This report is presented as two volumes:

Volume 1 - Heritage Study Report
Volume 2 - Report Appendices

This is *Volume 1 - Heritage Study Report*

Contents: Volume 1 - Heritage Study Report

EXECUTIVE SUMMARY

Archaeological and Heritage Management Solutions Pty Ltd was commissioned by *Blue Mountains City Council* (BMCC) to conduct an archaeological & built heritage survey of 140 hectares of land defined as 'Knapsack Reserve' at Glenbrook, NSW. The results will be incorporated into a Plan of Management for the Reserve aimed to improve its recreational use, residential amenity and heritage conservation outcomes.

The objectives of the study were to: (1) identify and record known and undocumented Aboriginal and Historic heritage sites within the Reserve and assess their significance following consultation with the Local Aboriginal Land Council, Aboriginal community organisations and the local Historical Society; (2) assess the impact of current and future recreation uses of the Reserve on its heritage sites and identify potential opportunities and constraints for the improvement of facilities; and (3) develop clear, concise management strategies to protect and conserve the Reserve's heritage assets and mitigate current and future impact on their heritage values.

The study involved considerable research and data collection, community consultation, field survey and reporting. Liaison was established with five community organisations during the project: *Deerubbin Local Aboriginal Land Council, Darug Tribal Aboriginal Corporation, Darug Custodian Aboriginal Corporation, Gundungurra Tribal Council* and the *Glenbrook & District Historical Society*. The locations of known Aboriginal sites within the Reserve were mapped following a review of the Department of Environment & Conservation (DEC) database (AHIMS). A brief history of the area, including a site specific history of Lapstone Hill, was compiled on the basis of historic journals, local histories, historic maps, plans and relevant land title documents. This provided a context for targeted site survey of the Reserve.

Thirty-nine [39] historic sites and fifteen [15] Aboriginal sites were located during the survey. Fifteen of the thirty-nine historic sites had previously been identified. Aboriginal sites included: one [1] significant axe grinding groove site, thirteen [13] sandstone shelters with potential to contain evidence of Aboriginal occupation (PAD) and one [1] isolated stone artefact. Historic heritage sites included a number of state significant items including: Lennox Bridge, Mitchell's Pass, Lapstone Zig Zag site complex, the former line of Cox's Road and Lapstone Hill Railway Tunnel and associated cuttings. Current recreational uses of the Reserve were found to be negatively impacting on a number of these sites including the axe grinding groove site, Mile Post on Mitchell's Pass and various items associated with the Lapstone Zig Zag.

The following recommendations were made to protect the cultural heritage assets identified within Knapsack Reserve:

(1) The draft Plan of Management should be forwarded to all community stakeholder groups for their comment. Liaison established with each group should also continue during future development planning;

(2) If future development has potential to disturb Aboriginal sites or PAD Council should engage a qualified heritage consultant to assess the level of impact and consult with relevant Aboriginal community organisations. If impact on Aboriginal sites is unavoidable Council will be required to follow DEC's *Interim Community Consultation Requirements* and

prepare required DEC permit applications. In the case of Aboriginal shelters with PAD, archaeological test excavation will be required if any impact is proposed. The investigation should be undertaken by a qualified archaeologist and local Aboriginal representatives under the terms and conditions of a DEC *Section 87 Preliminary Research Permit*. If excavation is proposed at Marge's or Elizabeth's Lookouts further archaeological survey of sandstone benches by a qualified archaeologist with local Aboriginal community representatives is recommended;

(3) If future development has potential to impact on Historic sites a *Statement of Heritage Impact* (SHI) should be prepared by a qualified heritage consultant. The study should include consultation with the Glenbrook & District Historical Society;

(4) Revegetation, annual monitoring and construction of a small bridge should be considered to slow the deterioration of the axe grinding groove site near Lennox Bridge;

(5) Close minor tracks and revegetate beyond the drip-line of sandstone shelters with PAD to assist their preservation and protect the sites from future visitor impacts;

(6) Collect and relocate the isolated artefact identified at Marge's Lookout to a nearby vegetated area under the terms and conditions of a DEC *Section 87 Preliminary Research Permit*;

(7) Nominations should be made for of the following sites, for listing on the State Heritage Register: Lapstone Zig Zag Site Complex, Lapstone Hill Tunnel & Cuttings, Cox's Road, Mitchell's Pass and Knapsack Gully Viaduct – 1865.

