution of complete flakes in the test pits (mm)

TP	Complete split	Core	Blade /Elongated	%	Block	%	Backed	%	Processing Tools	%	Mean Length (mm)	Std Dev.	Broken flakes	%
73	2	4	21	25.9	10	10.4	2	2.1	3	3.1	17.3	8.2	37	38.5
52	3	0	12	10.9	21	19.1	2	1.8	3	2.7	16.4	6.7	34	30.9
62	7	1	25	11.6	7	3.3	2	0.9	3	1.4	17.2	8.9	125	58.1
3	8	2	36	23.9	24	13.6	5	1.7	8	4.5	15.3	5.9	86	48.6

Table 20 Comparison of highest density test pits in the Lake Lyell assemblages

Regional Comparative Analysis

The surface and excavated assemblages can be directly compared to the results of the O'Driscoll and Kuskie (2015) and Doelman (2017, 2018) assessments at Moolarben and previous testing for the CWO REZ project (Doelman 2023, 2024). The results show that there are several differences that occur in the Lake Lyell assemblage (Table 19).

All assemblages are dominated by high quality macrocrystalline (milky/crystal) quartz artefacts. A high number of indurated mudstone artefacts occur in the excavated assemblages from Moolarben when compared to the Lake Lyell assemblages (Table 19). This difference may be related to access with indurated mudstone available near or within the Stage 1 survey area at Moolarben. This pattern also emerges in the CWO REZ assemblages with fewer indurated mudstone artefacts again indicating an increased distance from indurated mudstone sources. Similar core reduction technology and tool manufacture was seen in all areas. These include the flexible and innovative ways of manufacturing elongated flakes of milky quartz from large flakes, blocky fragments obtained from a primary outcrop. Comparing the two CWO REZ assemblages shows similarities in the raw material types and amounts of cortex, sources used, tool and core types to Lake Lyell (Table 19, Doelman 2023). Two differences were observed. Less cortex was found on the artefacts at Lake Lyell for both the quartz and indurated mudstone artefacts. This difference reflects the types of quartz sources available and possibly the thickness of the vein quarried at Lake Lyell. It is likely that ample, high quality vein exposures of quartz were available at Lake Lyell. In the CWO REZ assemblage more water-rolled nodules were reduced CWO REZ and Moolarben (Doelman 2023, 2024). The lack of cortex on the quartz artefacts at Lake Lyell reflects the use of a thick quartz vein exposure with only cortex at the margins of the vein. Hence, the type of stone source and its availability has influenced the composition of the assemblages at each location. This factor also influenced decisions to transport tools of high-quality raw materials as replacement parts i.e., Bondi points.

	Stage 1 O'Driscoll and Kuskie (2015)				Stage 2		Stage 3		CWO REZ SNI Jan 2023	CWO REZ Nov 2023	Lake Lyell
	Excavated	Surface collection	Survey	Scrape	Surface	Excavation	Surface	Excavation	Excavation	Excavation	Excavation
Count of cores	20	66	30	100	241	61	377	23	7	68	33
% of cores	5.6	12.6	7.3	10.3	8.3	3.2	13.8	8.3	8.3	6.4	2.9
Material type (% of indurated mudstone)	72/359 20.1	65/522 12.5	40/413 9.7	33/969 3.4	187/2887 6.5	148/1880 7.9	313/2740 11.4	31/277 11.2	31/84 5.6	55/1057 5.2	80/1344 5.9
% of Tuff artefacts with no cortex	71/72 98.6	50/65 76.9	30/40 75.0	29/33 87.9	124/187 66.3	109/148 73.6	190/313 60.7	21/31 67.7	15/31 49	26/55 47.3	60/80 75.0
% of quartz artefacts with no cortex	180/190 94.7	307/394 77.9	283/316 89.6	719/326 45.3	1827/2121 86.1	1217/1419 85.8	1783/2204 80.9	166/223 74.4	36/49 73.5	610/881 69.2	977/1140 85.7
Count of Tools (not backed)	40	78	10	120	27	55	145	3	3	50	32
Count of Tools (backed)	1	3	8	5	24	42	80	6	9	18	26
Mean weight quartz	1.4	7.2	4.1	*	4.5	0.6	7.6	2.9	4.9	3.7	1.7
Mean weight indurated	3.0	36.9	20.7	*	31.6	1.4	19.4	6.6	1.9	4.9	0.69
Core: complete flake	20:34 1:1.7	66:122 1:1.8	30:132 1:7.7	100:163 1:1.6	242:474 1:2.0	61:353 1:5.8	377:679 1:1.8	23:48 1:2.1	7:29 1:4.1	68:313 1:46	33:307 1:9.3

**unknown* *Table 19 Comparison of Lake Lyell with Moolarben assemblages to other sites on the area*

Summary

It is now possible to return to the questions posed in the research design.

Source Information. Which raw material resources were used?

The assemblage was dominated by milky quartz artefacts. However, differences do occur to the frequency and diversity of raw material types between the excavation areas. For example, the highest frequency of indurated mudstone and chert artefacts was found in TP3.

Milky and crystal quartz artefacts account for over 80% of the assemblage. Tuff and chert artefacts were the next common. Other raw material types include CCQ, quartzite and volcanics. The milky quartz artefacts are generally very high quality with few inclusions or flaws and many flake conchoidally. Given the size of the tuff/chert/CCQ artefacts it is likely they were mostly transported to the site/s complete rather than manufactured locally. The exception being in TP3 and TP7 where platform rejuvenation flakes and ridge-straightening flakes, associated with core reduction, were found.

Two types of raw material sources were used, terrestrial (primary) and rarely waterborne (secondary). There are more milky quartz artefacts with a terrestrial/outcropping cortex. This result indicates that primary sources were closer to the test pits, possibly on the west side of Farmers Creek. Here most of the milky quartz artefacts with cortex were derived from an outcropping exposure. The outcrop/s grade from milky white and opaque to crystal clear. Sometimes impurities are seen which has changed the colour from white to yellow or grey.

***Stone reduction technology*.** How was the stone worked and used? Can the function of the site be inferred from the artefact assemblage?

The composition of the quartz assemblage reflects its physical properties. The artefacts are highly fragmented with high numbers of broken flakes and angular fragments. However, the large number of broken flakes in TP62 may also indicate more time at place i.e. trampling. The relatively high number of complete splits in this test pit also indicates that intensive manufacture concentrated in this location.

Angular fragments, from primary exposures and some water-rolled nodules of quartz were used to manufacture quartz cores. Larger flakes were also used as a core body. The fracturing properties of quartz can vary significantly and appears to reflect its colour and translucency. This was apparent in the opaque milky quartz which was rarely used. It is likely that flaw-free angular fragments were selected as cores. Cores were reduced using a bipolar technique and depending on the size rotated to produce bi-directional and multi-directional cores. A variety of flake types were produced including a surprisingly high number of elongated and sometimes even blade flakes of quartz.

Evidence for an 'systematic' reduction of milky quartz cores made on these fragments occurred on site (i.e. the manufacture of elongated/blade flakes). Blocks were flaked along the lateral margin with limited platform preparation in a similar method to the Redbank A strategy described by Hiscock (1993) in the Hunter Valley. This strategy most likely reflects the opportunistic use suitably shaped fragments which produced the blanks used to make geometric microliths and Bondi points. Flakes

were also used as burin-blade cores. Radial/bifacial and alternate-blade cores of milky quartz were also observed in the assemblages. Larger, wider flakes were also selected, retouched and used as scrapers or, if made from milky quartz, used for its sharp working edge. Occasionally retouch was observed on quartz artefacts including denticulate and step scrapers.

High numbers of elongated flakes reflect the types of flakes manufacture (i.e. elongated or blade flakes). In addition, the selection of large flakes of non-local material and/or the movement of prepared cores selected for transportation indicates curation.

Tool Use

Numerous examples of complete geometric microliths and Bondi points were found. Backed artefacts of milky quartz were made on-site due to the presence of blade cores and unfinished tools. Milky quartz is not typically used to make backed artefacts, with a high failure rate, but was readily available and the quality was high. Microcrystalline materials (e.g., chert, CCQ, chalcedony) were also used to make backed artefacts but these were imported from non-local sources. Broken backed artefacts resulting from use were also found, some with missing tips from Bondi points or with use damage. It is likely that these were discarded and replaced on-site. Some were broken and attempts were made to rework the Bondi points.

In summary, three factors which influenced assemblage composition 1. The dependence and reduction of milky quartz cores leading to highly fragmented assemblages, flexible flaking strategies and the appearance of backed artefacts of milky quartz; 2. the apparent limited availability of other high-quality raw materials leading to the movement of curated tools, that could be resharpened, and Bondi points as replacement parts 3. the time at place, seen in the diversity of raw material, broken flakes and tools in and around TP62. In contrast, in and around TP52 the highest number of angular fragments were found. It is predicted that this location is near an outcrop of quartz.

***Post-depositional influences*.** What post-depositional influences have impacted on the assemblage?

Four observations of post-depositional factors were made:

- The excavated assemblage had little evidence of heat damage.
- Size-sorting influenced the assemblage seen in the smaller size of artefacts with depth and the vertical distribution of distinctive raw material types.
- Water-rolled artefacts were identified showing horizontal movement.
- Indurated mudstone artefacts were sometimes impacted by chemical weathering.

Site chronology/Occupation. When was the site occupied? Was the assemblage the product of repeated occupations or a single event? Does any spatial patterning occur in the assemblage?

The site was occupied during the mid-late Holocene based on the tool types i.e., backed artefacts. These artefacts typify the “Australian Small Tool Tradition”, defined by Mulvaney and Kamminga

(1999). It is likely that most occupation was short-term, single events but repeated over time – seen in the different areas of tool use, artefact colours and raw material types but not always in the same place. There is no evidence that the assemblage was Pleistocene in origin. Four locations have the highest artefact density and represent more intensive activity. While the diversity of tool, artefact and material types does reflect the site density at TP62, possibly associated with a camp site used repeatedly. Different activities/site functions occurred in different parts of the landscape. For example, areas of backed artefact manufacture and tool use in TP7 and TP3.

***Comparative Analysis*.** How does this site compare with others in the surrounding region?

An analysis, based on O'Driscoll and Kuskie (2015), suggests most test pits at Lake Lyell represent transient movement and activity. The assemblage at TP62 indicates more campsite activities whereas TP7 and TP3 have more task specific activities (e.g. backed artefact manufacture). Differences in the frequency of raw material types occur in different locations. However, all assemblages are dominated by milky quartz. Of note is the relative absence of cortex on and the lack of water-rolled cortex which indicates the use of a primary outcrop of quartz. Similar core reduction technology and tool manufacture was seen in across the region. However, the frequency of cores and size of artefacts were different between the assemblages. Differences can be attributed to the location and types of stone sources available but also the placement of different activities in the landscape.

Conclusion

This report provides some additional understanding of site chronology/occupation, raw material selection, core preparation and reduction strategies and tool manufacture for the Lake Lyell region.

The characteristics of the cores, flakes and tools in the assemblage indicate that substantial differences occurred in the ways milky/crystal quartz and non-quartz raw materials were worked and transported. These differences may be related to distance from source area and/or rarity of higher quality raw material types found locally. Decisions were made to transport larger flakes and fashion tools of non-local material as replacement parts i.e. Bondi points. Non-local cores were also worked to exhaustion. The dominance of milky quartz in the landscape has created flexibility in core reduction, tool manufacture and use. This flexibility is seen in the core types and presence of unfinished and finished backed artefacts made from milky quartz, typically seen in mid-late Holocene assemblages. The highly fragmented nature of the quartz assemblage relates to its flaking properties but also time at place. Internal flaws or fractures caused fragmentation during manufacture. Breakage was also increased due to repeated site use creating trampling in and around TP62. In general, the macrocrystalline quartzes available in the region are of very high quality and abundant locally as outcrops. The advantage of milky quartz is its ability to maintain a strong and sharp edge and this outweighs any issues with manufacturing failure. The presence of ample raw material may be one motivator to return to place with at least two occupations observed at Farmers Creek.

References

Allaby, M. (ed.) 2013. *A Dictionary of Geology and Earth Sciences* (4 ed.) Oxford University Press,Oxford.

Andrefsky, W. 1998. *Lithics: Macroscopic Approaches to Analysis. Cambridge University Press, New York.*

Attenbrow, V.J. 2002. *Sydney's Aboriginal Past*. Investigating the Archaeological and Historical Records. UNSW Press, Sydney.

Baker, C. M. 1978. The size effect: an explanation of variability in surface artifact assemblage content. *American Antiquity* 43:288-293.

Boot, P. 1987. Trampling damage on stone artefacts – some experimental results. *Australian Archaeology* 24: 10-15.

Corkill, T. 1997. Red, yellow and black: colour and heat in archaeological stone. *Australian Archaeology* 45: 54-55.

Doelman, T. 2018. Lithic Analysis of the Moolarbeen Stage 3 Salvage, NSW, New South Wales. Unpublished report prepared for Niche Environment and Heritage.

Doelman, T., 2017. Lithic Analysis of the Moolarbeen Stage 2 Salvage, NSW, New South Wales. Unpublished report prepared for Niche Environment and Heritage.

Doelman, T. 2008. *Time to Quarry: The Archaeology of Stone Procurement in Northwestern New South Wales, Australia*. Archaeopress, Oxford. B.A.R. International Series S1801.

Doelman, T. 2023. Analysis of Lithic Assemblage from the CWO REZ SNI Test Excavations. Unpublished report to EMM.

Doelman, T. 2024. Analysis of Lithic Assemblage from the CWO REZ SNI Test Excavations. Unpublished report to EMM.

Doelman, T., J. Webb and M. Domanski 2001 Source to discard: patterns of lithic raw material procurement and use in Sturt National Park, northwestern New South Wales. *Archaeology in Oceania* 36:15-33.

Doelman, T., J. Webb, Williams, May, J. and Barry, F. 2014. Paleo-channels and Patches: A Geoarchaeological Assessment of Silcrete Sources in the Cumberland Plain, western Sydney, NSW. *Geoarchaeology* 30:495–510.

Flenniken, J. Jeffrey 1981. *Replicative Systems Analysis: a Model Applied To the Vein Quartz Artifacts from the Hoko River Site.* Washington State University Laboratory of Anthropology Reports of Investigation, 1. Pullman, WA: Washington State University.

Flenniken, J. Jeffrey, and J. Peter White, 1985. Australian flaked stone tools: a technological perspective. *Records of the Australian Museum* 36(3): 131–151.

Hiscock, P. 1993 Bondian technology in the Hunter Valley, New South Wales. *Archaeology in Oceania* 28: 65-76.

Hiscock, P. 2002. Quantifying the size of artefact assemblages. *Journal ofArchaeological Science*. 29:251-258.

Hiscock, P. 2008. *Archaeology of Ancient Australia*. London: Routledge.

Hiscock, P and Mitchell, S. 1993. Stone artefact quarries and reduction sites in Australia: towards a type profile. Canberra: Australian Government Publishing Service

Holdaway, S. and Stern, N. 2004. *Record in Stone; the study of Australia's flaked stone artefacts*. Canberra: Aboriginal Studies Press.

MacDonald, J and Rich, B. 1993. Archaeological excavations for the hill infrastructure project (stage 1) along Caddies, Smalls and Second Ponds Creek, Rouse Hill and Parklea, NSW. Final report on test excavation programme (volume 1). Brayshaw MacDonald Pty Ltd. Unpublished report for Rouse Hill (stage 1) Pty Ltd.

McCarthy, F. 1976. *Australian Aboriginal Stone Implements*. Australian Museum Trust, Sydney.

Mulvaney D. J. and Kamminga, J. 1999. Prehistory of Australia. Allen and Unwin, St Lenards.

Odell, G. H. 2003. *Lithic Analysis*. Springer: New York

O'Driscoll, C. and Kuskie, P. 2015. Moolarben Coal Project _Stage 1 report on additional aboriginal heritage survey and salvage. South East Archaeology unpublished report to Moolarben Coal Pty Limited.

Richardson, N. 1992. Conjoin sets and stratigraphic integrity in a sandstone shelter: Kenniff Cave (Queensland, Australia*). Antiquity* 66:408-418.

Shott, M. 1997. Activity and Formation as Sources of Variation in Great Lakes Palaeoindian Assemblages. *Midcontinental Journal of Archaeology* 22:197-236.

Tallavaara, M., Manninen M.A., Hertell E. and Rankama T. 2010. How flakes shatter: a critical evaluationof quartz fracture analysis. *Journal of Archaeological Science* 372:442-2448.

Witter, D. 1992. Regions and resources. Unpublished Ph.D. Australian National University, Canberra.

E.7 Optical Stimulant Luminescence report



OSL dating of nine sediment samples collected from Farmers Creek, Lithgow on behalf of EMM Consulting Pty Ltd

21 May 2024

Zenobia Jacobs
ChronOZ

OSL sample preparation and measurement conducted by University of Wollongong Optical Dating Facility

Sample analysis, age determination and reporting conducted by ChronOZ

Introduction

Nine sediment samples were collected from Farmers Creek near Lithgow, NSW and submitted for single-grain optically stimulated luminescence (OSL) dating by EMM Pty Ltd. Sample preparation and measurements were carried out in the Optical Dating Facility at the University of Wollongong (UOW) and all data analyses and reporting was carried out by ChronOZ. Samples were prepared and measured using conventional standards and approaches adopted in the Optical Dating Facility. This report documents the specific procedures and results and provide the final age estimates for the samples.

Sample locations

Nine sediment samples were collected for OSL dating from three sites (TP57-81, TP24-39 and TP46-56) with where the largest archaeological stone artefact deposits were found. The sites are located on the original terrace landform along Farmers Creek near Lithgow, NSW. Farmers Creek is a tributary of Cox River, which flows into the Lake Lyell dam. The dam was flooded in the 1980s, which subsequently flooded the surrounding waterways, inundating large portions of this landform and likely archaeological sites. Four samples were collected from the northern side of Farmers Creek (samples OSL17-OSL20) and five on the southern side of Farmers Creek (samples OSL7, 9, 11, 13 and 16). The soil profile is divided into three units:

Unit 1 at the surface is a dark grey-brown sandy loam with frequent roots and rootlets (A1 horizon) extending to ~20 cm depth.

Unit 2 is a pale yellow to tight grey fine sandy loam (A2 horizon) with frequent rock and cobble inclusions extending up to ~110 cm in depth.

Unit 3 is a compacted yellow to orange clay anywhere from 30 cm (B horizon)

While the soil profile is largely the same at all three locations, a key question is whether the archaeological deposits are all form the same or different time periods.

Samples were collected by hammering 20 cm long and 20 mm diameter PVC tubing horizontally into the face of the exposure. Table 1 lists the field and laboratory codes for the three samples together with their present-day average depths below surface.

Table 1: *Field and laboratory codes, together with contextual information and present-day average depths below surface for all samples.*

Field code	Laboratory code	Site	Unit	Depth (cm)
TP62-OSL7	LC143	TP57-81	2	35
TP62-OSL9	LC144	TP57-81	3	55
TP74-OSL11	LC145	TP57-81	2	25
TP74-OSL13	LC146	TP57-81	2	55
TP37-OSL16	LC147	TP24-39	3	90
TP52-OSL17	LC148	TP46-56	1	5
TP52-OSL18	LC149	TP46-56	2	20
TP52-OSL19	LC150	TP46-56	2	35
TP52-OSL20	LC151	TP46-56	3	55

OSL dating

OSL dating provides a means of determining burial ages for sediments and associated artefacts and fossils (Huntley et al., 1985; Aitken, 1998; Duller, 2004; Jacobs and Roberts, 2007; Wintle, 2014; Roberts et al., 2015; Athanassas and Wagner, 2016). The method is based on the time-dependent increase in the number of trapped electrons induced in mineral grains—such as quartz—by low levels of ionising radiation from the decay of naturally occurring uranium, thorium and potassium in the surrounding deposits, and from cosmic rays. The time elapsed since the light-sensitive electron traps were emptied can be determined from measurements of the luminescence signals from quartz (OSL) from which the equivalent dose (D_e) is estimated, together with determinations of the radioactivity of the sample and the material surrounding it to a distance of ~30 cm (the environmental dose rate). The luminescence 'clock' is reset by just a few seconds (quartz) of exposure to sunlight. The D_e divided by the environmental dose rate gives the burial time of the grains in calendar years ago. Here, we exploited the inherent benefits of single-grain dating, which include the identification and elimination of individual grains that exhibit aberrant luminescence characteristics (Jacobs et al., 2006; Jacobs and Roberts, 2007; Duller, 2008) and the use of D_e distributions to investigate the potential impact that depositional and post-depositional processes, such as sediment mixing or insufficient exposure to sunlight (partial bleaching), may have on age determination.

Sample preparation and analytical facilities

All samples were prepared using routine optical dating procedures (Aitken, 1998). Samples were first treated with HCl acid and H_2O_2 solution to remove carbonates and organic matter, respectively. The remaining sediment was then dried and sieved to obtain a range of sand-sized grain fractions. Grains of 180–212 µm in diameter were used for dating. The grains were etched using 40% HF acid for 45 min to dissolve any feldspar grains that may be present, and to remove the alpha-irradiated layer around the surface of each grain. The HF-etched grains were then rinsed in HCl acid to remove any precipitated fluorides and sieved again.

Single-grain OSL measurements of D_e were made for all quartz samples. OSL measurements were made on an automated Risø TL-DA-20 luminescence reader equipped with a focused green (532 nm) laser for single-grain stimulation (Bøtter-Jensen et al., 2003). Luminescence emissions were detected using an Electron Tubes Ltd 9235QA photomultiplier tube. The OSL signals were detected through Hoya U-340 filters. Single-grain measurements were made using aluminium discs drilled with 100 holes, each 300 µm in diameter and 300 µm deep (Bøtter-Jensen et al., 2003). Irradiations were carried out inside the luminescence reader using a $^{90}Sr/^{90}Y$ beta source that has been calibrated using a range of known gamma-irradiated quartz. Spatial variations in beta dose rate to individual grain positions were taken into account for D_e determination (Ballarini et al., 2006).

D_e determination and results

All single-grain quartz measurements were made using the single-aliquot regenerative-dose (SAR) procedure (Galbraith et al., 1999; Murray and Wintle, 2000). The SAR procedure involves measuring the OSL signals from the natural (burial) dose (L_n) and from a series of regenerative doses (L_x) that adequately bracket the D_e value (given in the laboratory by means of the calibrated $^{90}Sr/^{90}Y$

beta source). Grains were preheated at 260°C for 10 s prior to optical stimulation by an intense, green (532 nm) laser beam for 2 s at 125°C. A fixed test dose (~10 Gy, preheated at 160°C for 5 s) was given after each natural and regenerative dose, and the induced OSL signals (T_n and T_x) were used to correct for any sensitivity changes during the SAR sequence. A duplicate regenerative dose was included in the sequence to check the adequacy of this sensitivity correction, and a 'zero regenerative dose' (0 Gy) measurement cycle was included to monitor the extent of any 'recuperation' induced by the preheat treatment. As a check for possible contamination of the acid-etched quartz grains by other mineral inclusions, we also applied the OSL IR depletion ratio test (Duller, 2003) to each grain at the end of the SAR sequence, using an infrared exposure of 40 s at 50°C.

A total of 4,500 individual quartz grains (500 grains for each sample) were measured, but not every quartz grain that is measured is useful as a chronometer. Most grains are unsuitable because they have inherent luminescence properties that may give rise to inaccurate estimates of D_e. These unsuitable grains are identified based on known characteristics and the outcomes of tests built into the measurement sequences (e.g., the recycling ratio test, OSL IR depletion ratio test and recuperation ratio test). A series of quality-assurance criteria (Jacobs et al., 2006; Li et al., 2017) have been developed to objectively identify and reject such grains.

Table 2: *Number of individual quartz grains measured, rejected and accepted for each sample, together with the reasons for their rejection (see text for reference to numbers).*

Sample	No. of measured grains	Rejection criteria (see text)						Sum of rejected grains	No. of accepted grains	Negative D_e values
		1	2	3	4	5	6			
TP62-OSL7	500	182	81	5	43	35	4	350	150	1
TP62-OSL9	500	178	63	7	44	68	24	384	116	0
TP74-OSL11	500	99	100	0	84	41	4	328	172	4
TP74-OSL13	500	100	203	0	61	31	6	401	99	0
TP37-OSL16	500	264	45	5	27	33	8	382	118	0
TP52-OSL17	500	291	51	7	13	23	0	385	115	35
TP52-OSL18	500	291	42	2	13	35	2	385	115	5
TP52-OSL19	500	289	38	4	17	31	3	382	118	2
TP52-OSL20	500	317	26	2	18	43	16	422	78	0

Grains were rejected for the following reasons:

1. Initial T_n signal is less than 3σ above the corresponding background count, or the relative error on T_n is >25%.
2. Recycling ratio (i.e., the ratio of L_x/T_x values for the duplicate regenerative doses) is not consistent with unity at 2σ.
3. Recuperation ratio (i.e., the ratio of the L_x/T_x values for the 0 Gy and maximum regenerative doses) is >5%.
4. OSL IR depletion ratio is greater than 2σ less than unity (Duller, 2003).
5. L_x/T_x ratios are too scattered to be reliably fitted with a curve, have a large figure-of-merit (FOM) value with an upper limit of 10% or a have a reduced chi-squared value of >5.

6. L_n/T_n ratio is statistically consistent with, or higher than, the saturation level of the corresponding dose-response curve (DRC), so that a finite D_e value and error estimate could not be obtained, or the D_e value is obtained by extrapolation of the fitted DRC, rather than interpolation among the regenerative-dose signals.

Table 2 lists the numbers of individual grains measured, rejected and accepted for D_e determination for each of the samples, and the reasons for their rejection. Between 16% and 34% of grains were accepted for each sample; all accepted grains provide reliable estimates of D_e. Sample TP52-OSL17 contains a large number of grains with negative D_e values, consistent with zero.

L_n, L_x, T_n and T_x values were estimated from the first 0.22 s of OSL decay, with the mean count recorded over the last 0.3 s subtracted as background. Sensitivity-corrected (L_x/T_x) dose response curves were then constructed from the L_x and T_x OSL signals, using a general-order kinetic (GOK) function (Guralnik et al., 2015), and the sensitivity-corrected natural OSL signal (L_n/T_n) was projected onto the fitted DRC to estimate the D_e value by interpolation (Fig. 2). All data analyses, including curve fitting, D_e determination and error estimations, were achieved using the functions implemented in the R-package 'numOSL' (Peng et al., 2013).

Fig. 1 (left) shows the natural and regenerative dose OSL decay curves for a bright quartz grain from sample TP62-OSL9, following a preheat of 260°C for 10 s. The OSL decay curves exhibit a range of shapes but are generally quite reproducible and decay rapidly to instrumental background, with less than ~5% of the initial signal remaining after 0.3 s of optical stimulation. Fig. 1 (right) shows the corresponding DRC for the same representative grain. Most DRCs have very similar shapes up to ~30 Gy and continue to grow beyond ~100 Gy. There are two samples collected from unit 3 that have a significant number of grains (~17%) that were saturated with respect to dose (rejection criterion 6) and for which D_e values could not be calculated because the L_n/T_n value lies at or above the maximum dose for the sample. This may mean that the De value for the upper range of the distribution may be truncated. The rest of the sample all have only small numbers of saturated grains.

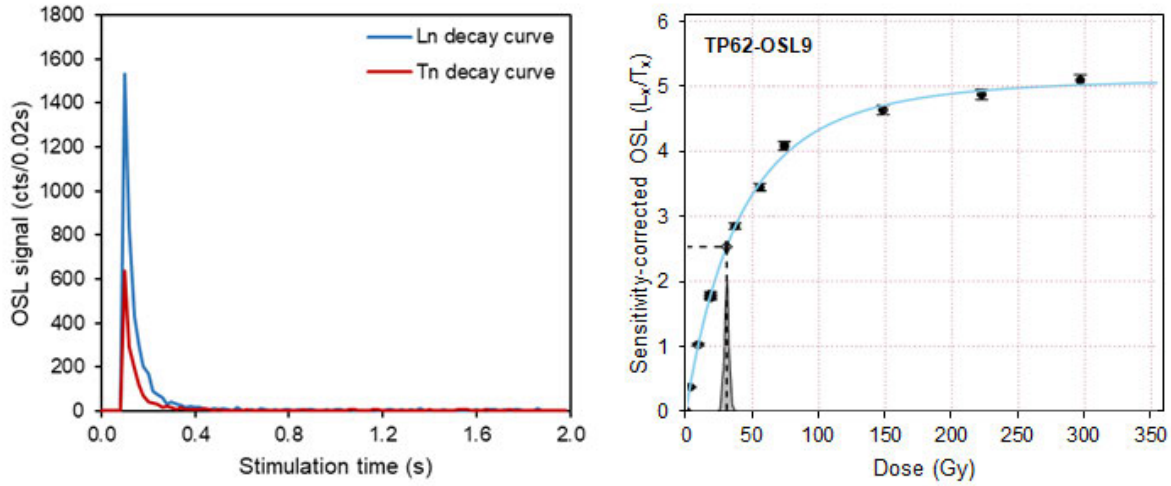


Figure 1: *Representative OSL decay curves (left-hand column) for the natural dose (blue) and test dose (~10 Gy; red) OSL signals and corresponding full DRCs (right-hand column) for one bright grain from TP62-OSL9.*

The performance of the single-grain OSL procedure was tested using a dose recovery test (Galbraith et al., 1999) on one sample from each site: TP74-OSL11, TP37-OSL16 and TP52-OSL17. The OSL signals for grains from each sample were first bleached and then given a known dose of ~25 Gy to act as a surrogate 'natural' dose. Five-hundred grains were measured for each sample using the procedure outlined above. The dose recovery ratios (i.e., the ratio of measured dose to given dose) of 1.04 ± 0.02 (TP74-OSL11), 1.00 ± 0.01 (TP37-OSL16) and 1.02 ± 0.01 (TP52-OSL17) are consistent with unity at 2σ, demonstrating that the single-grain OSL procedure can produce reliable estimates of measured dose for the samples in this study. The dose recovery results for all accepted grains are shown in Fig. 2, where the measured/given dose ratios are presented as radial plots. The overdispersion (OD) values are 7 ± 1%, 2 ± 2% and 9 ± 1%.

Information about the numbers of grains measured and used for D_e determination are provided in Table 3.

