Lake Lyell Geotechnical and Hydrogeological Drilling Program

Aboriginal heritage due diligence assessment

Prepared for EnergyAustralia
February 2023

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Aboriginal heritage due diligence assessment

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Prepared by	**Approved by**
	
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Archaeologist	Associate Director
17 February 2023	17 February 2023

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1 Introduction

1.1 Background of the development

EnergyAustralia (EA) is investigating the feasibility of developing a 335 megawatt (MW) Pumped Hydro Energy Storage (PHES) facility at Lake Lyell, approximately 15 km south of the existing Mount Piper Power Station, within the Lithgow Local Government Area (LGA). The PHES Project is currently in the concept phase. To support the ongoing development of the Project, EA obtained development consent for a geotechnical drilling program, hereafter referred to as the 'development'. The development was assessed and approved by Lithgow City Council under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Following commencement of the geotechnical drilling program, EA determined that additional bores are required for the purpose of a groundwater monitoring network. Consistent with the need for geotechnical investigations, the groundwater monitoring network would obtain data to support and inform the feasibility and design of the PHES, by providing more robust information on the existing hydrogeological condition and informing how it may be affected by a future PHES. Inclusion of additional bores will be sought via modification of the development consent with regard to s4.55(1A) of the EP&A Act.

EMM Consulting Pty Ltd (EMM) has updated its advice on potential Aboriginal heritage risks on behalf of EA to support a development application (DA) modification to Lithgow City Council.

To assess the presence of potential Aboriginal heritage risks to the proposed development, this Aboriginal heritage due diligence has included:

- Desktop review of the locale to inform the archaeological context of the site (see Section 2 and 3);
- Site inspection of the study area by a qualified archaeologist and representatives from the Bathurst Local Aboriginal Land Council (LALC) and Mingaan Wiradjuri Aboriginal Corporation (see Section 4);
- An assessment of the proposed development and recommended mitigation measures with regard to the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (NSW) (DECCW 2010) (see Section 5).

1.1.1 The modified development

The activity would provide a better understanding of the local geotechnical and hydrogeological conditions to support and inform the feasibility and design of the PHES.

The modified development is located approximately 3.5 kilometres (km) southwest of Lithgow on land owned and managed by EA (see Figure 1.1).

The modified development will consist of the following:

- Up to 13 geotechnical boreholes drilled from existing or new (groundwater monitoring) drill sites;
- Four groundwater monitoring bores drilled from existing drill sites;
- Three twinned groundwater monitoring bores (i.e. six bores) drilled from three new drill sites;
- Up to 2.6 km of low-impact seismic refraction and coincident resisitivity surveying;

- Clearing and establishment of approximately 1.3 km of new vehicle tracks to enable access to geotechnical investigation locations; and
- Repairing existing vehicle tracks and fire trails where necessary to ensure safe access.

The proposed modification would not exceed the previously approved disturbance area of 0.97 ha.An overview of the activity is shown in Figure 1.2.

1.1.2 Description of the study area

A broad study area was investigated for the desktop and field investigation. However, the findings of the investigation are limited to an area referred to as the 'investigation envelope' and the 'disturbance footprint' documented in this report. The investigation envelope is the area assessed to allow refinement of geotechnical locations and/or access to further avoid or minimise environmental or engineering constraints that may be identified on site. In this report, both the disturbance footprint and investigation envelope are described as the study area (Figures 1.1 and 1.2).

The study area is located to the south of Mount Walker and consists of a main section with two branches extending to the south-east and south-west and two discrete sections on the slopes down to Farmers Creek. It has a total area of 46,781 m² (Figure 1.1).

The proposed development is located on the land parcel identified in Table 1.1. The land is wholly owned by EA.

Table 1.1 Lot and DP descriptions of the study area

Study Area	Lot	DP
Investigation envelope	103	751651

1.2 Assessment framework

In NSW, Aboriginal objects, whether recorded or yet undiscovered, are afforded statutory protection under the *National Parks and Wildlife Act 1974*. Under Section 86 of the Act, it is an offence to disturb, destroy or deface Aboriginal objects without the approval of the Chief Executive of Heritage NSW. A breach of Section 86 of the *National Parks and Wildlife Act 1974* could result in prosecution and fines in excess of $1 million. Heritage NSW provides a series of guidelines as a framework for identifying and managing Aboriginal heritage and the cultural heritage interests of Aboriginal parties within development planning contexts.

The due diligence process is the first step and is outlined in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010) guidelines; and is intended to identify whether a proposed activity is likely to harm Aboriginal objects. These guidelines identify a number of permissible activities that are relevant to the proposed activity. These include 'low impact activities', which allow for certain types of mining and/or geotechnical activities:

> Clause 80B Defence of carrying out certain low impact activities: section 87 (4)
>
> (1) It is a defence to a prosecution for an offence under section 86 (2) of the Act, if the defendant establishes that the act or omission concerned:
>
> (f) was mining exploration work of the following kind on land that has been disturbed:
>
> (i) costeaning,

(ii) bulk sampling,

(iii) drilling, or

(g) was work of the following kind:

(i) geological mapping,

(ii) surface geophysical surveys (including gravity surveys, radiometric surveys, magnetic surveys and electrical surveys), but not including seismic surveys,

(iii) sub-surface geophysical surveys that involve downhole logging,[1]

(iv) sampling and coring using hand-held equipment, except where carried out as part of an archaeological investigation

In addition, the guidelines also allow for activities that are considered to result in 'trivial or negligible' harm to Aboriginal objects. This is a poorly defined term that uses examples of minor movement and inadvertent breakage of cultural materials.

1.3 Scope and assessment methods

The due diligence guidelines provide a generic code of practice used to determine whether activities will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm where possible. A summary of the due diligence is shown in Plate 1.1. This involves:

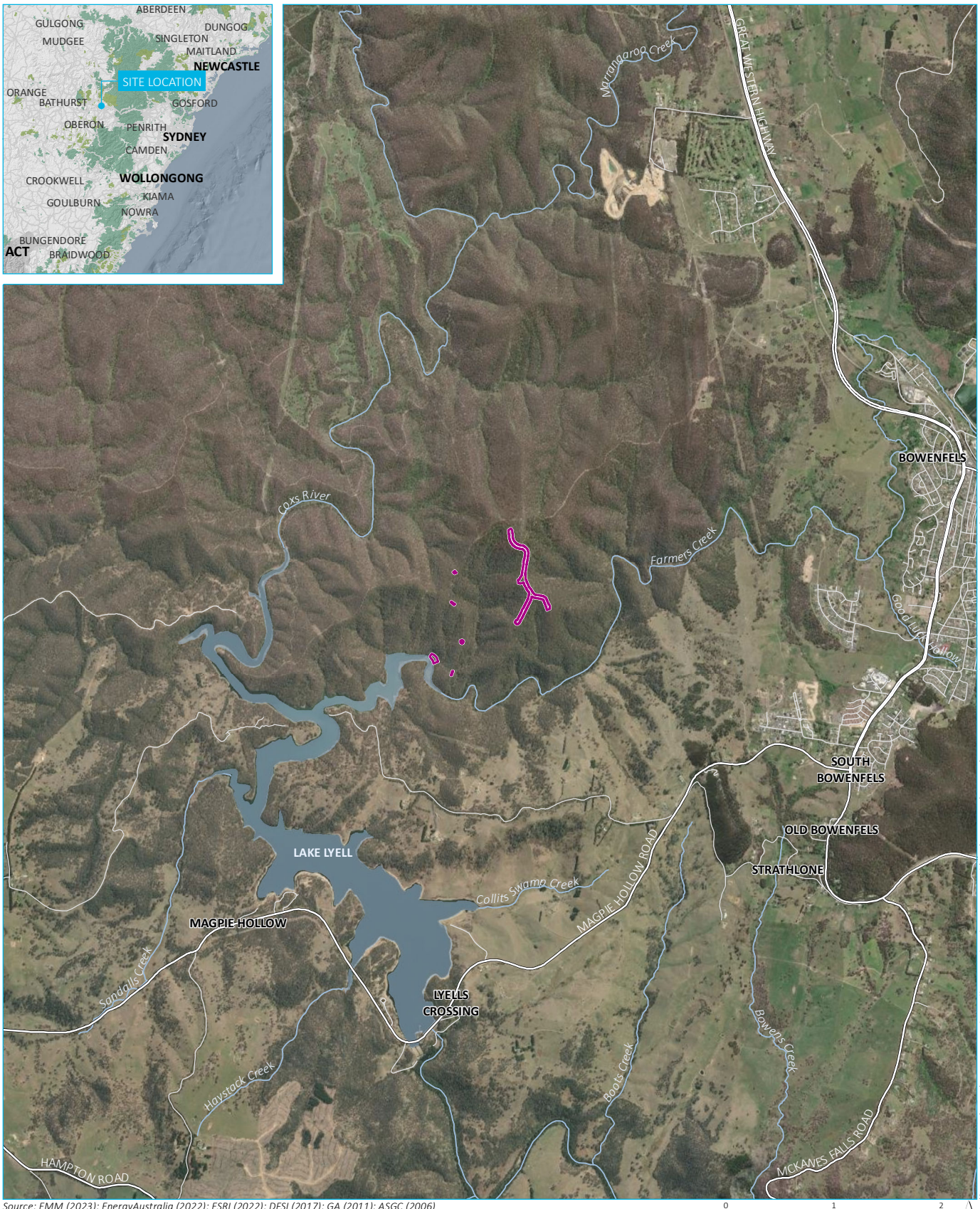
- a search of the Aboriginal Heritage Information System (AHIMS) database;
- consideration of the environmental context for the presence of Aboriginal objects or places;
- consideration of existing Aboriginal cultural heritage studies in the area and region for the presence of Aboriginal objects or places;
- a site inspection of the study area by an EMM archaeologist to identify any Aboriginal objects or areas of potential archaeological deposit (PAD); and
- determination of whether further heritage investigation and impact assessment is required.