(8) *Conservation Management Plans* (CMPs) should be prepared for the following state significant sites, if funding is available: Lapstone Hill Zig Zag Site Complex, Mitchell's Pass; and Cox's Road.

(9) Develop a long-term plan to channel visitors through Knapsack Reserve to limit accidental or intentional damage to heritage items;

(10) Establish monitoring and vegetation management and weed control programs to assist interim conservation of the Reserve's heritage assets;

(11) Detailed archaeological survey, recording and further research should be considered on a site-by-site basis to assess the condition of sites and/or site complexes and augment the existing dataset of heritage values identified for Knapsack Reserve;

(12) A qualified heritage consultant should be engaged to prepare an *Interpretation Plan* for the Lapstone Zig Zag site complex. The strategy should include consultation with the Glenbrook District Historical Society and their participation in delivering the strategy and communicating the significance of the place to visitors; and

(13) This report should be distributed to relevant community organisations and government agencies.

1.0 INTRODUCTION

1.1 PREAMBLE

In February 2006 ***Blue Mountains City Council*** (BMCC) engaged ***Archaeological and Heritage Management Solutions Pty Ltd*** (AHMS) to undertake an archaeological & built heritage survey to document and assess the cultural heritage values of 140 hectares of land defined as 'Knapsack Reserve' at Glenbrook, NSW. The results of the assessment will be incorporated into a Plan of Management for the Reserve aimed to improve its recreational use, residential amenity and conservation outcomes.

This report presents the results of the assessment.

1.2 SITE LOCATION

The subject site is comprised of twenty-five [25] land parcels situated on the eastern escarpment of the lower Blue Mountains adjacent to the township of Glenbrook, NSW roughly 50km west of Sydney CBD. The site covers approximately 140 hectares of land owned by four [4] different organisations: the Crown, State Rail Authority (SRA), Blue Mountains City Council & the Road & Transport Authority (RTA). All of the parcels are collectively referred to as 'Knapsack Reserve' or the 'Reserve'.

The Reserve includes Knapsack Park, which contains two [2] senior and two [2] mini soccer fields regularly used for sporting events and a number of walking tracks that lead to lookouts which provide impressive views over the Cumberland Plains towards Sydney. It also contains the recently decommissioned sewerage treatment plant that will be rehabilitated and returned to Council ownership, a number of dirt jump bike sites and disused quarries.

The site is bounded by Barnett and Olivet Streets to the west, Mitchell's Pass to the north, to the east by the western Railway line and to the south by the Great Western Highway and the Glenbrook RAAF Base.

Figure 1.1 below indicates the site's configuration with relevant land owners listed in Table 1.1.