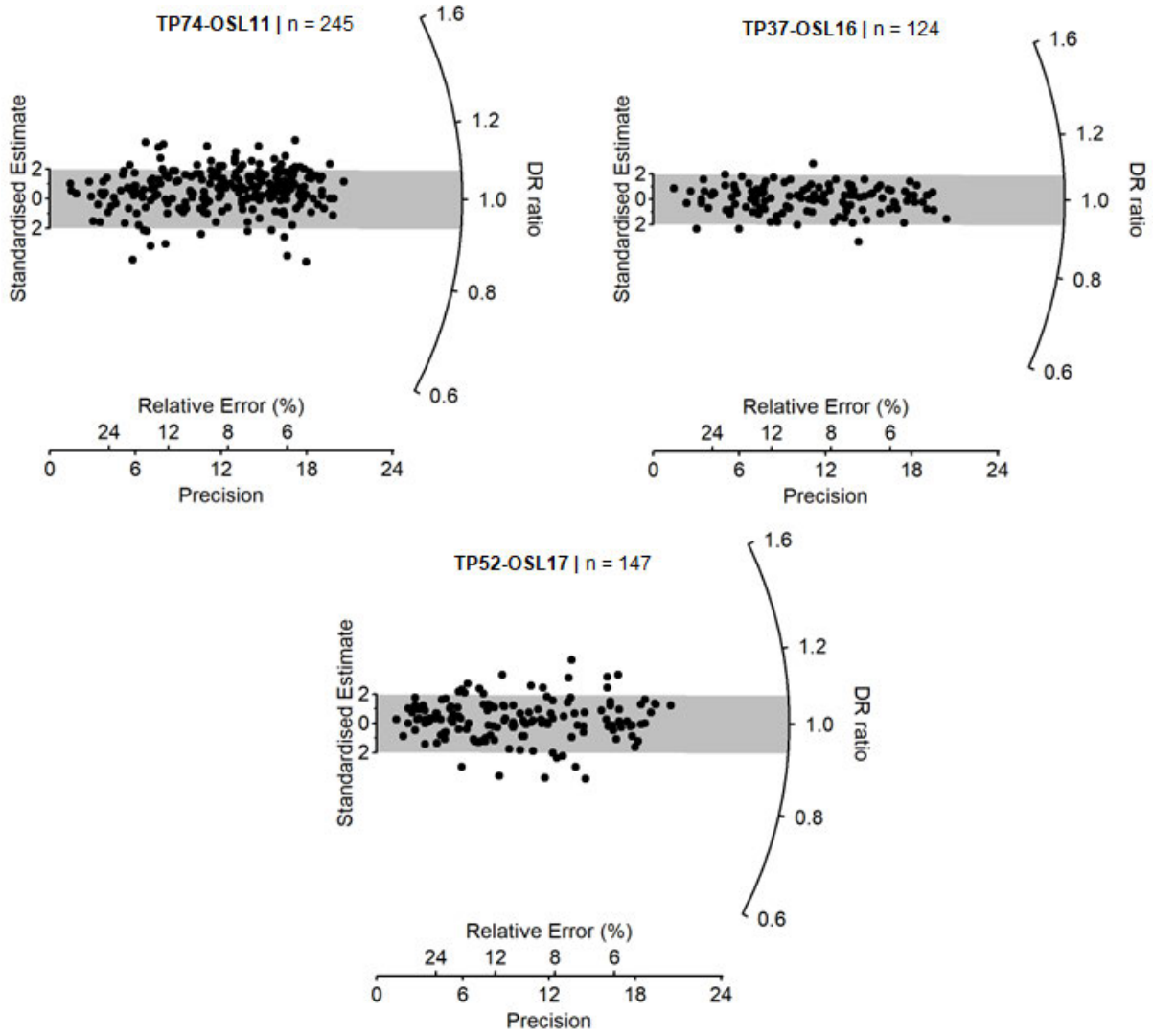


Figure 2: *Measured/given dose ratios for individual grains for one sample from each site. All grains consistent with the given dose fall within the grey band that is centred on a value of unity.*

It is commonplace in single-grain OSL dating for there to be some spread in the data due to natural variability and other complicating factors. To quantify the degree of spread, we routinely calculate OD

values for the D_e distributions of each sample. OD represents the relative standard deviation (i.e., the coefficient of variation) of the D_e distribution after accounting for the various measurement uncertainties (Galbraith et al., 2005; Galbraith and Roberts, 2012). Even for samples that have been well-bleached (zeroed by sunlight) prior to deposition and that remained undisturbed since burial, some degree of OD is present.

Information about potential reasons for OD are usually obtained by looking at the shape and patterns of the D_e distributions for each sample when plotted as radial plots, such as those shown in Fig. 3. In radial plots, each point represents a single grain, for which the D_e can be read by extending a line from the 'standardised estimate' axis on the left-hand side to intersect the radial axis on the right; the point of intersection is the D_e. The uncertainty on this estimate can be read by extending a line vertically from the data point to intersect the horizontal axis running along the bottom of the plot. This axis shows the relative standard error in % (i.e., the standard error, in Gy, divided by the D_e estimate, in Gy, multiplied by 100) and its reciprocal (the 'precision'). In such plots, the most precise estimates fall to the right and the least precise to the left. If the D_e values are consistent with statistical expectation, then 95% of the points will scatter within any chosen band of width ±2 units projecting from the left-hand axis (see grey band in Fig. 2), and 0% overdispersion will be obtained.

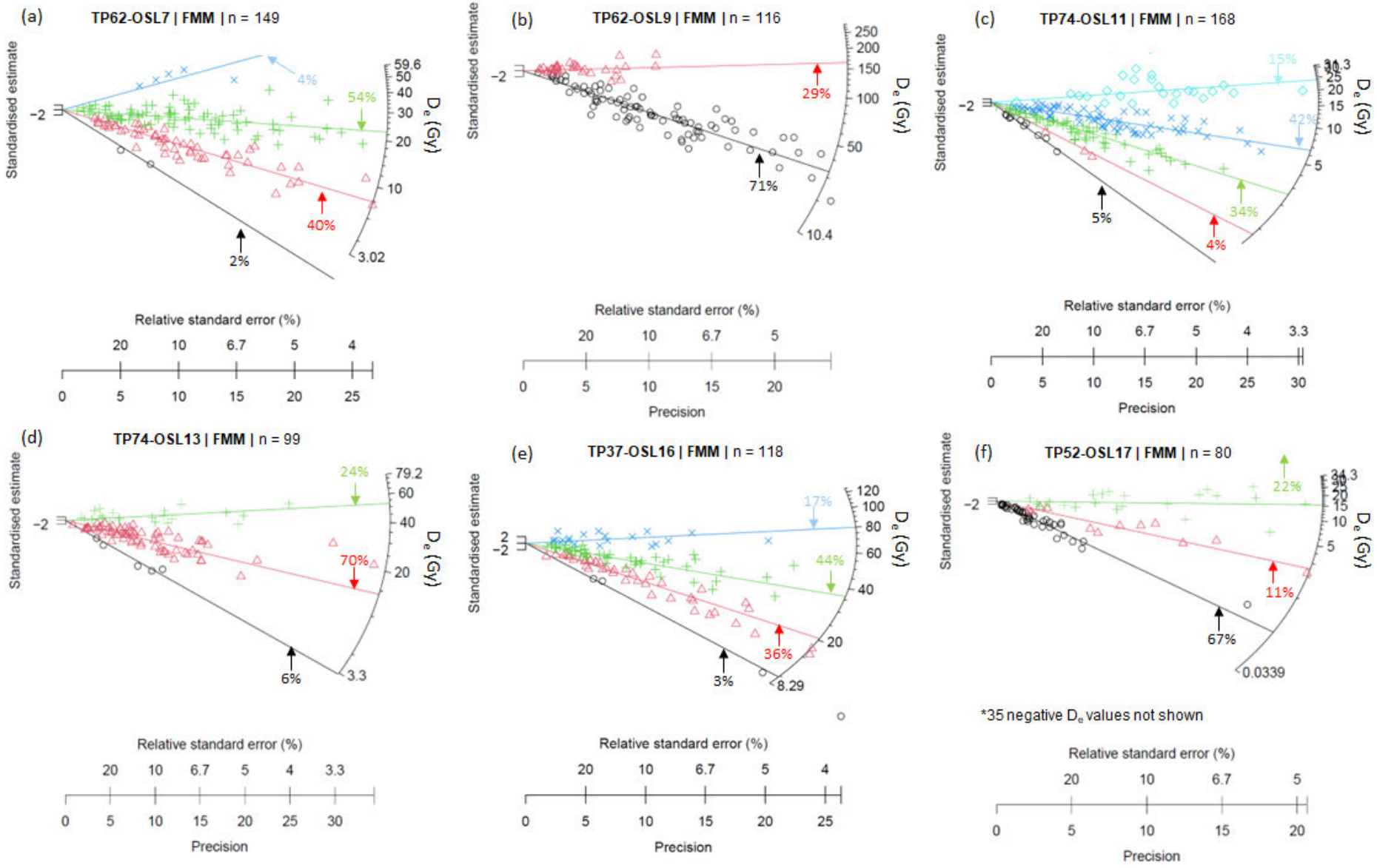
The same D_e distribution pattern was observed for all samples from Framers Creek, Lithgow. All samples have distributions typical of sediment that were post-depositionally mixed. To see whether we can untangle the mixture, we applied the finite mixture model (FMM) of Roberts et al. (2000) to get an estimate of the number of discrete D_e components, the OD of the components and their weighted mean D_e values, together with an estimate of the proportion of D_e values that make up each component. Grains belonging to different dose components are indicated using different coloured symbols in their radial plots in Fig. 3, and the matching colour solid line indicate the weighted mean D_e of that component. Also shown on each of the radial plots are the proportion of grains that are included in that component. The overdispersion of each of the components are provided in brackets in Table 3, where the value outside the bracket is the OD for the full distribution.

Between two and five components were identified for each of the samples. The results can be divided into two groups:

Group 1: Samples with a dominant component (>70% of grains in a single component) highlighted in grey and bold in Table 3. Only two samples fall within this group_TP62-OSL9 (unit 3) and TP74-OSL13 (unit 2). For these samples we assume that the component made up by >70% of the grains represents the depositional age of the sample and we should be able to calculate a reliable age. The additional minor components represent intrusive grains from under- and overlying sediment units.

Group 2: Samples with **two** components with almost equal proportions that together represent >70% of the grains, highlighted in blue and bold-italics in Table 3. With these samples, it is not possible to calculate and accurate estimate of depositional age. A range that encompasses both components would be most appropriate together with taking into account D_e values and ages for under- and overlying samples. Linking the main sediment depositional event to one of these components are more inconclusive and any artefacts contained within can also derive from deposits that have a range of different doses and, therefore, ages, so pinpointing the age, by association with the sediment is proving inconclusive and care should be taken.

The D_e values for all three samples using the FMM outlined above are provided in Table 3.


(a)
TP62-OSL7 | FMM | n = 149
Standardised estimate
D e (Gy)
4%
54%
40%
2%
59.6
3.02
Relative standard error (%)
20 10 6.7 5 4
0 5 10 15 20 25
(b)
TP62-OSL9 | FMM | n = 116
29%
71%
10.4
Relative standard error (%)
20 10 6.7 5
0 5 10 15 20
Precision
(c)
TP74-OSL11 | FMM | n = 168
15%
42%
5%
34%
4%
Relative standard error (%)
20 10 6.7 5 4 3.3
0 5 10 15 20 25 30
Precision
(d)
TP74-OSL13 | FMM | n = 99
24%
70%
6%
79.2
3.3
Relative standard error (%)
20 10 6.7 5 4 3.3
0 5 10 15 20 25 30
Precision
(e)
TP37-OSL16 | FMM | n = 118
17%
44%
36%
3%
8.29
Relative standard error (%)
20 10 6.7 5 4
0 5 10 15 20 25
Precision
(f)
TP52-OSL17 | FMM | n = 80
22%
11%
67%
0.0339
*35 negative D e values not shown
Relative standard error (%)
20 10 6.7 5
0 5 10 15 20
Precision

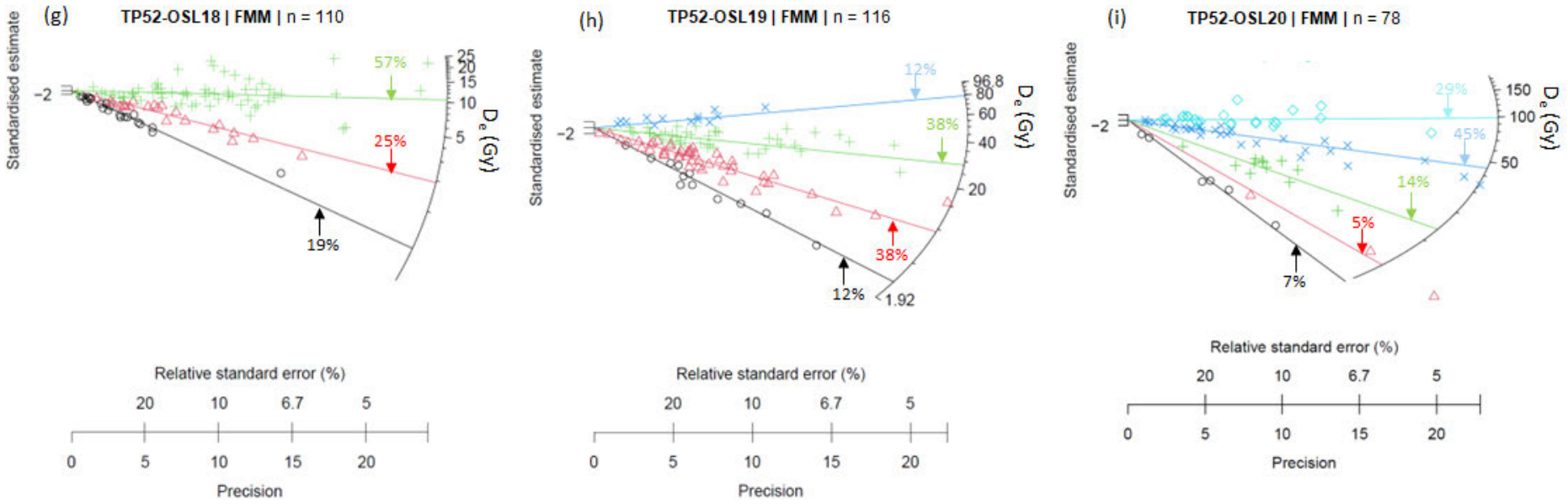


Figure 3: *Radial plots for all samples. Different coloured lines are centred on the weighted mean D_e value for each component identified using the FMM. Different coloured symbols indicate individual D_e values belonging to each of the different dose components. Proportion of D_e values in each component are indicated as a percentage.*

Environmental dose rate determination and results

The total environmental dose rate consists of contributions from beta, gamma and cosmic radiation external to the sand-sized quartz grains used for optical dating, as well as a small alpha dose rate due to the radioactive decay of uranium and thorium inclusions inside the grains. To calculate the OSL ages, we have assumed that the present-day radionuclide activities and dose rates have prevailed throughout the period of sample burial.

We estimated the beta and gamma dose rates by measuring the K, Th and U concentrations of dried, homogenised and powdered sediment samples using inductively coupled plasma optical emission spectrometry (ICP-OES; for K) and inductively coupled plasma mass spectrometry (ICP-MS; for Th and U). These analyses were performed externally at a commercial laboratory (Intertek Genalysis) in Perth, Western Australia. The K, Th and U concentrations were converted into beta and gamma dose rates using the dose rate conversion factors of Guèrin et al. (2011). For beta dose rates, allowance was made for the impact of sample water content (Nathan and Mauz, 2008), grain size (Brennan, 2003) and HF acid etching (Bell and Zimmerman, 1978) on beta-dose attenuation. Gamma dose rates were also corrected for water content. The cosmic dose rates were calculated following Prescott and Hutton (1994) and corrected for water content. In addition, we assumed an effective internal alpha dose rate of 0.031 ± 0.011 Gy/ka.

Present-day water contents of ~3-17% were measured. It is expected that the measured water contents varied over time, but in the absence of any specific information we have taken the measured values as indicative of the long-term average water contents of these samples. The relative uncertainty of 25% is sufficient to accommodate the likely range of water contents experienced by these deposits over the burial period; the OSL age estimates increase by about 1% for each 1% increase in water content. The dose rates for each of the samples are provided in Table 3.

OSL age estimates

The OSL age estimates are presented for all samples in Table 3. Uncertainties on the estimates are given at 1σ (the standard error on the mean) and were estimated by combining, in quadrature, all known and estimated sources of random and systematic error.

A single sample (TP52-OSL17) was collected from **Unit 1** at a depth of 5 cm below surface (Fig. 4d). This sample is dominated (67%) by grains that are modern in age with two older components (Fig. 3f). This sample was collected from a vehicle track within a frequently used modern camping area, which may explain the large proportion of modern grains. So, the most parsimonious age for the sample is that it was deposited sometime after 1,430 ± 790 years ago (i.e., the age for FMM-2) and the present. Most of the other samples also have minor components that date to within this age range.

Five samples were collected from Unit 2 in three of the four test pits (Fig. 4a,b,d). Only TP74-OSL13 (Fig. 4b) collected from the base of the unit at 55 cm depth below surface had a dose component that dominated the distribution (70%) and gave an age of 7,700 ± 640 years consistent with deposition during the mid-Holocene. This could be considered the maximum age for this unit. The remaining four samples all had more complex mixtures. OSL 11 collected from 25 cm below surface



Figure 4: *Photographs of each test pit (TP) from which samples were collected for OSL dating. Sample numbers are shown in blue together with the age for the component or components that dominate the dose distribution.*

near the top if Unit 2 gave two ages of 1,510 ± 220 years (34%) and 3,850 ± 420 (42%) years (Fig. 4b). The younger age is consistent with the older end of the age range for Unit 1, so it may be possible to assume that the older age is more representative of the age for the upper part of Unit 2, consistent with deposition during the late Holocene. A similar range was also obtained for the uppermost Unit 2 sample (OSL18) in TP52 (Fig. 4d). The age of 845 ± 255 (26%) is consistent with the range obtained for overlying Unit 1 and the age of 4,650 ± 530 (57%) years is consistent with the age obtained for OSL11. Like for sample OSL17, this sample is also possibly affected by compaction and disturbance due to it being a vehicle track and modern camping ground, suggesting that the older age is likely more accurate as a depositional age for the top of Unit 2. The remaining two samples collected from depths of 35 cm below surface in TP62 (OSL7; Fig. 4a) and TP52 (OSL19; Fig. 4d) have two components that encompasses both the ~4,000 years late-Holocene age for the top of the unit and ~8,000 years mid-Holocene age for the base of the unit. The most parsimonious interpretation of the age distribution of these samples is that the sediment were deposited sometime between ~8,000 and 4,000 years ago and post-depositionally mixed since then.

Three samples were collected from Unit 3 in three of the four test pits from depths of 55 cm (OSL9 and OSL20) and 90 cm (OSL16) below surface. OSL9 (Fig. 4a) is dominated by a single dose component (71%) and gave an age of 14,955 ± 925 years, consistent with deposition at the end of

the Pleistocene and near the start of the Holocene. The other two samples also have a component of grains consistent with this age (11,175 ± 875 for OSL16; Fig. 4c and 16,800 ± 2,490 for OSL 20; Fig. 4d). Both samples also contain a component of grains that are older and of Pleistocene age that also occur as a minor component in some of the other samples.

Together, it is therefore possible to suggest in broad terms that Unit 3 was deposited at the start of the Holocene, Unit 2 during the mid-Holocene and Unit 1 during the late Holocene and that these are consistent across the different sampled locations.

Table 3: *Dose rate data, equivalent dose (D_e) and overdispersion (OD) values, and ages.*

Sample	Water (%)	External dose rate (Gy/ka)			Total	D_e (Gy)	Model	OD (%)	Age (years)
		Beta	Gamma	Cosmic					
TP62-OSL7	12 ± 3 (11)	0.88 ± 0.07	0.73 ± 0.04	0.25	1.89 ± 0.07	1.74 ± 0.50 ***7.9 ± 0.5*** ***22.8 ± 1.2*** 7.9 ± 0.5	FMM-1 (2%) ***FMM-2 (40%)*** ***FMM-3 (54%)*** FMM-4 (4%)	78 ± 5 (33)	920 ± 265 ***4,180 ± 325*** ***12,055 ± 820*** 59,120 ± 12,100
TP62-OSL9	13 ± 3 (13)	1.02 ± 0.05	0.92 ± 0.05	0.23	2.21 ± 0.08	**33.0 ± 1.6** 164.3 ± 15.6	**FMM-1 (71%)** FMM-2 (29%)	78 ± 5 (37)	**14,955 ± 925** 74,400 ± 7,660
TP74-OSL11	5 ± 1 (3)	0.73 ± 0.03	0.67 ± 0.03	0.28	1.71 ± 0.06	0.24 ± 0.06 0.83 ± 0.41 ***2.58 ± 0.37*** ***6.6 ± 0.7*** 23.9 ± 2.6	FMM-1 (5%) FMM-2 (4%) ***FMM-3 (34%)*** ***FMM-4 (42%)*** FMM-5 (15%)	112 ± 6 (39)	140 ± 35 480 ± 240 ***1,510 ± 220*** ***3,850 ± 420*** 13,960 ± 1,610
TP74-OSL13	5 ± 1 (5)	0.81 ± 0.03	0.73 ± 0.03	0.26	1.83 ± 0.06	3.22 ± 0.66 **14.2 ± 0.8** 52.4 ± 5.7	FMM-1 (6%) **FMM-2 (70%)** FMM-3 (24%)	81 ± 6 (37)	1,760 ± 525 **7,770 ± 640** 28,665 ± 3,260
TP37-OSL16	12 ± 3 (11)	0.85 ± 0.04	0.74 ± 0.04	0.22	1.83 ± 0.06	9.7 ± 1.4 ***20.5 ± 1.4*** ***36.5 ± 2.7*** 20.5 ± 1.4	FMM-1 (3%) ***FMM-2 (36%)*** ***FMM-3 (44%)*** FMM-4 (17%)	56 ± 4 (20)	5,310 ± 780 ***11,175 ± 875*** ***19,900 ± 1,680*** 43,540 ± 3,875
TP52-OSL17	10 ± 3 (9)	0.99 ± 0.04	0.48 ± 0.04	0.29	1.79 ± 0.07	***0 ± 0.05*** ***2.6 ± 1.4*** 15.5 ± 3.1	***FMM-1 (67%)*** ***FMM-2 (11%)*** FMM-3 (22%)	196 ± 17 (50)	***modern*** ***1,430 ± 790*** 8,695 ± 1,755
TP52-OSL18	6 ± 2 (6)	1.11 ± 0.04	0.84 ± 0.04	0.29	2.27 ± 0.07	0.40 ± 0.10 ***1.92 ± 0.58*** ***10.6 ± 1.1***	FMM-1 (18%) ***FMM-2 (26%)*** ***FMM-3 (57%)***	140 ± 10 (58)	175 ± 45 ***845 ± 255*** ***4,640 ± 530***
TP52-OSL19	8 ± 2 (7)	1.57 ± 0.06	1.17 ± 0.05	0.26	3.04 ± 0.09	3.1 ± 0.5 ***9.6 ± 0.9*** ***28.7 ± 2.8*** 78.9 ± 13.5	FMM-1 (12%) ***FMM-2 (38%)*** ***FMM-3 (38%)*** FMM-4 (12%)	99 ± 7 (33)	1,010 ± 155 ***3,145 ± 330*** ***9,425 ± 990*** 25,965 ± 4,550
TP52-OSL20	18 ± 5 (17)	1.41 ± 0.10	1.04 ± 0.06	0.22	2.70 ± 0.10	1.55 ± 0.36 4.02 ± 1.42 13.4 ± 2.1 ***45.3 ± 6.4*** ***98.6 ± 15.1***	FMM-1 (7%) FMM-2 (5%) FMM-3 (14%) ***FMM-4 (45%)*** ***FMM-5 (29%)***	122 ± 10 (34)	575 ± 135 1,490 ± 530 4,980 ± 800 ***16,800 ± 2,490*** ***36,530 ± 5,800***

References

Aitken, M.J., 1998. An Introduction to Optical Dating. Oxford University Press, Oxford.

Athanassas, C.D., Wagner, G.A., 2016. Geochronology beyond radiocarbon: optically stimulated luminescence dating of palaeoenvironments and archaeological sites. Elements 12, 27–32.

Ballarini, M., Wintle, A.G., Wallinga, J., 2006. Spatial variation of dose rate from beta sources as measured using single grains. Ancient TL 24, 1–8.

Bell, W.T., Zimmerman, D.W., 1978. The effect of HF acid etching on the morphology of quartz inclusions for thermoluminescence dating. Archaeometry 20, 63–65.

Bøtter-Jensen, L., Mejdahl, V., 1988. Assessment of beta-dose-rate using a GM multicounter system. Nuclear Tracks and Radiation Measurements 14, 187–191.

Bøtter-Jensen, L., Andersen, C.E., Duller, G.A.T., Murray, A.S., 2003. Developments in radiation, stimulation and observation facilities in luminescence measurements. Radiation Measurements 37, 535–541.

Brennan, B.J. Beta doses to spherical grains. Radiation Measurements 37, 299–303.

Duller, G.A.T., 2003. Distinguishing quartz and feldspar in single grain luminescence measurements. Radiation Measurements 37, 161–165.

Duller, G.A.T., 2004. Luminescence dating of Quaternary sediments: recent advances. Journal of Quaternary Science 19, 183–192.

Duller, G.A.T., 2008. Single-grain optical dating of Quaternary sediments: why aliquot size matters in luminescence dating. Boreas 37, 589–612.

Galbraith, R.F., Roberts, R.G., 2012. Statistical aspects of equivalent dose and error calculation and display in OSL dating: an overview and some recommendations. Quaternary Geochronology 11, 1–27.

Galbraith, R.F., Roberts, R.G., Laslett, G.M., Yoshida, H., Olley, J.M., 1999. Optical dating of single and multiple grains of quartz from Jinmium rock shelter, northern Australia: Part I, experimental design and statistical models. Archaeometry 41, 339–364.

Galbraith, R.F., Roberts, R.G., Yoshida, H., 2005. Error variation in OSL palaeodose estimates from single aliquots of quartz: a factorial experiment. Radiation Measurements 39, 289–307.

Guralnik, B., Li, B., Jain, M., Chen, R., Paris, R.B., Murray, A.S., Li, S.-H., Pagonis, V., Valla, P.G., Herman, F., 2015. Radiation-induced growth and isothermal decay of infrared-stimulated luminescence from feldspar. Radiation Measurements 81, 224–231.

Huntley, D.J., Godfreysmith, D.I., Thewalt, M.L.W., 1985. Optical dating of sediments. Nature 313, 105–107.

Jacobs, Z., Roberts, R.G., 2007. Advances in optically stimulated luminescence dating of individual grains of quartz from archeological deposits. Evolutionary Anthropology 16, 210–223.

Jacobs, Z., Duller, G.A.T., Wintle, A.G., 2006. Interpretation of single grain D_e distributions and calculation of De. Radiation Measurements 41, 264–277.

Li, B., Jacobs, Z., Roberts R.G., Galbraith, R., Peng, J., 2017. Variability in quartz OSL signals caused by measurement uncertainties: problems and solutions. Quaternary Geochronology 41, 11–25.

Murray, A.S., Wintle, A.G., 2000. Luminescence dating of quartz using an improved single-aliquot regenerative-dose protocol. Radiation Measurements 32, 57–73.

Nathan, R.P., Mauz, B., 2008. On the dose-rate estimate of carbonate-rich sediments for trapped charge dating. Radiation Measurements 43, 14–25.

Peng, J., Dong, Z., Han, F., Long, H., Liu, X., 2013. R package numOSL: numeric routines for optically stimulated luminescence dating. Ancient TL 31, 41–48.

Prescott, J.R., Hutton, J.T., 1994. Cosmic-ray contributions to dose rates for luminescence and ESR dating: large depths and long-term time variations. Radiation Measurements 23, 497–500.

Roberts, R.G., Jacobs, Z., Li, B., Jankowski, N.R., Cunningham, A.C., Rosenfeld, A.B., 2015. Optical dating in archaeology: thirty years in retrospect and grand challenges for the future. Journal of Archaeological Science 56, 41–60.

Rousseeuw, P.J., Croux, C., 1993. Alternatives to the median absolute deviation. Journal of the American Statistical Association 88, 1273–1283.

Rousseeuw, P.J., Debruyne, M., Engelen, S., Hubert, M., 2006. Robustness and outlier detection in chemometrics. Critical Reviews in Analytical Chemistry 36, 221–242.

Wintle, A.G., 2014. Luminescence dating methods. In: Holland, H.D., Turekian, K.K. (Eds), Treatise on Geochemistry (second edition), vol. 14, pp. 17–35. Elsevier, Oxford.