This report addresses the potential for Aboriginal heritage within the study area. It is an initial investigation of constraints and opportunities pertaining to identified existing and potential Aboriginal heritage sites and places on and/or in the immediate vicinity of the study area.

As such, this due diligence assessment aims to identify whether the modified development will impact a known Aboriginal object or place, or areas that have potential for Aboriginal sites to occur (typically as subsurface archaeological material). It is not an Aboriginal Cultural Heritage Assessment (ACHA) and is not sufficient to support an application for an Aboriginal Heritage Impact Permit (AHIP), in accordance with section 90 of the *National Parks and Wildlife Act 1974*. Instead, this due diligence assessment aims to identify whether an ACHA is required to potentially support an AHIP application.

This report does not address historical or built heritage.

[1] It is highlighted that while the outcomes of the proposed geotechnical works here are not defined as 'geophysical', they would result in comparable levels of impact to this activity.



Source: EMM (2023); EnergyAustralia (2022); ESRI (2022); DFSI (2017); GA (2011); ASGC (2006)

0 1 2 km

GDA 1994 MGA Zone 56

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KEY

- Study area
- Modified disturbance footprint
- Major road
- Minor road
- Named watercourse
- Named waterbody

INSET KEY

- Major road
- NPWS reserve
- State forest

Regional setting

Lake Lyell Pumped Hydro
Aboriginal heritage due diligence
Figure 1.1

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Source: EMM (2023); EnergyAustralia (2022); ESRI (2022); DFSI (2017); GA (2011)

0 250 500 m

GDA 1994 MGA Zone 56

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KEY

- Study area
- Modified disturbance footprint
- Vehicular track
- Named watercourse
- NPWS reserve

Local setting

Lake Lyell Pumped Hydro
Aboriginal heritage due diligence
Figure 1.2

EMM
creating opportunities

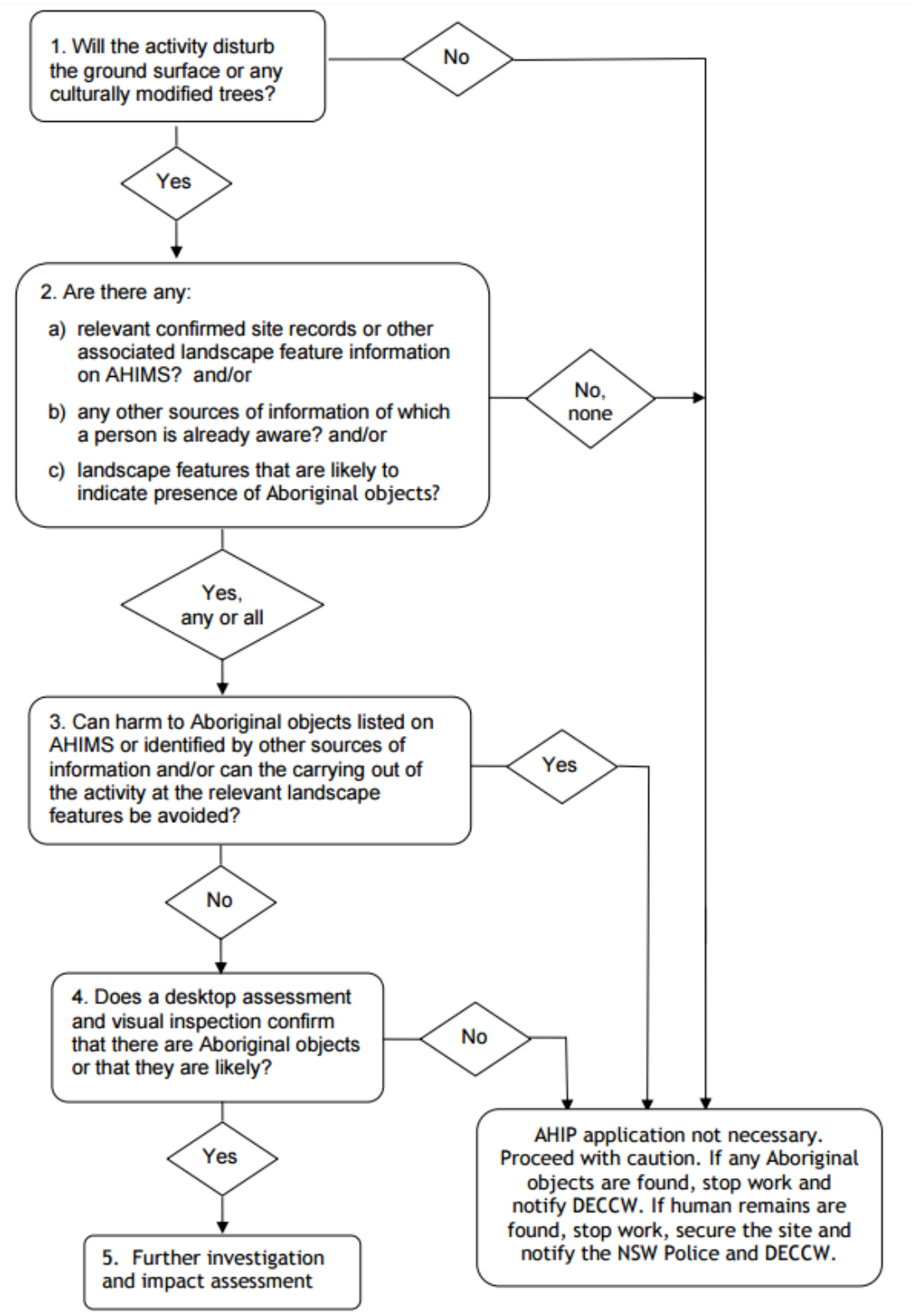

Plate 1.1 Due diligence process summary (Source: Due Diligence Code of Practice [DECCW 2010])

2 Environmental context

The environmental context is used to predict the spatial distribution, preservation and likelihood of archaeological material. Landscape features were an important factor for the choice of camping, transitory and ceremonial areas used by Aboriginal people. Natural resources, including raw stone materials and local flora and fauna, would have provided food, tools and material resources. These resources are linked to the topography, hydrology, geology and soil types in the region. Additionally, natural and anthropogenic (human-made) site formation processes influence the present location of archaeological material (e.g. if moved through disturbance), along with its preservation and archaeological integrity.

2.1 Environmental and landscape characteristics

The study area is located in the Hill End subregion of the South Eastern Highlands Bioregion in NSW (NSW Parks and Wildlife Service 2003). The Hill End subregion is primarily characterised by plateaux surrounded by steep hilly and mountainous edges, with the channels of the Macquarie and Turon Rivers deeply entrenched. The study area is located in the south-eastern corner of the subregion, close to the interface of the Hill End and Bathurst subregion boundaries. The broad locale is characterised by steep hills and plateaus surrounding Lake Lyell. The study area is situated within undeveloped lots currently owned by EA.

2.1.1 Geology, soils and topography

The main landform element of the study area is a broadly rounded ridgeline, which the proposed works follow as the crest moves around moderate to steep hillslopes down to Farmers Creek.

The dominant geology of the study area is Lambie Group sandstone, siltstone and mudstone deposited in the late Devonian. 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 for the production of pigment and engraved art. However, it is unlikely that any rock shelters are present in the study area, as it is wholly located across a crest/ridgeline which lacks the vertical relief required for the presence of sandstone overhangs. Conversely, it is possible that the study area features sandstone platforms and outcrops.

The Soil Landscapes of Central and Eastern NSW database, mapped by the Department of Planning, Industry and Environment (DPIE), places the study area within in the Mount Walker Soil Landscape (DPIE 2020) (Figure 2.1). The topography of this landscape (see Figure 2.2) is characterised by narrow rounded crests on steep to very steep slopes, with slopes greater than 25% and local relief between 40–200 m. Elevation ranges from 780–1,190 m. Rock outcrops and overhangs, as well as narrow, deeply incised valleys, are common. Mount Walker soils generally feature shallow (up to 30 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).

Typically, Aboriginal cultural material (primarily stone artefacts) is constrained to the topsoil units (i.e. A1 and A2 horizon) and the disturbance and/or removal of this unit has adverse implications regarding the potential for and survivability of cultural materials. The Mount Walker Soil Landscape topsoils are moderately to highly susceptible to sheet erosion. Given the moderate slopes within the study area, there is the potential for remnant topsoils to remain intact.

2.1.2 Vegetation

The study area has not been extensively cleared since European occupation of the area began. Site investigations identified the presence of two plant community types (*Snow Gum – Mountain Gum tussock grass-herb forest of the South Eastern Highlands Bioregion*; and *Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands; South Eastern Highlands Bioregion*) and some areas of non-native vegetation within the study areas. Common species include scribbly gum (*Eucalyptus haemastoma*), broad-leaved peppermint (*E. dives*), brittle gum (*E. mannifera*) and apple box (*E. bridgesiana*).