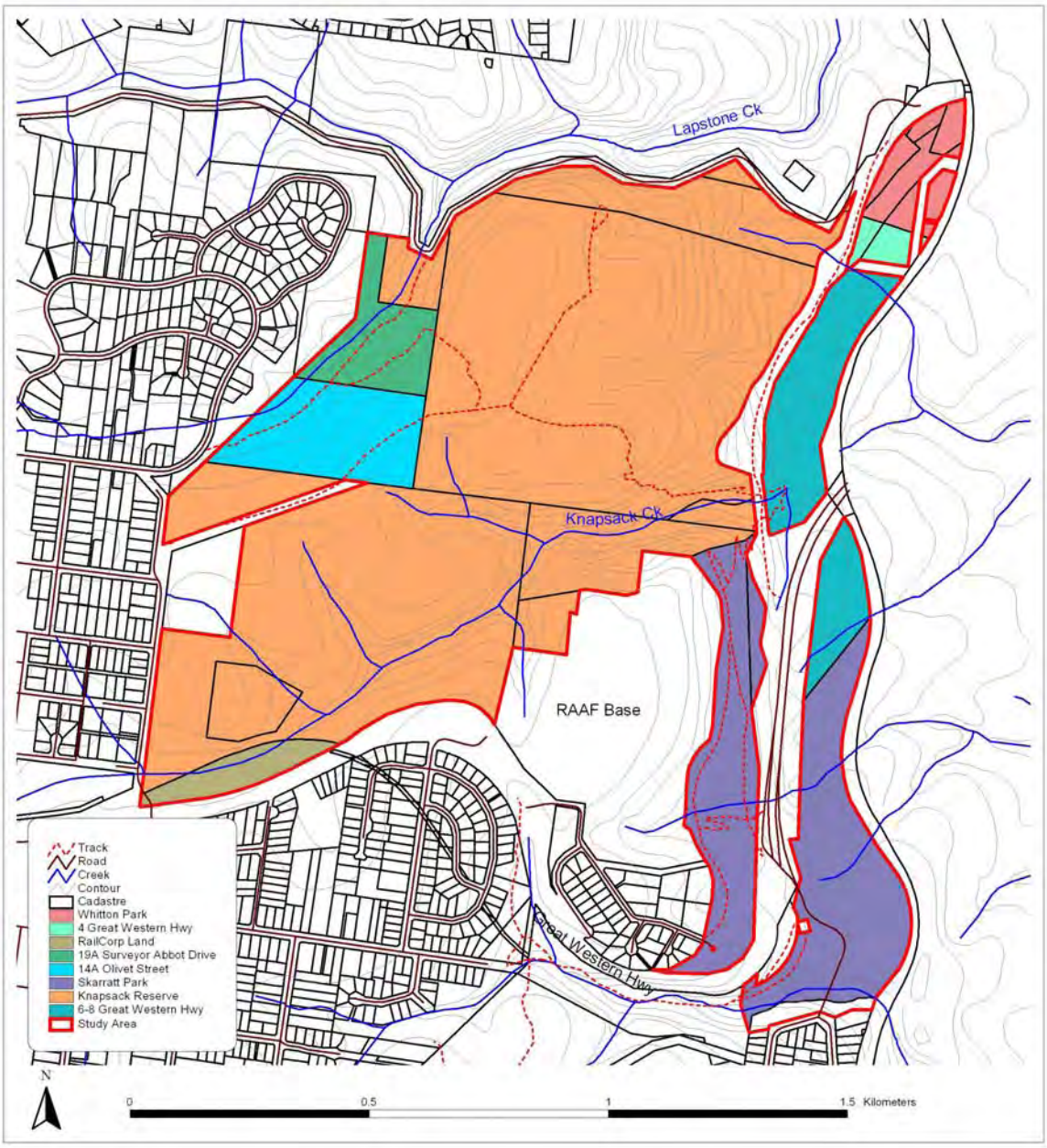

Figure 1.1: 'Knapsack Reserve', Glenbrook, NSW indicating land parcels in the study area.

Table 1.1: Land ownership within 'Knapsack Reserve'

Reserve / Land Title	*No. of Parcels*	*Area (Ha)*	*Owner*
19A Surveyor Abbot Drive	1	4.4	Crown
140A Olivet Street	1	7.0	Crown
Knapsack Reserve, 31 Great Western Hwy	8	91.5	Crown
37 Great Western Hwy	1	2.3	State Rail Authority
Whitton Park, 2 Great Western Hwy	6	3.2	Council
4 Great Western Hwy	2	1.0	RTA
6-8 Great Western Hwy	2	9.3	RTA
Skarratt Park, 15-17 Great Western Hwy	3	21.5	Crown
TOTALS	24	140.2	

1.3 RATIONALE, OBJECTIVES & SCOPE

The aim of the assessment was to inform BMCC of the Reserve's heritage values to assist with its future management. If BMCC wish to introduce additional infrastructure to the reserve significant Aboriginal and Historic heritage items or places will require consideration and management.

The report was prepared in accordance with relevant NSW Heritage Guidelines. The Aboriginal heritage component followed the Department of Environment and Conservation's (DEC) *Guidelines for Archaeological Survey and Reporting (1997)*, whilst the Historic heritage component was prepared in accordance with *Archaeological Assessments (1996)* and the revised *Assessing Heritage Significance: a NSW Heritage Manual Update (2001)* released by the NSW Heritage Council.