E.8 Lithics catalogue

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
1345	16	16	2	BROKTOOL	MQUART	WHITE	SEMI			0%		ELONG				USEWEAR	0					0			21.7	0	0	0	0	0		1.47	N/A	
1296	7	7	1	COMPTOOL	MQUART	WHITE	SEMI	STEP	HERTIZEN	0%		BLADE	UNI	NA	0	USEWEAR	1					0			18.7	16.9	11.2	4	10.5	3.6		1.21	N/A	cracks
1132	3EXT-C	3	2	COMPTOOL	MQUART	WHITE	OPAQ	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	180	USEWEAR	1					0			22.4	19.7	17	4.5	14.3	4.3		2.18	N/A	
660	47-B	47	2	COMPTOOL	CHERT	RED	OPAQ	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	90	USEWEAR	2					0			27.4	18.3	17.5	4.4	14.6	3.7		2.33	N/A	
1178	3EXT-C	3	1	COMPTOOL	TUFF	GREY	OPAQ	FEATHER	BIPLOAR	0%		ELONG	FACET	NA	180	USEWEAR	1					0			28.6	27.2	8.7	3.2	5.4	2.1		0.76	N/A	
199	62ext	62	4	COMPTOOL	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0	USEWEAR	1					0			30.4	24.3	28.1	4.9	20.8	5.3		4.45	N/A	
186	61-B	61	3	COMPTOOL	MQUART	WHITE	OPAQ	CRUSH	BIPLOAR	0%		BLOCK	MISSING	NA	90	USEWEAR	1					0			31.6	29.9	18	10.4	0	0		6.14	N/A	
103	62ext	62	5	COMPTOOL	CHERT	brown	OPAQ	FEATHER	HERTIZEN	0%		BLADE	FACET	NA	0	USEWEAR	1					0			32.4	28.1	7.8	3.2	5.9	2.9		0.95	N/A	
112	62	62	6	COMPTOOL	CHERT	brown	SEMI	FEATHER	HERTIZEN	1-25%	WATER-ROLL	EXPAND	UNI	STEP	0	USEWEAR	2					0			40.6	40.6	26.8	9.1	21.2	6.7		9.47	N/A	
709	77-C	77	3	COMPTOOL	QUARTZITE	RED/GREY	OPAQ	FEATHER	BENDING	51-99%	WATER-ROLL	BLOCK	UNI	NA	0	USEWEAR	2					0			47.5	18.6	42.6	8.3	42.4	17		14.35	N/A	
325	52-C	52	2	DISTTOOL	TUFF	YELLOW	OPAQ	FEATHER		0%		INDETER				USEWEAR	1					0			16.7	0	0	0	0	0		0.66	N/A	
1145	3	3	2	DISTTOOL	MQUART	WHITE	SEMI	FEATHER		0%		ELONG				USEWEAR	1					0			18.6	0	0	0	0	0		0.46	N/A	
671	73-C	73	4	DISTTOOL	MQUART	WHITE	SEMI	CORTICAL		1-25%	weathered	PLATREJUV				USEWEAR	1					0			36.3	0	0	0	0	0		5.5	N/A	
1284	7	7	1	PROXTOOL	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA		USEWEAR	1					0			16	0	0	0	11.2	4.5		1.15	N/A	
1085	3EXT-D	3	2	PROXTOOL	CCQ	GREY	SEMI			0%		BLADE	FACET	NA		USEWEAR	1					0			20	0	0	0	9.8	4		1.24	N/A	
1158	3	3	2	PROXTOOL	TUFF	GREY	OPAQ			0%		BLADE	FACET	NA		USEWEAR	1					0			24.7	0	0	0	10.6	2.6		1.89	N/A	
619	49-D	49	1	BLOCKTL	MQUART	WHITE	SEMI			0%		INDETER				AP	0					0			18.2	0	0	0	0	0		1.88	N/A	
556	50-B	50	3	BROKTOOL	CHERT	brown	OPAQ			0%		INDETER				AP	0					0			14.4	0	0	0	0	0		0.33	N/A	
1161	3EXT-D	3	3	COMPTOOL	TUFF	Y/G	OPAQ	HINGE	HERTIZEN	0%		INDETER	UNI	NA	NA	AP	1					0			15.7	15.4	7.4	3.5	2.5	1.9		0.39	weathered	D
1339	24-B	24	3	COMPTOOL	MQUART	WHITE	SEMI	ABRUPT	WEDGE	0%		BLOCK	UNI	NA	0	AP	1					0			31.6	27.9	21.3	12.3	20.9	10.6		9.32	N/A	
1273	7-B	7	2	DISTTOOL	TUFF	LGREY	OPAQ	FEATHER		51-99%	weathered	EXPAND				AP	1					0			17.9	0	0	0	0	0		0.93	weathered	D
1175	3EXT-C	3	2	DISTTOOL	TUFF	Y/G	OPAQ	ABRUPT		0%		PLATREJUV				AP	2					0			28.7	0	0	0	0	0		3.99	N/A	from alt
346	52-C	52	1	COMPTOOL	MQUART	WHITE	SEMI	N/A	UNCLEAR	1-25%	weathered	BLOCK	UNI	NA	0	P	2					0			26.6	15.8	23.6	9.1	21.7	7.7		4.75	N/A	
994	7-D	7	1	COMPTOOL	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		BLOCK	FLAKED	NA	RADIAL	P	2					0			38	37.4	28.2	13.8	31.3	14.4		20.71	N/A	
820	74-D	74	3	COMPTOOL	MQUART	WHITE	SEMI	CRUSH	BIPLOAR	26-50%	WATER-ROLL	BLOCK	UNI	NA	0	NOTCH	1					0			49.9	49.9	33.6	11.8	17.6	8.7		22.15	N/A	
1118	3EXT-C	3	2	COMPTOOL	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		BLOCK	UNI	NA	90	AP	2					0			32.5	22.7	29.4	7	19.2	5.9		6.31	N/A	
1288	7-B	7	2	COMPTOOL	MQUART	WHITE	SEMI	N/A	UNCLEAR	0%		N/A	NA	NA	0	GEO	1					0			12.8	12.8	7.5	2.9	0	0		0.31	N/A	DAMAGE
224	62ext	62	4	COMPTOOL	CHERT	GREY	OPAQ	N/A	UNCLEAR	0%		INDETER	NA	NA	0	GEO	3					0			25.9	25.9	19.1	6.3	0	0		3.46	N/A	no use
1304	7	7	1	COMPTOOL	MQUART	WHITE	SEMI	N/A	UNCLEAR	0%		ELONG	NA	NA	NA	GEO	3					0			9.8	9.8	5.6	2.8	0	0		0.2	N/A	loss
216	62ext	62	4	COMPTOOL	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		INDETER	UNI	NA	0	GEO	1					0			12.2	12.2	7	2	3.6	2.5		0.29	N/A	geo
1301	7-B	7	2	COMPTOOL	CQUART	WHITE	SEMI	N/A	UNCLEAR	0%		N/A	NA	N/A	0	GEO	3					0			10.9	10.9	8.9	2.1	0	0		0.26	N/A	
430	52	52	1	COMPTOOL	CHERT	GREY	SEMI	FEATHER	UNCLEAR	0%		INDETER	NA	NA	90	DRILL	2					0			29.6	29.6	18.3	4.2	0	0		1.94	N/A	Q3
504	49EXT	49	2	COMPTOOL	MQUART	WHITE	SEMI	N/A	UNCLEAR	0%		BLOCK	FLAKED	NA	NA	ATE	2					0			35.8	23.3	28.9	10.6	28.3	9.3		9.81	N/A	
781	77-D	77	3	COMPTOOL	QUARTZITE	RED/GREY	OPAQ	FEATHER	HERTIZEN	26-50%	WATER-ROLL	BLOCK	CORTICAL	NA	180	ATE	1					0			86.7	56.7	86	18.5	72.6	7.8		94.16	N/A	
1281	7	7	1	DISTTOOL	CQUART	WHITE	SEMI	FEATHER		0%		ELONG				ATE	1					0			15.6	0	0	0	0	0		0.41	N/A	
788	74-D	74	3	DISTTOOL	MQUART	WHITE	SEMI	N/A		0%		EXPAND				ATE	1					0			24.1	0	0	0	0	0		3.8	N/A	
729	73	73	1	DISTTOOL	MQUART	WHITE	SEMI	N/A		0%		BLOCK				ATE	2					0			32.3	0	0	0	0	0		9.84	N/A	
668	73	73	20-35	COMPTOOL	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	FACET	NA	0	AP	1					0			18.5	16.5	14.8	2.8	7.2	1.7		0.86	N/A	
965	1	1	4	COMPTOOL	MQUART	WHITE	SEMI	N/A	HERTIZEN	0%		EXPAND	UNI	NA	0	AP	2					0			19.1	10.2	13	3.2	12.1	4.2		1.07	N/A	
921	91	91	1	COMPTOOL	MQUART	WHITE	SEMI	N/A	WEDGE	0%		BLOCK	UNI	NA	0	AP	2					0			20	14.9	14.4	5.6	16.9	8.8		2.39	N/A	
911	1	1	2	COMPTOOL	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		BLOCK	UNI	NA	180	AP	1					0			24.4	21.1	20.3	9.7	21.6	9.8		5.01	N/A	
906	19	19	4	COMPTOOL	TUFF	YELLOW	SEMI	FEATHER	HERTIZEN	26-50%	weathered	INDETER	NA	NA	0	AP	2					0			25.4	25.3	18.2	6	0	0		2.87	N/A	
977	1-D	1	1	DISTTOOL	MQUART	WHITE	SEMI	N/A		0%		INDETER				AP	3					0			16.6	0	0	0	0	0		0.67	N/A	
562	49EXT	49	2	DISTTOOL	MQUART	WHITE	SEMI	FEATHER		0%		BLOCK				AP	1					0			18	0	0	0	0	0		1.37	N/A	
468	52-B	52	3	COMPTOOL	CHERT	brown	OPAQ	FEATHER	HERTIZEN	0%		POINT	FACET	NA	0	BONDI	2					0			32.6	32.6	9.2	3.8	4.3	2.6		1.14	N/A	100% TRI
1091	3EXT-B	3	2	COMPTOOL	CHERT	GREY	OPAQ	N/A	HERTIZEN	0%		ELONG	FACET	NA	0	BONDI	2					0			21.3	21.3	7.2	2	4.2	1.3		0.43	N/A	LOSS
865	74	74	5	COMPTOOL	TUFF	darkgrey	OPAQ	N/A	UNCLEAR	1-25%	WATER-ROLL	ELONG	NA	NA	0	BONDI	3					0			24	23.9	7.3	3.7	0	0		0.81	N/A	SCAR NO
1338	24-D	24	4	COMPTOOL	MATRIXSIL	PINK	OPAQ	N/A	UNCLEAR	26-50%	weathered	BLADE	NA	NA	0	BONDI	3					0			16.9	15.2	8.6	2.7	0	0		0.38	N/A	BACKED
840	74	74	3	COMPTOOL	MATRIXSIL	PINK/GREY	OPAQ	N/A	HERTIZEN	0%		ELONG	FLAKED	NA	0	BONDI	2					0			26.5	26.1	10.5	3.9	6.5	2.3		1.26	N/A	BAKQ2 3
1097	3EXT-D	3	2	COMPTOOL	CHERT	Y/G	OPAQ	N/A	UNCLEAR	0%		BLADE	NA	NA	0	BONDI	4					0			40.3	40.6	9.2	3	0	0		1.92	N/A	BAC Q4
832	74-D	74	3	COMPTOOL	CHERT	brown	OPAQ	HINGE	HERTIZEN	0%		ELONG	FLAKED	NA	0	BONDI	2					0			14.7	14.7	6.7	2.4	3.1	1.5		0.26	N/A	BONDI
732	73-B	73	2	COMPTOOL	CHERT	GREY	OPAQ	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	0	BONDI	2					0			24.5	24.5	6.8	4.3	3.9	3.1		0.73	N/A	
700	77-B	77	1	PROXTOOL	MQUART	WHITE	SEMI			0%		ELONG	FACET	NA		BONDI	1					0			16	0	0	0	7.5	3.5		0.7	N/A	
310	52-C	52	2	BROKTOOL	CCQ	YELLOW	OPAQ			0%		BLADE				BACKED	0					0			15.5	0	0	0	0	0		0.23	N/A	BACKED
1102	3EXT-B	3	2	BROKTOOL	MQUART	WHITE	SEMI			0%		INDETER				BACKED	0					0			10.1	0	0	0	0	0		0.32	N/A	1125
1024	7	7	3	BROKTOOL	CQUART	WHITE	SEMI			0%		INDETER				BACKED	0					0			9.4	0	0	0	0	0		0.38	N/A	
1280	7	7	1	BROKTOOL	MQUART	WHITE	SEMI			0%		INDETER				BACKED	0					0			10.5	0	0	0	0	0		0.26	N/A	
1125	3EXT-B	3	2	BROKTOOL	MQUART	WHITE	SEMI			0%		INDETER				BACKED	0					0			14.3	0	0	0	0	0		0.49	N/A	
962	1	1	1	COMPTOOL	MQUART	WHITE	SEMI	N/A	HERTIZEN	0%		ELONG	UNI	NA	0	BACKED	1					0			16.3	15.9	11.2	3.7	7.2	3		0.94	N/A	WITH USE
756	73-B	73	3	COMPTOOL	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	UNI	NA	0	BACKED	1					0			20.2	20.4	7.8	3.8	5.5	3.4		0.86	N/A	
879	74-C	74	4	DISTTOOL	CHERT	brown	OPAQ	FEATHER		51-99%	WATER-ROLL	ELONG				BACKED	2					0			19.8	0	0	0	0	0		0.65	N/A	D BONDI
612	48	48	2	DISTTOOL	MQUART	WHITE	SEMI	FEATHER		0%		ELONG				BACKED	1					0			16.5	0	0	0	0	0		0.52	N/A	BREAK
874	77-C	77	2	DISTTOOL	CQUART	WHITE	SEMI	FEATHER		0%		ELONG				BACKED	2					0			14.5	0	0	0	0	0		0.44	N/A	
1109	3EXT-D	3	2	PROXTOOL	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA		BACKED	1					0			11.1	0	0	0	5.6	2.8		0.28	N/A	BONDI
638	50-C	50	2	PROXTOOL	MQUART	WHITE	SEMI			0%		BLADE	UNI	NA		BACKED	2					0			12.4	0	0	0	6.8	3.1		0.58	N/A	BONDI
734	73-B	73	4	BLOCK	MQUART	WHITE	SEMI			26-50%	weathered						0					0			34	0	0	0	0	0		10.95	N/A	VESICULES
233	61	61	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			17	0	0	0	0	0		1.23	N/A	S
221	61	61	2	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			19.3	0	0	0	0	0		2.28	N/A	S
315	52-C	52	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10.7	0	0	0	0	0		0.36	N/A	CRACKS
1070	3EXT-B	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10.8	0	0	0	0	0		0.34	N/A	CRACKS
412	54-B	54	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10.9	0	0	0	0	0		0.35	N/A	CRACKS
359	54	54	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			12.6	0	0	0	0	0		0.45	N/A	cracks
419	54	54	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			14.6	0	0	0	0	0		0.99	N/A	cracks
1082	3EXT-C	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			17.1	0	0	0	0	0		0.7	N/A	cracks
426	52-D	52	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			24.2	0	0	0	0	0		2.54	N/A	CRACKS
625	70	70	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			24.4	0	0	0	0	0		3.82	N/A	CRACKS

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
846	37	37	7	BLOCK	MQUART	WHITE	SEMI			0%							0					0			26.2	0	0	0	0	0		3.65	N/A	CRACKS
507	49EXT	49	2	BLOCK	MQUART	WHITE	SEMI			26-50%	weathered						0					0			27.3	0	0	0	0	0		3.91	N/A	CRACKS
983	7-B	7	1	BLOCK	MQUART	WHITE	OPAQ			1-25%	weathered						0					0			29.2	0	0	0	0	0		8.71	N/A	CRACKS
417	54	54	2	BLOCK	MQUART	WHITE	OPAQ			0%							0					0			32.6	0	0	0	0	0		13.48	N/A	cracks
860	74-C	74	4	BLOCK	MQUART	WHITE	OPAQ			0%							0					0			63.9	0	0	0	0	0		51.85	N/A	CRACKS
662	77-C	77	3	BLOCK	QUARTZITE	RED/GREY	OPAQ			26-50%	WATER-ROLL						0					0			35.8	0	0	0	0	0		5.13	N/A	MOVEME
544	47	47	2	BLOCK	MQUART	WHITE	SEMI			26-50%	weathered						0					0			22.2	0	0	0	0	0		3.13	N/A	628
549	48	48	2	BLOCK	MQUART	WHITE	OPAQ			0%							0					0			7.2	0	0	0	0	0		0.16	N/A	
308	52-D	52	2	BLOCK	MQUART	WHITE	SEMI			1-25%	VEIN						0					0			8.5	0	0	0	0	0		0.28	N/A	
779	73-D	73	5	BLOCK	MQUART	WHITE	SEMI			0%							0					0			8.7	0	0	0	0	0		0.21	N/A	
1242	3EXT-C	3	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			9	0	0	0	0	0		0.26	N/A	
584	49EXT-B	49	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			9	0	0	0	0	0		0.25	N/A	
286	61-D	61	3	BLOCK	MQUART	WHITE	OPAQ			0%	ROUGH						0					0			9.2	0	0	0	0	0		0.3	N/A	
888	74-D	74	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			9.4	0	0	0	0	0		0.17	N/A	
1142	3EXT-C	3	1	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			9.7	0	0	0	0	0		0.22	N/A	
397	50	50	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			9.8	0	0	0	0	0		0.23	N/A	
330	52-C	52	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			9.9	0	0	0	0	0		0.29	N/A	
697	77-C	77	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10	0	0	0	0	0		0.3	N/A	
744	73-B	73	3	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			10.2	0	0	0	0	0		0.48	N/A	
1260	3EXT-D	3	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10.3	0	0	0	0	0		0.44	N/A	
861	74-D	74	7	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10.3	0	0	0	0	0		0.26	N/A	
650	49	49	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10.7	0	0	0	0	0		0.36	N/A	
514	49EXT	49	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10.8	0	0	0	0	0		0.52	N/A	
1058	7-C	7	2	BLOCK	MQUART	WHITE	OPAQ			1-25%	weathered						0					0			10.9	0	0	0	0	0		0.51	N/A	
793	37	37	5	BLOCK	MQUART	WHITE	SEMI			0%							0					0			10.9	0	0	0	0	0		0.56	N/A	
629	50-D	50	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			11	0	0	0	0	0		0.29	N/A	
765	73-A/B	73	CLEAN 3-4	BLOCK	MQUART	WHITE	SEMI			26-50%	weathered						0					0			11.4	0	0	0	0	0		0.45	N/A	
1074	7-D	7	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			11.6	0	0	0	0	0		0.14	N/A	
1063	3EXT-B	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			11.7	0	0	0	0	0		0.36	N/A	
1032	7-D	7	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			11.7	0	0	0	0	0		0.36	N/A	
886	77-D	77	6	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			11.7	0	0	0	0	0		0.47	N/A	
1212	3EXT-D	3	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			11.9	0	0	0	0	0		0.51	N/A	
321	52	52	1	BLOCK	MQUART	WHITE	SEMI			1-25%	ROUGH						0					0			11.9	0	0	0	0	0		0.38	N/A	
370	52-B	52	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			11.9	0	0	0	0	0		0.43	N/A	
895	74-C	74	4	BLOCK	CHERT	brown	OPAQ			1-25%	WATER-ROLL						0					0			11.9	0	0	0	0	0		0.43	N/A	
857	73-B	73	4	BLOCK	MQUART	WHITE	SEMI			0%							0					0			12.3	0	0	0	0	0		0.21	N/A	
1041	3EXT-B	3	2	BLOCK	MQUART	WHITE	OPAQ			1-25%	weathered						0					0			12.4	0	0	0	0	0		0.65	N/A	
606	49EXT	49	2	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			12.4	0	0	0	0	0		0.55	N/A	
230	61-B	61	2	BLOCK	CQUART	WHITE	SEMI			0%							0					0			12.4	0	0	0	0	0		0.14	N/A	
452	52	52	2	BLOCK	TUFF	LGREY	SEMI			0%							0					0			12.6	0	0	0	0	0		0.58	N/A	
621	49	49	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			12.7	0	0	0	0	0		0.58	N/A	
778	73-D	73	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			12.7	0	0	0	0	0		0.38	N/A	
570	50-A	50	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			12.9	0	0	0	0	0		0.74	N/A	
193	61-B	61	3	BLOCK	CQUART	WHITE	SEMI			0%							0					0			12.9	0	0	0	0	0		0.4	N/A	
1154	3EXT-C	3	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			13.2	0	0	0	0	0		0.48	N/A	
591	49	49	1	BLOCK	MQUART	WHITE	OPAQ			0%							0					0			13.2	0	0	0	0	0		0.75	N/A	
651	49	49	1	BLOCK	MQUART	WHITE	OPAQ			1-25%	weathered						0					0			13.2	0	0	0	0	0		1	N/A	
241	55	55	4	BLOCK	MQUART	WHITE	SEMI			0%							0					0			13.2	0	0	0	0	0		0.62	N/A	
1272	7	7	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			13.3	0	0	0	0	0		0.66	N/A	
620	49	49	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			13.4	0	0	0	0	0		0.85	N/A	
367	52-C	52	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			13.4	0	0	0	0	0		0.8	N/A	
53	62	62	4	BLOCK	MQUART	WHITE	OPAQ			1-25%	ROUGH						0					0			13.5	0	0	0	0	0		0.32	N/A	
1115	3EXT-D	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			13.6	0	0	0	0	0		1.26	N/A	
376	54-C	54	2	BLOCK	QUARTZITE	GREY	OPAQ			0%							0					0			14	0	0	0	0	0		0.2	N/A	
491	50	50	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			14.3	0	0	0	0	0		0.56	N/A	
1127	3EXT-D	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			14.4	0	0	0	0	0		0.66	N/A	
1312	7-B	7	2	BLOCK	MQUART	WHITE	OPAQ			0%							0					0			14.4	0	0	0	0	0		0.45	N/A	
276	54-D	54	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			14.5	0	0	0	0	0		0.26	N/A	
293	61-B+C	61	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			14.6	0	0	0	0	0		0.47	N/A	
1044	7-D	7	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			14.8	0	0	0	0	0		0.71	N/A	
446	50	50	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			14.8	0	0	0	0	0		0.66	N/A	
530	50-A	50	1	BLOCK	MQUART	WHITE	OPAQ	FEATHER		0%							0					0			15.2	0	0	0	0	0		1.11	N/A	
1174	3EXT-D	3	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			15.3	0	0	0	0	0		0.71	N/A	
475	50-C	50	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			15.3	0	0	0	0	0		1	N/A	
373	52-D	52	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			15.4	0	0	0	0	0		1.26	N/A	
243	57	57	3	BLOCK	MQUART	WHITE	SEMI			26-50%	WATER-ROLL						0					0			15.5	0	0	0	0	0		0.69	N/A	
1320	7	7	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			15.7	0	0	0	0	0		0.22	N/A	
1114	3EXT-B	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			15.9	0	0	0	0	0		0.5	N/A	
431	52-B	52	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			15.9	0	0	0	0	0		0.92	N/A	
259	61-B+C	61	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			16	0	0	0	0	0		1.3	N/A	
1034	3EXT-B	3	2	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			16.1	0	0	0	0	0		1.27	N/A	
1021	3EXT-B	3	2	BLOCK	MQUART	WHITE	SEMI	FEATHER		0%							0					0			16.4	0	0	0	0	0		0.97	N/A	
1218	3EXT-B	3	3	BLOCK	MQUART	WHITE	OPAQ			26-50%	WATER-ROLL						0					0			16.4	0	0	0	0	0		0.78	N/A	
1151	3EXT-D	3	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			16.5	0	0	0	0	0		0.97	N/A	
41	62	62	4	BLOCK	MQUART	WHITE	OPAQ			0%							0					0			16.5	0	0	0	0	0		0.88	N/A	
704	73	73	20-35	BLOCK	MQUART	WHITE	SEMI			0%							0					0			16.6	0	0	0	0	0		0.52	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
649	48	48	1	BLOCK	CQUART	WHITE	SEMI			0%							0					0			16.8	0	0	0	0	0		1.55	N/A	
1342	24-B	24	6	BLOCK	QUARTZITE	RED	OPAQ			51-99%	WATER-ROLL						0					0			16.9	0	0	0	0	0		0.81	N/A	
501	47-B	47	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			16.9	0	0	0	0	0		1.13	N/A	
295	61-B+C	61	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			17.1	0	0	0	0	0		1.56	N/A	
920	92	92	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			17.1	0	0	0	0	0		0.98	N/A	
142	62	62	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			17.2	0	0	0	0	0		0.66	N/A	
432	52-D	52	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			17.4	0	0	0	0	0		1.73	N/A	
1261	7-B	7	2	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			17.5	0	0	0	0	0		1.49	N/A	
1235	16ext	16	4	BLOCK	MQUART	WHITE	SEMI			26-50%	FACET						0					0			17.7	0	0	0	0	0		0.88	N/A	
1053	3EXT-B	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			17.9	0	0	0	0	0		2.04	N/A	
1315	7-C	7	3	BLOCK	MQUART	WHITE	OPAQ			26-50%	ROUGH						0					0			17.9	0	0	0	0	0		1.18	N/A	
390	52-B	52	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			18.2	0	0	0	0	0		0.94	N/A	
600	47-C	47	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			18.3	0	0	0	0	0		1.54	N/A	
1066	7-C	7	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			18.4	0	0	0	0	0		1.52	N/A	
811	37-B	37	4	BLOCK	MQUART	WHITE	SEMI			0%							0					0			18.6	0	0	0	0	0		1.69	N/A	
498	49EXT	49	2	BLOCK	MQUART	WHITE	OPAQ			26-50%	weathered						0					0			18.8	0	0	0	0	0		1.26	N/A	
425	52-B	52	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			19.1	0	0	0	0	0		1.88	N/A	
27	62	62	4	BLOCK	MQUART	WHITE	SEMI			0%							0					0			19.1	0	0	0	0	0		1.27	N/A	
800	37	37	5	BLOCK	MQUART	WHITE	SEMI			0%							0					0			19.2	0	0	0	0	0		1.52	N/A	
1065	3EXT-B	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			19.6	0	0	0	0	0		1.23	N/A	
1054	7-C	7	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			19.7	0	0	0	0	0		2.96	N/A	
964	1-D	1	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			19.8	0	0	0	0	0		0.81	N/A	
682	73	73	20-35	BLOCK	MQUART	WHITE	SEMI			0%							0					0			19.8	0	0	0	0	0		1.27	N/A	
1277	7-C	7	3	BLOCK	QUARTZITE	brown	OPAQ			1-25%	WATER-ROLL						0					0			19.9	0	0	0	0	0		1.07	N/A	
1190	3EXT-C	3	1	BLOCK	TUFF	RED/GREY	OPAQ			1-25%	WATER-ROLL						0					0			20.5	0	0	0	0	0		1.32	N/A	
1188	3EXT-C	3	1	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			20.7	0	0	0	0	0		1.95	N/A	
1150	3EXT-D	3	3	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			20.9	0	0	0	0	0		1.4	N/A	
372	52-D	52	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			21.1	0	0	0	0	0		2.18	N/A	
427	52-C	52	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			21.6	0	0	0	0	0		2.84	N/A	
469	50	50	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			21.7	0	0	0	0	0		2.94	N/A	
1179	3EXT-C	3	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			22.2	0	0	0	0	0		4.73	N/A	
195	61-D	61	1	BLOCK	CQUART	WHITE	SEMI			0%							0					0			22.2	0	0	0	0	0		1.6	N/A	
133	62ext	62	4	BLOCK	MQUART	WHITE	SEMI			0%							0					0			22.2	0	0	0	0	0		0.93	N/A	
413	54-C	54	2	BLOCK	QUARTZITE	GREY	OPAQ			0%							0					0			22.4	0	0	0	0	0		1.26	N/A	
596	70-D	70	3	BLOCK	MQUART	WHITE	SEMI			1-25%	weathered						0					0			22.9	0	0	0	0	0		4.35	N/A	
1068	7-C	7	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			23.2	0	0	0	0	0		1.98	N/A	
435	52-C	52	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			23.2	0	0	0	0	0		2.33	N/A	
146	62ext	62	4	BLOCK	MQUART	WHITE	SEMI			0%							0					0			23.5	0	0	0	0	0		0.7	N/A	
38	62	62	4	BLOCK	MQUART	WHITE	SEMI			0%							0					0			23.5	0	0	0	0	0		1.67	N/A	
821	37-C	37	5	BLOCK	MQUART	WHITE	SEMI			1-25%	ROUGH						0					0			23.7	0	0	0	0	0		2.25	N/A	
1303	7	7	2	BLOCK	MQUART	WHITE	OPAQ			0%							0					0			23.9	0	0	0	0	0		2.84	N/A	
456	52-B	52	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			24.4	0	0	0	0	0		2.98	N/A	
807	37	37	7	BLOCK	MQUART	WHITE	SEMI			0%							0					0			24.5	0	0	0	0	0		3.91	N/A	
306	52-C	52	3	BLOCK	MQUART	WHITE	SEMI			0%							0					0			24.7	0	0	0	0	0		3.61	N/A	
253	57	57	3	BLOCK	MQUART	WHITE	SEMI			1-25%	FLAT0						0					0			25.5	0	0	0	0	0		7.05	N/A	
429	52-D	52	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			25.6	0	0	0	0	0		3.3	N/A	
936	1	1	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			26.4	0	0	0	0	0		3.57	N/A	
1147	3	3	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			27.8	0	0	0	0	0		1.47	N/A	
351	52-D	52	2	BLOCK	MQUART	WHITE	SEMI			1-25%	WATER-ROLL						0					0			27.9	0	0	0	0	0		4.73	N/A	
642	48	48	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			28.2	0	0	0	0	0		4.18	N/A	
579	70	70	3	BLOCK	MQUART	W/Y	SEMI			0%							0					0			28.4	0	0	0	0	0		4.55	N/A	
768	73-B	73	3	BLOCK	MQUART	WHITE	OPAQ			1-25%	weathered						0					0			31.6	0	0	0	0	0		6.04	N/A	
707	77	77	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			31.9	0	0	0	0	0		7.6	N/A	
489	50-B	50	1	BLOCK	MQUART	WHITE	SEMI			0%							0					0			32.9	0	0	0	0	0		9.87	N/A	
780	73-B	73	3	BLOCK	MQUART	WHITE	OPAQ			1-25%	ROUGH						0					0			34	0	0	0	0	0		23.5	N/A	
856	74-D	74	2	BLOCK	MQUART	WHITE	SEMI			1-25%	FACET						0					0			35.4	0	0	0	0	0		6.04	N/A	
287	54-D	54	2	BLOCK	MQUART	WHITE	SEMI			0%							0					0			35.9	0	0	0	0	0		7.35	N/A	
1038	7-D	7	2	BLOCK	MQUART	WHITE	SEMI			26-50%	ROUGH						0					0			36.5	0	0	0	0	0		22.82	N/A	
363	52-C	52	3	BLOCK	MQUART	WHITE	SEMI			26-50%	WATER-ROLL						0					0			36.5	0	0	0	0	0		9.67	N/A	
658	47-C	47	3	BLOCK	MQUART	WHITE	OPAQ			0%							0					0			47.9	0	0	0	0	0		11.48	N/A	
488	50-B	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			17	0	0	0	0	0		0.99	N/A	X2SNAP?
896	74-C	74	4	BROKFLAKE	CHERT	brown	SEMI			0%		BLADE					0					0			11.5	0	0	0	0	0		0.15	N/A	SNAP
955	19	19	2	BROKFLAKE	MQUART	WHITE	SEMI			51-99%	weathered	INDETER					0					0			13.7	0	0	0	0	0		0.78	N/A	ROUNDED
951	53	53	2	BROKFLAKE	TUFF	YELLOW	OPAQ			0%		INDETER					0					0			11.6	0	0	0	0	0		0.16	N/A	VENT
248	61-C	61	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.3	0	0	0	0	0		0.7	N/A	S
348	52-B	52	3	BROKFLAKE	CHERT	brown	OPAQ			0%		INDETER					0					0			8.9	0	0	0	0	0		0.15	PATINA	INTERNAL
712	73	73	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			12.1	0	0	0	0	0		0.31	N/A	SNAPSX2
696	73-C	73	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			15	0	0	0	0	0		0.62	N/A	SHAPE
1197	3EXT-D	3	3	BROKFLAKE	TUFF	GREY	OPAQ			0%		INDETER					0					0			11.4	0	0	0	0	0		0.21	weathered	D
1332	24	24	5	BROKFLAKE	TUFF	LGREY	OPAQ			0%		INDETER					0					0			13.3	0	0	0	0	0		0.14	weathered	D
1141	3EXT-C	3	2	BROKFLAKE	TUFF	GREY	OPAQ			100%	WATER-ROLL	INDETER					0					0			18.1	0	0	0	0	0		1.06	weathered	fractured
457	50	50	2	BROKFLAKE	TUFF	YELLOW	OPAQ			0%		INDETER					0					0			26.9	0	0	0	0	0		3.3	weathered	D
245	55EXT-B	55	1	BROKFLAKE	CHERT	brown	OPAQ			1-25%	WATER-ROLL	INDETER					0					0			39.4	0	0	0	0	0		4.2	weathered	D
661	77-D	77	3	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			9.3	0	0	0	0	0		0.16	N/A	CRACKS
1148	3	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.7	0	0	0	0	0		0.48	N/A	CRACKS
352	54-B	54	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.9	0	0	0	0	0		1.14	N/A	CRACKS