2.1.3 Hydrology

Farmers Creek (a 4th order Strahler stream) lies adjacent to the south of the study area and is fed by several unnamed 1st, 2nd and 3rd order watercourses to the north and south (Figure 2.2).

Coxs River is the highest-order stream in the area and is located over 1 km away from the study 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.

Lake Lyell is the largest body of water in the area and was created by damming the Coxs River in the early 1980s. As such it does not represent a natural body of water that was present prior to European contact.

2.2 Landforms of archaeological interest

Particular landforms are known to have been favoured locations for repeat and/or long-term occupation and are, therefore, more likely to retain archaeological evidence of past Aboriginal use. Within the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010), Heritage NSW specifies five landscape features which are likely to indicate the presence of Aboriginal objects: (i) within 200 m of waterways; (ii) within a sand dune system; (iii) on a ridge top, ridge line or headland; (iv) within 200 m below or above a cliff face; and, (v) within 20 m of or in a cave, rock shelter, or a cave mouth. The first criterion is relevant to the study area, as it is bounded by a watercourse (Figure 2.2).

Criterion (iii) is also relevant to the study area, as it runs along a ridgeline comprised of a narrow crest surrounded by adjoining slopes (Figure 2.2). Aboriginal people are known to have focused their activities around waterways and on elevated landform elements like ridgelines, as these locales provided natural resources essential for daily life (e.g. fresh water, aquatic and terrestrial sources of food) as well as dry areas for camping and travel. Therefore, based on the presence of the landform elements discussed above, the study area potentially has archaeological sensitivity.

2.3 Previous disturbance

Offset against the landforms of archaeological interest is any disturbance that may have occurred within the study area in the past, and which may have had adverse impacts on survival of cultural materials.

Historical maps of the Lidsdale Parish show the study area was part of a 120 acre property owned by J Flanagan (later reduced to 40 acre; see Plate 2.1) The specific activities undertaken within the study area is unclear. Due to steep terrain, the study area is unlikely to have been extensively cleared or used for farming, grazing or residential purposes.

To supplement this information, a series of historical aerial images centred on the study area are provided in Appendix A. An aerial photograph from 1966 shows it had not been subject to any major disturbances, with almost all remnant vegetation present at this time. Further photographs from 1984 and 1991 confirm that disturbances in the study area have been limited to the establishment of the unnamed fire trail adjoining Mount Walker Road. The

flooding of Coxs River and Farmers Creek to create Lake Lyell, as well as the clearance of large swathes of vegetation, represent the largest impacts to the study area. 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.

Based on this limited information, neither component can be considered to have 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.

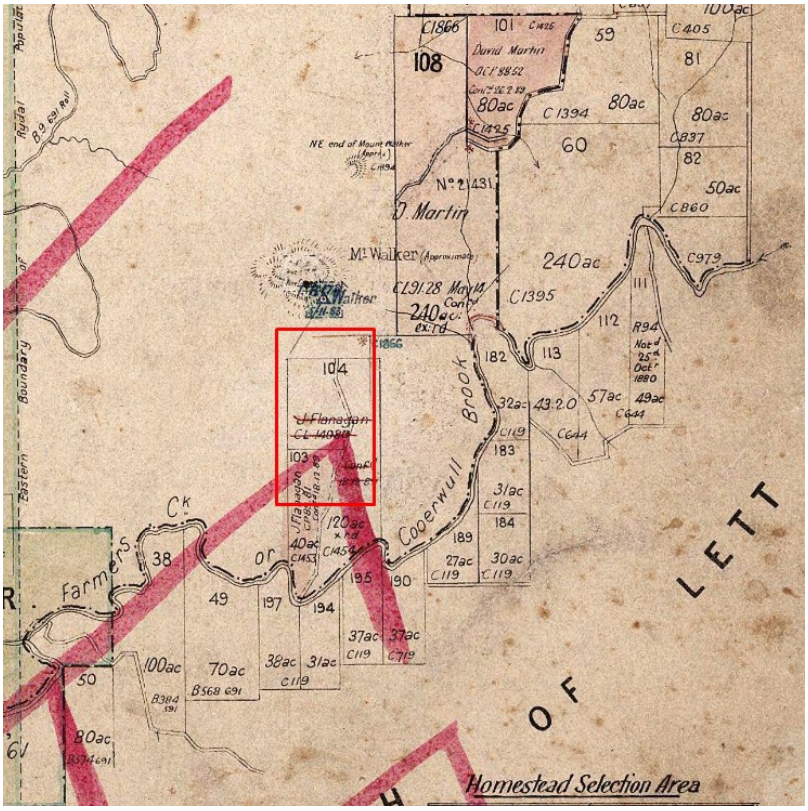

Plate 2.1 **Approximate location of the study area outlined in red on a historical parish map dating to 1892 (source: HLRV).**

Source: EMM (2022); EnergyAustralia (2022); ESRI (2022); OEH (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

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KEY

- Study area
- Modified disturbance footprint
- Vehicular track
- Named watercourse
- Named waterbody

Soil landscape

- Mount Walker

Soil landscapes

Lake Lyell Pumped Hydro
Aboriginal heritage due diligence
Figure 2.1

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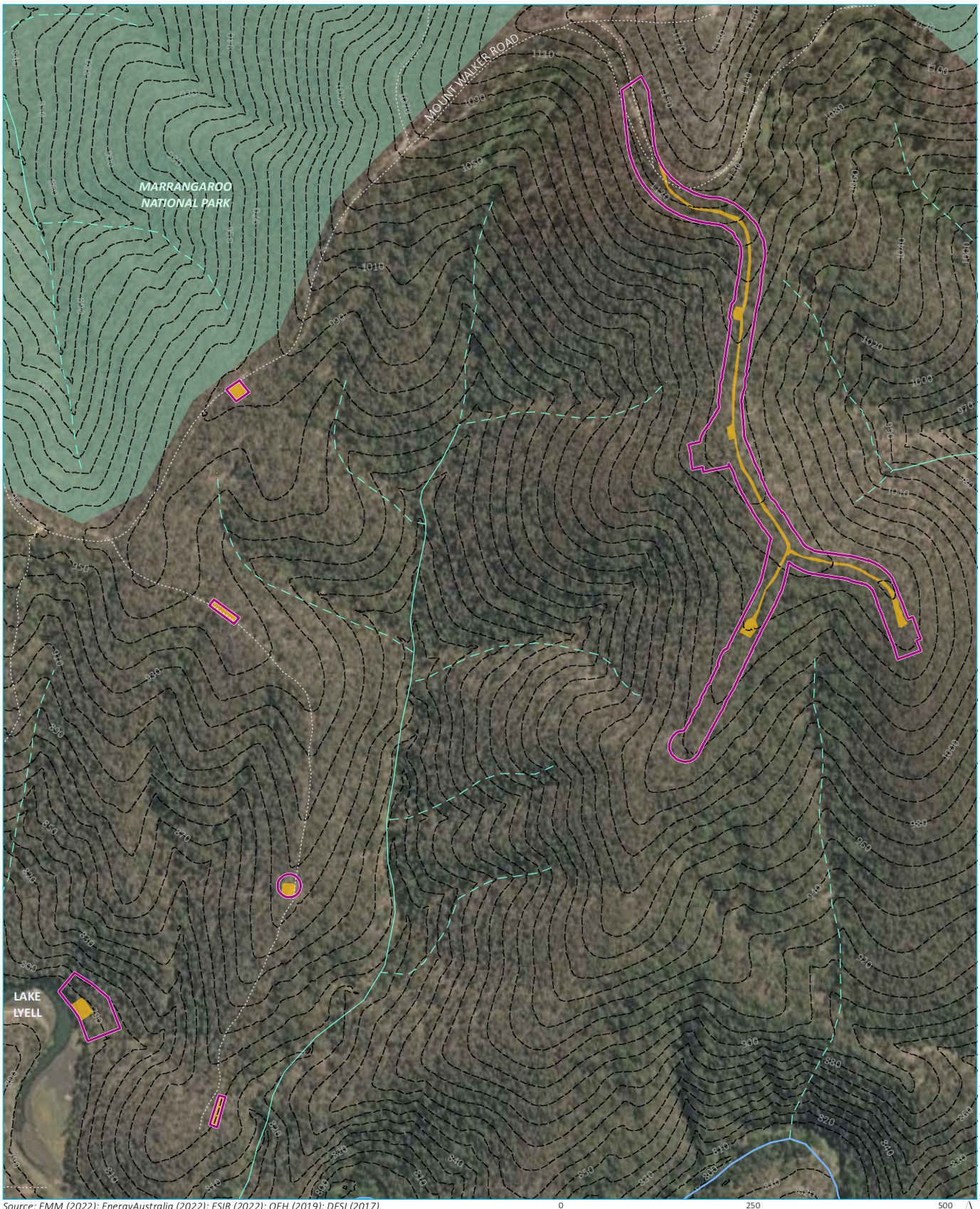

Source: EMM (2022); EnergyAustralia (2022); ESIR (2022); OEH (2019); DFSI (2017)

0 250 500 m

GDA 1994 MGA Zone 56

N

KEY

- Study area
- Modified disturbance footprint
- Vehicular track
- Topographic contour (10 m)
- NPWS reserve

Strahler stream order

- 1st order
- 2nd order
- 4th order

Elevation and hydrology

Lake Lyell Pumped Hydro
Aboriginal heritage due diligence
Figure 2.2

EMM creating opportunities

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3 Archaeological context

There have been a number of archaeological studies in the region. A selection of studies relevant to the study area have been summarised in the following sections.