The following objectives were identified for the study:

- Identify, record and assess known and previously undocumented Aboriginal and European heritage sites within 'Knapsack Reserve' and assess their significance following consultation with the relevant Local Aboriginal Land Council, Aboriginal Corporations, Native Title groups and the local Historical Society;
- Assess the impact of current and future recreational uses of the Reserve on its heritage sites and identify potential opportunities and constraints for the improvement of facilities; and
- Apply general principles & policies of heritage management to develop clear, concise management strategies to protect and conserve the Reserve's heritage sites and mitigate current and future impacts on their heritage values.

Specific tasks to be completed during the assessment were outlined in AHMS' response to the Brief and are summarised below:

- **Research and Data Collection**: Existing heritage studies and historic source material were reviewed, interpreted and summarised to form a brief history of Knapsack Reserve. Heritage databases, including the DEC Aboriginal Heritage Information System (AHIMS) database, the NSW Heritage Office Library and other relevant literature sources including previous archaeological investigations in the locality were also examined to locate and map known heritage sites in the study area.

- **Community Consultation**: Liaison was established with relevant community organisations, including the local Aboriginal Land Council, Aboriginal community organisations and the local Historical Societies to identify the Reserve's European and Aboriginal heritage values. The aim of consultation was to clearly identify these values and incorporate them into a significance assessment of the Reserve.

- **Field Survey**: A field survey of accessible areas within the Reserve was conducted to assess the condition, integrity and significance of known heritage sites and systematically survey areas identified as having potential to contain heritage sites. Representatives of the local Aboriginal community and the local historical society were invited to participate in various components of the survey. Aboriginal sites were recorded using DEC Site Cards and historic sites using State Heritage Inventory Data Sheets.

- **Reporting**: A heritage assessment report was prepared describing the results of community consultation and field survey in accordance with DEC and Heritage Council Guidelines. The final report includes an assessment of site significance and provides appropriate recommendations and conservation management policies with respect to potential and current impacts on the Reserve's identified heritage values.

1.4 COMMUNITY CONSULTATION

Consultation with local community organisations is essential when attempting to identify the heritage values of a site. Liaison was established with five community organisations during the course of the project; four local Aboriginal groups and the local historical society.

Knapsack Reserve is located within the boundaries of four local Aboriginal community organisations: the ***Deerubbin Local Aboriginal Land Council (DLALC),*** the ***Darug Tribal Aboriginal Corporation (DTAC),*** the ***Darug Custodian Aboriginal Corporation (DCAC)*** and the ***Gundungurra Tribal Council (GTC)***. In accordance with DEC Guidelines, representatives from the four organisations were invited to participate in the Aboriginal field survey component, assisted in the identification of Aboriginal sites and were consulted to determine the Aboriginal cultural significance of the Reserve. A draft assessment report has been forwarded to the four groups and their views and recommendations will be incorporated within the final assessment report. Letters from DLALC, DCAC, GTC and DTAC will be included as Appendix 4.

The Glenbrook & District Historical Society also has a strong connection to Knapsack Reserve. The society runs regular historic walks aimed to inform the public of the area's historic heritage values. Following initial liaison with the society, President – Tim Miers – was invited to participate in the historic field survey component to assist in identifying historic sites within the Reserve. A copy of the draft assessment report was then sent to Tim for comment. Information provided by the Glenbrook & District Historical Society has been incorporated into the draft report and any correspondence received will be included in Appendix 4 of the final report.

1.5 REPORT OUTLINE

The balance of the report is set out as follows:

- A summary of relevant statutory considerations (**Section 2.0**);
- Description of the environmental context of the study area (**Section 3.0**);
- Review of the Aboriginal and Historic history of Glenbrook using ethno-historic sources and early documentary records (**Section 4.0**);
- Summary of the local and regional archaeological context (**Section 5.0**)
- Results of the archaeological and built heritage field survey, including a summary of Aboriginal and Historic sites and potential archaeological deposits (PAD's) identified on site (**Section 6.0**);
- Results of community consultation (**Section 7.0**);
- Assessment of the Reserve's heritage significance and the impact of current and future recreational uses of the Reserve on identified heritage sites. (**Section 8.0**) ;

- Management Strategies to protect and conserve the Reserve's heritage sites and mitigate current and future impacts on their heritage values (**Section 9.0**).