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
203	61-B	61	2	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			17.4	0	0	0	0	0		0.66	N/A	CRACKS
464	52	52	3	BROKFLAKE	MQUART	WHITE	SEMI			100%	weathered	BLOCK					0					0			27.7	0	0	0	0	0		4.19	N/A	CRACKS
218	61	61	1	BROKFLAKE	TUFF	YELLOW	OPAQ			0%		INDETER					0					0			13	0	0	0	0	0		0.34	N/A	CHALKY
932	90	90	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			12.9	0	0	0	0	0		0.47	N/A	956
592	49	49	1	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			9.7	0	0	0	0	0		0.37	N/A	652
19	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.2	0	0	0	0	0		0.04	N/A	52
144	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.1	0	0	0	0	0		0.47	N/A	132
72	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			5.1	0	0	0	0	0		0.01	N/A	
1258	3EXT-D	3	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			5.2	0	0	0	0	0		0.01	N/A	
115	62ext	62	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			5.4	0	0	0	0	0		0.04	N/A	
866	74	74	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			5.4	0	0	0	0	0		0.01	N/A	
512	49	49	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			5.6	0	0	0	0	0		0.04	N/A	
928	33	33	4	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			5.7	0	0	0	0	0		0.01	N/A	
770	73-C	73	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			6.2	0	0	0	0	0		0.1	N/A	
552	70	70	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			6.4	0	0	0	0	0		0.1	N/A	
294	61-B+C	61	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			6.5	0	0	0	0	0		0.15	N/A	
387	52-C	52	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			6.6	0	0	0	0	0		0.17	N/A	
483	70	70	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			6.8	0	0	0	0	0		0.04	N/A	
151	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.2	0	0	0	0	0		0.06	N/A	
897	74-C	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.2	0	0	0	0	0		0.14	N/A	
139	62	62	3	BROKFLAKE	MQUART	W/Y	SEMI			0%		INDETER					0					0			7.3	0	0	0	0	0		0.1	N/A	
17	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.4	0	0	0	0	0		0.07	N/A	
810	37-D	37	8	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.6	0	0	0	0	0		0.05	N/A	
1100	3EXT-C	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.7	0	0	0	0	0		0.15	N/A	
125	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.7	0	0	0	0	0		0.04	N/A	
191	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.7	0	0	0	0	0		0.03	N/A	
574	70	70	3	BROKFLAKE	TUFF	brown	OPAQ			0%		INDETER					0					0			7.7	0	0	0	0	0		0.02	N/A	
555	50-C	50	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.8	0	0	0	0	0		0.13	N/A	
141	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			7.8	0	0	0	0	0		0.13	N/A	
836	74-B	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.9	0	0	0	0	0		0.07	N/A	
673	77-D	77	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			7.9	0	0	0	0	0		0.13	N/A	
137	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8	0	0	0	0	0		0.04	N/A	
708	73-D	73	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8	0	0	0	0	0		0.19	N/A	
855	74	74	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8	0	0	0	0	0		0.07	N/A	
365	52-B	52	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			8.1	0	0	0	0	0		0.12	N/A	
169	62ext	62	4	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			8.2	0	0	0	0	0		0.09	N/A	
1229	3EXT-C	3	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.3	0	0	0	0	0		0.15	N/A	
163	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.3	0	0	0	0	0		0.05	N/A	
416	54	54	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			8.4	0	0	0	0	0		0.11	N/A	
166	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.4	0	0	0	0	0		0.11	N/A	
889	77-C	77	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.4	0	0	0	0	0		0.05	N/A	
623	49-D	49	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.5	0	0	0	0	0		0.12	N/A	
1035	7-C	7	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.6	0	0	0	0	0		0.24	N/A	
444	52-D	52	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			8.6	0	0	0	0	0		0.13	N/A	
29	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.6	0	0	0	0	0		0.07	N/A	
585	70	70	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.6	0	0	0	0	0		0.13	N/A	
818	74-C	74	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.6	0	0	0	0	0		0.1	N/A	
1110	3EXT-C	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.7	0	0	0	0	0		0.1	N/A	
1227	16ext	16	3	BROKFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8.7	0	0	0	0	0		0.19	N/A	
458	50	50	2	BROKFLAKE	MQUART	WHITE	SEMI			100%	weathered	INDETER					0					0			8.7	0	0	0	0	0		0.15	N/A	
455	50	50	1	BROKFLAKE	CQUART	CLEAR	TRANS			0%		INDETER					0					0			8.7	0	0	0	0	0		0.19	N/A	
1205	3EXT-C	3	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.8	0	0	0	0	0		0.19	N/A	
327	52-C	52	2	BROKFLAKE	CHERT	GREY	OPAQ			0%		INDETER					0					0			8.8	0	0	0	0	0		0.15	N/A	
122	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.8	0	0	0	0	0		0.05	N/A	
706	73-C	73	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.8	0	0	0	0	0		0.17	N/A	
506	49-D	49	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			8.9	0	0	0	0	0		0.14	N/A	
234	61-B	61	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			8.9	0	0	0	0	0		0.18	N/A	
51	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.9	0	0	0	0	0		0.03	N/A	
773	73-C	73	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			8.9	0	0	0	0	0		0.09	N/A	
170	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9	0	0	0	0	0		0.11	N/A	
69	62ext	62	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			9	0	0	0	0	0		0.08	N/A	
801	74-B	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9	0	0	0	0	0		0.15	N/A	
804	74	74	6	BROKFLAKE	CHERT	GREY	OPAQ			0%		INDETER					0					0			9	0	0	0	0	0		0.06	N/A	
1033	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.1	0	0	0	0	0		0.14	N/A	
75	62ext	62	6	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.1	0	0	0	0	0		0.12	N/A	
32	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.1	0	0	0	0	0		0.13	N/A	
769	73	73	20-35	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.1	0	0	0	0	0		0.17	N/A	
1321	16	16	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			9.2	0	0	0	0	0		0.12	N/A	
662	49EXT	49	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.2	0	0	0	0	0		0.16	N/A	
317	52	52	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.2	0	0	0	0	0		0.31	N/A	
242	54-B	54	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.2	0	0	0	0	0		0.18	N/A	
181	61-D	61	1	BROKFLAKE	TUFF	GREY	OPAQ			0%		INDETER					0					0			9.2	0	0	0	0	0		0.19	N/A	
148	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.2	0	0	0	0	0		0.15	N/A	
175	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.2	0	0	0	0	0		0.11	N/A	
1224	3EXT-D	3	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.3	0	0	0	0	0		0.13	N/A	
952	33	33	4	BROKFLAKE	CQUART	WHITE	SEMI			0%		ELONG					0					0			9.3	0	0	0	0	0		0.11	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
82	62ext	62	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.3	0	0	0	0	0		0.12	N/A	
81	62ext	62	5	BROKFLAKE	MQUART	W/Y	SEMI			0%		INDETER					0					0			9.3	0	0	0	0	0		0.05	N/A	
766	73-C	73	2	BROKFLAKE	MQUART	WHITE	OPAQ	FEATHER	HERTIZEN	0%		INDETER					0					0			9.3	0	0	0	0	0		0.19	N/A	
340	50	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.4	0	0	0	0	0		0.22	N/A	
320	52	52	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			9.4	0	0	0	0	0		0.06	N/A	
350	54-B	54	2	BROKFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	INDETER					0					0			9.4	0	0	0	0	0		0.32	N/A	
123	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.4	0	0	0	0	0		0.06	N/A	
678	77-B	77	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.4	0	0	0	0	0		0.23	N/A	
726	73-C	73	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.5	0	0	0	0	0		0.29	N/A	
902	53	53	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.6	0	0	0	0	0		0.12	N/A	
735	73-B	73	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.6	0	0	0	0	0		0.12	N/A	
1279	7	7	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.7	0	0	0	0	0		0.16	N/A	
472	50	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.7	0	0	0	0	0		0.21	N/A	
4	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.7	0	0	0	0	0		0.16	N/A	
1248	3EXT-D	3	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.8	0	0	0	0	0		0.16	N/A	
654	48	48	1	BROKFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.8	0	0	0	0	0		0.14	N/A	
403	50-C	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.8	0	0	0	0	0		0.24	N/A	
407	50	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.8	0	0	0	0	0		0.18	N/A	
487	50-D	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.8	0	0	0	0	0		0.27	N/A	
515	49EXT	49	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			9.9	0	0	0	0	0		0.11	N/A	
565	50-D	50	2	BROKFLAKE	TUFF	LGREY	OPAQ			0%		INDETER					0					0			9.9	0	0	0	0	0		0.05	N/A	
319	52	52	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.9	0	0	0	0	0		0.32	N/A	
388	52-C	52	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			9.9	0	0	0	0	0		0.1	N/A	
851	74	74	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			9.9	0	0	0	0	0		0.22	N/A	
1176	3EXT-C	3	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10	0	0	0	0	0		0.15	N/A	
285	61-B	61	5	BROKFLAKE	MQUART	PINK	OPAQ			1-25%	WATER-ROLL	INDETER					0					0			10	0	0	0	0	0		0.2	N/A	
105	62ext	62	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			10	0	0	0	0	0		0.07	N/A	
1122	3EXT-C	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.1	0	0	0	0	0		0.23	N/A	
342	50-C	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.1	0	0	0	0	0		0.19	N/A	
454	52-C	52	1	BROKFLAKE	MQUART	WHITE	SEMI			100%	weathered	INDETER					0					0			10.1	0	0	0	0	0		0.3	N/A	
478	52	52	3	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			10.1	0	0	0	0	0		0.19	N/A	
1112	3EXT-C	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.2	0	0	0	0	0		0.21	N/A	
641	50-B	50	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.2	0	0	0	0	0		0.22	N/A	
140	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			10.2	0	0	0	0	0		0.08	N/A	
1078	7-C	7	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.3	0	0	0	0	0		0.45	N/A	
513	49	49	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.3	0	0	0	0	0		0.13	N/A	
395	52-B	52	3	BROKFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	INDETER					0					0			10.3	0	0	0	0	0		0.19	N/A	
1306	7	7	1	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			10.4	0	0	0	0	0		1.24	N/A	
1056	7-C	7	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			10.4	0	0	0	0	0		0.32	N/A	
404	52	52	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.4	0	0	0	0	0		0.26	N/A	
117	62ext	62	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			10.4	0	0	0	0	0		0.03	N/A	
760	73	73	20-35	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.4	0	0	0	0	0		0.12	N/A	
1120	3EXT-C	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.5	0	0	0	0	0		0.13	N/A	
929	20	20	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.5	0	0	0	0	0		0.19	N/A	
812	77-D	77	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.5	0	0	0	0	0		0.21	N/A	
973	1-B	1	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.6	0	0	0	0	0		0.27	N/A	
624	48	48	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.6	0	0	0	0	0		0.3	N/A	
652	49	49	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.6	0	0	0	0	0		0.11	N/A	
494	50-C	50	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.6	0	0	0	0	0		0.18	N/A	
205	61-B	61	3	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			10.6	0	0	0	0	0		0.18	N/A	
718	73-B	73	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.6	0	0	0	0	0		0.19	N/A	
905	20	20	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			10.7	0	0	0	0	0		0.16	N/A	
534	49EXT	49	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.7	0	0	0	0	0		0.3	N/A	
763	73-B	73	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			10.7	0	0	0	0	0		0.1	N/A	
842	74	74	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.7	0	0	0	0	0		0.27	N/A	
887	74-D	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.7	0	0	0	0	0		0.25	N/A	
1196	3EXT-B	3	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.8	0	0	0	0	0		0.27	N/A	
538	47	47	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.8	0	0	0	0	0		0.4	N/A	
448	50	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.8	0	0	0	0	0		0.4	N/A	
486	50-D	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.8	0	0	0	0	0		0.31	N/A	
1080	7-C	7	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.9	0	0	0	0	0		0.22	N/A	
970	7	7	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.9	0	0	0	0	0		0.48	N/A	
640	50-B	50	3	BROKFLAKE	CQUART	WHITE	SEMI			0%		EXPAND					0					0			10.9	0	0	0	0	0		0.26	N/A	
329	52	52	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.9	0	0	0	0	0		0.3	N/A	
261	55	55	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			10.9	0	0	0	0	0		0.16	N/A	
145	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			10.9	0	0	0	0	0		0.03	N/A	
688	73	73	5	BROKFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER					0					0			10.9	0	0	0	0	0		0.32	N/A	
875	74-D	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11	0	0	0	0	0		0.25	N/A	
1225	16ext	16	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.1	0	0	0	0	0		0.2	N/A	
653	48	48	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.1	0	0	0	0	0		0.23	N/A	
1311	7	7	2	BROKFLAKE	CHERT	GREY	SEMI			0%		INDETER					0					0			11.2	0	0	0	0	0		0.18	N/A	
445	50	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.2	0	0	0	0	0		0.15	N/A	
360	54-B	54	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.2	0	0	0	0	0		0.21	N/A	
138	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.2	0	0	0	0	0		0.14	N/A	
844	74-C	74	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.2	0	0	0	0	0		0.24	N/A	
273	55	55	2	BROKFLAKE	TUFF	GREY	OPAQ			0%		INDETER					0					0			11.3	0	0	0	0	0		0.17	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
204	62ext	62	4	BROKFLAKE	MQUART	W/Y	SEMI			0%		EXPAND					0					0			11.3	0	0	0	0	0		0.27	N/A	
667	77-B	77	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.3	0	0	0	0	0		0.27	N/A	
1004	7-D	7	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			11.4	0	0	0	0	0		0.21	N/A	
593	48	48	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.4	0	0	0	0	0		0.36	N/A	
633	48	48	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			11.4	0	0	0	0	0		0.3	N/A	
178	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.4	0	0	0	0	0		0.2	N/A	
716	73-C	73	4	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			11.4	0	0	0	0	0		0.25	N/A	
900	74-D	74	3	BROKFLAKE	CQUART	WHITE	SEMI			1-25%	weathered	ELONG					0					0			11.4	0	0	0	0	0		0.19	N/A	
819	77-D	77	2	BROKFLAKE	TUFF	YELLOW	SEMI			0%		INDETER					0					0			11.4	0	0	0	0	0		0.1	N/A	
576	49EXT	49	2	BROKFLAKE	MQUART	WHITE	SEMI			26-50%	weathered	INDETER					0					0			11.5	0	0	0	0	0		0.45	N/A	
1094	3EXT-C	3	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			11.6	0	0	0	0	0		0.05	N/A	
132	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.6	0	0	0	0	0		0.64	N/A	
172	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.6	0	0	0	0	0		0.24	N/A	
1013	1	1	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.7	0	0	0	0	0		0.51	N/A	
998	1	1	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		BLADE					0					0			11.7	0	0	0	0	0		0.17	N/A	
1164	3EXT-C	3	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.7	0	0	0	0	0		0.11	N/A	
1052	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.7	0	0	0	0	0		0.28	N/A	
1064	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.7	0	0	0	0	0		0.29	N/A	
550	48	48	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			11.7	0	0	0	0	0		0.36	N/A	
558	49-B	49	3	BROKFLAKE	CHERT	RED	OPAQ			51-99%	WATER-ROLL	INDETER					0					0			11.7	0	0	0	0	0		0.43	N/A	
339	50	50	2	BROKFLAKE	MQUART	WHITE	SEMI			1-25%	ROUGH	INDETER					0					0			11.7	0	0	0	0	0		0.38	N/A	
927	53	53	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.7	0	0	0	0	0		0.3	N/A	
883	74-C	74	4	BROKFLAKE	CHERT	brown	SEMI			0%		EXPAND					0					0			11.7	0	0	0	0	0		0.18	N/A	
1001	7-D	7	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.8	0	0	0	0	0		0.24	N/A	
6	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.8	0	0	0	0	0		0.2	N/A	
991	1-C	1	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.9	0	0	0	0	0		0.49	N/A	
1186	3EXT-D	3	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			11.9	0	0	0	0	0		0.33	N/A	
1275	7	7	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.9	0	0	0	0	0		0.2	N/A	
996	7-B	7	1	BROKFLAKE	CHERT	GREY	SEMI			0%		INDETER					0					0			11.9	0	0	0	0	0		0.23	N/A	
98	62ext	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.9	0	0	0	0	0		0.36	N/A	
143	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.9	0	0	0	0	0		0.49	N/A	
30	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			11.9	0	0	0	0	0		0.22	N/A	
743	73-D	73	5	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			11.9	0	0	0	0	0		0.19	N/A	
1302	7-B	7	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12	0	0	0	0	0		0.19	N/A	
323	52-D	52	1	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			12	0	0	0	0	0		0.59	N/A	
713	73	73	35-40	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12	0	0	0	0	0		0.22	N/A	
838	74-B	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12	0	0	0	0	0		0.4	N/A	
674	77-D	77	3	BROKFLAKE	QUARTZITE	RED/GREY	OPAQ			0%		INDETER					0					0			12	0	0	0	0	0		0.22	N/A	
926	53	53	2	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			12.1	0	0	0	0	0		0.52	N/A	
786	74	74	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.1	0	0	0	0	0		0.23	N/A	
1042	7-D	7	2	BROKFLAKE	TUFF	GREY	OPAQ			0%		INDETER					0					0			12.2	0	0	0	0	0		0.17	N/A	
1043	7-D	7	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.2	0	0	0	0	0		0.23	N/A	
611	48	48	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			12.2	0	0	0	0	0		0.42	N/A	
108	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.2	0	0	0	0	0		0.15	N/A	
1113	3EXT-B	3	2	BROKFLAKE	CHERT	GREY	OPAQ			0%		ELONG					0					0			12.3	0	0	0	0	0		0.26	N/A	
747	73-C	73	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.4	0	0	0	0	0		0.43	N/A	
414	54-C	54	2	BROKFLAKE	CQUART	CLEAR	TRANS			0%		INDETER					0					0			12.5	0	0	0	0	0		0.32	N/A	
281	55EXT-B	55	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.5	0	0	0	0	0		0.25	N/A	
963	1-C	1	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.6	0	0	0	0	0		0.33	N/A	
1006	7	7	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			12.6	0	0	0	0	0		0.49	N/A	
18	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.6	0	0	0	0	0		0.25	N/A	
700	77	77	2	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			12.6	0	0	0	0	0		0.26	N/A	
1241	3EXT-C	3	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			12.7	0	0	0	0	0		0.37	N/A	
1018	7-D	7	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.7	0	0	0	0	0		0.18	N/A	
402	50-C	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.8	0	0	0	0	0		0.63	N/A	
400	50	50	1	BROKFLAKE	CQUART	WHITE	SEMI			1-25%	weathered	INDETER					0					0			12.8	0	0	0	0	0		0.49	N/A	
845	73-B	73	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.8	0	0	0	0	0		0.52	N/A	
813	74-B	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.8	0	0	0	0	0		0.18	N/A	
1289	7	7	2	BROKFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.9	0	0	0	0	0		0.36	N/A	
917	20	20	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.9	0	0	0	0	0		0.24	N/A	
644	48	48	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		ELONG					0					0			12.9	0	0	0	0	0		0.16	N/A	
587	49EXT-B	49	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			12.9	0	0	0	0	0		0.58	N/A	
297	61-D	61	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			12.9	0	0	0	0	0		0.55	N/A	
424	52-B	52	1	BROKFLAKE	CQUART	W/Y	SEMI			0%		INDETER					0					0			13	0	0	0	0	0		0.65	N/A	
250	61	61	3	BROKFLAKE	TUFF	LGREY	OPAQ			0%		INDETER					0					0			13	0	0	0	0	0		0.42	N/A	
540	47	47	3	BROKFLAKE	MQUART	W/Y	SEMI			0%		INDETER					0					0			13.1	0	0	0	0	0		0.47	N/A	
271	61-B+C	61	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.1	0	0	0	0	0		0.66	N/A	
168	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.1	0	0	0	0	0		0.26	N/A	
843	74	74	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.1	0	0	0	0	0		0.29	N/A	
1255	3EXT-B	3	3	BROKFLAKE	TUFF	YELLOW	OPAQ			0%		INDETER					0					0			13.2	0	0	0	0	0		0.34	burnt	
1297	7	7	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			13.2	0	0	0	0	0		0.29	N/A	
1266	7-B	7	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.2	0	0	0	0	0		0.42	N/A	
1290	7	7	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.2	0	0	0	0	0		0.81	N/A	
508	47	47	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.3	0	0	0	0	0		0.3	N/A	
635	48	48	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.3	0	0	0	0	0		0.49	N/A	
401	50-C	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.3	0	0	0	0	0		0.23	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
474	50	50	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.3	0	0	0	0	0		0.43	N/A	
384	54-B	54	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.3	0	0	0	0	0		0.18	N/A	
267	55	55	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.4	0	0	0	0	0		0.19	N/A	
948	1	1	2	BROKFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			13.5	0	0	0	0	0		0.37	N/A	
532	49	49	1	BROKFLAKE	MQUART	WHITE	SEMI			51-99%	weathered	INDETER					0					0			13.5	0	0	0	0	0		0.31	N/A	
480	52-B	52	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.5	0	0	0	0	0		0.66	N/A	
301	52-B	52	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.5	0	0	0	0	0		0.48	N/A	
45	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.5	0	0	0	0	0		0.4	N/A	
152	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.5	0	0	0	0	0		0.18	N/A	
92	62ext	62	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.6	0	0	0	0	0		0.25	N/A	
1069	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	INDETER					0					0			13.7	0	0	0	0	0		0.73	N/A	
1047	7-C	7	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			13.7	0	0	0	0	0		0.28	N/A	
1334	16	16	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.7	0	0	0	0	0		0.26	N/A	
809	37	37	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.7	0	0	0	0	0		0.44	N/A	
198	61-B	61	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			13.7	0	0	0	0	0		0.19	N/A	
869	74-C	74	3	BROKFLAKE	MQUART	WHITE	SEMI			100%	FLAT0	INDETER					0					0			13.7	0	0	0	0	0		0.44	N/A	
1318	7	7	1	BROKFLAKE	CQUART	WHITE	SEMI			1-25%	weathered	INDETER					0					0			13.8	0	0	0	0	0		0.43	N/A	
150	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.8	0	0	0	0	0		0.25	N/A	
894	73-B	73	4	BROKFLAKE	CQUART	CLEAR	TRANS			0%		INDETER					0					0			13.8	0	0	0	0	0		0.38	N/A	
999	1-C	1	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			13.9	0	0	0	0	0		0.35	N/A	
362	52-B	52	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.9	0	0	0	0	0		0.78	N/A	
453	52-C	52	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.9	0	0	0	0	0		0.93	N/A	
79	62ext	62	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			13.9	0	0	0	0	0		0.14	N/A	
580	49	49	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14	0	0	0	0	0		0.48	N/A	
627	50-D	50	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14	0	0	0	0	0		0.35	N/A	
676	73	73	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14	0	0	0	0	0		0.59	N/A	
380	54-C	54	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14.1	0	0	0	0	0		0.23	N/A	
1027	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14.2	0	0	0	0	0		0.55	N/A	
748	73-B	73	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			14.2	0	0	0	0	0		0.53	N/A	
182	61-B	61	3	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			14.3	0	0	0	0	0		0.52	N/A	
529	48	48	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14.4	0	0	0	0	0		0.41	N/A	
87	62ext	62	6	BROKFLAKE	CHERT	brown	OPAQ			100%	weathered	INDETER					0					0			14.4	0	0	0	0	0		0.23	N/A	
1076	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14.5	0	0	0	0	0		0.3	N/A	
628	47	47	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14.6	0	0	0	0	0		0.36	N/A	
209	61	61	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14.6	0	0	0	0	0		0.57	N/A	
689	73	73	4	BROKFLAKE	QUARTZITE	brown	SEMI			0%		INDETER					0					0			14.6	0	0	0	0	0		0.68	N/A	
758	73-B	73	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14.6	0	0	0	0	0		0.48	N/A	
728	70	70	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			14.7	0	0	0	0	0		0.66	N/A	
690	73	73	35-40	BROKFLAKE	CQUART	WHITE	SEMI			0%		ELONG					0					0			14.7	0	0	0	0	0		0.54	N/A	
992	1-C	1	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15	0	0	0	0	0		0.46	N/A	
1046	7-C	7	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			15	0	0	0	0	0		0.68	N/A	
173	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15	0	0	0	0	0		0.43	N/A	
548	70	70	2	BROKFLAKE	CHERT	RED	OPAQ			0%		INDETER					0					0			15	0	0	0	0	0		0.21	N/A	
993	1-D	1	1	BROKFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	INDETER					0					0			15.1	0	0	0	0	0		0.91	N/A	
1098	3EXT-C	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.1	0	0	0	0	0		0.41	N/A	
589	50-C	50	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.1	0	0	0	0	0		0.65	N/A	
313	52-B	52	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			15.1	0	0	0	0	0		0.38	N/A	
378	54-C	54	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.2	0	0	0	0	0		0.3	N/A	
15	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.2	0	0	0	0	0		0.51	N/A	
826	74-B	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.2	0	0	0	0	0		0.56	N/A	
347	52-C	52	1	BROKFLAKE	MQUART	WHITE	OPAQ	FEATHER	HERTIZEN	0%		INDETER					0					0			15.3	0	0	0	0	0		0.95	N/A	
197	61	61	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.4	0	0	0	0	0		0.61	N/A	
83	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.5	0	0	0	0	0		0.5	N/A	
976	1-D	1	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.6	0	0	0	0	0		0.62	N/A	
1254	3EXT-C	3	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.7	0	0	0	0	0		0.36	N/A	
470	50	50	1	BROKFLAKE	MQUART	WHITE	SEMI			100%	weathered	INDETER					0					0			15.7	0	0	0	0	0		0.9	N/A	
303	52-B	52	2	BROKFLAKE	CHERT	brown	OPAQ			0%		EXPAND					0					0			15.7	0	0	0	0	0		0.27	N/A	
521	49EXT	49	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			15.8	0	0	0	0	0		0.89	N/A	
1123	3EXT-D	3	2	BROKFLAKE	MQUART	WHITE	SEMI			100%	VEIN	EXPAND					0					0			15.9	0	0	0	0	0		0.32	N/A	
1324	24-D	24	5	BROKFLAKE	QUARTZITE	brown	OPAQ			100%	WATER-ROLL	INDETER					0					0			15.9	0	0	0	0	0		1	N/A	
1210	3EXT-D	3	1	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			16	0	0	0	0	0		0.45	N/A	
909	89	89	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		BLOCK					0					0			16	0	0	0	0	0		0.51	N/A	
590	49EXT	49	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.1	0	0	0	0	0		0.93	N/A	
314	52-C	52	2	BROKFLAKE	TUFF	brown	OPAQ			0%		INDETER					0					0			16.3	0	0	0	0	0		0.49	N/A	
1037	7-D	7	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			16.4	0	0	0	0	0		0.66	N/A	
257	55EXT-B	55	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.4	0	0	0	0	0		0.6	N/A	
217	61-B	61	3	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			16.4	0	0	0	0	0		0.54	N/A	
687	77	77	4	BROKFLAKE	CHERT	YELLOW	OPAQ			0%		INDETER					0					0			16.4	0	0	0	0	0		0.41	N/A	
1057	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.5	0	0	0	0	0		1.95	N/A	
805	37	37	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.5	0	0	0	0	0		0.87	N/A	
318	52-C	52	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.5	0	0	0	0	0		0.97	N/A	
481	50-D	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.6	0	0	0	0	0		0.73	N/A	
210	61-D	61	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.6	0	0	0	0	0		0.98	N/A	
1124	3EXT-C	3	2	BROKFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	ELONG					0					0			16.7	0	0	0	0	0		0.47	N/A	
467	52-C	52	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			16.7	0	0	0	0	0		0.82	N/A	
966	1-D	1	2	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			16.8	0	0	0	0	0		0.38	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
374	54-B	54	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			16.8	0	0	0	0	0		0.73	N/A	
305	52-B	52	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		ELONG					0					0			16.9	0	0	0	0	0		0.86	N/A	
1016	1-C	1	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			17	0	0	0	0	0		1.03	N/A	
637	50-C	50	2	BROKFLAKE	MQUART	WHITE	SEMI			26-50%	weathered	INDETER					0					0			17	0	0	0	0	0		1.52	N/A	
337	50	50	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			17	0	0	0	0	0		0.77	N/A	
411	52-D	52	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			17	0	0	0	0	0		3.26	N/A	
71	62	62	4	BROKFLAKE	MQUART	W/Y	SEMI			0%		INDETER					0					0			17	0	0	0	0	0		0.33	N/A	
1028	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			17.1	0	0	0	0	0		1.18	N/A	
751	73-B	73	4	BROKFLAKE	CQUART	WHITE	SEMI			26-50%	weathered	INDETER					0					0			17.1	0	0	0	0	0		1.58	N/A	
1232	3EXT-B	3	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			17.2	0	0	0	0	0		1.21	N/A	
111	62ext	62	6	BROKFLAKE	MQUART	YELLOW	SEMI			0%		INDETER					0					0			17.2	0	0	0	0	0		1.5	N/A	
62	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			17.2	0	0	0	0	0		0.48	N/A	
774	73-C	73	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			17.3	0	0	0	0	0		1.12	N/A	
941	36	36	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			17.4	0	0	0	0	0		0.86	N/A	
551	48	48	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			17.4	0	0	0	0	0		0.65	N/A	
331	52	52	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			17.4	0	0	0	0	0		1.22	N/A	
354	54-C	54	2	BROKFLAKE	MQUART	W/P	SEMI			0%		INDETER					0					0			17.7	0	0	0	0	0		0.35	N/A	
107	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI				0					0			17.8	0	0	0	0	0		0.99	N/A	
383	54-B	54	1	BROKFLAKE	CCQ	LGREEN	OPAQ			0%		INDETER					0					0			17.9	0	0	0	0	0		0.58	N/A	
775	73-D	73	4	BROKFLAKE	MQUART	W/Y	SEMI			0%		INDETER					0					0			17.9	0	0	0	0	0		0.65	N/A	
1134	3EXT-C	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			18	0	0	0	0	0		0.7	N/A	
1309	7	7	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			18	0	0	0	0	0		0.98	N/A	
239	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			18.1	0	0	0	0	0		0.79	N/A	
950	53	53	2	BROKFLAKE	MQUART	WHITE	OPAQ			0%		EXPAND					0					0			18.6	0	0	0	0	0		0.57	N/A	
1330	24-B	24	5	BROKFLAKE	CQUART	WHITE	SEMI			1-25%	ROUGH	INDETER					0					0			18.7	0	0	0	0	0		1	N/A	
954	77-B	77	5	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			18.8	0	0	0	0	0		0.74	N/A	
1003	7-D	7	1	BROKFLAKE	MQUART	WHITE	SEMI			51-99%	weathered	INDETER					0					0			18.9	0	0	0	0	0		1.12	N/A	
1215	16ext	16	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			18.9	0	0	0	0	0		2.24	N/A	
272	61-D	61	3	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			18.9	0	0	0	0	0		1.12	N/A	
681	73	73	20-35	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			19	0	0	0	0	0		0.8	N/A	
982	7-D	7	1	BROKFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	INDETER					0					0			19.4	0	0	0	0	0		1.29	N/A	
106	62ext	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			19.4	0	0	0	0	0		1.11	N/A	
100	62ext	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			19.5	0	0	0	0	0		0.87	N/A	
614	50-D	50	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			19.8	0	0	0	0	0		1.35	N/A	
852	74-D	74	3	BROKFLAKE	CQUART	WHITE	SEMI			0%		INDETER					0					0			19.9	0	0	0	0	0		0.56	N/A	
65	62ext	62	5	BROKFLAKE	MQUART	W/Y	SEMI			0%		INDETER					0					0			20	0	0	0	0	0		1.14	N/A	
405	52-C	52	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			20.1	0	0	0	0	0		1.21	N/A	
265	57	57	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			20.1	0	0	0	0	0		0.74	N/A	
877	74	74	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			20.2	0	0	0	0	0		0.84	N/A	
415	54-D	54	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			20.6	0	0	0	0	0		1.21	N/A	
463	50-C	50	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			20.7	0	0	0	0	0		2.25	N/A	
997	1-B	1	1	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			21.1	0	0	0	0	0		2.2	N/A	
536	47	47	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			21.1	0	0	0	0	0		2.35	N/A	
828	77-D	77	6	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			21.1	0	0	0	0	0		1.26	N/A	
47	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			21.2	0	0	0	0	0		1.02	N/A	
789	74	74	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			21.2	0	0	0	0	0		1.63	N/A	
42	62	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			21.3	0	0	0	0	0		1.08	N/A	
97	62ext	62	6	BROKFLAKE	QUARTZITE	GREY	OPAQ			1-25%	WATER-ROLL	INDETER					0					0			21.4	0	0	0	0	0		0.61	N/A	
567	50-C	50	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			21.5	0	0	0	0	0		1.82	N/A	
923	1	1	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			21.6	0	0	0	0	0		1.85	N/A	
730	73-D	73	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			22	0	0	0	0	0		2.86	N/A	
326	52-C	52	2	BROKFLAKE	TUFF	brown	OPAQ			0%		INDETER					0					0			22.1	0	0	0	0	0		0.9	N/A	
935	1	1	2	BROKFLAKE	MQUART	WHITE	SEMI			26-50%	weathered	EXPAND					0					0			22.7	0	0	0	0	0		1.45	N/A	
222	61-B	61	2	BROKFLAKE	MQUART	WHITE	SEMI			100%	weathered	INDETER					0					0			22.8	0	0	0	0	0		1.36	N/A	
502	49EXT	49	2	BROKFLAKE	MQUART	WHITE	OPAQ			0%		BLOCK					0					0			23.2	0	0	0	0	0		1.73	N/A	
159	62ext	62	4	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			23.6	0	0	0	0	0		1.67	N/A	
64	62ext	62	3	BROKFLAKE	MQUART	W/Y	SEMI			0%		EXPAND					0					0			23.7	0	0	0	0	0		1.42	N/A	
1126	3EXT-B	3	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			24	0	0	0	0	0		2.68	N/A	
74	62ext	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			24	0	0	0	0	0		1.63	N/A	
1349	5	5	2	BROKFLAKE	MQUART	WHITE	OPAQ			0%		INDETER					0					0			24.5	0	0	0	0	0		1.48	N/A	
755	73-D	73	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			25.2	0	0	0	0	0		4.76	N/A	
885	74-C	74	3	BROKFLAKE	CQUART	GREY	SEMI			1-25%	FACET	INDETER					0					0			25.6	0	0	0	0	0		2.61	N/A	
167	62	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			25.7	0	0	0	0	0		1.6	N/A	
517	48	48	2	BROKFLAKE	MQUART	WHITE	SEMI			0%		INDETER					0					0			28.7	0	0	0	0	0		2.6	N/A	
76	62ext	62	3	BROKFLAKE	MQUART	WHITE	SEMI			0%		EXPAND					0					0			29.7	0	0	0	0	0		2.86	N/A	
399	50	50	2	BROKFLAKE	CCQ	GREY	SEMI			0%		INDETER					0					0			30.2	0	0	0	0	0		1.69	N/A	
835	37-B	37	4	BROKFLAKE	MQUART	WHITE	SEMI			26-50%	weathered	INDETER					0					0			30.3	0	0	0	0	0		6.2	N/A	
761	73-D	73	4	BROKFLAKE	MQUART	W/Y	SEMI			0%		INDETER					0					0			31	0	0	0	0	0		3.03	N/A	
867	74-C	74	4	BROKFLAKE	CHERT	GREY	OPAQ			51-99%	weathered	ELONG					0					0			17.5	0	0	0	0	0		0.32	N/A	
720	70-B	70	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	90		0					0			20.4	20.5	16	2	5.8	1.8		0.67	N/A	TRIM
724	73	73	1	COMPFLAKE	MQUART	WHITE	OPAQ	ABRUPT	WEDGE	1-25%	weathered	BLOCK	CRUSH	NA	90		0					0			28.2	21.2	25.3	12.3	0	0		7.06	N/A	SPLIT
790	74	74	3	COMPFLAKE	TUFF	brown	OPAQ	FEATHER	HERTIZEN	1-25%	WATER-ROLL	ELONG	FLAKED	NA	0		0					0			23.6	23.6	11.1	3	7.5	2.3		0.77	N/A	/WROLLED
525	49EXT-B	49	1	COMPFLAKE	CHERT	RED	OPAQ	ABRUPT	UNCLEAR	1-25%	WATER-ROLL	RIDGESTRAT	MISSING	NA	90		0					0			37.6	37.1	10.4	6.7	0	0		2.88	N/A	REMOVAL
282	61-B+C	61	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	100%	ROUGH	INDETER	MISSING	NA	NA		0					0			15.4	15.3	11.2	3.3	0	0		0.75	N/A	OUGH/WE
229	61	61	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	RADIAL		0					0			20.5	19.9	15.5	5.8	10.4	4		2.06	N/A	S
392	52-C	52	2	COMPFLAKE	CHERT	brown	OPAQ	M	HERTIZEN	0%		PLATREJUV	UNI	STEP	180		0					0			29	26.5	11.3	7.5	5.2	2		2.71	N/A	BLADE