3.1 Previous archaeological investigations

While there have been no systematic archaeological or cultural studies of the broader South Eastern Highlands 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. For example, more than 1,000 sites have been identified in the AHIMS database as being located within the adjacent Greater Blue Mountains World Heritage Area (GBMWHA) (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 1-5, Emu Plains Shelter and Lapstone Creek (McCarthy 1964; Stockton 1970; 1973; Johnson 1979; Kohen, Stockton, and Williams 1981; Kohen 1984). Dated rock shelter sites in the area suggest that Aboriginal occupation extended as far back as 14 thousand years ago and potentially as early as 22 thousand years ago (Stockton 1973; Stockton and Holland 1974).

i Rich (1985a) An Archaeological Survey of the Proposed Angus Place to Mount Piper Coal Conveyor

This report documented the results of a survey of a fixed water pipeline route from Angus Place to the Mount Piper Power Station (approximately 13 km north-west of the study area). Two artefact scatters were identified during the survey. The first site consisted of 20 artefacts identified on a road cutting 50 m distant from Long Swamp (on the embankments adjacent to Coxs River). No artefacts were found on the ground surface, but were rather observed eroding out of the lower topsoil units. Raw materials included indurated mudstone/tuff (IMTC), grey silcrete, brown quartzite and milky quartz. The second site consisted of an unspecified number of stone artefacts identified on an unsurfaced track, across a spur approximately 400 m distant from Long Swamp and within 100 m of an ephemeral creek line. Raw materials at this site included quartz and IMTC.

Although the survey route crossed sandstone escarpments, no rock shelters with deposit, grinding grooves or art sites were encountered. However, unlike the investigation carried out by Central West Archaeological and Heritage Services (2000) discussed below, this assessment did not consider rock shelters that did not contain visible cultural features as evidence of Aboriginal occupation. 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. Likewise, open campsites were encountered at densities lower than expected in this resource-rich zone. This was interpreted as a result of previous disturbance along the survey route.

ii Rich (1985b) Preliminary Archaeological Investigation for a Proposed Water Pipeline, Honeysuckle Flat to Mt. Piper

This report documented the results of a survey from Honeysuckle Flat to the Mount Piper Power Station (approximately 13 km north-west of the study area), to inform the placement and route of a water pipeline. Two sites, a culturally modified tree (CMT) and an artefact scatter, were identified during the survey. The CMT was a mature stringybark located near a ridge top 50 m west of an ephemeral creek line. The artefact scatter consisted of at least nine artefacts (exact numbers were not recorded) on slightly elevated access tracks within 200 m of Solitary Creek and swamps along the creek fringe. Raw materials included quartz, quartzite and IMTC. Furthermore, two areas were classified as having archaeological potential. These areas were classified based on the presence of certain landforms, these being elevated flat areas in proximity to permanent sources of potable water.

iii Pacific Power (1992) Aboriginal Sites Survey – Proposed Upgrade of Lyell Dam

A survey undertaken in advance of upgrades to Lake Lyell, focusing on the flats and foot slopes adjacent to the lake, identified eight artefact scatters and one rock shelter. All artefact sites were located in exposed areas along the lake edge – this was interpreted as a baseline for the entire archaeological resource of the surveyed area. A variety of raw materials were identified, including quartz and IMTC. The lake edge was surveyed, although no artefacts or other archaeological sites were identified at this time.

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

The Marangaroo Department of Defence (DOD) site (located approximately 5 km north-west of the study area) was subject to a desktop and physical investigation focusing on the identification and documentation of previously unrecorded Aboriginal sites. A total of 17 sites were found during the field survey. Ten of these were occupational rock shelters (some without archaeological deposit), two were rock shelters with art, four were artefact scatters and the remaining site was an isolated find. Unlike the assessment carried out by Rich (1985b) above, this study defined any sandstone overhang to constitute evidence of Aboriginal occupation. 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; it was concluded that the disturbances that led to the identification of these sites also caused their partial destruction. Lastly, the isolated artefact was identified on an upper slope close to a flat ridge crest.

In addition to the Aboriginal sites identified above, CWAHS classified several areas of moderate to high archaeological sensitivity. These areas were identified based on the presence of certain landform elements, including exposed sandstone cliffs and outcrops, and alluvial and colluvial terraces along Marangaroo Creek.

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

This report was commissioned to inform road corridor options for upgrades to the Great Western Highway between Mt Victoria and Lithgow. It built on previous desktop assessments of a large parcel of land containing Newnes State Forest, Hartley, Little Hartley and Hartley Vale (approximately 5 km east of the study area). Phase 1 of this project consisted of database searches, background research and synthesis of this data to identify broad-level Aboriginal heritage constraints. Phase 2 was also desktop-based and consisted of targeted assessments of the potential corridor options identified in Phase 1. Environmental data (including topography, geology, soil landscapes, hydrology etc) was combined with existing archaeological data (obtained from AHIMS) to create a predictive model for the entire assessment area.

Based on this data, the predictive model identified three levels of archaeological sensitivity: low, medium and high. The descriptions for each zone are as follows:

- 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 creeklines.

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.

vi OzArk (2011) Wallerawang Quarry Extension Project: Aboriginal and Historic Cultural Heritage Assessment Report

OzArk undertook an ACHA addressing potential impacts to Aboriginal site WQ1 (AHIMS #45-1-2802, located approximately 12 km north of the study area) by the proposed Wallerawang Quarry extension. This site was originally recorded as consisting of 22 stone artefacts scattered across an unsurfaced, eroded access track on a mid-slope location. Coxs River was located 450 m to the south-east. Several artefacts were partly buried in sediment but it was unclear whether these artefacts were in situ or eroding out of redeposited soils.

A subsequent ground-truthing program carried out by OzArk identified 16 stone artefacts, with the remaining eight 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 and soils in the study area are potentially highly erodible and may be exacerbated by vegetation clearance.

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

OzArk undertook salvage excavations at AHIMS #45-1-2802 following a previous ACHA addressing potential risks posed by the quarry extension (see above). Six 0.25 cm² pits were excavated on the western edge of the site extent. The maximum depth of excavation was 15 cm, and most pits were only 5 cm deep. 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 study area (ie Mount Walker) and the findings can be used to inform the prediction of how deep the soil profile may be within the study area, and the likelihood that archaeological material may remain in situ. Only two artefacts were recovered, both quartz flakes without any diagnostic features. The artefacts were reburied 825 m east of their original location.

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

EMM undertook a desktop and physical assessment of the Angus Place Colliery (approximately 19 km north of the study area) to support extension of its operating life. The desktop assessment found that rock art and rock shelters are the most common site type in the region and may be expected to occur at the base of scarp and cliff-line landforms. Artefact scatters were likewise identified as widely occurring throughout the landscape and may be expected to be identified on interconnecting ridgelines, and near perennial watercourses. Elevated spurs within 100 m of fresh water may bear evidence of more complex and/or repeated occupation.

The physical assessment consisted of a survey of the assessment area (covering an area of 876,220 m²) and resulted in the identification of 23 Aboriginal sites. 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 fifteen 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.

3.2 Database search

Heritage NSW maintains the AHIMS, a database of known and registered Aboriginal sites in NSW. An AHIMS search was undertaken on 30 January 2023 (ID: 748800) encompassing an area of approximately 380 km² centred on the study area. The results are presented in Table 3.1, Figure 3.1 and Appendix B. The search identified 90 sites within the search area. One site has been listed as 'Destroyed' by approved impact activities under AHIPs 104305 and 104697, and four sites have been listed as 'Not a Site'. Therefore, the following discussion will relate to the remaining 85 sites listed as 'Valid'.