Attachments to the report include:

- Copies of current State and National State Heritage Listings for known historic sites within the Reserve (Appendix 1);
- DEC Site Record Forms for Aboriginal sites identified within the study area (Appendix 2);
- NSW State Heritage Inventory Forms for Historic Heritage Sites identified within the Reserve (Appendix 3);
- Correspondence received from relevant community organisations including Deerubbin LALC, GTC, DCAC and DTAC and the Glenbrook District Historical Society. (Appendix 4).

1.6 AUTHORSHIP & ACKNOWLEDGEMENTS

Fiona Leslie (AHMS, Archaeologist) was the project manager and author of this report. Fiona conducted research and data collection, organised and conducted the field survey and consulted with local community organisations and government agencies.

Matthew Kelly (AHMS, Historical Archaeologist) assisted with the recording of built structures during the historic heritage survey and reviewed the draft report and State Heritage Inventory Forms.

The author acknowledges the assistance and advice received from:

- Ms. Patricia Gonzalez (BMCC, Recreation Development Officer)
- Mr. Reg Yates (BMCC, Aboriginal Community Development Officer)
- Mr. Elton Menday (BMCC, Heritage Strategic Planner)
- Mr. Eric Mahony (BMCC, Bushland Management Officer)
- Mr. Tim Miers (President, Glenbrook District Historical Society)
- Ms. Pam Pascoe (Secretary, Glenbrook District Historical Society)
- Mr. Phil Khan (Deerubbin LALC, Site Officer)
- Ms. Leanne Watson (DCAC, Coordinator)
- Ms. Celestine Everingham and Mr. Des Dyer (DTAC, Site Officer & Secretary); and
- Mr. David King (GTC, Chairperson)

2.0 STATUTORY CONSIDERATIONS

2.1 PREAMBLE

Cultural heritage in NSW is administered by two Government Departments: Aboriginal heritage by the Department of Environment and Conservation (DEC) and Historic heritage by the Department of Planning (DP) via its appointed referral body – the NSW Heritage Council. Both departments enforce various Acts designed to protect heritage sites from development impacts. These statutes, and their implications for future management of potential heritage sites within Knapsack Reserve, are outlined below.

2.2 ABORIGINAL HERITAGE LEGISLATION

The *National Parks & Wildlife Act 1974* and the *Environmental Planning and Assessment Act 1979* provide the statutory tools for Aboriginal cultural heritage management in New South Wales. Aboriginal objects and places can be listed on statutory and non-statutory registers, as discussed in Sections 2.4 and 2.5.

2.2.1 National Parks & Wildlife Act 1974 (Amended 2001)

The *National Parks & Wildlife (NPW) Act 1974* provides blanket protection for Aboriginal objects (material evidence of indigenous occupation) and Aboriginal places (areas of cultural significance to the Aboriginal community). The following sections of the Act are of particular importance:

- Section 84 makes provision for protection of 'Aboriginal Places' or locations of special significance to Aboriginal culture.
- Section 86 and 87 state that it is an offence to collect or disturb objects or excavate, or in any way disturb land for the purpose of discovering objects without a permit authorised by the Director-General DEC.
- Section 90 states that it is an offence to destroy, deface, damage or desecrate, or cause or permit the destruction, defacement, damage or desecration of, an Aboriginal object or Aboriginal place.
- Section 91 of the Act states that anyone who discovers an Aboriginal object is obliged to report the discovery to the DEC.

In practical terms, the provisions of the Act require an archaeological assessment of any land where there is potential for Aboriginal objects to be disturbed by development. The required format of Aboriginal archaeological assessments is outlined in the *National Parks and Wildlife Service Guidelines for Archaeological Survey and Reporting (1997)*. These guidelines require full consultation with Aboriginal communities and relevant representative bodies such as Local

Aboriginal Land Council's (LALC's) and Traditional Owner groups. Aboriginal community participation in all archaeological survey and excavation work, and full consideration of the Aboriginal cultural significance of sites and places is also required.

In accordance with Section 90 of the *NPW Act 1974*, all Aboriginal objects are protected and cannot be legally destroyed or disturbed without a *Heritage Impact Permit (formerly known as 'Consent to Destroy')* from the Department of Environment and Conservation (DEC). This protection is provided irrespective of both the level of significance of the objects, and issues of land tenure. If areas of sub-surface archaeological potential are identified, DEC generally require archaeological test excavation prior to development to determine whether sub-surface objects are present, and the nature, extent and significance of such objects. The results of archaeological testing are used to determine appropriate management strategies, which should be developed by consultation between Aboriginal community representatives, the consultant archaeologist, client and DEC.