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
1199	3EXT-C	3	2	COMPFLAKE	TUFF	YELLOW	OPAQ	STEP	HERTIZEN	0%		ELONG	UNI	NA	90		0					0			17	17	10.1	4.4	3.4	3.4		0.67	weathered	fractured
1139	3EXT-B	3	2	COMPFLAKE	CHERT	GREY	OPAQ	HINGE	HERTIZEN	0%		ELONG	FLAKED	NA	NA		0					0			42.9	42.8	13.2	6.8	6.3	5.4		3.46	N/A	FLAKE
25	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	UNI	NA	90		0					0			34.6	33	23.2	7.8	12.1	5.5		5.71	N/A	FACET
1017	1-C	1	1	COMPFLAKE	MQUART	WHITE	SEMI	M	HERTIZEN	1-25%	weathered	PLATREJUV	UNI	NA	180		0					0			31.4	27.7	10.2	4.2	8.6	6.4		2.28	N/A	D FLAKES
128	62	62	3	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			42.2	23	42.2	8.4	30.1	6.4		10.21	N/A	nge
492	50	50	1	COMPFLAKE	MQUART	WHITE	SEMI	STEP	HERTIZEN	1-25%	weathered	INDETER	CORTICAL	NA	0		0					0			20.4	18.8	16.3	3.8	10.3	3.1		1.65	N/A	CRACKS
421	52-B	52	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	51-99%	WATER-ROLL	SPLITPEB	CORTICAL	NA	0		0					0			24.7	24	23.3	7.6	12.3	5		4.19	N/A	CRACKS
1014	1-C	1	3	COMPFLAKE	MQUART	WHITE	SEMI	M	HERTIZEN	0%		PLATREJUV	UNI	NA	180		0					0			31.9	25.6	20	7.8	8.4	3.5		4.98	N/A	CRACKS
223	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	STEP	UNCLEAR	0%		BLOCK	MISSING	NA	180		0					0			29.6	17	29.4	6	0	0		3.75	N/A	cracked
1252	3EXT-C	3	3	COMPFLAKE	CHERT	GREY	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			11.8	7.5	11.9	1.9	5.7	1.7		0.3	N/A	CCQ?1228
815	74-C	74	4	COMPFLAKE	TUFF	brown	OPAQ	FEATHER	HERTIZEN	100%	WATER-ROLL	PLATREJUV	CORTICAL	NA	NA		0					0			10.5	9.3	8.6	1.1	4.8	1.5		0.16	N/A	CHERTY
1328	24	24	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	26-50%	WATER-ROLL	INDETER	UNI	NA	0		0					0			22.8	20.2	10.6	5.7	5.6	4.2		1.35	N/A	1331
176	62	62	3	COMPFLAKE	CHERT	brown	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			6.5	5.8	5.6	0.5	0	0		0.01	N/A	
791	74	74	3	COMPFLAKE	TUFF	GREY	OPAQ	CORTICAL	HERTIZEN	1-25%	WATER-ROLL	EXPAND	CRUSH	NA	0		0					0			7.2	6.7	6.5	0.8	0	0		0.05	N/A	
192	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	CRUSH	NA	0		0					0			7.4	6.8	6.3	1.2	0	0		0.05	N/A	
799	37	37	5	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	CRUSH	NA	NA		0					0			7.8	5.6	8.1	0.2	0	0		0.03	N/A	
1067	7-B	7	3	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			7.9	6.7	6.5	1.1	4.9	1.2		0.11	N/A	
899	74	74	5	COMPFLAKE	TUFF	GREY	SEMI	FEATHER	HERTIZEN	1-25%	WATER-ROLL	EXPAND	CORTICAL	NA	0		0					0			8	6.7	6.7	0.5	2.4	0.6		0.05	N/A	
1237	16	16	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	NA		0					0			8.1	6	7.9	0.6	0	0		0.06	N/A	
228	62ext	62	4	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	MISSING	NA	0		0					0			8.3	7.2	4.6	1.4	0	0		0.07	N/A	
666	77-C	77	3	COMPFLAKE	CHERT	YELLOW	SEMI	HINGE	HERTIZEN	1-25%	weathered	EXPAND	CRUSH	NA	0		0					0			8.4	5.4	8.5	1.3	0	0		0.11	N/A	
134	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			8.5	8.3	7.4	0.6	6.4	1.7		0.06	N/A	
171	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	NA		0					0			8.5	7.7	8.2	0.3	4.1	1.1		0.05	N/A	
157	62ext	62	4	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	UNCLEAR	0%		INDETER	CRUSH	NA	180		0					0			8.7	8.7	5	1.5	0	0		0.05	N/A	
437	52	52	1	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	UNI	NA	90		0					0			8.9	5.7	8.6	0.9	3.2	0.3		0.07	N/A	
837	74-B	74	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			9.2	8.9	9.1	0.7	7.2	0.5		0.11	N/A	
782	74-D	74	5	COMPFLAKE	CHERT	brown	OPAQ	FEATHER	HERTIZEN	0%		EXPAND	FACET	NA	0		0					0			9.3	6.7	9.3	2.8	6.6	2.1		0.17	N/A	
554	50-D	50	2	COMPFLAKE	TUFF	YELLOW	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			9.4	8.3	7.6	0.8	6.3	0.4		0.07	N/A	
752	73	73	20-35	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	CRUSH	NA	0		0					0			9.5	9.7	6.3	1.4	0	0		0.1	N/A	
1233	16ext	16	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	NA		0					0			9.5	7	5.6	0.7	5.3	1.4		0.1	N/A	
84	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	UNCLEAR	0%		ELONG	CRUSH	NA	0		0					0			9.6	9.6	3.5	1.3	0	0		0.05	N/A	
110	62ext	62	6	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			9.7	9.5	7.1	1.6	5.2	0.7		0.14	N/A	
1162	3EXT-D	3	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BENDING	0%		EXPAND	UNI	NA	90		0					0			9.7	6.7	10	1.6	6	1		0.15	N/A	
630	70	70	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	0		0					0			9.9	8.1	4.8	2.4	4.9	2.9		0.15	N/A	
496	50-B	50	3	COMPFLAKE	CHERT	GREY	OPAQ	HINGE	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			9.9	7.6	8.5	1	4.7	1.4		0.11	N/A	
871	74-C	74	4	COMPFLAKE	CHERT	brown	OPAQ	FEATHER	HERTIZEN	0%		EXPAND	CRUSH	G	0		0					0			9.9	6.4	9.8	0.8	0	0		0.08	N/A	
377	54-C	54	2	COMPFLAKE	CQUART	CLEAR	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	90		0					0			9.9	4.8	10.2	1.6	8.4	1.3		0.15	N/A	
1234	3EXT-D	3	1	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	CRUSH	NA	0		0					0			10	8.4	8.2	1.1	0	0		0.15	N/A	
91	62ext	62	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		INDETER	MISSING	NA	180		0					0			10.2	9.7	7.9	1.9	0	0		0.15	N/A	
1202	16ext	16	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	CRUSH	NA	180		0					0			10.3	10	5.9	1.2	0	0		0.1	N/A	
589	48	48	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	26-50%	WATER-ROLL	INDETER	UNI	NA	0		0					0			10.4	7.7	8	2.7	7.9	3.1		0.32	N/A	
598	70	70	2	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	0		0					0			10.5	8.9	5.3	0.9	6.2	1.7		0.08	N/A	
5	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	MISSING	NA	90		0					0			10.5	7.6	10.4	1.5	0	0		0.14	N/A	
776	73-C	73	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	MISSING	NA	0		0					0			10.6	10.6	6.5	1.5	0	0		0.14	N/A	
386	52-D	52	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	UNI	NA	NA		0					0			10.6	6.6	9.2	1.6	5.7	3		0.18	N/A	
945	91	91	1	COMPFLAKE	CHERT	RED	OPAQ	HINGE	UNCLEAR	0%		EXPAND	MISSING	NA	0		0					0			10.6	6.1	10.6	0.8	0	0		0.07	N/A	
1211	3EXT-D	3	1	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	NA		0					0			10.7	8.4	6.1	1	4.8	1.1		0.12	N/A	
7	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		EXPAND	CRUSH	NA	90		0					0			10.9	10.1	9.9	1.5	0	0		0.21	N/A	
1307	7	7	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	FLAKED	NA	0		0					0			10.9	9.8	7.7	2.3	7.2	2.3		0.27	N/A	
436	52-C	52	2	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	NA		0					0			11	6.3	10.8	1.3	6.9	0.9		0.14	N/A	
1081	3EXT-C	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	CRUSH	NA	0		0					0			11.1	11.1	7.6	1.6	0	0		0.21	N/A	
275	54-D	54	3	COMPFLAKE	CHERT	LGREY	SEMI	HINGE	BENDING	1-25%	WATER-ROLL	INDETER	CORTICAL	G	0		0					0			11.1	9.2	6.1	1.9	8.1	3.3		0.17	N/A	
220	62	62	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	90		0					0			11.2	4.2	10.8	0.5	4.9	0.3		0.07	N/A	
67	62ext	62	5	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	UNCLEAR	0%		ELONG	CRUSH	NA	90		0					0			11.3	11.3	5.3	1.5	0	0		0.15	N/A	
727	73-D	73	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	CRUSH	N/A	0		0					0			11.3	8.5	11	0.9	0	0		0.13	N/A	
371	52-C	52	3	COMPFLAKE	CQUART	CLEAR	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			11.4	10.7	7.6	1	5.3	0.8		0.15	N/A	
31	62	62	4	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	BIPLOAR	0%		INDETER	CRUSH	NA	90		0					0			11.4	10.1	10.9	1.4	0	0		0.22	N/A	
451	52	52	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			11.4	8.4	10.6	3.2	5.1	1.8		0.35	N/A	
569	50-C	50	2	COMPFLAKE	CHERT	RED	SEMI	FEATHER	HERTIZEN	51-99%	weathered	INDETER	UNI	NA	NA		0					0			11.4	8.1	6.8	1.8	6.4	1.6		0.19	N/A	
1002	1-D	1	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	26-50%	weathered	EXPAND	UNI	NA	0		0					0			11.5	10.2	8.8	1.2	4.1	1		0.19	N/A	
418	54	54	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BENDING	0%		INDETER	UNI	NA	180		0					0			11.5	9.3	8.6	2.5	4.9	2.7		0.26	N/A	
563	49EXT-B	49	1	COMPFLAKE	MQUART	WHITE	SEMI	M	UNCLEAR	0%		PLATREJUV	UNI	NA	180		0					0			11.5	6.4	10.5	5.1	5.8	3.5		0.55	N/A	
1071	7-B	7	3	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	weathered	EXPAND	CORTICAL	NA	0		0					0			11.6	9.8	11.4	2.3	8.9	2.5		0.34	N/A	
862	74-D	74	3	COMPFLAKE	RHYO	brown	OPAQ	HINGE	HERTIZEN	1-25%	WATER-ROLL	ELONG	CORTICAL	NA	0		0					0			11.7	10.9	7.3	0.6	3.5	1.2		0.11	N/A	
44	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		ELONG	CRUSH	NA	0		0					0			11.8	11.8	5.1	1.5	0	0		0.11	N/A	
1282	7	7	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	0		0					0			11.9	11.9	8.7	4	4.6	1.4		0.31	N/A	
754	73-C	73	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	0		0					0			12	12	5.7	1.7	5.7	0.6		0.15	N/A	
1180	3EXT-C	3	1	COMPFLAKE	CHERT	GREY	OPAQ	HINGE	HERTIZEN	0%		EXPAND	UNI	G	90		0					0			12	11	12.2	1.7	2.3	1.4		0.27	N/A	
783	74	74	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	90		0					0			12	7.2	8	2.6	6.7	1.9		0.25	N/A	
1329	24	24	4	COMPFLAKE	TUFF	YELLOW	OPAQ	STEP	HERTIZEN	0%		EXPAND	MISSING	NA	NA		0					0			12	6.3	11.9	0.9	0	0		0.09	N/A	
1073	7-C	7	1	COMPFLAKE	CQUART	CLEAR	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			12.1	12.1	8.4	1.5	3.6	1.3		0.2	N/A	
878	74	74	5	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	CRUSH	NA	0		0					0			12.2	12.2	6.8	1.7	0	0		0.18	N/A	
393	52-B	52	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	1-25%	weathered	INDETER	CORTICAL	NA	0		0					0			12.2	9.7	11.2	2.6	11.2	3.4		0.27	N/A	
850	74-D	74	3	COMPFLAKE	CHERT	brown	SEMI	HINGE	HERTIZEN	0%		EXPAND	FLAKED	NA	0		0					0			12.2	6.8	9.9	2.3	8.6	2		0.19	N/A	
90	62ext	62	5	COMPFLAKE	QUARTZITE	GREY	OPAQ	FEATHER	HERTIZEN	0%		EXPAND	CRUSH	NA	90		0					0			12.4	6.3	12.2	1.4	0	0		0.18	N/A	
1236	3EXT-B	3	1	COMPFLAKE	MQUART	WHITE	SEMI	STEP	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			12.6	12.7	9.4	2.8	3.4	1.3		0.5	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
1253	3EXT-C	3	3	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	FACET	NA	0		0					0			12.7	11.9	9.7	1.9	10.6	3.6		0.44	N/A	
127	62	62	3	COMPFLAKE	CHERT	brown	SEMI	FEATHER	UNCLEAR	0%		EXPAND	CRUSH	NA	90		0					0			12.7	7	12.6	0.5	0	0		0.09	N/A	
328	52-C	52	2	COMPFLAKE	CCQ	PINK	SEMI	FEATHER	HERTIZEN	0%		EXPAND	CRUSH	NA	0		0					0			12.8	9.9	8.8	0.7	0	0		0.16	N/A	
893	74-C	74	3	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	NA		0					0			12.8	8	12.4	2	11.3	1.7		0.25	N/A	
891	74	74	5	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	180		0					0			13	13	7.2	3.4	2.9	1.3		0.22	N/A	
745	73	73	20-35	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	weathered	BLOCK	UNI	NA	0		0					0			13	10.5	11.9	6.8	6.3	5.3		0.83	N/A	
829	37-C	37	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			13.1	12.1	11	2.2	8.9	2.9		0.47	N/A	
722	73	73	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			13.1	11.7	8.6	2.5	7.2	1.2		0.29	N/A	
1181	3	3	2	COMPFLAKE	CHERT	Y/G	OPAQ	FEATHER	HERTIZEN	1-25%	weathered	EXPAND	UNI	NA	90		0					0			13.1	7.2	11	1.7	9.4	1.5		0.25	N/A	
858	37	37	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		PLATREJUV	UNI	NA	90		0					0			13.3	9.3	10.8	4.9	10.7	4.3		0.64	N/A	
581	50-B	50	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	MISSING	NA	0		0					0			13.4	12.4	11.1	2.4	0	0		0.43	N/A	
847	74-C	74	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BENDING	0%		EXPAND	UNI	NA	90		0					0			13.4	8	10.7	2	11.7	4.3		0.38	N/A	
1083	3EXT-D	3	2	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		INDETER	CRUSH	NA	0		0					0			13.6	13.8	10.5	3.5	0	0		0.45	N/A	
787	74	74	5	COMPFLAKE	TUFF	GREY	SEMI	STEP	HERTIZEN	0%		ELONG	UNI	NA	0		0					0			13.6	12.7	8.8	1.9	2.9	1.3		0.28	weathered	
24	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		INDETER	CRUSH	NA	0		0					0			13.6	11.3	9.4	1.7	0	0		0.3	N/A	
279	55	55	3	COMPFLAKE	TUFF	LGREY	OPAQ	FEATHER	HERTIZEN	0%		EXPAND	FLAKED	NA	0		0					0			13.6	5.7	13.6	1.6	13.4	2		0.2	N/A	
981	7-D	7	1	COMPFLAKE	MQUART	WHITE	OPAQ	FEATHER	UNCLEAR	0%		INDETER	MISSING	NA	90		0					0			13.7	13	11.2	4.3	0	0		0.81	N/A	
409	52-B	52	2	COMPFLAKE	CQUART	WHITE	SEMI	ABRUPT	BIPLOAR	0%		ELONG	UNI	NA	180		0					0			13.7	12.1	6.5	3.5	4.2	1.7		0.28	N/A	
1200	3EXT-C	3	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	UNI	NA	180		0					0			13.7	11.7	9.2	1	6.5	2.3		0.32	N/A	
796	77-D	77	2	COMPFLAKE	TUFF	YELLOW	OPAQ	HINGE	BIPLOAR	1-25%	weathered	EXPAND	CRUSH	NA	0		0					0			13.8	10	13.8	1.6	0	0		0.27	N/A	
50	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			13.9	12.2	9.8	4	9.1	4.9		0.45	N/A	
903	33	33	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	CRUSH	NA	90		0					0			13.9	10.4	13.9	1.8	0	0		0.33	N/A	
1010	1-D	1	1	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	WEDGE	0%		EXPAND	UNI	NA	0		0					0			14	8.9	9.7	4.1	12.9	5.9		0.66	N/A	
34	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	90		0					0			14	8.7	14.2	3.9	10.4	3		0.68	N/A	
1079	7-B	7	3	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			14	6.5	13.8	0.8	7.2	0.6		0.13	N/A	
1105	3EXT-C	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	FLAKED	NA	90		0					0			14	6.2	12.4	2.4	12.2	4.4		0.37	N/A	
1156	3EXT-C	3	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	CRUSH	NA	0		0					0			14.1	14.1	8.4	2.7	0	0		0.42	N/A	
1194	3	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	51-99%	weathered	EXPAND	UNI	NA	90		0					0			14.1	9.6	13.7	3.4	4.3	0.7		0.43	N/A	
1007	7-B	7	1	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	90		0					0			14.1	9.4	7.8	0.6	8.5	1.7		0.18	N/A	
1173	3EXT-D	3	3	COMPFLAKE	TUFF	LGREY	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	90		0					0			14.4	14.4	10.6	1.4	3.1	0.9		0.24	N/A	
201	62ext	62	4	COMPFLAKE	MQUART	W/Y	SEMI	STEP	UNCLEAR	0%		ELONG	MISSING	NA	0		0					0			14.4	13.7	8.2	3.2	0	0		0.44	N/A	
56	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	MISSING	NA	90		0					0			14.4	13.1	14.6	2.8	0	0		0.6	N/A	
1276	7-B	7	2	COMPFLAKE	CQUART	CLEAR	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	0		0					0			14.4	10.2	7.7	2	9.8	3.3		0.36	N/A	
187	62ext	62	4	COMPFLAKE	CHERT	brown	SEMI	HINGE	HERTIZEN	1-25%	WATER-ROLL	EXPAND	CORTICAL	NA	0		0					0			14.4	9.1	14.6	1.2	10.8	0.9		0.19	N/A	
256	66	66	6	COMPFLAKE	CHERT	brown	SEMI	HINGE	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			14.5	10	14.6	1.2	6	1.2		0.26	N/A	
829	37-C	37	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			14.5	0	0	0	0	0		2.23	N/A	
859	73-B	73	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	CRUSH	NA	0		0					0			14.6	11.8	11.8	1.6	0	0		0.38	N/A	
987	1-D	1	2	COMPFLAKE	CQUART	CLEAR	TRANS	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			14.7	9.7	14.6	1.3	10.6	2.5		0.29	N/A	
1146	3	3	2	COMPFLAKE	MQUART	WHITE	SEMI	STEP	HERTIZEN	0%		EXPAND	FLAKED	NA	0		0					0			14.7	8.3	14.7	2.1	12.5	1.9		0.45	N/A	
1189	3EXT-C	3	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	FLAKED	NA	NA		0					0			14.7	8.1	14.6	2.1	10	3.8		0.42	N/A	
1005	7-D	7	1	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	BIPLOAR	0%		ELONG	UNI	NA	0		0					0			14.8	13.9	9.3	3	6.5	2.9		0.51	N/A	
918	95	95	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			14.8	12	9.1	4.3	9.4	3.2		0.68	N/A	
723	77-C	77	3	COMPFLAKE	CHERT	YELLOW	OPAQ	FEATHER	BENDING	0%		EXPAND	CRUSH	NA	90		0					0			14.8	7	14.6	2.2	0	0		0.18	N/A	
1193	3	3	2	COMPFLAKE	CHERT	GREY	OPAQ	FEATHER	HERTIZEN	0%		EXPAND	UNI	G	RADIAL		0					0			14.9	9.5	14	1.6	8	2.1		0.33	N/A	
1298	7-B	7	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	UNI	NA	0		0					0			15	14.6	8.1	2.2	8.8	2.5		0.54	N/A	
160	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	MISSING	NA	0		0					0			15	12.2	7.6	1.3	0	0		0.17	N/A	
705	73	73	20-35	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	CRUSH	NA	90		0					0			15	9	14.9	2.6	0	0		0.33	N/A	
1214	16ext	16	2	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	FLAKED	NA	90		0					0			15.1	11.2	11.5	1.5	6.8	2.4		0.36	N/A	
1293	7	7	1	COMPFLAKE	CQUART	WHITE	SEMI	CRUSH	BIPLOAR	0%		INDETER	CRUSH	NA	180		0					0			15.3	15.3	10	3.8	0	0		0.73	N/A	
302	52-C	52	3	COMPFLAKE	CCQ	RED/GREY	SEMI	HINGE	HERTIZEN	1-25%	weathered	INDETER	UNI	NA	90		0					0			15.3	14	11.4	3.2	6.8	2.8		0.54	N/A	
1325	24	24	4	COMPFLAKE	TUFF	YELLOW	OPAQ	FEATHER	UNCLEAR	0%		BLADE	MISSING	NA	0		0					0			15.3	13.7	7.5	1	0	0		0.17	N/A	
284	61	61	3	COMPFLAKE	TUFF	LGREY	OPAQ	FEATHER	HERTIZEN	0%		ELONG	CRUSH	NA	0		0					0			15.4	15.4	5.9	0.7	0	0		0.12	N/A	
795	37	37	7	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	BIPLOAR	1-25%	VEIN	ELONG	UNI	NA	180		0					0			15.4	15.2	7.3	2.7	5.2	1.9		0.38	N/A	
573	48	48	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BENDING	0%		EXPAND	UNI	NA	0		0					0			15.4	7.3	13.2	2.4	15.2	5.4		0.53	N/A	
196	62	62	5	COMPFLAKE	MQUART	W/Y	SEMI	CRUSH	BIPLOAR	0%		INDETER	MISSING	NA	0		0					0			15.5	15.5	12.7	4	0	0		0.88	N/A	
777	73-A/B	73	CLEAN 3-4	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	FLAKED	NA	0		0					0			15.6	14.5	7.5	2.7	6.6	3.1		0.44	N/A	
1107	3EXT-D	3	2	COMPFLAKE	MQUART	WHITE	SEMI	CORTICAL	WEDGE	1-25%	weathered	INDETER	CORTICAL	NA	0		0					0			15.6	12.7	12.5	5.2	7.3	2.2		0.73	N/A	
639	47	47	?	COMPFLAKE	QUARTZITE	brown	SEMI	FEATHER	HERTIZEN	0%		INDETER	FLAKED	NA	90		0					0			15.6	12	12.2	4.2	10.7	4.8		0.8	N/A	
1230	3EXT-B	3	3	COMPFLAKE	MQUART	WHITE	OPAQ	FEATHER	BIPLOAR	26-50%	weathered	INDETER	CORTICAL	NA	0		0					0			15.8	12.5	9.9	2.5	12.6	5.5		0.74	N/A	
894	73-B	73	4	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	180		0					0			15.9	10.3	16	2.5	11.3	1.2		0.53	N/A	
1274	7-C	7	3	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	0		0					0			16	10.9	7.6	3.2	6.6	3.4		0.43	N/A	
449	50-C	50	1	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	UNCLEAR	1-25%	weathered	ELONG	MISSING	NA	0		0					0			16.2	16.4	8.8	3.2	0	0		0.49	N/A	
1036	7	7	3	COMPFLAKE	MQUART	WHITE	OPAQ	FEATHER	BIPLOAR	0%		ELONG	MISSING	NA	0		0					0			16.2	14.5	8.5	3	0	0		0.43	N/A	
438	52-B	52	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	UNI	NA	180		0					0			16.4	16	7.4	2.9	6.2	1.7		0.4	N/A	
459	50	50	2	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	90		0					0			16.5	10.9	16.7	3.4	11.2	2.5		0.87	N/A	
312	52-B	52	1	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	0		0					0			16.6	16.8	9.5	2.4	5.6	2.3		0.4	N/A	
597	70-B	70	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	180		0					0			16.6	16.4	8.2	3.2	3.9	1.5		0.59	N/A	
1072	3EXT-B	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	CRUSH	NA	180		0					0			16.7	11.7	13.8	2.7	0	0		0.61	N/A	
1243	3EXT-B	3	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	180		0					0			16.8	15.9	9.4	3.4	5.9	2.5		0.47	N/A	
1182	3	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	MISSING	NA	90		0					0			16.9	11.7	15.5	1.9	0	0		0.51	N/A	
1240	3EXT-C	3	3	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		EXPAND	CRUSH	NA	0		0					0			16.9	9.9	16.9	3.1	0	0		0.62	N/A	
333	52	52	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		ELONG	UNI	NA	180		0					0			17.1	17.1	7.2	3.6	5	2.8		0.44	N/A	
663	73-B	73	5	COMPFLAKE	TUFF	GREY	OPAQ	FEATHER	HERTIZEN	26-50%	weathered	ELONG	UNI	STEP	0		0					0			17.1	17.1	9.4	4.4	0	0		0.55	N/A	
953	33	33	4	COMPFLAKE	CQUART	WHITE	SEMI	ABRUPT	WEDGE	1-25%	weathered	INDETER	CORTICAL	NA	180		0					0			17.2	16.3	11.4	3.5	3.4	2.4		0.86	N/A	
1222	3EXT-D	3	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	CRUSH	NA	0		0					0			17.3	17.3	7	3	0	0		0.49	N/A	
420	54-B	54	1	COMPFLAKE	TUFF	YELLOW	OPAQ	HINGE	HERTIZEN	26-50%	weathered	EXPAND	FACET	NA	0		0					0			17.3	10	14.3	2.3	8.6	2.6		0.49	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
298	61-D	61	2	COMPFLAKE	MQUART	WHITE	OPAQ	FEATHER	UNCLEAR	0%		EXPAND	UNI	NA	180		0					0			17.4	16.9	14.4	2	6.2	1.6		0.78	N/A	
1166	3EXT-C	3	1	COMPFLAKE	TUFF	brown	OPAQ	HINGE	HERTIZEN	0%		BLADE	FACET	NA	0		0					0			17.4	16	8.4	2.4	4.8	1.1		0.36	burnt	
721	77	77	5	COMPFLAKE	CHERT	YELLOW	SEMI	HINGE	HERTIZEN	1-25%	weathered	EXPAND	UNI	NA	90		0					0			17.4	13.4	17.1	2.6	8.2	2.9		0.73	N/A	
396	52-D	52	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	26-50%	ROUGH	EXPAND	CORTICAL	NA	90		0					0			17.4	13	14.7	3.7	8.2	4.1		1.04	N/A	
1191	3EXT-C	3	1	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	WEDGE	26-50%	weathered	INDETER	FLAKED	NA	0		0					0			17.5	14	11.2	5.3	11.3	6.3		1.25	N/A	
289	61-B	61	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		EXPAND	CRUSH	NA	90		0					0			17.6	17.6	14.9	3.4	0	0		1.13	N/A	
270	61-B+C	61	1	COMPFLAKE	MQUART	W/P	OPAQ	FEATHER	BIPLOAR	0%		INDETER	CRUSH	NA	0		0					0			17.6	16	12.2	6.1	0	0		0.94	N/A	
1206	3-D	3	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	UNI	NA	90		0					0			17.6	10.5	16.4	3.3	16.6	5.4		1.2	N/A	
959	1	1	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	0		0					0			17.8	17	8.1	1.8	5.7	1.7		0.38	N/A	
466	52-C	52	1	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	0		0					0			17.9	17.5	9.5	2.2	7.3	1.5		0.53	N/A	
601	48	48	2	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	0		0					0			17.9	16.9	15.3	4.2	8.1	4.9		1.35	N/A	
675	73-D	73	3	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	UNI	NA	0		0					0			17.9	14.9	10.2	2.6	10	3.7		0.44	N/A	
277	61-B	61	2	COMPFLAKE	CHERT	YELLOW	OPAQ	FEATHER	HERTIZEN	0%		EXPAND	UNI	G	90		0					0			18	13.5	13.2	0.7	7.2	1.5		0.27	N/A	
703	73	73	20-35	COMPFLAKE	MQUART	WHITE	OPAQ	CRUSH	BIPLOAR	0%		INDETER	UNI	NA	180		0					0			18.1	17.6	13.6	4.4	4.7	2		1	N/A	
1327	24-B	24	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	100%	WATER-ROLL	INDETER	CORTICAL	NA	NA		0					0			18.1	17	13.2	2.6	7.3	2.5		0.89	N/A	
599	70	70	2	COMPFLAKE	MQUART	darkgrey	SEMI	FEATHER	UNCLEAR	0%		ELONG	CRUSH	NA	0		0					0			18.2	18.2	8.5	3.2	0	0		0.55	N/A	
1217	3EXT-C	3	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	WATER-ROLL	EXPAND	CORTICAL	NA	0		0					0			18.2	12.9	17.9	2.7	17.5	2.9		0.67	N/A	
892	74-C	74	4	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	CRUSH	NA	180		0					0			18.3	13.1	13.4	2.7	0	0		0.61	N/A	
381	54	54	2	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	UNCLEAR	26-50%	weathered	ELONG	MISSING	NA	180		0					0			18.6	18.6	3.8	2	0	0		0.18	N/A	
631	48	48	1	COMPFLAKE	CQUART	WHITE	SEMI	CRUSH	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			18.6	18.2	14.3	2.7	10.4	2.3		0.9	N/A	
1184	3	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	FLAKED	NA	90		0					0			18.7	14.7	18.3	3.5	12.8	4.3		1.04	N/A	
822	37-A	37	9	COMPFLAKE	MQUART	GREY	SEMI	FEATHER	HERTIZEN	100%	weathered	EXPAND	UNI	NA	NA		0					0			18.7	8.6	18.8	2.1	15.6	3.1		0.67	N/A	
833	37-D	37	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			18.8	15.8	14.5	3.2	9.2	4.2		1.06	N/A	
1062	7	7	3	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	WEDGE	0%		EXPAND	FLAKED	NA	0		0					0			18.8	15.1	15.8	4.5	10.1	3.5		1.39	N/A	
1259	3EXT-D	3	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	90		0					0			18.8	13.4	8.6	4.3	8.6	2.7		0.76	N/A	
694	73-B	73	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			18.8	12.9	13.9	5.5	12.7	6.1		1.25	N/A	
485	50-D	50	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	weathered	EXPAND	CORTICAL	NA	90		0					0			18.8	12.5	16	4.5	5.8	3.1		1.22	N/A	
1269	7	7	1	COMPFLAKE	TUFF	LGREY	OPAQ	HINGE	HERTIZEN	0%		BLADE	UNI	G	0		0					0			18.9	15.1	10.2	1.2	6.2	0.7		0.41	N/A	
39	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	BIPLOAR	0%		INDETER	MISSING	NA	180		0					0			19	18.3	12.9	2.8	0	0		0.77	N/A	
510	70	70	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	90		0					0			19.2	19.1	12.2	3.6	4.9	1.9		0.8	N/A	
1092	3EXT-B	3	2	COMPFLAKE	TUFF	RED/GREY	OPAQ	HINGE	HERTIZEN	1-25%	weathered	EXPAND	UNI	NA	90		0					0			19.2	12.1	19	3	9.9	2.3		1.14	N/A	
389	52	52	1	COMPFLAKE	CHERT	GREY	OPAQ	FEATHER	HERTIZEN	0%		ELONG	FACET	NA	180		0					0			19.3	17.2	7.8	1.6	7.2	2		0.45	N/A	
358	54	54	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	MISSING	NA	0		0					0			19.5	17.2	12.9	4.6	0	0		1.12	N/A	
1375	24-D	24	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	180		0					0			19.5	17	12.7	4.5	11.6	6.9		1.24	N/A	
12	62	62	4	COMPFLAKE	MQUART	W/Y	SEMI	ABRUPT	WEDGE	0%		ELONG	UNI	NA	0		0					0			19.5	16.2	8.6	5.1	5.8	2.9		1.18	N/A	
505	48	48	2	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	weathered	INDETER	UNI	NA	90		0					0			19.6	14.2	12.4	4	9.9	5		1.18	N/A	
876	74-D	74	3	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		INDETER	CRUSH	NA	0		0					0			19.8	19.8	11.7	3.4	0	0		0.98	N/A	
268	66	66	3	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	BIPLOAR	0%		INDETER	CRUSH	NA	0		0					0			19.9	19.8	13.3	3.9	0	0		1.02	N/A	
797	37	37	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		PLATREJUV	UNI	NA	90		0					0			19.9	18.6	13	3.4	13.2	3.9		0.92	N/A	
1337	24-B	24	5	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	FLAKED	NA	0		0					0			20	19.9	8.7	4	9.4	4.2		0.82	N/A	
686	77-C	77	3	COMPFLAKE	CHERT	YELLOW	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	180		0					0			20	18.5	10.8	3.3	4.5	1.4		0.68	N/A	
806	74-C	74	4	COMPFLAKE	CQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		BLADE	UNI	NA	0		0					0			20	17.9	9.7	4.5	10.3	7.5		1.03	N/A	
1039	3EXT-B	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			20.1	19.3	11.5	3.3	6.4	1.5		0.77	N/A	
89	62ext	62	5	COMPFLAKE	QUARTZITE	GREY	OPAQ	CORTICAL	HERTIZEN	1-25%	WATER-ROLL	EXPAND	UNI	NA	0		0					0			20.1	10.2	19.7	1.9	18.5	1.6		0.88	N/A	
940	33	33	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			20.4	16.7	19.8	3.2	14.5	4.6		1.58	N/A	
1111	3EXT-D	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	UNI	NA	0		0					0			20.5	20.3	11.6	2.5	6.2	1.7		0.97	N/A	
479	52-C	52	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	51-99%	ROUGH	ELONG	UNI	NA	0		0					0			20.5	16.6	13.2	4.9	11.4	3.9		1.11	N/A	
656	70	70	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		INDETER	UNI	NA	0		0					0			20.6	17.4	14.5	3.1	8.3	2.6		1.28	N/A	
1159	3	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	UNI	NA	90		0					0			20.6	14.7	15.3	3.6	12	3.8		1.33	N/A	
213	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			20.7	10.5	14.5	4.3	14.3	4.1		1.32	N/A	
238	62ext	62	4	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	HERTIZEN	0%		ELONG	FLAKED	NA	NA		0					0			20.8	19.3	9.5	1.7	6.1	2.2		0.48	N/A	
831	77-D	77	2	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	BIPLOAR	0%		ELONG	CRUSH	NA	180		0					0			20.9	20.9	9.6	3.5	0	0		0.78	N/A	
497	49	49	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	weathered	BLOCK	CORTICAL	NA	90		0					0			20.9	20.4	11.6	6.2	9.3	5		2.72	N/A	
1012	1-D	1	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	FACET	NA	90		0					0			20.9	8.5	20.8	3.9	14.5	3.4		0.96	N/A	
547	47-C	47	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	0%		BLADE	MISSING	NA	0		0					0			21	21	10.1	3.5	0	0		0.91	N/A	
792	74	74	6	COMPFLAKE	CHERT	YELLOW	OPAQ	FEATHER	HERTIZEN	1-25%	WATER-ROLL	INDETER	CORTICAL	NA	0		0					0			21	15.9	10.6	3.2	10.9	4.7		0.66	N/A	
60	62	62	4	COMPFLAKE	MQUART	W/Y	SEMI	STEP	UNCLEAR	0%		EXPAND	UNI	NA	0		0					0			21.4	14.5	14.5	3.6	12.7	3		1.18	N/A	
516	47	47	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		BLOCK	UNI	NA	0		0					0			21.6	21.6	7	2.3	3	1.6		0.49	N/A	
794	74-C	74	4	COMPFLAKE	QUARTZITE	GREY	OPAQ	FEATHER	BENDING	51-99%	ROUGH	BLOCK	UNI	NA	90		0					0			21.8	15.4	15.1	9	12.3	2.7		3.26	N/A	
164	62	62	3	COMPFLAKE	MQUART	WHITE	SEMI	STEP	HERTIZEN	0%		EXPAND	UNI	G	90		0					0			21.8	15.1	21.9	4.4	9.8	2.7		1.63	N/A	
33	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	FLAKED	NA	0		0					0			22	21.2	10	2.7	7.8	3.4		0.81	N/A	
300	54-B	54	3	COMPFLAKE	CHERT	brown	OPAQ	FEATHER	BENDING	1-25%	WATER-ROLL	INDETER	CORTICAL	NA	0		0					0			22.1	18.2	14	2.8	16.6	4.5		1.4	N/A	
96	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		EXPAND	MISSING	NA	90		0					0			22.2	18	22.4	3.8	0	0		1.63	N/A	
1201	16ext	16	2	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		ELONG	UNI	NA	180		0					0			22.3	21.5	15.7	4	10.5	5.9		2.13	N/A	
249	61-D	61	3	COMPFLAKE	CHERT	brown	OPAQ	HINGE	HERTIZEN	0%		ELONG	CRUSH	NA	0		0					0			22.3	21	12	2.4	0	0		0.83	N/A	
260	61-D	61	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	CRUSH	NA	90		0					0			22.5	22.5	10.8	5.7	0	0		1.41	N/A	
669	73	73	20-35	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		ELONG	UNI	NA	0		0					0			22.5	17.7	13.6	4.7	9.8	4.5		1.41	N/A	
1059	7-C	7	2	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	BIPLOAR	0%		BLADE	UNI	NA	0		0					0			22.7	22.7	10.7	3.5	6.3	1.5		1.07	N/A	
717	73-C	73	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			22.7	16.6	17.8	4.4	13.1	6.5		2.2	N/A	
88	62ext	62	3	COMPFLAKE	CQUART	CLEAR	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	90		0					0			22.8	13.4	14	6.9	14.6	7.6		1.76	N/A	
336	52-D	52	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	weathered	INDETER	UNI	NA	0		0					0			22.9	22.9	10.9	7.4	6.5	3.3		1.7	N/A	
1015	1-C	1	3	COMPFLAKE	MQUART	WHITE	SEMI	STEP	BIPLOAR	0%		ELONG	UNI	NA	0		0					0			22.9	22.5	13.9	4.6	6.1	1.7		1.84	N/A	
1249	16ext	16	2	COMPFLAKE	MATRIXSIL	brown	OPAQ	N/A	HERTIZEN	1-25%	weathered	ELONG	UNI	NA	0		0					0			22.9	21.3	11.2	2.2	10.7	2.9		0.93	N/A	
226	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		BLOCK	FLAKED	NA	RADIAL		0					0			22.9	20.4	18.1	9.7	9.1	5.8		3.53	N/A	
1285	7-B	7	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	ROUGH	INDETER	UNI	NA	RADIAL		0					0			22.9	18.8	10.2	9.1	10.7	6		1.47	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
908	111	111	2	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			23	20.7	14	5.3	8.3	3.3		1.83	N/A	
849	74-C	74	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	90		0					0			23.1	19.3	15.9	6.6	10.7	6		3.03	N/A	
278	61-C	61	2	COMPFLAKE	TUFF	LGREY	OPAQ	STEP	HERTIZEN	0%		EXPAND	CRUSH	NA	90		0					0			23.3	23.3	20.1	2.3	0	0		0.89	N/A	
974	1-D	1	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	RADIAL		0					0			23.3	20.8	15.2	6.4	13.4	3.9		2.1	N/A	
225	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	MISSING	NA	NA		0					0			23.4	15.8	12.3	1.5	0	0		0.52	N/A	
235	62ext	62	4	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	BENDING	0%		INDETER	UNI	NA	180		0					0			23.5	17.3	18.5	6.4	9.3	4.5		2.22	N/A	
1228	3EXT-C	3	3	COMPFLAKE	TUFF	GREY	OPAQ	HINGE	HERTIZEN	0%		RIDGESTRAT	UNI	NA	90		0					0			23.6	23.6	6.7	4.9	6.2	2.2		1.17	N/A	
736	73-B	73	3	COMPFLAKE	MQUART	WHITE	OPAQ	FEATHER	BENDING	1-25%	weathered	BLOCK	UNI	NA	0		0					0			23.6	15.3	23.8	9.2	7.7	3.4		2.77	N/A	
771	73	73	20-35	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		BLADE	UNI	NA	0		0					0			24.2	23.4	9.5	3.5	4.4	2.3		1.09	N/A	
560	70	70	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	0		0					0			24.2	18.3	15.6	5.9	16.3	5.7		1.94	N/A	
937	37	37	4	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	weathered	ELONG	CORTICAL	NA	0		0					0			24.4	23	12.8	3.9	9.8	3.5		1.65	N/A	
1344	12	12	1	COMPFLAKE	CQUART	darkgrey	SEMI	FEATHER	HERTIZEN	0%		ELONG	UNI	NA	180		0					0			24.4	20.6	11.3	5.9	11.5	2.4		1.75	N/A	
967	1	1	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	WEDGE	1-25%	weathered	BLOCK	UNI	NA	0		0					0			24.5	23.3	14.5	7.2	7.5	2.7		3.94	N/A	
594	48	48	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	ROUGH	EXPAND	FLAKED	NA	90		0					0			24.6	16.5	21.5	5.7	13.6	5.1		2.6	N/A	
975	1-C	1	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		ELONG	UNI	NA	0		0					0			24.7	24.3	14.5	3.3	9.4	3.1		1.46	N/A	
66	62ext	62	5	COMPFLAKE	MQUART	YELLOW	SEMI	ABRUPT	WEDGE	26-50%	weathered	INDETER	UNI	NA	0		0					0			25.2	22.8	20	5.4	13.8	5.6		3.09	N/A	
247	61-B+C	61	1	COMPFLAKE	MQUART	WHITE	SEMI	N/A	HERTIZEN	0%		BLOCK	UNI	NA	0		0					0			25.3	22.1	13.2	6.3	14.3	9.1		2.6	N/A	
189	62ext	62	4	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			25.5	20.1	16.6	3.5	10.5	3.3		1.67	N/A	
22	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	WEDGE	0%		INDETER	UNI	NA	90		0					0			25.6	20.3	15.3	5.2	10.6	4.6		2.18	N/A	
290	61-C	61	2	COMPFLAKE	TUFF	LGREY	OPAQ	FEATHER	UNCLEAR	0%		INDETER	MISSING	NA	0		0					0			25.9	25.9	15.5	3.8	0	0		1.29	N/A	
1341	12	12	1	COMPFLAKE	MQUART	WHITE	OPAQ	STEP	HERTIZEN	0%		INDETER	UNI	NA	90		0					0			26.2	24.4	20.7	4.9	9.3	2.9		3.11	N/A	
672	73-D	73	2	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	WEDGE	0%		ELONG	UNI	NA	0		0					0			26.3	26.3	11.4	2.7	6.7	1.5		1.08	N/A	
264	54-D	54	3	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		INDETER	UNI	NA	0		0					0			26.5	17.9	16.8	7.2	16.1	7.9		3.61	N/A	
539	70	70	2	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		BLOCK	UNI	NA	90		0					0			26.7	26	16	7.8	11.3	5.3		3.07	N/A	
1153	3EXT-C	3	2	COMPFLAKE	CHERT	GREY	OPAQ	HINGE	HERTIZEN	0%		ELONG	UNI	NA	180		0					0			26.8	26.2	5.7	3.2	0	0		0.56	N/A	
960	1	1	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			27	13.4	25.3	3.6	17.8	3.4		2.15	N/A	
526	47	47	2	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	BIPLOAR	0%		INDETER	UNI	STEP	0		0					0			27.4	27.4	17.8	7.4	9.3	1.6		3.16	N/A	
394	52-C	52	2	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	BIPLOAR	26-50%	weathered	INDETER	CRUSH	NA	180		0					0			27.6	26.7	14.5	7.5	0	0		3.79	N/A	
440	52-C	52	2	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			27.6	22.3	22.7	4.1	18.1	4.8		3.31	N/A	
304	52-B	52	1	COMPFLAKE	MQUART	WHITE	OPAQ	FEATHER	UNCLEAR	1-25%	weathered	INDETER	FLAKED	NA	90		0					0			27.9	26.4	20	6.2	14.3	5.3		4.42	N/A	
1095	3EXT-D	3	2	COMPFLAKE	MQUART	WHITE	OPAQ	ABRUPT	HERTIZEN	0%		BLOCK	UNI	NA	90		0					0			28.4	19.5	24.8	9.3	9.6	3.2		5.71	N/A	
882	74-C	74	3	COMPFLAKE	MQUART	WHITE	SEMI	CORTICAL	WEDGE	51-99%	VEIN	BLOCK	UNI	N/A	90		0					0			29.1	17.6	29.1	16.4	11.5	7.2		7.66	N/A	
943	94	94	1	COMPFLAKE	CHERT	GREY	OPAQ	FEATHER	BENDING	26-50%	ROUGH	BLOCK	UNI	NA	90		0					0			29.2	22.9	26.8	10	26.5	11.8		8.04	N/A	
719	73-D	73	2	COMPFLAKE	MQUART	WHITE	OPAQ	FEATHER	WEDGE	0%		INDETER	FLAKED	NA	0		0					0			29.6	27.9	17.3	6.6	13	2.5		3.25	N/A	
101	62ext	62	5	COMPFLAKE	QUARTZITE	GREY	OPAQ	CORTICAL	HERTIZEN	1-25%	WATER-ROLL	INDETER	UNI	NA	0		0					0			30.4	23.9	20.1	6.7	17.8	5.9		4.56	N/A	
13	62	62	4	COMPFLAKE	MQUART	WHITE	SEMI	PLUNGE	WEDGE	0%		PLATREJUV	UNI	STEP	180		0					0			30.7	30.3	18.9	6	12.1	7.7		4.58	N/A	
568	70	70	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	90		0					0			30.7	29.1	21	4.6	12.8	3.9		3.39	N/A	
215	62ext	62	4	COMPFLAKE	MQUART	WHITE	SEMI	CRUSH	HERTIZEN	0%		BLOCK	UNI	NA	180		0					0			31.1	30.4	23.2	8.2	13.9	7.9		7.03	N/A	
803	74-C	74	4	COMPFLAKE	TUFF	YELLOW	OPAQ	FEATHER	HERTIZEN	26-50%	weathered	ELONG	CRUSH	STEP	0		0					0			31.5	29.5	15.2	6.4	0	0		2.69	N/A	
85	62ext	62	6	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	HERTIZEN	0%		INDETER	FLAKED	NA	0		0					0			31.6	27	24.1	8.7	16.8	4.8		5.96	N/A	
1264	7-B	7	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	1-25%	WATER-ROLL	BLOCK	CORTICAL	NA	0		0					0			31.7	21.7	26.5	8.2	24.9	8.4		8.26	N/A	
825	74-D	74	3	COMPFLAKE	TUFF	brown	OPAQ	CORTICAL	UNCLEAR	1-25%	WATER-ROLL	ELONG	MISSING	NA	0		0					0			31.9	31.9	8.9	5.4	0	0		1.55	N/A	
77	62ext	62	5	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	HERTIZEN	0%		EXPAND	UNI	NA	90		0					0			31.9	23.3	29.6	5.4	11.5	4.7		4.59	N/A	
746	73-B	73	4	COMPFLAKE	MQUART	WHITE	OPAQ	ABRUPT	HERTIZEN	0%		EXPAND	FLAKED	NA	90		0					0			32.1	21.7	28.8	6.8	24	4.3		6.99	N/A	
255	57	57	3	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		ELONG	MISSING	NA	180		0					0			32.8	32.4	17.6	6.9	0	0		3.78	N/A	
1336	24-D	24	5	COMPFLAKE	CCQ	darkgrey	OPAQ	CRUSH	BIPLOAR	51-99%	WATER-ROLL	BLOCK	CRUSH	NA	0		0					0			32.9	32.9	23.7	11.4	0	0		9.44	N/A	
244	55EXT-B	55	3	COMPFLAKE	MQUART	WHITE	OPAQ	CRUSH	BIPLOAR	0%		BLOCK	UNI	NA	0		0					0			33.1	31.5	18.4	9.7	15.2	7.7		6.57	N/A	
335	52-D	52	1	COMPFLAKE	MQUART	WHITE	SEMI	CORTICAL	WEDGE	1-25%	ROUGH	BLOCK	UNI	NA	90		0					0			33.6	21.7	33.5	8.7	9.3	1.6		8	N/A	
938	25	25	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	51-99%	weathered	BLOCK	UNI	NA	0		0					0			33.6	20.5	25.5	17	16.3	10		9.61	N/A	
369	54-D	54	1	COMPFLAKE	QUARTZITE	GREY	OPAQ	FEATHER	BENDING	51-99%	WATER-ROLL	EXPAND	UNI	NA	90		0					0			33.6	15.1	22.2	6.1	19.9	5.1		4.09	N/A	
450	50-C	50	1	COMPFLAKE	MQUART	WHITE	SEMI	CORTICAL	WEDGE	26-50%	weathered	BLOCK	UNI	NA	0		0					0			34.1	30.4	15.9	9.1	9.9	4.6		6.92	N/A	
165	62	62	3	COMPFLAKE	MQUART	W/Y	SEMI	ABRUPT	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			34.3	32.7	31.6	6	14	3.9		7.7	N/A	
1011	1-B	1	1	COMPFLAKE	MQUART	WHITE	SEMI	M	HERTIZEN	0%		PLATREJUV	UNI	NA	90		0					0			35.2	33.8	22.9	10.7	13.7	6		10.58	N/A	
63	62ext	62	6	COMPFLAKE	QUARTZITE	GREY	SEMI	CORTICAL	HERTIZEN	0%		EXPAND	UNI	NA	0		0					0			35.4	20	27.7	6.2	23.7	7.4		5.16	N/A	
190	62ext	62	4	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	HERTIZEN	0%		BLOCK	UNI	NA	180		0					0			36.3	23.7	21.2	12	17.3	10.3		7.62	N/A	
364	54-C	54	3	COMPFLAKE	QUARTZITE	GREY	OPAQ	FEATHER	UNCLEAR	0%		INDETER	MISSING	NA	90		0					0			36.4	38	23	9.6	0	0		6.78	N/A	
109	62ext	62	6	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		BLOCK	UNI	NA	90		0					0			36.8	32.2	32.5	8.9	12.3	6.7		9.63	N/A	
113	62	62	6	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		BLOCK	UNI	NA	RADIAL		0					0			37.4	30.6	29.8	13.2	20.4	11.1		13.18	N/A	
1020	7	7	1	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		BLOCK	UNI	NA	90		0					0			37.4	26.2	18.2	15.2	16.6	6.9		11.34	N/A	
1106	3EXT-C	3	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	0%		INDETER	UNI	NA	90		0					0			37.9	31.8	25	5.7	18.6	7.7		6.22	N/A	
202	62ext	62	4	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	BIPLOAR	0%		BLOCK	FLAKED	NA	90		0					0			39	39	28.5	12.8	10.7	3.3		9.18	N/A	
586	47-C	47	2	COMPFLAKE	MQUART	WHITE	OPAQ	FEATHER	HERTIZEN	0%		BLOCK	UNI	NA	90		0					0			39.3	27.8	32.8	7.8	22.4	7.6		10.16	N/A	
738	77-D	77	3	COMPFLAKE	QUARTZITE	RED/GREY	OPAQ	FEATHER	HERTIZEN	1-25%	WATER-ROLL	PLATREJUV	UNI	NA	90		0					0			39.8	36	16.9	6.6	7.2	7.3		3.25	N/A	
237	62ext	62	4	COMPFLAKE	MQUART	W/Y	SEMI	ABRUPT	HERTIZEN	0%		EXPAND	FLAKED	NA	0		0					0			42	26.7	40	8.9	17.7	7.2		9.93	N/A	
739	73-B	73	4	COMPFLAKE	MQUART	WHITE	SEMI	ABRUPT	UNCLEAR	26-50%	weathered	PLATREJUV	MISSING	NA	0		0					0			42.8	34.1	41.3	11.6	0	0		19.94	N/A	
398	50-C	50	1	COMPFLAKE	QUARTZITE	GREY	OPAQ	HINGE	HERTIZEN	51-99%	WATER-ROLL	BLOCK	CORTICAL	NA	0		0					0			43.4	32.8	24.4	11.8	23.3	10.1		11.68	N/A	
104	62	62	4	COMPFLAKE	TUFF	YELLOW	SEMI	FEATHER	HERTIZEN	0%		BLADE	FACET	NA	0		0					0			43.8	43.7	13.3	4.5	9.3	2.4		2.79	N/A	
881	74-C	74	3	COMPFLAKE	CHERT	brown	OPAQ	FEATHER	HERTIZEN	51-99%	WATER-ROLL	ELONG	FLAKED	NA	0		0					0			44.7	42.2	20.8	10.2	10.5	3.1		8.96	N/A	
500	47	47	3	COMPFLAKE	MQUART	YELLOW	OPAQ	ABRUPT	HERTIZEN	1-25%	WATER-ROLL	INDETER	UNI	NA	0		0					0			45.4	40.4	24.2	8.6	20.8	7.7		13.36	N/A	
798	37-D	37	8	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	1-25%	weathered	BLOCK	CORTICAL	NA	90		0					0			46.2	45.8	24.5	10.3	19.1	3.3		13.19	N/A	
299	54-D	54	2	COMPFLAKE	MQUART	WHITE	SEMI	FEATHER	UNCLEAR	26-50%	WATER-ROLL	PLATREJUV	UNI	NA	90		0					0			50.5	42.7	28.6	14.6	15	2.7		19.71	N/A	
2	62	62	4	COMPFLAKE	MQUART	W/Y	SEMI	FEATHER	HERTIZEN	0%		BLOCK	UNI	STEP	180		0					0			52.1	45.5	32.8	14.8	17.3	7.2		21.36	N/A	
1060	7	7	3	COMPSPLIT	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND		NA			0					0			8.2	0	0	0	0	0		0.11	N/A	
484	50-D	50	1	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			9	0	0	0	0	0		0.18	N/A	
1104	3EXT-B	3	2	COMPSPLIT	TUFF	LGREY	SEMI	N/A		0%		EXPAND		NA			0					0			9.2	0	0	0	0	0		0.06	N/A	