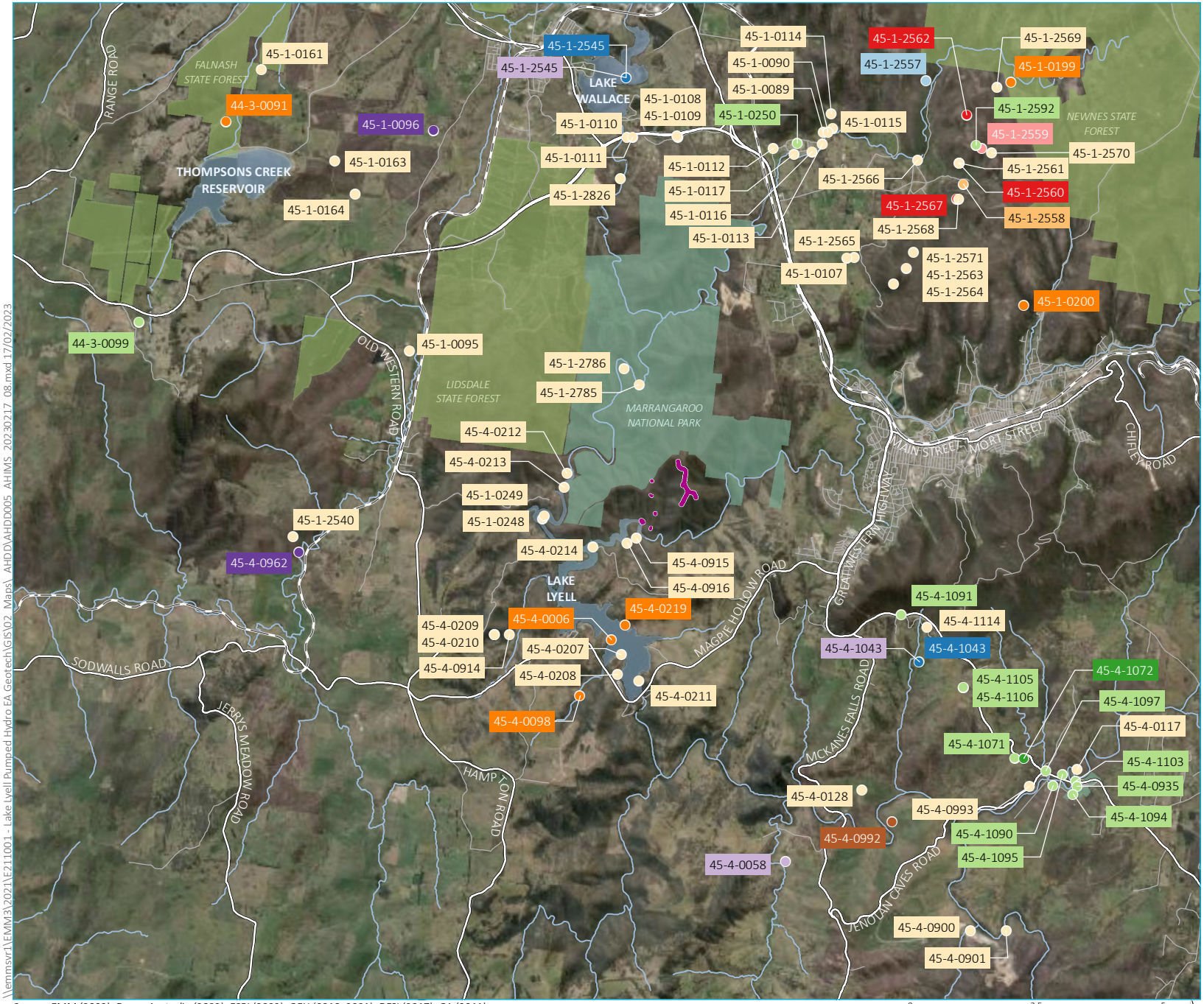
The most common and widely distributed site types within the search area are open campsites, comprised of stone artefact sites such as artefact scatters and isolated finds. These two site types alone represent ~75% of registered sites within the search area. They are also frequently found in association with other site types. Rock shelters featuring pigment art, areas of potential archaeological deposit (PADs), and/or stone artefacts are also common in the region (~14%). This is a reflection of the prominent sandstone geology across the Blue Mountains region, and is also evident in the surrounding archaeological studies (Section 3.1). 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 sandstone overhangs. Three burials—a relatively rare site type across NSW – have been recorded within the AHIMS search area, and at least one of these (AHIMS #45-1-2545) is associated with the massacre of Aboriginal people during the war between Wiradjuri leader *Windradyne* and colonial forces during the 1820s. This site is located 7.6 km to the north of the study area, and the remaining two burials are likewise situated a number of kilometres to the south-east. 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.

Of the 85 valid registered sites, none are located within the study area. Two sites are located nearby on the other side of Farmers Creek: AHIMS #45-4-0915, as site consisting of over 200 crystalline quartz artefacts located in an area of 3,500 m²; and AHIMS #45-4-0916, an undefined artefact scatter recorded during the same assessment as #45-4-0915 These sites would not be impacted by the drilling program.

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. 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.

Table 3.1 AHIMS extensive search results

Site Type	Number of sites	Representation (%)
Aboriginal Ceremony and Dreaming	1	1.18
Burial	2	2.35
Burial; Undefined artefact scatter	1	1.18
Culturally modified tree	2	2.35
Isolated artefact	9	10.59
Low density artefact scatter (2-14)	1	1.18
Rock art (engraved)	1	1.18
Rock art (pigment)	4	4.71
Rock art (pigment); Undefined artefact scatter	1	1.18
Rock shelter with deposit	6	7.06
Undefined artefact scatter	54	63.53
Water hole; Low density artefact scatter (2-14)	1	1.18
Potential Archaeological Deposit (PAD)	1	1.18
Undefined artefact scatter; Potential Archaeological Deposit (PAD)	1	1.18
Total	**85**	**100**



Source: EMM (2022); EnergyAustralia (2022); ESRI (2022); OEH (2019, 2021); DFSI (2017); GA (2011)

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AHIMS sites in the vicinity of the project area

Lake Lyell Pumped Hydro
Aboriginal heritage due diligence
Figure 3.1

EMM creating opportunities

3.3 Implications for Aboriginal archaeology

The local environment (refer Section 2) combined with information provided in this section above allows for archaeological predictions to be made for the study areas.

The local environment would have provided a rich source of food and raw material. Local terrain ranges from incised or low-lying creek channels to elevated ridges separated by steep to very steep slopes. Based on the assumption Aboriginal people used ridgelines for travel, these landform patterns would indicate the broad area would have been suitable both for camping and for travel. Higher-order streams and major bodies of water generally formed the focus for Aboriginal activity in the past, as they provide drinking water and support a range of flora and fauna species (eg fish, birds, mussels and oysters) essential for daily social, economic and spiritual life. Aboriginal people are known to have camped on the fringes of these waterways in order to exploit the wealth of natural resources present. Coxs River, Farmers Creek and associated tributaries would have provided fresh drinking water, food and materials.

Previous investigations indicate rock shelters and artefact scatters are the most commonly identified site types in the region. The former is generally constrained to ridgelines, crests and spurs, while the latter are usually encountered in alluvial channels and terraces near watercourses, as these locations were favoured occupational locales - these landforms may also feature rock shelters and grinding grooves. Previous archaeological studies also suggest elevated areas on the fringes of Farmers Creek and Coxs River are archaeologically sensitive, as these locations are suitable for camping and resource gathering.

The study area consists wholly of a ridgeline down to a small alluvial plain. Therefore, based on the above environmental and archaeological data, there is the potential for archaeologically sensitive, with rock shelters and/or stone artefacts of varying densities being the most probably cultural materials if present. The presence of CMT also cannot be discounted given our current understanding of these site types in the region.

4 Site inspection

A site inspection of the study area was conducted by EMM Archaeologist Cameron Neal and Bathurst Local Aboriginal Land Council (LALC) site officer Donald Morgan on 17 December 2021 (see Plate 4.1 to Plate 4.5) in relation to the original development application. Subsequent site inspections were carried out as the project elements evolved by Peter Douglas (EMM Archaeologist) with Bathurst LALC on 15 December 2022, and Mingaan Wiradjuri Aboriginal Corporation on 23 January 2023. The subsequent site inspections were performed to specifically address the additional sites proposed for inclusion in the drilling program for the groundwater monitoring network. The study area was inspected to identify any previously recorded Aboriginal objects and areas of archaeological potential that may be present. The study area exceeded the required disturbance footprint to provide flexibility allowing for the potential relocation of boreholes or disturbance activity should cultural materials be observed.

Topographically, the study area was characterised by an unsealed fire trail curving around to a ridgeline descending several metres from the trail level. The ridgeline continued south and branched off into two arms, and featured gentle to moderate slopes descending southwards (Plate 4.1 and Plate 4.2). Remnant bushland was present throughout. BH101, BH103 and BH104 located at intervals throughout the main portion of the study area adjacent to the proposed new access track, and BH105 and BH102 were located at the southern extent of each branch of the study area where the access track is proposed to end. BH106 was located on an unsurfaced fire trail on a ridgeline in an isolated spot, and BH107/108 was situated in a sloping, heavily vegetated spot on the northern bank of Farmers Creek (Plate 4.3 and Plate 4.4). A small part of this area was flat and may contain remnant topsoil. However, poor visibility at the time of survey prevented confirmation of this. Indeed, visibility across the study area was poor, with the exception of the exiting fire trail in the north and several areas of ground surface exposed by feral pig activity (Plate 4.5).

The access track leading to and connecting the groundwater drill pads (MB2203[2], MB2204, MB2205 and MB2206) traverse steep to very steep terrain covered by mixed open eucalypt forest and grasses that developed on generally thin surface soil profiles derived from fine-grained sedimentary metamorphic rock (Plate 4.6 to Plate 4.8). Potential for high energy storm water movement down slope was identified (as previously observed) by surface erosion of formed surfaces. The groundwater drill pad sites however were situated where the access track crosses localised portions of the descending ridgelines with shallower slope angles, therefore erosion was more limited than on adjacent steeper sections. Overland flow was observed about 40m from MB2206 following recent rainfall. Nonetheless, all of the soil deposits that once formed the surface stratigraphy within parts of the drill pads had evidence of previous disturbance though undisturbed vegetated (groundcover) areas were also observed. None of the drill pad locations, where the vegetation cover is undisturbed, contained surface artefacts, rock outcropping or rock shelters.

No Aboriginal sites were identified in the study area during the inspection. However, both the Bathurst LALC and Mingaan Wiradjuri Aboriginal Corporation representatives highlighted the potential for intangible places, stories and values within the study area; and the need for these to be suitably investigated in subsequent project stages.

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[2] Note that MB2203 was eventually relocated to within the previous disturbance footprint to the site of BH103. The site inspected during the December 2022 and January 2023 visits is no longer proposed.