In December 2004 DEC released new *Interim Community Consultation Requirements for Applications under Part 6 of the National Parks and Wildlife Act 1974*. The guidelines were developed to clarify consultation between proponents and members and representatives of the Aboriginal community during the Development Application (DA) process. The document outlines community consultation requirements as part of preparing an application for a Section 87 or Section 90 permit.

2.2.2 *Environmental Planning & Assessment Act (1979)*

The *Environmental Planning & Assessment Act 1979* requires that potential environmental and heritage impacts are considered by consent authorities prior to granting development approvals. Under *Division 5 Part 4* of the Act, specific approval from state agencies may be required in certain circumstances. This mechanism is known as an 'Integrated Development Application' or IDA.

The DEC is an approval body in the IDA process when a development will impact on an Aboriginal object or place, and thereby require a *S.90 Heritage Impact Permit* from DEC to allow the destruction or disturbance of a registered site. In this circumstance, consent must be granted by DEC prior to the development being approved.

2.3 HISTORIC HERITAGE LEGISLATION

In New South Wales, protection for Historic heritage items and places is provided by the *NSW Heritage Act, 1977* and the *Environmental Planning and Assessment Act, 1979*. Significant historic sites and places can be listed on either statutory or non-statutory registers, as discussed in following sections.

2.3.1 *The NSW Heritage Act (1977)*

The NSW Heritage Act is a statutory tool designed to conserve New South Wales' historic heritage.[1] It is used to regulate development impacts on the state's historic heritage assets. In addition to buildings, landscapes and other items listed on the State Heritage Register,

[1] NSW Heritage Act, http://www.legislation.nsw.gov.au/, p1

archaeological features and deposits are afforded automatic statutory protection by the relic provisions of the NSW Heritage Act 1977 (as amended in 1999). The Act defines 'relic' as:

any deposit, object or material evidence relating to the settlement of the area that comprises NSW, not being an aboriginal settlement, and which is fifty or more years old.

Sections 139 to 145 of the Act prevent the excavation or disturbance of land for the purpose of discovering, exposing or moving a relic, except by a qualified archaeologist to whom an excavation permit has been issued by the Heritage Council of NSW.

2.3.2 *Environmental Planning and Assessment Act, 1979*

As with Aboriginal heritage, the NSW Heritage Council, on behalf of the Department of Planning, is an approval body in the IDA process, with their involvement triggered by the *Environmental Planning & Assessment Act 1979*. The Heritage Council requires an *Historical Archaeological Assessment* when a development has potential to disturb 'relics'. If the development will disturb historic relics, consent must be granted by the Heritage Council prior to their disturbance / removal.

2.4 STATUTORY HERITAGE REGISTERS

There are a number of statutory registers maintained by DEC and DP to protect Aboriginal and Historic heritage sites in New South Wales. These are briefly discussed below.

2.4.1 *Aboriginal Heritage Information Management System (AHIMS)*

The Department of Environment and Conservation (DEC) maintains a database of Aboriginal items, sites and Potential Archaeological Deposits (PADs) identified in NSW. Sites are most commonly identified by archaeologists employed to survey areas proposed for development. As part of preparing an Aboriginal Heritage Impact Assessment (AHIA) consultants, on behalf of developers, are required to search the AHIMS to discover if an Aboriginal object has been previously recorded, or an Aboriginal place declared, on a parcel of land. Aboriginal items, sites and PAD are legally protected under the *National Parks and Wildlife Act (1974)*. Approval must be granted by DEC prior to their disturbance.

2.4.2 *The State Heritage Register*

The State Heritage Register is a statutory list of historic places and items of State heritage significance made by the Minister of Planning. The Register lists a diverse range of historic places, including archaeological sites, that are particularly important to the State and which enrich our understanding of the history of NSW. State heritage significance is defined by the NSW Heritage Office as "*significance to the State in relation to the historical, scientific cultural, social, archaeological, architectural, natural or aesthetic value of the item* (Section 4A (1), Heritage Act, 1977)"[2]. Places and items listed on the Register are legally protected under the NSW Heritage Act 1977 and require approval from the Heritage Council of NSW prior to undertaking work that results in their alteration or modification.