408	52-B	52	3	COMPSPLIT	MQUART	WHITE	SEMI	CRUSH		0%		INDETER		NA			0					0			10.5	0	0	0	0	0		0.23	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
343	50-C	50	1	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			10.9	0	0	0	0	0		0.3	N/A	
1022	3EXT-B	3	2	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			11.6	0	0	0	0	0		0.21	N/A	
35	62	62	4	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			12	0	0	0	0	0		0.15	N/A	
194	61-B	61	3	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			12.9	0	0	0	0	0		0.26	N/A	
684	73-C	73	2	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			12.9	0	0	0	0	0		0.44	N/A	
443	52-B	52	3	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND		NA			0					0			13	0	0	0	0	0		0.48	N/A	
519	49EXT	49	1	COMPSPLIT	MQUART	WHITE	SEMI	CRUSH		0%		BIPOLAR		NA			0					0			13.4	0	0	0	0	0		0.37	N/A	
1244	3EXT-D	3	1	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			13.6	0	0	0	0	0		0.37	N/A	
1167	3EXT-C	3	1	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND		NA			0					0			14.1	0	0	0	0	0		0.32	N/A	
149	62ext	62	4	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			14.3	0	0	0	0	0		0.37	N/A	
933	96	96	1	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			14.3	0	0	0	0	0		0.43	N/A	
410	54-C	54	1	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND		NA			0					0			14.6	0	0	0	0	0		0.37	N/A	
1223	3-D	3	1	COMPSPLIT	CQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			15.3	0	0	0	0	0		0.29	N/A	
816	74	74	3	COMPSPLIT	CHERT	RED	OPAQ	FEATHER		0%		EXPAND		NA			0					0			15.6	0	0	0	0	0		0.41	N/A	
355	54-D	54	1	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			15.8	0	0	0	0	0		0.56	N/A	
1128	3EXT-B	3	2	COMPSPLIT	CHERT	YELLOW	OPAQ	FEATHER		0%		EXPAND		NA			0					0			16.1	0	0	0	0	0		0.37	N/A	
353	54-C	54	2	COMPSPLIT	MQUART	WHITE	SEMI	CRUSH		0%		EXPAND		NA			0					0			16.3	0	0	0	0	0		0.74	N/A	
311	52-B	52	3	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND		NA			0					0			16.4	0	0	0	0	0		1.24	N/A	
868	73-B	73	4	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			16.4	0	0	0	0	0		0.31	N/A	
73	62ext	62	6	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			16.5	0	0	0	0	0		0.39	N/A	
646	48-C	48	3	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			16.8	0	0	0	0	0		0.64	N/A	
1270	7	7	1	COMPSPLIT	MQUART	WHITE	SEMI	STEP		0%		INDETER		NA			0					0			17.2	0	0	0	0	0		0.89	N/A	
1278	7	7	1	COMPSPLIT	MQUART	WHITE	SEMI	ABRUPT		0%		INDETER		NA			0					0			17.3	0	0	0	0	0		0.71	N/A	
1251	16ext	16	4	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			17.8	0	0	0	0	0		0.86	N/A	
1348	5	5	2	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND		NA			0					0			18.5	0	0	0	0	0		2.11	N/A	
1130	3EXT-C	3	2	COMPSPLIT	MQUART	WHITE	SEMI	ABRUPT		0%		INDETER		NA			0					0			18.6	0	0	0	0	0		0.44	N/A	
1322	24-D	24	5	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			18.7	0	0	0	0	0		0.9	N/A	
603	49EXT	49	1	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND		NA			0					0			19.5	0	0	0	0	0		1.4	N/A	
604	49	49	1	COMPSPLIT	MQUART	WHITE	SEMI	ABRUPT		0%		BLOCK		NA			0					0			20	0	0	0	0	0		1.96	N/A	
733	70	70	3	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		INDETER		NA			0					0			20.4	0	0	0	0	0		0.7	N/A	
95	62	62	4	COMPSPLIT	MQUART	WHITE	SEMI	CRUSH		0%		INDETER		NA			0					0			20.7	0	0	0	0	0		0.55	N/A	
949	37	37	4	COMPSPLIT	MQUART	WHITE	SEMI	ABRUPT		0%		INDETER		NA			0					0			20.8	0	0	0	0	0		1.12	N/A	
1165	3EXT-C	3	1	COMPSPLIT	MQUART	WHITE	SEMI	CORTICAL		1-25%	weathered	INDETER		NA			0					0			22.4	0	0	0	0	0		2.02	N/A	
522	49EXT	49	2	COMPSPLIT	MQUART	WHITE	OPAQ	ABRUPT		0%		EXPAND		NA			0					0			22.4	0	0	0	0	0		2.78	N/A	
177	62	62	3	COMPSPLIT	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND		NA			0					0			24.3	0	0	0	0	0		1.18	N/A	
219	61	61	2	COMPSPLIT	MQUART	WHITE	SEMI	ABRUPT		0%		BLOCK		NA			0					0			26.6	0	0	0	0	0		5	N/A	
957	91	91	1	COMPSPLIT	MQUART	WHITE	SEMI	ABRUPT		0%		BLOCK		NA			0					0			27.4	0	0	0	0	0		3.62	N/A	
1	62	62	4	COMPSPLIT	MQUART	W/Y	SEMI	FEATHER		0%		EXPAND		NA			0					0			33.2	0	0	0	0	0		4.72	N/A	
57	62	62	4	COMPSPLIT	MQUART	W/Y	SEMI	ABRUPT		0%		INDETER		NA			0					0			38.4	0	0	0	0	0		5.24	N/A	
711	77	77	4	COMPSPLIT	QUARTZITE	RED/GREY	OPAQ	FEATHER		1-25%	WATER-ROLL	EXPAND		NA			0					0			40.3	0	0	0	0	0		5.07	N/A	
482	50-D	50	1	CORE	MQUART	WHITE	SEMI			26-50%	FACET						0	UNIDIR	BLOCK	NA	EXPAND	1	1	0	27.1	0	26.8	13.7	0	0	1-2	10.28	N/A	ED/FACET
557	49	49	1	CORE	MQUART	WHITE	SEMI			0%							0	UNIDIR	FLAKE	NA	MIXED	1	0	0	28.4	0	26.7	17.7	0	0	3-5	6.33	N/A	TOOL
566	49EXT	49	1	CORE	MQUART	WHITE	SEMI			0%							0	UNIDIR	NONDIAG	NA	EXPAND	1	0	0	33	0	16.6	11.5	0	0	3-5	8.02	N/A	TOOL
1333	16	16	2	CORE	MQUART	WHITE	SEMI			0%							0	ABBC	FLAKE	NA	EXPAND	1	0	0	30.4	0	18.8	10.4	0	0	1-2	6.51	N/A	from term
280	66	66	6	CORE	MQUART	W/Y	SEMI			0%							0	BIPOLAR	NONDIAG	NA	ELONG	1	0	0	32.3	0	35.1	7.4	0	0	1-2	8.4	N/A	ANVIL
990	1-B	1	1	CORE	MQUART	WHITE	SEMI			0%							0	ABBC	NONDIAG	NA	ELONG	2	0	0	24.2	0	21.5	12.5	0	0	1-2	7.41	N/A	ALT PLAT
1323	24-D	24	5	CORE	MQUART	WHITE	OPAQ			0%							0	BURINBL	FLAKE	NA	ELONG	1	0	0	31.9	0	14.4	7.2	0	0	1-2	4.3	N/A	TERM
978	1-D	1	2	CORE	MQUART	WHITE	OPAQ			0%							0	RADBIF	FLAKE	NA	EXPAND	3	2	0	20.7	0	17.8	7.8	0	0	3-5	3.44	N/A	
1313	7	7	2	CORE	MQUART	WHITE	OPAQ			1-25%	weathered						0	BIPOLAR	NONDIAG	NA	ELONG	1	0	0	22.3	0	17.7	7.3	0	0	1-2	3.92	N/A	
1090	3EXT-B	3	2	CORE	MQUART	WHITE	SEMI			0%							0	BURINBL	FLAKE	NA	ELONG	1	0	0	24	0	20.5	7.5	0	0	1-2	3.5	N/A	
1346	16	16	1	CORE	MQUART	WHITE	SEMI			26-50%	VEIN						0	BIPOLAR	BLOCK	NA	MIXED	1	0	0	25.1	0	17.5	13.7	0	0	1-2	6.52	N/A	
715	73	73	20-35	CORE	MQUART	WHITE	SEMI			1-25%	weathered						0	MULTI	BLOCK	NA	MIXED	3	1	0	25.4	0	23.9	17.3	0	0	3-5	10.4	N/A	
1268	7	7	1	CORE	MQUART	WHITE	SEMI			26-50%	weathered						0	ALTBLADE	BLOCK	NA	ELONG	2	2	0	27.8	0	21.2	13.8	0	0	3-5	8.98	N/A	
691	73	73	20-35	CORE	MQUART	LGREY	SEMI			0%							0	BIDIR	NONDIAG	NA	MIXED	28	1	0	28.2	0	22.4	11.9	0	0	3-5	6.25	N/A	
616	49-D	49	1	CORE	MQUART	WHITE	SEMI			26-50%	WATER-ROLL						0	BIPOLAR	NODULE	NA	ELONG	1	0	0	28.5	0	22.1	14.5	0	0	1-2	8.46	N/A	
1163	3EXT-C	3	2	CORE	MQUART	WHITE	SEMI			0%							0	UNIDIR	NONDIAG	NA	EXPAND	1	0	0	28.6	0	17	9.9	0	0	1-2	3.59	N/A	
939	53	53	2	CORE	MQUART	WHITE	SEMI			0%							0	MULTI	BLOCK	NA	EXPAND	3	0	0	29.2	0	23.8	14.3	0	0	3-5	10.59	N/A	
1265	7-C	7	3	CORE	MQUART	WHITE	SEMI			26-50%	weathered						0	ALTBLADE	BLOCK	NA	MIXED	2	2	0	30.7	0	23.5	17	0	0	3-5	11.79	N/A	
461	50-C	50	1	CORE	MQUART	WHITE	SEMI			26-50%	weathered						0	UNIDIR	BLOCK	NA	EXPAND	1	0	0	30.9	0	27.7	16	0	0	1-2	9.43	N/A	
595	49	49	2	CORE	MQUART	WHITE	SEMI			0%							0	BIDIR	BLOCK	NA	EXPAND	2	3	0	33.3	0	21.5	15.5	0	0	3-5	10.09	N/A	
1283	7	7	1	CORE	MQUART	WHITE	SEMI			1-25%	weathered						0	MULTI	FLAKE	NA	MIXED	4	1	0	33.4	0	26.3	22.2	0	0	3-5	17.65	N/A	
678	77-B	77	4	CORE	MQUART	WHITE	SEMI			0%							0	MULTI	BLOCK	NA	MIXED	3	0	0	33.6	0	28.4	17.9	0	0	3-5	17.61	N/A	
725	73-C	73	1	CORE	MQUART	WHITE	SEMI			1-25%	FLAT0						0	UNIDIR	BLOCK	NA	ELONG	1	3	0	33.9	0	25.6	18.9	0	0	1-2	18.27	N/A	
341	50-C	50	1	CORE	MQUART	WHITE	SEMI			26-50%	weathered						0	BIDIR	BLOCK	NA	MIXED	2	1	0	34.6	0	30	25.2	0	0	3-5	23.67	N/A	
1331	24	24	3	CORE	MQUART	WHITE	SEMI			0%							0	BIDIR	BLOCK	NA	MIXED	2	0	0	34.9	0	21.9	11.5	0	0	1-2	9.24	N/A	
971	7-B	7	1	CORE	MQUART	WHITE	SEMI			1-25%	weathered						0	BURINBL	FLAKE	NA	ELONG	1	3	0	37.3	0	27.4	11.1	0	0	1-2	14.17	N/A	
1340	24	24	7	CORE	MQUART	WHITE	SEMI			0%							0	MULTI	BLOCK	NA	MIXED	3	0	0	37.3	0	25	16.4	0	0	3-5	21.07	N/A	
211	62ext	62	4	CORE	MQUART	W/Y	SEMI			0%							0	ABBC	BLOCK	NA	MIXED	2	1	0	38.4	0	27.3	13.6	0	0	1-2	14.47	N/A	
564	48	48	2	CORE	MQUART	WHITE	SEMI			0%							0	ABBC	BLOCK	NA	ELONG	1	0	0	45.8	0	28.7	21.3	0	0	1-2	32.99	N/A	
344	50-C	50	1	CORE	MQUART	WHITE	SEMI			26-50%	weathered						0	UNIDIR	FLAKE	NA	EXPAND	1	0	0	46.8	0	31.2	17.4	0	0	1-2	22.12	N/A	
1207	16ext	16	8	CORE	MQUART	WHITE	SEMI			26-50%	ROUGH						0	BIDIR	BLOCK	NA	EXPAND	45	0	0	48.28	0	30.3	29.2	0	0	1-2	48.25	N/A	
767	73-D	73	3	CORE	MQUART	WHITE	SEMI			0%							0	UNIDIR	BLOCK	NA	EXPAND	1	2	0	49.1	0	31.4	20.5	0	0	1-2	30.05	N/A	
460	50-C	50	1	CORE	MQUART	WHITE	SEMI			51-99%	weathered						0	UNIDIR	SLAB	NA	EXPAND	1	0	0	51.3	0	24.3	13.8	0	0	1-2	19.9	N/A	
1128	3EXT-B	3	2	COREFRAG	CHERT	YELLOW	OPAQ			26-50%	WATER-ROLL						0					0			18.5	0	0	0	0	0		1.66	N/A	DE FRAC
915	53	53	2	COREFRAG	MQUART	WHITE	SEMI			0%							0					0			26.4	0	0	0	0	0		2.75	N/A	CRACK
361	52-C	52	3	COREFRAG	CHERT	RED	SEMI			0%							0					0			10.7	0	0	0	0	0		0.18	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
907	94	94	1	COREFRAG	TUFF	GREY	SEMI			0%							0					0			12.5	0	0	0	0	0		0.36	N/A	
473	50-C	50	1	COREFRAG	TUFF	GREY	SEMI			0%							0					0			13	0	0	0	0	0		0.63	N/A	
1319	7	7	1	COREFRAG	MQUART	WHITE	SEMI			26-50%	weathered						0					0			16	0	0	0	0	0		0.67	N/A	
968	1	1	3	COREFRAG	MQUART	WHITE	SEMI			1-25%	weathered						0					0			16.9	0	0	0	0	0		1.49	N/A	
524	48	48	1	COREFRAG	CHERT	brown	OPAQ			0%							0					0			16.9	0	0	0	0	0		0.57	N/A	
762	73-D	73	2	COREFRAG	MQUART	WHITE	SEMI			0%							0					0			17.7	0	0	0	0	0		1.93	N/A	
1295	7	7	1	COREFRAG	MQUART	WHITE	SEMI			0%							0					0			18.1	0	0	0	0	0		2.27	N/A	
605	49EXT	49	2	COREFRAG	CQUART	WHITE	SEMI			0%							0					0			19.9	0	0	0	0	0		1.5	N/A	
577	49EXT	49	1	COREFRAG	MQUART	WHITE	OPAQ			0%							0					0			23.1	0	0	0	0	0		4.1	N/A	
608	48	48	1	COREFRAG	MQUART	WHITE	SEMI			0%							0					0			23.2	0	0	0	0	0		2.22	N/A	
578	50	50	3	COREFRAG	MQUART	WHITE	SEMI			0%							0					0			25.6	0	0	0	0	0		3.94	N/A	
898	74-C	74	4	COREFRAG	QUARTZITE	brown	SEMI			0%							0					0			26.7	0	0	0	0	0		2.22	N/A	
823	37-B	37	4	COREFRAG	MQUART	WHITE	SEMI			1-25%	weathered						0					0			37	0	0	0	0	0		10.3	N/A	
685	77-D	77	3	COREFRAG	QUARTZITE	RED/GREY	OPAQ			1-25%	WATER-ROLL						0					0			46.6	0	0	0	0	0		25.04	N/A	
942	77-B	77	5	DISTFLAKE	CHERT	YELLOW	SEMI	FEATHER		0%		EXPAND					0					0			24.7	0	0	0	0	0		0.88	N/A	CONJOIN
922	19	19	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			10.4	0	0	0	0	0		0.44	N/A	ROUNDED
610	47	47	2	DISTFLAKE	TUFF	brown	SEMI	FEATHER		0%		INDETER					0					0			24.1	0	0	0	0	0		1.19	N/A	rim
613	48	48	1	DISTFLAKE	MQUART	WHITE	OPAQ	FEATHER		0%		INDETER					0					0			20.9	0	0	0	0	0		1.79	N/A	FRACTURE
944	90	90	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		BLOCK					0					0			16.9	0	0	0	0	0		1.1	N/A	CRACKS
1087	3EXT-D	3	2	DISTFLAKE	MQUART	WHITE	OPAQ	FEATHER		0%		INDETER					0					0			17.2	0	0	0	0	0		0.7	N/A	CRACKS
1247	3EXT-D	3	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			20.2	0	0	0	0	0		1.25	N/A	CRACKS
1271	7	7	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		BLOCK					0					0			26	0	0	0	0	0		3.24	N/A	cracks
232	62ext	62	2	DISTFLAKE	TUFF	GREY	OPAQ	HINGE		0%		EXPAND					0					0			23.2	0	0	0	0	0		0.85	N/A	208
136	62ext	62	3	DISTFLAKE	MQUART	WHITE	SEMI	ABRUPT		0%		BLOCK					0					0			33.4	0	0	0	0	0		9.72	N/A	124
382	54	54	1	DISTFLAKE	MQUART	WHITE	SEMI	CRUSH		0%		EXPAND					0					0			19	0	0	0	0	0		1.6	N/A	anvil
785	74	74	4	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			13	0	0	0	0	0		0.18	N/A	786
126	62ext	62	4	DISTFLAKE	MQUART	W/Y	SEMI	FEATHER		0%		EXPAND					0					0			16.1	0	0	0	0	0		0.51	N/A	137
495	50-D	50	2	DISTFLAKE	QUARTZITE	PINK	OPAQ	FEATHER		51-99%	WATER-ROLL	INDETER					0					0			3.95	0	0	0	0	0		3.95	N/A	
114	62	62	4	DISTFLAKE	MQUART	W/Y	SEMI	FEATHER		0%		INDETER					0					0			5.7	0	0	0	0	0		0.04	N/A	
442	52	52	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			6.2	0	0	0	0	0		0.01	N/A	
240	62ext	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		INDETER	UNI	NA			0					0			6.6	0	0	0	0	0		0.05	N/A	
332	52	52	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			7.4	0	0	0	0	0		0.04	N/A	
158	62ext	62	4	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			7.7	0	0	0	0	0		0.04	N/A	
870	74-C	74	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			7.7	0	0	0	0	0		0.05	N/A	
236	62ext	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8	0	0	0	0	0		0.11	N/A	
1140	3EXT-B	3	2	DISTFLAKE	CHERT	YELLOW	SEMI	FEATHER		0%		EXPAND					0					0			8.2	0	0	0	0	0		0.04	N/A	
20	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8.3	0	0	0	0	0		0.04	N/A	
919	94	94	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8.3	0	0	0	0	0		0.15	N/A	
70	62ext	62	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			8.5	0	0	0	0	0		0.04	N/A	
366	52-C	52	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		1-25%	weathered	INDETER					0					0			8.6	0	0	0	0	0		0.15	N/A	
757	70-B	70	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8.6	0	0	0	0	0		0.04	N/A	
890	74	74	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8.6	0	0	0	0	0		0.17	N/A	
155	62	62	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8.7	0	0	0	0	0		0.12	N/A	
854	77-C	77	2	DISTFLAKE	TUFF	YELLOW	SEMI	STEP		0%		INDETER					0					0			8.7	0	0	0	0	0		0.03	N/A	
356	54	54	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			8.8	0	0	0	0	0		0.14	N/A	
1144	3EXT-C	3	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8.9	0	0	0	0	0		0.16	N/A	
8	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			8.9	0	0	0	0	0		0.15	N/A	
561	47-B	47	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.1	0	0	0	0	0		0.21	N/A	
679	77	77	4	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			9.1	0	0	0	0	0		0.14	N/A	
179	62	62	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.2	0	0	0	0	0		0.11	N/A	
1086	3EXT-C	3	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.3	0	0	0	0	0		0.17	N/A	
1009	1	1	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.4	0	0	0	0	0		0.05	N/A	
986	1-D	1	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.4	0	0	0	0	0		0.17	N/A	
980	1-C	1	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.5	0	0	0	0	0		0.09	N/A	
1084	3EXT-C	3	2	DISTFLAKE	MQUART	WHITE	OPAQ	FEATHER		0%		EXPAND					0					0			9.5	0	0	0	0	0		0.16	N/A	
147	62ext	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.5	0	0	0	0	0		0.02	N/A	
1023	7-C	7	2	DISTFLAKE	CQUART	CLEAR	SEMI	FEATHER		0%		INDETER					0					0			9.6	0	0	0	0	0		0.07	N/A	
1310	7-B	7	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			9.6	0	0	0	0	0		0.04	N/A	
1172	3EXT-B	3	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.8	0	0	0	0	0		0.15	N/A	
94	62ext	62	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			9.8	0	0	0	0	0		0.03	N/A	
1137	3EXT-C	3	2	DISTFLAKE	MQUART	WHITE	OPAQ	FEATHER		0%		INDETER					0					0			9.9	0	0	0	0	0		0.15	N/A	
1030	7-D	7	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.9	0	0	0	0	0		0.18	N/A	
130	62	62	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			9.9	0	0	0	0	0		0.09	N/A	
1026	7-D	7	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			10	0	0	0	0	0		0.12	N/A	
1294	7	7	1	DISTFLAKE	CQUART	WHITE	SEMI	CRUSH		0%		INDETER					0					0			10	0	0	0	0	0		0.15	N/A	
1267	7-C	7	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			10	0	0	0	0	0		0.14	N/A	
99	62ext	62	6	DISTFLAKE	QUARTZITE	GREY	OPAQ	FEATHER		0%		INDETER					0					0			10	0	0	0	0	0		0.19	N/A	
969	7-D	7	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		51-99%	ROUGH	ELONG					0					0			10.1	0	0	0	0	0		0.14	N/A	
904	122	122	1	DISTFLAKE	MQUART	WHITE	SEMI	CORTICAL		1-25%	weathered	INDETER					0					0			10.1	0	0	0	0	0		0.34	N/A	
1093	3EXT-C	3	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			10.2	0	0	0	0	0		0.12	N/A	
296	61	61	3	DISTFLAKE	TUFF	LGREY	OPAQ	HINGE		0%		INDETER					0					0			10.3	0	0	0	0	0		0.11	N/A	
636	70	70	3	DISTFLAKE	CQUART	CLEAR	TRANS	FEATHER		0%		INDETER					0					0			10.4	0	0	0	0	0		0.16	N/A	
741	73-C	73	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			10.4	0	0	0	0	0		0.17	N/A	
582	48	48	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			10.5	0	0	0	0	0		0.23	N/A	
54	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			10.5	0	0	0	0	0		0.11	N/A	
447	50	50	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			10.6	0	0	0	0	0		0.18	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
1245	16	16	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	weathered	INDETER					0					0			10.7	0	0	0	0	0		0.19	N/A	
931	94	94	1	DISTFLAKE	CQUART	CLEAR	TRANS	FEATHER		0%		EXPAND					0					0			10.7	0	0	0	0	0		0.12	N/A	
972	7	7	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			10.9	0	0	0	0	0		0.18	N/A	
493	49EXT	49	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			10.9	0	0	0	0	0		0.11	N/A	
607	50-B	50	3	DISTFLAKE	CQUART	WHITE	SEMI	CRUSH		0%		ELONG					0					0			10.9	0	0	0	0	0		0.19	N/A	
322	52-B	52	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			10.9	0	0	0	0	0		0.14	N/A	
23	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	CRUSH		0%		INDETER					0					0			10.9	0	0	0	0	0		0.22	N/A	
784	74	74	4	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			10.9	0	0	0	0	0		0.13	N/A	
49	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			11	0	0	0	0	0		0.2	N/A	
764	73-C	73	2	DISTFLAKE	TUFF	brown	SEMI	FEATHER		0%		INDETER					0					0			11	0	0	0	0	0		0.17	N/A	
808	77-D	77	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			11.1	0	0	0	0	0		0.16	N/A	
1208	3EXT-D	3	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			11.2	0	0	0	0	0		0.19	N/A	
511	49	49	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			11.2	0	0	0	0	0		0.34	N/A	
546	50-D	50	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			11.2	0	0	0	0	0		0.15	N/A	
740	73	73	20-35	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			11.2	0	0	0	0	0		0.28	N/A	
1025	7-D	7	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			11.3	0	0	0	0	0		0.12	N/A	
1292	7	7	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		100%	weathered	EXPAND					0					0			11.3	0	0	0	0	0		0.14	N/A	
618	49-D	49	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	ROUGH	EXPAND					0					0			11.3	0	0	0	0	0		0.16	N/A	
1246	3EXT-D	3	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		26-50%	weathered	EXPAND					0					0			11.4	0	0	0	0	0		0.26	N/A	
714	73	73	35-40	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			11.4	0	0	0	0	0		0.27	N/A	
1209	16	16	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			11.5	0	0	0	0	0		0.19	N/A	
988	1-D	1	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			11.6	0	0	0	0	0		0.28	N/A	
509	50-D	50	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			11.6	0	0	0	0	0		0.27	N/A	
207	61	61	2	DISTFLAKE	MQUART	WHITE	OPAQ	FEATHER		0%		EXPAND					0					0			11.6	0	0	0	0	0		0.3	N/A	
135	62ext	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			11.6	0	0	0	0	0		0.12	N/A	
880	73-B	73	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			11.6	0	0	0	0	0		0.33	N/A	
246	61	61	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			11.7	0	0	0	0	0		0.36	N/A	
258	61-B+C	61	1	DISTFLAKE	CQUART	CLEAR	SEMI	FEATHER		0%		ELONG					0					0			11.8	0	0	0	0	0		0.28	N/A	
683	73-C	73	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			11.8	0	0	0	0	0		0.21	N/A	
910	111	111	1	DISTFLAKE	MQUART	WHITE	SEMI	CRUSH		26-50%	weathered	ELONG					0					0			11.8	0	0	0	0	0		0.26	N/A	
1061	7-C	7	1	DISTFLAKE	CQUART	WHITE	SEMI	CRUSH		0%		ELONG					0					0			11.9	0	0	0	0	0		0.32	N/A	
1031	7-D	7	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		PLATREJUV					0					0			11.9	0	0	0	0	0		0.34	N/A	
528	47	47	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			11.9	0	0	0	0	0		0.15	N/A	
120	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			11.9	0	0	0	0	0		0.24	N/A	
1239	16ext	16	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			12	0	0	0	0	0		0.21	N/A	
634	49	49	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			12	0	0	0	0	0		0.39	N/A	
830	74-C	74	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			12	0	0	0	0	0		0.16	N/A	
924	1	1	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			12.1	0	0	0	0	0		0.19	N/A	
1171	3	3	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			12.1	0	0	0	0	0		0.26	N/A	
1219	3EXT-B	3	3	DISTFLAKE	TUFF	RED	SEMI	HINGE		0%		INDETER					0					0			12.1	0	0	0	0	0		0.22	N/A	
1089	3EXT-C	3	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.1	0	0	0	0	0		0.32	N/A	
154	62	62	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			12.1	0	0	0	0	0		0.07	N/A	
864	74-D	74	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			12.1	0	0	0	0	0		0.1	N/A	
118	62ext	62	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.2	0	0	0	0	0		0.36	N/A	
1220	3EXT-B	3	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.3	0	0	0	0	0		0.35	N/A	
1143	3EXT-C	3	1	DISTFLAKE	CHERT	GREY	OPAQ	HINGE		0%		EXPAND					0					0			12.3	0	0	0	0	0		0.26	N/A	
490	50	50	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.3	0	0	0	0	0		0.63	N/A	
379	54-C	54	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.5	0	0	0	0	0		0.28	N/A	
518	70	70	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			12.5	0	0	0	0	0		0.27	N/A	
1257	16ext	16	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			12.6	0	0	0	0	0		0.21	N/A	
441	52	52	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		1-25%	ROUGH	INDETER					0					0			12.6	0	0	0	0	0		0.41	N/A	
184	62	62	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.6	0	0	0	0	0		0.18	N/A	
11	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			12.6	0	0	0	0	0		0.33	N/A	
680	73	73	20-35	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.6	0	0	0	0	0		0.29	N/A	
1019	7-B	7	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.7	0	0	0	0	0		0.52	N/A	
609	47-C	47	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			12.7	0	0	0	0	0		0.39	N/A	
385	52-B	52	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	weathered	INDETER					0					0			12.7	0	0	0	0	0		0.48	N/A	
254	54-B	54	1	DISTFLAKE	CQUART	WHITE	SEMI	CRUSH		0%		INDETER					0					0			12.7	0	0	0	0	0		0.42	N/A	
28	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			12.7	0	0	0	0	0		0.21	N/A	
503	49EXT-B	49	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			12.8	0	0	0	0	0		0.44	N/A	
1116	3EXT-B	3	2	DISTFLAKE	TUFF	LGREY	SEMI	FEATHER		0%		EXPAND					0					0			12.9	0	0	0	0	0		0.26	N/A	
643	48	48	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			12.9	0	0	0	0	0		0.19	N/A	
664	73	73	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			12.9	0	0	0	0	0		0.18	N/A	
357	54	54	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			13	0	0	0	0	0		0.15	N/A	
266	61-B+C	61	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			13	0	0	0	0	0		0.35	N/A	
659	70	70	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			13	0	0	0	0	0		0.14	N/A	
710	77-C	77	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			13	0	0	0	0	0		0.43	N/A	
1149	3	3	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			13.1	0	0	0	0	0		0.41	N/A	
1198	3EXT-D	3	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	ROUGH	INDETER					0					0			13.2	0	0	0	0	0		0.85	N/A	
324	52-D	52	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			13.3	0	0	0	0	0		0.51	N/A	
961	1-B	1	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			13.4	0	0	0	0	0		0.43	N/A	
617	48	48	1	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			13.4	0	0	0	0	0		0.16	N/A	
873	74-C	74	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		PLATREJUV					0					0			13.4	0	0	0	0	0		0.62	N/A	
1168	3EXT-C	3	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			13.7	0	0	0	0	0		0.19	N/A	
1291	7	7	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	ROUGH	EXPAND					0					0			13.9	0	0	0	0	0		0.31	N/A	
406	52-C	52	1	DISTFLAKE	MQUART	CLEAR	SEMI	FEATHER		0%		EXPAND					0					0			14	0	0	0	0	0		0.42	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
274	61	61	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			14	0	0	0	0	0		0.22	N/A	
119	62	62	4	DISTFLAKE	MQUART	W/Y	SEMI	FEATHER		0%		INDETER					0					0			14	0	0	0	0	0		0.43	N/A	
48	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		EXPAND					0					0			14.1	0	0	0	0	0		0.36	N/A	
16	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			14.1	0	0	0	0	0		0.44	N/A	
583	48	48	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		51-99%	WATER-ROLL	EXPAND					0					0			14.2	0	0	0	0	0		0.62	N/A	
615	48	48	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			14.2	0	0	0	0	0		0.43	N/A	
3	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			14.2	0	0	0	0	0		0.41	N/A	
731	73-D	73	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			14.2	0	0	0	0	0		0.37	N/A	
956	90	90	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			14.3	0	0	0	0	0		0.56	N/A	
471	50	50	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			14.4	0	0	0	0	0		0.59	N/A	
36	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			14.4	0	0	0	0	0		0.15	N/A	
129	62	62	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			14.4	0	0	0	0	0		0.23	N/A	
695	73-C	73	2	DISTFLAKE	MQUART	WHITE	SEMI	ABRUPT		100%	WATER-ROLL	INDETER					0					0			14.4	0	0	0	0	0		0.46	N/A	
1335	24-B	24	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		100%	ROUGH	INDETER					0					0			14.6	0	0	0	0	0		0.94	N/A	
1135	3EXT-D	3	2	DISTFLAKE	TUFF	GREY	OPAQ	FEATHER		0%		INDETER					0					0			14.8	0	0	0	0	0		0.24	burnt	
912	1	1	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		51-99%	weathered	INDETER					0					0			14.9	0	0	0	0	0		0.59	N/A	
1040	3EXT-B	3	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			14.9	0	0	0	0	0		0.35	N/A	
737	73-B	73	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			14.9	0	0	0	0	0		0.3	N/A	
863	74-D	74	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			15.1	0	0	0	0	0		0.7	N/A	
701	77-B	77	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			15.1	0	0	0	0	0		0.38	N/A	
1343	24	24	6	DISTFLAKE	TUFF	YELLOW	OPAQ	FEATHER		0%		INDETER					0					0			15.3	0	0	0	0	0		0.89	N/A	
477	52	52	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			15.3	0	0	0	0	0		0.92	N/A	
989	1-D	1	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			15.5	0	0	0	0	0		0.65	N/A	
1077	3EXT-B	3	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			15.5	0	0	0	0	0		0.28	N/A	
913	25	25	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			15.5	0	0	0	0	0		0.52	N/A	
930	77-B	77	5	DISTFLAKE	QUARTZITE	Y/R	SEMI	FEATHER		0%		EXPAND					0					0			15.6	0	0	0	0	0		0.27	N/A	
742	73-D	73	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			15.7	0	0	0	0	0		0.46	N/A	
541	70	70	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			15.8	0	0	0	0	0		0.64	N/A	
537	70	70	3	DISTFLAKE	MQUART	WHITE	OPAQ	FEATHER		0%		INDETER					0					0			15.9	0	0	0	0	0		0.55	N/A	
527	70	70	2	DISTFLAKE	TUFF	brown	OPAQ	HINGE		0%		INDETER					0					0			15.9	0	0	0	0	0		0.68	N/A	
553	50-D	50	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			16	0	0	0	0	0		0.99	N/A	
121	62ext	62	4	DISTFLAKE	MQUART	W/Y	SEMI	FEATHER		0%		INDETER					0					0			16	0	0	0	0	0		0.93	N/A	
670	73-C	73	4	DISTFLAKE	MQUART	WHITE	SEMI	ABRUPT		0%		INDETER					0					0			16	0	0	0	0	0		1.1	N/A	
802	74-B	74	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			16	0	0	0	0	0		0.55	N/A	
1216	3EXT-C	3	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	weathered	INDETER					0					0			16.1	0	0	0	0	0		0.65	N/A	
531	49	49	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			16.1	0	0	0	0	0		0.8	N/A	
116	62ext	62	5	DISTFLAKE	MQUART	W/Y	SEMI	FEATHER		0%		INDETER					0					0			16.1	0	0	0	0	0		0.44	N/A	
1317	7	7	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			16.2	0	0	0	0	0		0.73	N/A	
1117	3EXT-C	3	2	DISTFLAKE	MQUART	WHITE	SEMI	ABRUPT		1-25%	weathered	ELONG					0					0			16.3	0	0	0	0	0		0.45	N/A	
1049	7-C	7	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		51-99%	weathered	PLATREJUV					0					0			16.3	0	0	0	0	0		0.56	N/A	
914	53	53	2	DISTFLAKE	TUFF	YELLOW	OPAQ	HINGE		0%		EXPAND					0					0			16.3	0	0	0	0	0		0.41	N/A	
291	55	55	3	DISTFLAKE	CHERT	brown	OPAQ	FEATHER		0%		INDETER					0					0			16.5	0	0	0	0	0		0.59	N/A	
916	56	56	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			16.5	0	0	0	0	0		0.32	N/A	
68	62ext	62	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			16.7	0	0	0	0	0		1.02	N/A	
693	73	73	20-35	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			16.7	0	0	0	0	0		0.62	N/A	
188	62	62	5	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			16.8	0	0	0	0	0		0.7	N/A	
1152	3EXT-C	3	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			17.1	0	0	0	0	0		1.01	N/A	
1050	7-D	7	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			17.1	0	0	0	0	0		0.84	N/A	
251	54-D	54	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			17.1	0	0	0	0	0		2.56	N/A	
958	116	116	1	DISTFLAKE	VOL	BLACK	OPAQ	FEATHER		0%		INDETER					0					0			17.2	0	0	0	0	0		0.53	N/A	
1262	7-B	7	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	weathered	INDETER					0					0			17.3	0	0	0	0	0		0.56	N/A	
212	62ext	62	4	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			17.3	0	0	0	0	0		0.47	N/A	
227	62ext	62	4	DISTFLAKE	MQUART	YELLOW	SEMI	FEATHER		0%		EXPAND					0					0			17.4	0	0	0	0	0		0.47	N/A	
744	73-B	73	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			17.4	0	0	0	0	0		0.79	N/A	
1055	7-B	7	3	DISTFLAKE	MQUART	WHITE	SEMI	STEP		0%		ELONG					0					0			17.5	0	0	0	0	0		0.7	N/A	
979	1	1	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			17.6	0	0	0	0	0		0.79	N/A	
1048	7	7	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			17.7	0	0	0	0	0		1.4	N/A	
1286	7	7	2	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			17.7	0	0	0	0	0		0.39	N/A	
946	91	91	3	DISTFLAKE	TUFF	GREY	OPAQ	FEATHER		0%		RIDGESTRAT					0					0			17.7	0	0	0	0	0		0.55	N/A	
626	49-D	49	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			18.1	0	0	0	0	0		1.67	N/A	
572	48	48	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			18.2	0	0	0	0	0		0.86	N/A	
1119	3EXT-D	3	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			18.3	0	0	0	0	0		0.47	N/A	
180	62	62	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			18.3	0	0	0	0	0		0.92	N/A	
59	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	ROUGH	ELONG					0					0			18.4	0	0	0	0	0		0.74	N/A	
542	50-D	50	2	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		BLADE					0					0			18.6	0	0	0	0	0		0.34	N/A	
439	52	52	1	DISTFLAKE	MQUART	GREY	SEMI	FEATHER		100%	WATER-ROLL	INDETER					0					0			18.9	0	0	0	0	0		0.62	N/A	
1170	3	3	2	DISTFLAKE	TUFF	GREY	OPAQ	HINGE		0%		INDETER					0					0			19.1	0	0	0	0	0		0.8	N/A	
520	49	49	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			19.2	0	0	0	0	0		1.39	N/A	
1300	7-B	7	2	DISTFLAKE	MQUART	WHITE	SEMI	CRUSH		0%		BLOCK					0					0			19.3	0	0	0	0	0		1.91	N/A	
677	77	77	4	DISTFLAKE	TUFF	YELLOW	OPAQ	FEATHER		1-25%	WATER-ROLL	INDETER					0					0			19.5	0	0	0	0	0		0.74	N/A	
872	74-C	74	3	DISTFLAKE	CQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			19.6	0	0	0	0	0		0.85	N/A	
61	62ext	62	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			20	0	0	0	0	0		0.66	N/A	
37	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			20.4	0	0	0	0	0		1.13	N/A	
772	73	73	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		1-25%	weathered	ELONG					0					0			20.6	0	0	0	0	0		0.88	N/A	
834	37-A	37	9	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			20.7	0	0	0	0	0		1.33	N/A	
422	52-C	52	3	DISTFLAKE	CCQ	darkgrey	SEMI	FEATHER		0%		INDETER					0					0			20.8	0	0	0	0	0		1.38	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
131	62	62	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			20.9	0	0	0	0	0		0.71	N/A	
1299	7	7	2	DISTFLAKE	TUFF	YELLOW	OPAQ	HINGE		0%		BLADE					0					0			21.1	0	0	0	0	0		0.48	N/A	
58	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			21.1	0	0	0	0	0		1.23	N/A	
174	62ext	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG					0					0			21.3	0	0	0	0	0		0.69	N/A	
102	62	62	4	DISTFLAKE	MQUART	WHITE	OPAQ	FEATHER		0%		EXPAND					0					0			21.6	0	0	0	0	0		0.95	N/A	
827	74-B	74	3	DISTFLAKE	CQUART	WHITE	SEMI	CRUSH		0%		EXPAND					0					0			21.6	0	0	0	0	0		1.4	N/A	
14	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			21.7	0	0	0	0	0		1.14	N/A	
40	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			21.7	0	0	0	0	0		3.16	N/A	
26	62	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			22	0	0	0	0	0		1.02	N/A	
162	62ext	62	4	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			22.1	0	0	0	0	0		1.33	N/A	
462	50-C	50	1	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			22.2	0	0	0	0	0		1.71	N/A	
10	62	62	4	DISTFLAKE	MQUART	W/Y	SEMI	FEATHER		0%		ELONG					0					0			23.3	0	0	0	0	0		1.17	N/A	
533	49EXT-B	49	1	DISTFLAKE	TUFF	Y/R	SEMI	FEATHER	UNCLEAR	26-50%	WATER-ROLL	INDETER	MISSING	NA	90		0					0			25.7	0	0	0	0	0		1.94	N/A	
80	62ext	62	5	DISTFLAKE	MQUART	W/Y	SEMI	FEATHER		0%		ELONG					0					0			26	0	0	0	0	0		1.37	N/A	
1213	16	16	5	DISTFLAKE	MQUART	WHITE	OPAQ	FEATHER		26-50%	WATER-ROLL	INDETER					0					0			26.1	0	0	0	0	0		2.92	N/A	
156	62	62	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		EXPAND					0					0			27	0	0	0	0	0		1.56	N/A	
200	62ext	62	4	DISTFLAKE	MQUART	W/Y	SEMI	FEATHER		100%	weathered	EXPAND					0					0			28	0	0	0	0	0		2.13	N/A	
423	52-B	52	2	DISTFLAKE	CHERT	brown	OPAQ	FEATHER		0%		INDETER					0					0			28.1	0	0	0	0	0		1.11	N/A	
750	77-D	77	3	DISTFLAKE	QUARTZITE	RED/GREY	OPAQ	FEATHER		1-25%	WATER-ROLL	INDETER					0					0			30.5	0	0	0	0	0		2.29	N/A	
702	77-D	77	3	DISTFLAKE	QUARTZITE	RED/GREY	OPAQ	FEATHER		0%		INDETER					0					0			31.1	0	0	0	0	0		2.5	N/A	
262	61	61	3	DISTFLAKE	CHERT	LGREY	SEMI	FEATHER		0%		ELONG					0					0			34	0	0	0	0	0		3.16	N/A	
839	74-B	74	3	DISTFLAKE	MQUART	W/P	SEMI	M		0%		PLATREJUV					0					0			34.8	0	0	0	0	0		9.36	N/A	
571	49EXT	49	1	DISTFLAKE	MQUART	WHITE	SEMI	STEP		1-25%	weathered	BLOCK					0					0			36.2	0	0	0	0	0		7.87	N/A	
288	54-D	54	3	DISTFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		INDETER					0					0			43.3	0	0	0	0	0		11.52	N/A	
523	48	48	1	GRINDFRAG	QUARTZITE	brown	OPAQ			1-25%	WATER-ROLL	N/A					0					0			58.1	0	0	0	0	0		14.87	N/A	FILE?
543	49EXT	49	2	HF	QUARTZITE	RED/GREY	OPAQ			1-25%	WATER-ROLL	N/A					0					0			65.3	0	0	0	0	0		58.22	N/A	
1155	3EXT-C	3	1	HFA	TUFF	LGREY	OPAQ			0%		BLADE					0					0			26.2	0	0	0	0	0		1.26	weathered	D
1169	3	3	2	HFA	TUFF	LGREY	OPAQ			0%		N/A					0					0			14.2	0	0	0	0	0		0.45	weathered	FRAC
295	61	61	4	MORTAR	QUARTZITE	GREY	OPAQ			51-99%	WATER-ROLL	N/A					0					0			105.2	0	0	0	0	0		802.9	N/A	RTAR
1350	54	54	1	MORTAR	VOL	darkgrey	OPAQ			51-99%	WATER-ROLL	N/A					0					0			174.3	0	0	0	0	0		1150	burnt	NDSTONE
753	73-C	73	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			12.2	0	0	0	6.7	3.3		0.37	N/A	SNAP LAT
283	61-B+C	61	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			15.1	0	0	0	6.2	3.3		0.62	N/A	S
1231	3EXT-D	3	1	PROXFLAKE	TUFF	GREY	OPAQ			1-25%	weathered	BLADE	CORTICAL	STEP			0					0			19.5	0	0	0	6.9	2.1		1.15	weathered	D
309	52-D	52	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			15.2	0	0	0	7.9	2.9		0.48	N/A	CRACKS
1101	3EXT-B	3	2	PROXFLAKE	CHERT	GREY	OPAQ			0%		ELONG	FLAKED	NA			0					0			11.2	0	0	0	6.8	2.8		0.32	N/A	1113
208	62ext	62	1	PROXFLAKE	TUFF	GREY	OPAQ			1-25%	WATER-ROLL	INDETER	CORTICAL	NA			0					0			22.5	0	0	0	12.5	3.5		1.26	weathered	burnt
206	61	61	1	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	MISSING	NA			0					0			21.8	0	0	0	0	0		1.52	N/A	218
1045	3EXT-B	3	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	CRUSH	NA			0					0			1.07	0	0	0	0	0		1.07	N/A	
645	70	70	3	PROXFLAKE	TUFF	brown	SEMI			0%		INDETER	UNI	NA			0					0			4.5	0	0	0	2.9	0.3		0.01	N/A	
21	62	62	4	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	CRUSH	NA			0					0			7.4	0	0	0	0	0		0.02	N/A	
1192	3EXT-C	3	1	PROXFLAKE	CQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			8.2	0	0	0	4.8	1.5		0.13	N/A	
1195	3	3	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	CRUSH	NA			0					0			8.7	0	0	0	0	0		0.11	N/A	
984	7	7	1	PROXFLAKE	MQUART	WHITE	SEMI	FEATHER		0%		ELONG	UNI	NA			0					0			8.7	0	0	0	5	0.4		0.12	N/A	
1138	3EXT-C	3	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	CRUSH	NA			0					0			8.9	0	0	0	0	0		0.12	N/A	
1341	7	7	1	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	FLAKED	NA			0					0			8.9	0	0	0	5.6	1.3		0.1	N/A	
934	90	90	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	CRUSH	NA			0					0			9	0	0	0	0	0		0.13	N/A	
476	52	52	5	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	CRUSH	NA			0					0			9.1	0	0	0	0	0		0.22	N/A	
995	7-B	7	1	PROXFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	INDETER	CORTICAL	NA			0					0			9.2	0	0	0	7.3	1.3		0.14	N/A	
602	50-C	50	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			9.4	0	0	0	5.3	2.2		0.2	N/A	
338	50-C	50	1	PROXFLAKE	TUFF	LGREY	SEMI			0%		INDETER	UNI	G			0					0			9.5	0	0	0	7.7	2.2		0.11	N/A	
1183	3	3	2	PROXFLAKE	CQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			9.7	0	0	0	7.4	2.1		0.16	N/A	
1160	3	3	2	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	CRUSH	NA			0					0			9.8	0	0	0	0	0		0.25	N/A	
1187	3EXT-C	3	2	PROXFLAKE	TUFF	YELLOW	OPAQ			0%		ELONG	FACET	NA			0					0			9.9	0	0	0	6.2	1.4		0.19	N/A	
161	62ext	62	4	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			9.9	0	0	0	3.1	1.6		0.2	N/A	
817	37	37	5	PROXFLAKE	CQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			10	0	0	0	3	0.9		0.1	N/A	
185	61	61	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			10.4	0	0	0	4.4	0.7		0.18	N/A	
1263	7	7	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	MISSING	NA			0					0			10.5	0	0	0	0	0.25		0.24	N/A	
655	48	48	1	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			10.5	0	0	0	9.4	1		0.18	N/A	
535	49	49	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		EXPAND	UNI	NA			0					0			10.5	0	0	0	6.7	1.7		0.13	N/A	
1029	7-B	7	3	PROXFLAKE	CQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			10.7	0	0	0	8	2		0.16	N/A	
434	52-C	52	2	PROXFLAKE	CQUART	CLEAR	TRANS			0%		EXPAND	UNI	NA			0					0			10.7	0	0	0	8	1.2		0.2	N/A	
1203	16ext	16	4	PROXFLAKE	MATRIXSIL	GREY	OPAQ			0%		INDETER	UNI	NA			0					0			10.9	0	0	0	4.8	0.6		0.18	N/A	
43	62	62	4	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	CRUSH	NA			0					0			10.9	0	0	0	0	0		0.16	N/A	
692	73	73	35-40	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			10.9	0	0	0	2.8	1.8		0.21	N/A	
1177	3EXT-C	3	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	FLAKED	NA			0					0			11.1	0	0	0	0	0		0.38	N/A	
1103	3EXT-D	3	2	PROXFLAKE	MQUART	WHITE	SEMI	FEATHER	BIPLOAR	1-25%	weathered	ELONG	CORTICAL	NA			0					0			11.1	0	0	0	6.2	2.4		0.32	N/A	
814	74-B	74	3	PROXFLAKE	MQUART	WHITE	SEMI			0%		BLADE	FLAKED	NA			0					0			11.1	0	0	0	6.2	2.9		0.36	N/A	
1121	3EXT-D	3	2	PROXFLAKE	CHERT	BLACK	OPAQ			0%		INDETER	FACET	NA			0					0			11.4	0	0	0	4.1	1		1.21	N/A	
465	52-C	52	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	CRUSH	NA			0					0			11.4	0	0	0	0	0		0.4	N/A	
1051	3EXT-B	3	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			11.5	0	0	0	7.2	1.7		0.25	N/A	
499	70	70	2	PROXFLAKE	TUFF	RED	OPAQ			0%		INDETER	UNI	NA			0					0			11.5	0	0	0	5	0.9		0.14	N/A	
252	54-B	54	1	PROXFLAKE	CQUART	WHITE	SEMI			0%		ELONG	FLAKED	NA			0					0			11.7	0	0	0	6.1	1.8		0.3	N/A	
93	62ext	62	5	PROXFLAKE	MQUART	W/Y	SEMI			0%		INDETER	UNI	NA			0					0			11.9	0	0	0	11.1	2.5		0.45	N/A	
52	62	62	4	PROXFLAKE	CQUART	WHITE	SEMI			0%		EXPAND	UNI	NA			0					0			12.2	0	0	0	2.6	1.7		0.2	N/A	
1256	3EXT-D	3	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			12.4	0	0	0	8.7	1.5		0.29	N/A	
345	52	52	3	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			12.4	0	0	0	3.7	2.2		0.32	N/A	