Plate 4.1 View north-west showing vegetation and ridgeline (running left to right) in the study area

Plate 4.2 View south along ridgeline showing poor visibility caused by vegetation cover in the study area.

Plate 4.3 View north showing location of BH106 on eroded access track. Tree to left contains a non-cultural scar (ie scarred by insect and/or vehicle damage).

Plate 4.4 View west showing location of BH108 on northern bank of Farmers Creek/Lake Lyell

Plate 4.5 **Pig disturbance encountered in the study area. This exposure showed some remnant topsoil**

Plate 4.6 **Proposed drill pad location MB2204 located immediately adjacent to the existing access track. The undisturbed vegetation cover is characterised by eucalypts, blackwattle trees and grasses.**

Plate 4.7 **Proposed drill pad location MB2205 located immediately adjacent to and located across the existing access track**

Plate 4.8 **Proposed drill pad location MB2206 located across the existing access track. Soil deposits are extensively rutted by slope wash**

5 Conclusions and recommendations

Based on a review of previous work in the region, the archaeological record within the study areas is dominated by rock shelters, rock art and/or stone artefact scatters of various densities. Rock shelters and rock art would be found in areas of steep relief where stone outcrops and/or overhangs are present, while stone artefact scatters would be constrained primarily to slightly elevated, flat areas surrounding fresh water sources. Three site inspections were undertaken of the modified development to identify previously documented sites in the region and to further investigate the study area based on these site predictions (see Section 4). Overall, the proposed access track and sites of proposed boreholes in the study area lacked evidence of any form of stone outcrops or overhangs in which cultural materials may be present, nor do they exhibit environmental characteristics where stone artefacts may be expected (i.e. a significant distance from water sources) (see Figure 5.1). Further, several parts of the study area are on moderate to steep slope landforms, and as such are prone to erosion limiting the potential for stone artefacts to remain if they were ever present. The access track, geotechnical borehole locations (BH101 – BH108) and groundwater monitoring bore locations (MB2203, MB2204, MB2205 and MB2206) are considered to have low risk of Aboriginal objects being present, and works may proceed with caution.

Overall, the results of the assessment suggest the study area may have been utilised as a travelling route through the rugged local terrain. However, this finding is not conclusive, as the ridgeline here terminates at very steep gullies to the south (i.e. landforms that are hard to traverse by foot) and does not connect to other ridgelines. If this landform was used as a travelling route, it is likely that very low densities of stone artefact scatters are present (representing accidental loss and/or incidental tool maintenance). However, no cultural materials have been identified previously, nor as part of the site inspection.

Aboriginal participants did not identify any specific intangible sites, places or values that may be affected by the proposed geotechnical program. However, discussions with them did indicate a concern that such cultural heritage may be present, and should form a focus of future engagement with relevant Aboriginal community and the assessment if the Lake Lyell Pumped Hydro project should it progress.

Based on these findings, we conclude that:

1. The disturbance footprint has been assessed for its potential to contain Aboriginal objects that may be impacted by the modified development.

    a) BH101–BH108 and the proposed access track are considered to have low risk of Aboriginal objects being present. Therefore, works in the study area may proceed with caution.

    b) MB2203, MB2204, MB2205 and MB2206 are considered to have low risk of Aboriginal objects being present. Therefore, works in the study area may proceed with caution.

    However, the nature of disturbance does not preclude the potential for isolated finds, which is a common site type across the region, even in disturbed contexts. In the event of unexpected Aboriginal objects, sites or places (or potential Aboriginal objects, site or places) are discovered during construction, all works in the vicinity should cease and the proponent should determine the subsequent course of action in consultation with a heritage professional and/or the relevant State government agency as appropriate.

2. This document may be summarised within and/or appended to a Development Application, Statement of Environmental Effects (SEE) or Review of Environmental Factors (REF). If any Aboriginal objects are later identified within the proposed activity area, this report cannot, however, be used to support an application for an Aboriginal Heritage Impact Permit (AHIP). Such an application would require more detailed investigation involving a formal process of Aboriginal community consultation and the preparation of an ACHA as per Recommendation 1 above.

3. If human remains are discovered, the *Coroners Act 2009* requires that all works should cease and the NSW Police and the NSW Coroner's Office should be contacted. Traditional or contemporary (post-contact) Aboriginal burials which occur outside of designated cemeteries are protected under the *National Parks and Wildlife Act 1974* and should not be disturbed. Interpreting the age and nature of skeletal remains is a

specialist field and an appropriately skilled archaeologist or physical anthropologist should therefore be contacted to inspect the find and recommend an appropriate course of action. Should the remains prove to be Aboriginal in origin, notification of DPIE and the Local Aboriginal Land Council will be required. Notification should also be made to the Commonwealth Minister for the Environment, under the provisions of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

A summary of this due diligence with regard to the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010) guidelines is provided at Table 5.1.

Source: EMM (2022); EnergyAustralia (2022); ESRI (2022); OEH (2019); DFSI (2017)

0 100 200 m

GDA 1994 MGA Zone 56

N

KEY

- Study area
- Modified disturbance footprint
- NPWS reserve
- Vehicular track
- Named watercourse
- NPWS reserve

Archaeological potential

- Low archaeological potential

Archaeological potential

Lake Lyell Pumped Hydro
Aboriginal heritage due diligence
Figure 5.1

EMM
creating opportunities

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Table 5.1 Due Diligence Summary

Step	Results	Section in this report
Step 1: Check for records of Aboriginal objects and places in area of proposed activity.	An AHIMS search covering the proposed activity areas was conducted on 6 December 2021. No AHIMS sites have been registered within the study area.	Section 3.1
Step 2: Is the activity a 'Low Impact Activity', as defined in the National Parks and Wildlife Regulation?	The proposed activity is not considered to be a 'Low Impact Activity' as it will involve machine ground disturbance.	Section 1.2
Step 3: Are there any landscape features on undisturbed land that are likely to indicate the presence of Aboriginal objects?	The study area traverses a ridgeline, which is another archaeologically sensitive landform feature. Minimal ground disturbance has occurred here.	Section 2 and 4
Step 4: Does a desktop assessment and visual inspection confirm that there are Aboriginal objects present or likely to be present?	The study area has low potential to contain Aboriginal artefacts.	Sections 2, 3 and 4
Step 5: Can the activity be relocated away from the known/likely area for Aboriginal objects?	There is potential for boreholes to be relocated if Aboriginal objects are encountered during the works. However, the study area has low potential to contain Aboriginal artefacts and avoidance has not been recommended based on the findings in this report.	N/A
Step 6: Commence investigation for an Aboriginal heritage impact permit (AHIP).	The study area has low potential to contain Aboriginal artefacts. The works can proceed with caution and an ACHA or AHIP is not required.	Section 5

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Kohen, Jim 1984, “An Archaeological Re-Appraisal of the Jamisons Creek Site Complex, Emu Plains.”