[2] NSW Heritage Office website. www.heritage.nsw.gov.au 12/04/06

2.4.3 The State Heritage Inventory (SHI)

The State Heritage Inventory (SHI) is an electronic database of statutory listed heritage items in New South Wales that are protected by heritage schedules of Local Environmental Plans (LEPs) and Regional Environmental Plans (REPs) or by the State Heritage Register. The inventory can include historical archaeological sites, maritime archaeology, industrial sites, urban landscapes including parks and gardens, private and civic buildings, heritage items owned by State government agencies, moveable heritage - such as transport vehicles or heritage collections - and Aboriginal heritage[3].

2.4.4 Local and Regional Planning Instruments

Other documents that include statutory listings for both Historic and Aboriginal heritage items in NSW include Regional Environmental Plans (REPs), Development Control Plans (DCPs) and Local Environmental Plans (LEPs). These planning instruments are prepared in accordance with the requirements of the *NSW Environmental and Planning Assessment Act, 1979* and are designed to integrate heritage management and conservation into the planning and development control process to ensure that development does not affect the significance of heritage items, sites and/or places, and conservation areas.

2.5 NON-STATUTORY HERITAGE REGISTERS

2.5.1 Australian Heritage Database

The Australian Heritage Database is a register, maintained by the Australian Government Department of Environment & Heritage (DEH), of sites, places and landscapes with either Aboriginal or historic heritage values.

2.5.2 The National Trust of Australia (New South Wales)

The National Trust of Australia is a non-statutory register of historic heritage sites, buildings, landscapes, places and objects. Listing by the National Trust of Australia (NSW) constitutes an authoritative statement regarding a site's heritage significance, and while it does not impose any legal constraints upon future use or development of a site or place, a National Trust listing is a strong indication of the community's recognition of that site or place's heritage significance and the need for its conservation.

[3] ibid

3.0 ENVIRONMENT

3.1 PREAMBLE

Environmental factors such as topography, climate, soils, vegetation, access to water and other natural resources strongly determined the range of cultural activities undertaken within any given area in the past. This in turn influences the types of archaeological and built heritage sites that may be found in a particular area today.

The environmental setting of Knapsack Reserve is discussed below.

3.2 TOPOGRAPHY

Knapsack Reserve is situated on the eastern escarpment of the lower Blue Mountains approximately 1 kilometre west of the Nepean River. Its locality is geologically significant because of its association with the Lapstone Monocline[4] – an extensive region of deeply incised Hawkesbury Sandstone overlying Narrabeen sandstone, formed during the uplift of the Blue Mountains. During the uplift the Nepean River migrated east leaving behind the remains of its old course. As a result, the Reserve contains Tertiary gravels from an ancient river bed deposited around 15 million years ago. The River now forms the boundary between the Blue Mountains Plateau and the extensive Cumberland Lowlands to the east.

The topography of the study area is highly varied. In the north and west undulating to rolling rises and low hills are dissected by shallow creeks that flow eastward. Adjacent crests are generally broad with moderately incised side slopes and wide benches. As you move east the terrain becomes more rugged. Creeks, including Knapsack and tributaries of Lapstone Creek, deeply dissect gullies to form steep side-slopes that feature narrow to wide outcrops of sandstone[5]. At the base of the mountains the terrain merges into gently undulating low rises on tertiary river terraces formed during the migration of the Nepean River.

In terms of access, the Reserve would have been difficult to traverse by people travelling from Nepean River terraces across the Blue Mountains to the west. However, as demonstrated by early European explorers such as Cox, Blaxland, Lawson, Wentworth and Mitchell, such crossings were possible by traversing less-steep side-slopes along Tunnel Gully Creek, directly south of the Reserve, and Lapstone Creek to the north.