ID	Square	Test Pit	Spit	CLASS	MATERIAL	COLOUR	Transparency	DISIAL END	INITIATION	CORTEX %	CORTEX TYPE	FORM	EXT. PLATFORM	PLATFORM TYPE	DORSAL SCARS	TOOL TYPE	RETOUCHED EDGES	CORE TYPE	CORE BODY	CORE PREP.	SCAR FORM	CORE PLATFROM NO	STEP TERMIANTIONS	HINGE TERMINATIO	MAX. LENGTH	AXIAL LENGTH	MAX. WIDTH	MAX. THICK	PLATFORM WIDITH	PLATFORM THICKNE	CORE SCAR NO.	WEIGHT	MODIFIED	COMMENTS
375	52-D	52	2	PROXFLAKE	CQUART	WHITE	SEMI			0%		EXPAND	UNI	NA			0					0			12.5	0	0	0	4.7	1.2		0.32	N/A	
78	62ext	62	5	PROXFLAKE	CHERT	brown	OPAQ			0%		INDETER	UNI	NA			0					0			12.5	0	0	0	9.6	2.4		0.26	burnt	
1185	3EXT-D	3	3	PROXFLAKE	CHERT	brown	SEMI			0%		BLADE	MISSING	NA			0					0			12.9	0	0	0	0	0		0.16	N/A	
269	55EXT-B	55	3	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			12.9	0	0	0	3.9	1.9		0.26	N/A	
9	62	62	4	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			12.9	0	0	0	4.2	1.7		0.18	N/A	
545	50-D	50	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		BLOCK	UNI	NA			0					0			13	0	0	0	3.4	2		0.36	N/A	
334	52-C	52	2	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			13.1	0	0	0	7	2.5		0.51	N/A	
1099	3EXT-D	3	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			13.2	0	0	0	8.5	1.8		0.52	N/A	
632	48	48	1	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			13.2	0	0	0	6.7	5.7		0.69	N/A	
985	1-B	1	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			13.3	0	0	0	4.3	2.2		0.7	N/A	
1131	3EXT-D	3	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			13.7	0	0	0	9.9	2.9		0.51	N/A	
1204	3EXT-C	3	3	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	MISSING	NA			0					0			13.7	0	0	0	0	0		0.44	N/A	
1000	1-D	1	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			14.2	0	0	0	10.4	4.1		0.91	N/A	
1008	7	7	1	PROXFLAKE	CQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			14.3	0	0	0	6.9	3.5		0.62	N/A	
86	62ext	62	3	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			14.3	0	0	0	5.4	1.5		0.57	N/A	
759	73	73	20-35	PROXFLAKE	CQUART	WHITE	SEMI			0%		INDETER	FACET	NA			0					0			14.4	0	0	0	9.8	2.8		0.56	N/A	
231	61	61	2	PROXFLAKE	CHERT	GREY	OPAQ	FEATHER		26-50%	weathered	ELONG	CRUSH	NA			0					0			14.5	0	0	0	0	0		0.17	N/A	
55	62	62	4	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	CRUSH	NA			0					0			14.5	0	0	0	0	0		0.34	N/A	
428	52-D	52	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			14.7	0	0	0	10.3	1.9		0.48	N/A	
1278	7	7	2	PROXFLAKE	CQUART	WHITE	SEMI			26-50%	VEIN	ELONG	FLAKED	NA			0					0			15.1	0	0	0	9.9	2.1		0.43	N/A	
947	1	1	2	PROXFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	INDETER	CORTICAL	G			0					0			15.2	0	0	0	13.2	2.1		0.73	N/A	
901	69	69	1	PROXFLAKE	TUFF	LGREY	OPAQ			1-25%	ROUGH	INDETER	CRUSH	NA			0					0			15.3	0	0	0	0	0		0.69	N/A	
884	74-C	74	3	PROXFLAKE	CQUART	WHITE	SEMI			26-50%	weathered	ELONG	FLAKED	NA			0					0			15.5	0	0	0	8.2	4.9		0.69	N/A	
657	70-B	70	3	PROXFLAKE	CQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			15.7	0	0	0	6.9	4		0.7	N/A	
1129	3EXT-C	3	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			15.8	0	0	0	8.9	2.4		0.68	N/A	
1305	7	7	1	PROXFLAKE	TUFF	CLEAR	OPAQ			0%		BLADE	UNI	NA			0					0			16	0	0	0	6.5	2.5		0.55	burnt	
925	37	37	4	PROXFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	ELONG	CORTICAL	NA			0					0			16	0	0	0	9.8	3.5		0.9	N/A	
648	47-B	47	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	FLAKED	NA			0					0			16.1	0	0	0	9.9	4.2		1.17	N/A	
433	52-B	52	3	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			16.8	0	0	0	6.6	2.8		1.12	N/A	
699	77	77	2	PROXFLAKE	MQUART	WHITE	OPAQ			0%		ELONG	UNI	NA			0					0			17	0	0	0	8.8	2.4		0.88	N/A	
1157	3	3	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		BLADE	UNI	NA			0					0			17.1	0	0	0	7.1	1.5		0.62	N/A	
1316	7	7	1	PROXFLAKE	TUFF	LGREY	SEMI			0%		INDETER	FACET	NA			0					0			18	0	0	0	6.8	1.9		0.54	N/A	
307	52-C	52	3	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	FLAKED	NA			0					0			18.2	0	0	0	14.4	5.8		1.24	N/A	
153	62	62	3	PROXFLAKE	MQUART	WHITE	SEMI			0%		EXPAND	UNI	NA			0					0			18.2	0	0	0	9.3	2		0.36	N/A	
853	37	37	5	PROXFLAKE	MQUART	WHITE	SEMI			0%		EXPAND	CRUSH	NA			0					0			18.3	0	0	0	0	0		0.63	N/A	
1250	16ext	16	5	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	STEP			0					0			18.5	0	0	0	7.9	3		0.81	N/A	
1221	16ext	16	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		BLADE	UNI	NA			0					0			18.8	0	0	0	5.7	2.1		0.6	N/A	
848	74-C	74	4	PROXFLAKE	CHERT	brown	OPAQ			0%		ELONG	FACET	NA			0					0			19.1	0	0	0	7.9	3.6		0.81	N/A	
1226	16ext	16	2	PROXFLAKE	MATRIXSIL	brown	OPAQ			1-25%	weathered	ELONG	UNI	NA			0					0			19.5	0	0	0	7	1.3		0.67	burnt	
824	37	37	5	PROXFLAKE	MQUART	WHITE	SEMI			0%		EXPAND	UNI	NA			0					0			19.5	0	0	0	9.5	1.6		0.47	N/A	
349	54-C	54	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		ELONG	UNI	NA			0					0			19.8	0	0	0	12.4	4.5		1.42	N/A	
1238	16ext	16	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			20.3	0	0	0	14	5.5		1.55	N/A	
1075	3EXT-B	3	2	PROXFLAKE	MQUART	WHITE	SEMI			1-25%	weathered	BLOCK	UNI	NA			0					0			20.4	0	0	0	10.5	6.4		3.25	N/A	
214	62ext	62	4	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	FLAKED	NA			0					0			20.8	0	0	0	14.9	2.3		1.3	N/A	
316	52-C	52	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			22.3	0	0	0	5.7	2.7		1.84	N/A	
183	62	62	2	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	CRUSH	NA			0					0			22.3	0	0	0	0	0		1.32	N/A	
575	48-C	48	3	PROXFLAKE	MQUART	WHITE	SEMI	FEATHER	HERTIZEN	0%		BLADE	UNI	NA	0		0					0			22.6	0	0	0	11.1	1.9		1.13	N/A	
368	52-D	52	2	PROXFLAKE	CHERT	brown	SEMI			1-25%	weathered	INDETER	FACET	NA			0					0			24.3	0	0	0	21.2	8.4		2.57	N/A	
46	62	62	4	PROXFLAKE	MQUART	WHITE	SEMI			0%		EXPAND	UNI	NA			0					0			25.2	0	0	0	14.9	3		2.27	N/A	
263	54-D	54	3	PROXFLAKE	MQUART	WHITE	SEMI			0%		INDETER	UNI	NA			0					0			32.7	0	0	0	16	5.5		7.93	N/A	
391	52-D	52	1	PROXFLAKE	MQUART	WHITE	SEMI			0%		EXPAND	UNI	NA			0					0			33.6	0	0	0	29.4	4.1		6.87	N/A	
124	62ext	62	3	PROXFLAKE	MQUART	WHITE	SEMI			0%		PLATREJUV	UNI	NA			0					0			38.8	0	0	0	23.7	6.4		16.14	N/A	