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Appendix A

Historical aerial imagery

Plate A.1 Historical aerial photograph from 1966 showing the study area

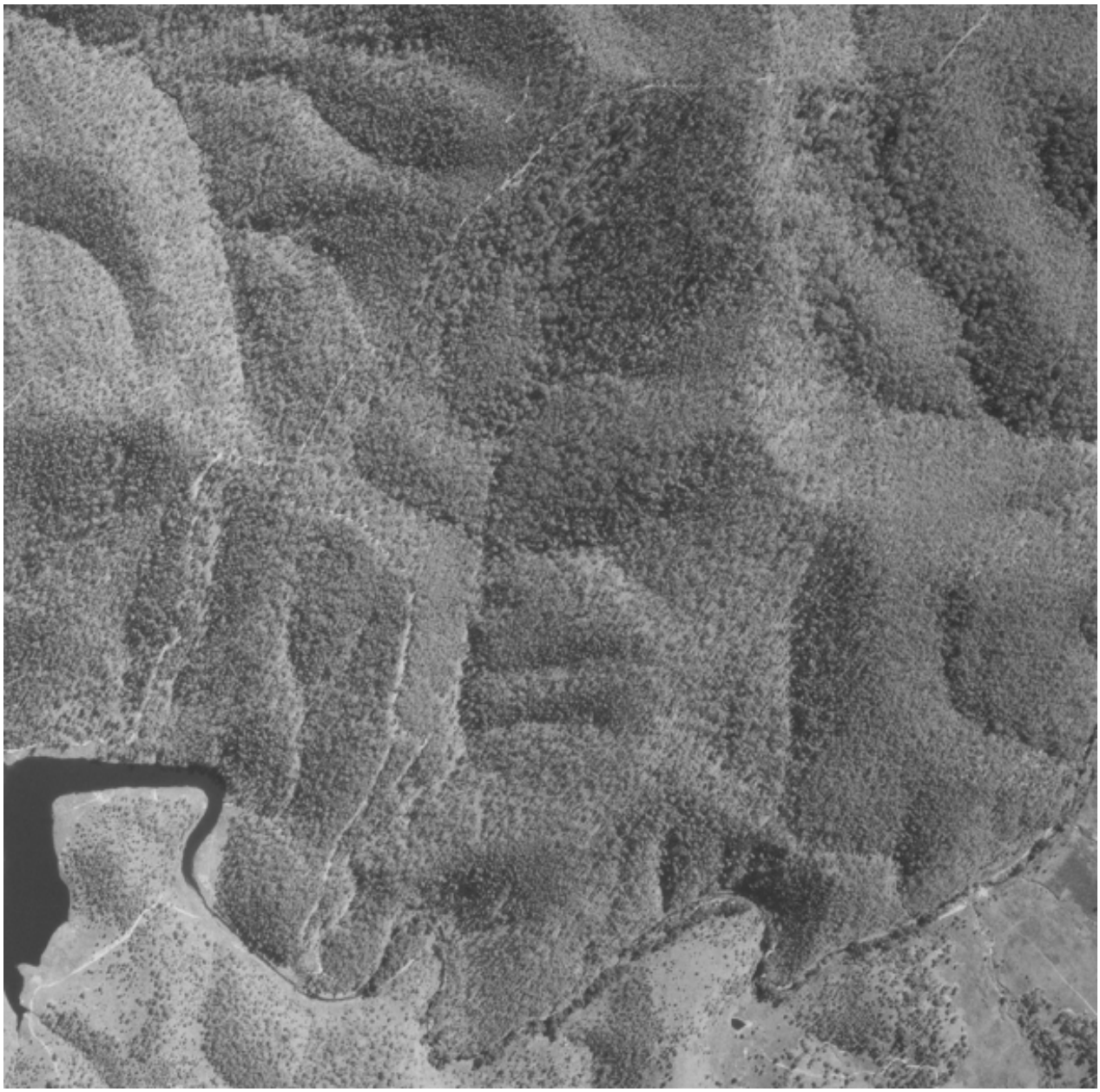

Plate A.2 Historical aerial photograph from 1984 showing the location of the study area

Plate A.3 Historical aerial photograph from 1991 showing the location of the study area

Appendix B

AHIMS search results

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E211001 Lake Lyell

Client Service ID : 748800

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-4-0962	Solitary Creek 2	AGD	56	222140	6289130	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
Contact		Recorders	Kerry Navin,Mr.Kelvin Officer					Permits		
45-4-0935	Hartley Historic Site	AGD	56	237500	6284500	Open site	Valid	Artefact : -	Isolated Find	
Contact		Recorders	J Rayner					Permits		
45-4-0098	Lilyvale;Lyell's Crossing;	AGD	56	227688	6286287	Closed site	Valid	Artefact : -	Shelter with Deposit	
Contact		Recorders	ASRSYS					Permits		
45-4-0117	Hartley;Hartley Survey Area;	AGD	56	237506	6284830	Open site	Valid	Artefact : -	Open Camp Site	1135
Contact		Recorders	Unknown Author					Permits		
45-4-0128	Junction Rock;Katoomba;	AGD	56	233250	6284420	Open site	Valid	Artefact : -	Open Camp Site	
Contact		Recorders	Laura-Jane Smith,Miss.Lisa Smith					Permits		
45-4-0219	lyell dam 9;	AGD	56	228580	6287680	Closed site	Valid	Artefact : -	Shelter with Deposit	
Contact		Recorders	David Bell					Permits		
45-4-0006	Lyell's Crossing;Andy Stack's Hill;	AGD	56	228307	6287397	Closed site	Valid	Artefact : -	Shelter with Deposit	
Contact		Recorders	Richard Wright					Permits		
45-4-0207	Lyell Dam 2;	AGD	56	228500	6287100	Open site	Valid	Artefact : -	Open Camp Site	2435
Contact		Recorders	David Bell					Permits		
45-4-0208	Lyell Dam 1;	AGD	56	228430	6286700	Open site	Valid	Artefact : -	Open Camp Site	2435
Contact		Recorders	David Bell					Permits		
45-4-0209	Lyell Dam 3;	AGD	56	226000	6287500	Open site	Valid	Artefact : -	Open Camp Site	2435
Contact		Recorders	David Bell					Permits	621	
45-4-0210	Lyell Dam 4;	AGD	56	226000	6287500	Open site	Valid	Artefact : -	Open Camp Site	2435
Contact		Recorders	David Bell					Permits	621	
45-4-0211	Lyell Dam 5;	AGD	56	228850	6286580	Open site	Valid	Artefact : -	Open Camp Site	2435
Contact		Recorders	David Bell					Permits		
45-4-0212	Lyell Dam 6;	AGD	56	227430	6290680	Open site	Valid	Artefact : -	Open Camp Site	2435
Contact		Recorders	David Bell					Permits		
45-4-0213	Lyell Dam 7;	AGD	56	227380	6290400	Open site	Valid	Artefact : -	Open Camp Site	2435
Contact		Recorders	David Bell					Permits		
45-4-0214	Lyell Dam 8;	AGD	56	227950	6289230	Open site	Valid	Artefact : -	Open Camp Site	2435
Contact		Recorders	David Bell					Permits		
45-4-0058	Mount Blaxland.;Kylie Park.;	AGD	56	231750	6283010	Open site	Valid	Artefact : -, Burial : -	Burial/s,Open Camp Site	
Contact		Recorders	David Bell					Permits		

Report generated by AHIMS Web Service on 30/01/2023 for Rohani Dutch for the following area at Datum :GDA, Zone : 56, Eastings : 218919.0 - 237829.0, Northings : 6278892.0 - 6299002.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 90

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E211001 Lake Lyell

Client Service ID : 748800

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-4-0900	Hartley 2;	AGD	56	235400	6281650	Open site	Valid	Artefact : -	Open Camp Site	2676
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**	646	
45-4-0901	Hartley 1;	AGD	56	236100	6281650	Open site	Valid	Artefact : -	Open Camp Site	2676
	Contact	**Recorders**	Mrs.Robynne Mills					**Permits**		
45-4-0914	LD 12;	AGD	56	226300	6287500	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Doctor.Jo McDonald,Huw Barton					**Permits**		
45-4-0915	LD 14;	AGD	56	228800	6289400	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Doctor.Jo McDonald					**Permits**		
45-4-0916	LD 13;	AGD	56	228620	6289300	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Doctor.Jo McDonald					**Permits**		
45-1-0161	Site 3;	AGD	56	221400	6298650	Open site	Valid	Artefact : -	Open Camp Site	1706
	Contact	**Recorders**	Doctor.Susan (left ahms) Mcintyre-Tamwoy					**Permits**		
45-1-0164	Site 7;	AGD	56	223250	6296200	Open site	Valid	Artefact : -	Open Camp Site	1706
	Contact	**Recorders**	Doctor.Susan (left ahms) Mcintyre-Tamwoy					**Permits**		
45-1-0117	MC 6;	AGD	56	231910	6296980	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Helen Brayshaw,Elizabeth Rich					**Permits**		
45-1-0248	LD 15;Lyell Dam 15;	AGD	56	226950	6289790	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.Warwick Pearson					**Permits**		
45-1-0249	LD 16;Lyell Dam 16;	AGD	56	226990	6289840	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.Warwick Pearson					**Permits**		
45-1-2540	Solitary Creek 1	AGD	56	222020	6289430	Open site	Valid	Artefact : -	Isolated Find	4191
	Contact	**Recorders**	Kerry Navin,Mr.Kelvin Officer					**Permits**		
45-1-0089	Marangaroo Ridge 4;	AGD	56	232490	6297420	Open site	Valid	Artefact : -	Open Camp Site	1414
	Contact	**Recorders**	Helen Brayshaw					**Permits**		
45-1-0090	Marangaroo Ridge 5;	AGD	56	232580	6297420	Open site	Valid	Artefact : -	Open Camp Site	1414
	Contact	**Recorders**	ASRSYS					**Permits**		
45-1-0096	Elizabeth Vale 1;Wallerawang;	AGD	56	224800	6297450	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	950
	Contact	**Recorders**	Elizabeth Rich,Shelly Greer,Doctor.Susan (left ahms) Mcintyre-Tamwoy					**Permits**		
45-1-0107	Maroo - YLS/4	AGD	56	232960	6294940	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Bonhomme Craib & Associates					**Permits**		
45-1-0108	W1;	AGD	56	229620	6297320	Open site	Valid	Artefact : -	Open Camp Site	1515
	Contact	**Recorders**	Rex Silcox					**Permits**		
45-1-0109	W2;	AGD	56	229600	6297350	Open site	Valid	Artefact : -	Open Camp Site	1515
	Contact	**Recorders**	Rex Silcox					**Permits**		
45-1-0110	W4;	AGD	56	228620	6297310	Open site	Valid	Artefact : -	Open Camp Site	1515

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E211001 Lake Lyell

Client Service ID : 748800

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Rex Silcox					**Permits**		
45-1-0111	W3;	AGD	56	228730	6297320	Open site	Valid	Artefact : -	Open Camp Site	1515
	Contact	**Recorders**	Rex Silcox					**Permits**	78	
45-1-0112	MC 1;	AGD	56	231500	6297100	Open site	Valid	Artefact : -	Open Camp Site	1414
	Contact	**Recorders**	Helen Brayshaw,Elizabeth Rich					**Permits**		
45-1-0113	MC 2;	AGD	56	232470	6297180	Open site	Valid	Artefact : -	Open Camp Site	1414
	Contact	**Recorders**	Helen Brayshaw,Elizabeth Rich					**Permits**		
45-1-0114	MC 3;	AGD	56	232650	6297780	Open site	Valid	Artefact : -	Open Camp Site	1414
	Contact	**Recorders**	Elizabeth Rich					**Permits**		
45-1-0115	MC 4;	AGD	56	232680	6297500	Open site	Valid	Artefact : -	Open Camp Site	1414
	Contact	**Recorders**	Helen Brayshaw,Elizabeth Rich					**Permits**		
45-1-0116	MC 5;	AGD	56	232270	6297030	Open site	Valid	Artefact : -	Open Camp Site	1414
	Contact	**Recorders**	Helen Brayshaw,Elizabeth Rich					**Permits**		
45-1-0199	MC 1;NEWNES SF;	AGD	56	236200	6298400	Closed site	Valid	Artefact : -	Shelter with Deposit	
	Contact	**Recorders**	Klim Gollan					**Permits**		
45-1-0200	SMC 1;NEWNES SF;	AGD	56	236450	6294000	Closed site	Valid	Artefact : -	Shelter with Deposit	
	Contact	**Recorders**	Klim Gollan					**Permits**		
44-3-0091	Site 1;see zone 55;	AGD	55	778600	6297650	Closed site	Valid	Artefact : -	Shelter with Deposit	1706,1707
	Contact	**Recorders**	Doctor.Susan (left ahms) Mcintyre-Tamwoy					**Permits**		
44-3-0099	Mount Lambie 1;ML-1;	AGD	55	776660	6293800	Open site	Valid	Artefact : -	Isolated Find	
	Contact	**Recorders**	Alice Gorman,Jon Winston-Gregson					**Permits**	609	
45-1-2557	M-OS-1	AGD	56	234520	6298440	Open site	Valid	Aboriginal Ceremony and Dreaming : -		97636,98115
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2569	M-S-12	AGD	56	235920	6298310	Open site	Valid	Artefact : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2570	M-S-10	AGD	56	235820	6297010	Closed site	Valid	Artefact : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2558	M-S-6	AGD	56	235260	6296390	Closed site	Valid	Artefact : -, Art (Pigment or Engraved) : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2559	M-S-5	AGD	56	235620	6297100	Open site	Valid	Art (Pigment or Engraved) : -		
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E211001 Lake Lyell

Client Service ID : 748800

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-1-2560	M-S-4	AGD	56	235170	6296810	Closed site	Valid	Art (Pigment or Engraved) : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2561	M-S-3	AGD	56	235170	6296810	Closed site	Valid	Artefact : -		1157
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2562	M-S-11	AGD	56	235320	6297760	Closed site	Valid	Art (Pigment or Engraved) : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2563	M-S-1	AGD	56	234130	6294730	Closed site	Valid	Artefact : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2564	M-OS-4	AGD	56	233880	6294430	Open site	Valid	Artefact : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2565	M-OS-3	AGD	56	233110	6294950	Open site	Valid	Artefact : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2566	M-OS-2	AGD	56	234350	6296870	Open site	Valid	Artefact : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2567	M-S-9	AGD	56	235130	6296100	Closed site	Valid	Art (Pigment or Engraved) : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2568	M-S-8	AGD	56	235160	6296100	Closed site	Valid	Artefact : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2571	M-S-2	AGD	56	234270	6295050	Closed site	Valid	Artefact : -		97636
	Contact	**Recorders**	Central West Archaeological and Heritage Services Pty Ltd					**Permits**		
45-1-2545	Wallerowong Station Massacre	AGD	56	228600	6298500	Open site	Valid	Burial : -	Burial/s	
	Contact	**Recorders**	Ms.Adrienne Howe-Piening					**Permits**		
45-4-0992	McKanes Bridge Cox's River	AGD	56	233850	6283800	Open site	Valid	Artefact : 6, Water Hole : 1		
	Contact T Russell	**Recorders**	Miss.Sharon Riley					**Permits**		
45-4-0993	Lett River Jenolan Caves Rd	AGD	56	236560	6284500	Open site	Valid	Artefact : -		
	Contact Miss.Sharon Riley	**Recorders**	Miss.Sharon Riley					**Permits**		
45-1-2592	M-IF-1, Lithgow	AGD	56	235510	6297160	Open site	Valid	Artefact : 1		97636
	Contact T Russell	**Recorders**	Jim Kelton					**Permits**		
45-1-0250	MC7 (IF2);Marrangaroo Creek (IF2);	AGD	56	231980	6297200	Open site	Valid	Artefact : -	Isolated Find	
	Contact	**Recorders**	Elizabeth Rich					**Permits**		
45-1-0163	Site 6;	AGD	56	222850	6296850	Open site	Valid	Artefact : -	Open Camp Site	1706
	Contact	**Recorders**	Doctor.Susan (left ahms) Mcintyre-Tamwoy					**Permits**		
45-1-0095	Rydal Mount 1 Rydal	AGD	56	224320	6293100	Open site	Valid	Artefact : -	Open Camp Site	950
	Contact	**Recorders**	Elizabeth Rich,Shelly Greer,Doctor.Susan (left ahms) Mcintyre-Tamwoy					**Permits**		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E211001 Lake Lyell

Client Service ID : 748800

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-4-1043	Hassan's Walls Burial Site	GDA	56	234490	6287142	Open site	Valid	Burial : -		101975
	Contact	**Recorders**	Doctor.Jillian Comber,Comber Consultants Pty Limited					**Permits**		
45-4-1071	GWH8 Great Western Highway	GDA	56	236380	6285243	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited,Ms.Tory Stening					**Permits**	4994	
45-4-1072	GWH9 Great Western Highway	GDA	56	236556	6285240	Open site	Valid	Artefact : 3		
	Contact	**Recorders**	Comber Consultants Pty Limited,Ms.Tory Stening					**Permits**	4994	
45-4-1103	Great Western Highway (GWH) 31	GDA	56	237581	6284788	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited					**Permits**	4994	
45-4-1105	Great Western Highway (GWH) 33	GDA	56	235366	6286646	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited					**Permits**	4994	
45-4-1106	Great Western Highway (GWH) 34	GDA	56	235366	6286646	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited					**Permits**	4994	
45-4-1090	GWH 44	GDA	56	237130	6284697	Open site	Not a Site	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited,Jacobs Group (Australia) Pty Ltd - North Sydney,M					**Permits**		
45-4-1091	GWH 36	GDA	56	234137	6288079	Open site	Not a Site	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited,Jacobs Group (Australia) Pty Ltd - North Sydney,M					**Permits**	3783	
45-4-1094	GWH 43	GDA	56	237527	6284530	Open site	Not a Site	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited,Jacobs Group (Australia) Pty Ltd - North Sydney,M					**Permits**		
45-4-1095	GWH 35	GDA	56	237319	6284922	Open site	Not a Site	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited,Jacobs Group (Australia) Pty Ltd - North Sydney,M					**Permits**	4994	
45-4-1097	Great Western Highway (GWH7)	GDA	56	236995	6284990	Open site	Valid	Artefact : 1		
	Contact	**Recorders**	Comber Consultants Pty Limited					**Permits**	4994	
45-4-1114	Forty Bends 1 (FB1)	GDA	56	234643	6287829	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Comber Consultants Pty Limited,Ms.Tory Stening					**Permits**		
45-1-2785	Marrangaroo NP Cox's River	GDA	56	228960	6292622	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Miss.Sharon Riley					**Permits**		
45-1-2786	Marrangaroo NP Camp Ground	GDA	56	228668	6292938	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Miss.Sharon Riley					**Permits**		
45-1-2802	WQ1;	GDA	56	227905	6296556	Open site	Destroyed	Artefact : -		104305,104697
	Contact	**Recorders**	OzArk Environmental and Heritage Management - Dubbo,OzArk Environmental an					**Permits**		
45-1-2826	WQ1 Reburial Location	GDA	56	228588	6296695	Open site	Valid	Artefact : -		
	Contact	**Recorders**	OzArk Environmental and Heritage Management - Dubbo,Miss.Taylor Foster					**Permits**		
45-1-2890	Marrangaroo Tunnel	GDA	56	230523	6298175	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	GML Heritage Pty Ltd - Surry Hills,Ms.Caitlin Harvey					**Permits**	4947	

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E211001 Lake Lyell

Client Service ID : 748800

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
45-4-1191	Forty Bends Contact Site	GDA	56	235209	6287099	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Jacobs Group (Australia) Pty Ltd - North Sydney,Mr.James Backhouse					**Permits**		
45-4-1195	Robsons Site	GDA	56	235223	6287118	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Jacobs Group (Australia) Pty Ltd - North Sydney,Mr.James Backhouse					**Permits**	4994	
45-4-1197	South Bowenfells Rural Fire Brigade Site (SBRFBS)	GDA	56	232718	6288466	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Jacobs Group (Australia) Pty Ltd - North Sydney,Mr.James Backhouse					**Permits**	4994	
45-4-1198	Magpie Hollow Road (MHR)	GDA	56	232850	6288724	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Jacobs Group (Australia) Pty Ltd - North Sydney,Mr.James Backhouse					**Permits**	4994	
45-1-2889	MR-AS-01 (Lot 2 DP455889)	GDA	56	231682	6295624	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Kayandel Archaeological Services,Ms.Natalie Stiles					**Permits**		
45-1-2882	Goanna ck 1	GDA	56	233477	6290336	Closed site	Valid	Art (Pigment or Engraved) : -		
	Contact	**Recorders**	L Ahearn,Mr.Mark Roebuck					**Permits**		
45-4-1187	Magpie Hollow AS1	GDA	56	232218	6288890	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Mr.Nicholas James Harrop					**Permits**		

**** Site Status**

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

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

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

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

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