Annexure F

Cultural values mapping (this annexure has been removed from this version of the ACHA due to culturally sensitive information)

EMM
creating opportunities

Annexure G

Aboriginal cultural heritage management plan guiding principles

EMM
creating opportunities

G.1 Guiding principles

The key recommendation of Section 11 of this report is the development of an Aboriginal cultural heritage management plan (ACHMP) to guide the management and mitigation of cultural materials within the project.

G.1.1 Contents and methods for the Aboriginal cultural heritage management plan

While specific approaches and methodology would be developed as part of the ACHMP, the below section provides over-arching guiding principles for the management of key content requirements and each site type that may be adversely affected by the project.

The contents of the ACHMP would be determined in consultation with the RAPs prior to construction. The ACHMP should include, but not be limited to the following:

- Processes, timing, communication methods and project involvement (e.g. on-site activities) for maintaining Aboriginal community consultation and participation through the remainder of the project. This should include a grievance mechanism that is readily available and designed for use by the local Aboriginal community.
- If not previously completed, discuss and identify any areas of design optimisation with the RAPs to avoid or further minimise harm to identified Aboriginal sites, objects and place.
- If not previously completed and where necessary, provide descriptions and methods for undertaking further investigation and assessment of tentative classified cultural materials (e.g. LL ST1 and LL ST2).
- Detail descriptions and methods to avoid any inadvertent impacts to identified Aboriginal objects and/or sites and areas of archaeological sensitivity outside of the construction activities. A suitable regime of monitoring these activities should also be outlined, including locations, methods, personnel and timing.
- Detail descriptions and methods of any additional investigative and/or mitigate archaeological actions that may be required prior to main construction works commencing or during the project. These should include any areas of LD 13 (AHIMS #45-4-0916) and LD 14 (AHIMS #45-4-0915) remaining following early/enabling works, and investigate inundated part of Farmers Creek that would be exposed as part of the project. Further details of these activities are presented in Annexure G. For these activities, details of location/s, methods, personnel, and timing should be included.
- Description and methods of post-excavation analysis and reporting of the archaeological investigations and activities implemented as part of the ACHMP. For excavations, these should include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samples.
- Procedures for managing the unexpected discovery of Aboriginal objects, sites and/or human remains during the project.
- Procedures for the curation and long-term management of cultural materials recovered or relocated as part of the works outlined in the ACHMP and any preceding stages associated with the project.
- Processes for reviewing, monitoring, and updating the ACHMP as the project progresses.
- Where the heritage consultant changes through the project, suitable hand over should be undertaken to minimise loss or mistranslation of the intent of the information, findings and future steps in heritage management occur.

i Avoidance and/or impact minimisation approaches

The specific methods for avoiding or minimising impacts to identified Aboriginal sites and places would typically be highly specific to the cultural materials in question and the development activities occurring nearby. Below are some general approaches that can be applied with site specific options developed and applied as part of the ACHMP, which should be developed in conjunction with an Aboriginal heritage specialist and/or RAPs:

- Incorporation of the sites, cultural deposits, curtilages, and obligations for their protection into cultural inductions for site personnel.
- Where available, incorporation of the sites and curtilage into 'no-go' and/or constraint layers within the development document packages and their inclusion into ground disturbance permit/approval requirements for the project.
- Establishment of fencing and/or signage during works in and around identified sites and cultural deposits.
- Where necessary, establishment of surface protection such as heavy-duty ground protection mats, or equivalent.

In relation to LL AS3 (AHIMS# 45-1-2976), the following guiding principles should be considered:

- Development of suitable physical barriers to ensure no inadvertent impact by nearby construction activities and in discussion with the registered Aboriginal parties.
- The implementation of cultural monitoring of the site during the nearby construction works to ensure it remains unaffected and processes and procedures in place to stop impact in the event it is observed.

ii Methods for identified site types

In terms of each site type, the following provides a number of guiding principles that should be adopted in the ACHMP and other relevant documents (such as the construction environmental management plan (CEMP), project inductions etc) where sites and/or cultural deposits would be adversely affected (direct and indirect), including the following:

- Management of cultural places (Mount Walker peak, Platypus Dreaming story):
    - See main report recommendations in relation to development of a cultural values mitigation strategy package in consultation with relevant Elders and key knowledge-holders.
- Management of high and moderate density artefact scatters (LD3 [AHIMS #45-4-0209], LD8 [AHIMS #45-4-0214], LL AS3 (part) [AHIMS #45-1-2976], LL AS4 [AHIMS #45-1-2978], LD 13 [AHIMS #45-4-0916], and LD 14 [AHIMS #45-4-0915]):
    - Detailed field survey should be undertaken to identify the curtilage of the site and all observable surface cultural materials. Once identified, cultural materials should be spatially documented, collected and subject to detailed lithic analysis.
    - Where subsurface potential is identified, it should be subjected to archaeological excavations as outlined below.
- Management of culturally modified trees (LL ST1 and LL ST2):
    - Archival recording of the tree both in its landscape context and the specific features of the modifications prior to disturbance.

- Methods for protection in situ and/or suitable relocation of the tree, either in its entirety and/or via the removal of the 'scar' portion of the tree. It should be dictated that these approaches should be overseen by a qualified arboriculturist.

- Where left in situ, the processes and methods for long term monitoring of the culturally modified tree to ensure its ongoing preservation.

- Where relocated, methods for the long-term curation and conservation of the removed tree or tree fragment, including suitable conditions and preservation agents as required.

- Management of rock shelters (LD9 [AHIMS #45-4-0219] and Lyell's Crossing [AHIMS #45-4-0006]):

  - Archival recording of the site both in its landscape context and the specific features of the modifications prior to disturbance, including a focus on any rock art if present.

  - Archaeological excavation of any cultural deposits to inform the significance of the site and provide information on the past use by Aboriginal people. Excavations should include an investigative phase and if needed a salvage phase:

    - Investigative phase – where cultural deposits are to be adversely affected, additional investigation in the form of high-resolution systematic grids of test pits should be undertaken. These should be suitably spaced based on the confines and extent of the rock shelter and deposits, but typically ≤5 m apart. The talus slope where present should also be encompassed in these investigations. Excavations should be undertaken manually in discrete test pits (1 m^2), use 5 cm spits for recovery, sieve all sediment through a 3 mm mesh, recover suitable palaeo environmental and chronological sampling, and undertake appropriate recording.

    - Salvage phase – once the extent and nature of the cultural deposits are known, additional salvage excavation (conservation *ex situ*) of the area/s should be undertaken. Excavation should focus on contiguous open area excavations using the same approaches as the test excavation phase, with the aim being to recover a substantive portion of the cultural deposit.

  - Where relevant, development methods for the long-term stabilisation and protection of the rock shelters, as well as future monitoring activities.

  - Where relevant and feasible, methods for protection in situ and/or relocation of any rock art panels (and associated sandstone outcrop) should be included.

- Management of high-density stone artefact cultural deposits (LD7 [AHIMS #45-4-0213], LL AS3, LL AS4, LD13 [AHIMS #45-4-0916]):

  - Where test pit/s containing the highest significance are identified, archaeological salvage excavation (conservation *ex situ*) of the area/s should be undertaken. Depending on the number of high value locales and the nature of the impacts, salvage excavation may focus on some or all of these test pits. In accordance with current best practice, all salvage works should consist of initially 25 m^2 of contiguous open area excavation centred on the test pit/s of interest and expanding up to 100 m^2 where suitable thresholds are met (e.g. continuing high density of artefact numbers, unique characteristics, etc). Excavations should be undertaken manually in discrete test pits (0.25 to 1 m^2), use 5 cm spits for recovery, sieve all sediment through a 3 mm mesh, recover suitable palaeo environmental and chronological sampling, and undertake appropriate recording.

- Management of sub-surface cultural deposits and areas of archaeological potential on level terrain (e.g. alluvial terrace, ridgelines, etc.) within 400 m of Coxs River and 200 m of Farmers Creek:
    - Test excavations that include both an investigative phase and a salvage phase:
        - Investigative phase – the excavations undertaken as part of the ACHA were disparate and widely spaced to maximise investigation of the construction area. Where cultural deposits are to be adversely affected, additional investigation in the form of high-resolution systematic grids of test pits spaced 10 to 20 m across targeted areas should be implemented. Excavations should be undertaken manually in discrete test pits (1 m^2), use 10 cm spits for recovery, sieve all sediment through a 5 mm mesh, recover suitable paleo-environmental and chronological sampling, and undertake appropriate recording.
        - Salvage phase – once the test pits containing the highest significance are identified, archaeological salvage excavation (conservation *ex situ*) of the area/s should be undertaken. Depending on the number of high value locales and the nature of the impacts, salvage excavation may focus on some or all of these test pits. In accordance with current best practice, all salvage works should consist of initially 25 m^2 of contiguous open area excavation centred on the test pit/s of interest and expanding up to 100 m^2 where suitable thresholds are met (e.g. continuing high density of artefact numbers, unique characteristics, etc). Excavations should be undertaken manually in discrete test pits (0.25 to 1 m^2), use 5 cm spits for recovery, sieve all sediment through a 3 mm mesh, recover suitable palaeo environmental and chronological sampling, and undertake appropriate recording.
- Management of low-density background artefact scatter cultural materials (LL background scatter):
    - no further mitigation measures are recommended. It has been demonstrated that ~1 to 21 artefacts/m^2 would be expected disparately and intermittently across the construction envelope, which reflects the ephemeral use of the region by Aboriginal people for several millennia. It is considered that further investigation of these areas would not alter the significance or understanding of these cultural deposits.
    - targeted surface collection may be considered for cultural materials where requested by the RAPs.
- Analysis and reporting:
    - All additional investigation, mitigation and monitoring activities should ensure suitable reporting and lodgement with relevant repositories, such as the Heritage NSW AHIMS database.
    - In the case of excavations, post- excavation analysis should be undertaken for all recovered sedimentological and cultural materials. Analysis should include processing of chronological samples (e.g. optically stimulated luminescence, radiocarbon), palaeo environmental samples (e.g. particle size, geochemistry, pollen analysis, etc.), and stone tool analysis.
    - Identification of short- and long-term repositories for recovered cultural materials and other collected samples.

G.1.2 Contents and methods for interpretation strategy, plan and implementation

The following points provide some guiding principles for consideration in the development of heritage interpretation of the project:

- Initially an interpretation strategy should be developed to identify key and over-arching themes. Subsequently, a plan would refine the strategy with content (visual and textual) and design details to inform the implementation stage.
- The documents should be co-designed and closely developed with local Wiradjuri traditional owners (and which may not include all RAPs). This includes identification of initial aims and ideas, content and structure.
- Given the nature of the project, these documents may consider off-site public outreach opportunities at nearby townships such as Wallerawang, Lithgow, etc.
- The content should include, but not be limited to:
    - The ethnographic and historical record, which includes post-Contact and contemporary associations with the site and immediate environs.
    - Consultation and input from the Wiradjuri traditional owners.
    - Information obtained from the archaeological excavations and findings undertaken for the project on the cultural and environmental landscape within which past Aboriginal people interacted with in the past.

EMM

creating opportunities

www.emmconsulting.com.au