[4] Bannerman and Hazelton 1990
[5] ibid

3.3 GEOLOGY AND SOILS

Knapsack Reserve extends across four [4] different soil landscapes (See Figure 3.1):

1. Crests and ridges are part of a residual soil landscape known as Faulconbridge;
2. Adjacent undulating to rolling rises and low hills to the north and west form part of the Gymea soil landscape (erosional);
3. The steep side-slopes and gullies of Knapsack Creek are part of the Hawkesbury (colluvial) soil landscape; and
4. Gently undulating low rises within Whitton Park are remnants part of the Berkshire Park soil landscape (fluvial).

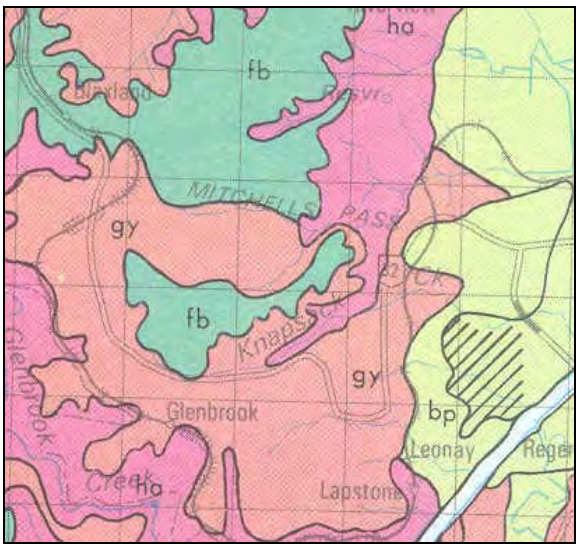

Figure 3.1: Extract from the 1:100 000 Penrith Soil Landscape Map and a rough estimate of the location of the study area. Note: extension of the study area across four soil landscapes: Faulconbridge (fb), Hawkesbury (ha), Gymea (gy) and Berkshire Park (bp).

The Faulconbridge soil landscape is characterised by level to gently undulating crests and ridges on plateau surfaces of Hawkesbury Sandstone[6]. Local relief is generally less than 20 metres, with slopes lower than 5%. Rock outcrops are occasionally present with minor sheet erosion, although severe erosion may occur following a loss of vegetation after bushfires. A typical soil profile on broad ridge crests consists of less than 100mm of loose brown / black loamy sand as topsoil (A horizon) overlying either sandstone bedrock or 150 -300mm of early yellow clayey sand subsoil (A2 horizon). The distinction between topsoil and subsoil is generally clear. With depth, the texture of the A2 horizon can increase to a sandy clay loam with yellow or orange mottled inclusions, eventually merging into a yellow earthy sand clay loam (B horizon). Total soil depth is typically between 300 and 1000mm. Of relevance to the current study, flat sandstone benches commonly found in this landscape were often used for engraved art and artefact grinding by local Aboriginal groups.

[6] Bannerman & Hazelton, 1990: 22

The Gymea soil landscape occurs extensively across the Blue Mountains Plateau[7]. The underlying geology in the area is Hawkesbury Sandstone consisting of medium to coarse-grained quartz sandstone with occasional thin lenses of shale and laminate. Outcrops of this sandstone are commonly exposed on slopes of ridges. At lower elevations (< 210m) the outcrops consist of discontinuous cliff lines up to 10 m high with platforms ranging from 6 to 10m wide. At medium elevations (210-216m) they occur as low platforms and at higher elevations, towards ridge peaks, (> 216 metres) as boulders and fragmented rubble[8]. Soils within this landscape are characterised by shallow to moderately deep (30-100cm) loose, coarse sandy loam (A horizon) overlying a yellowish brown clayey sand (20-100cm) occurring as subsoil over sandstone bedrock (B Horizon)[9]. In exposed areas this soil horizon often forms a hard topsoil layer. Soil colour is commonly yellowish brown with red and orange inclusions occasionally present with depth. Accessible rock shelters near water are commonly found within the Gymea soil landscape and were often occupied by Aboriginal people in the past, with their flat protected walls occasionally used for painted art.

Unlike the Gymea landscape, the Hawkesbury soil landscape consists of rugged rolling to very steep hills on Hawkesbury Sandstone with local relief 40 – 200 metres and slopes greater than 25%[10]. Crests and ridges are convex and narrow and slopes moderately inclined to precipitous. Rock outcrops occur less frequently (>50%) with side slopes commonly featuring rock benches, broken scarps and boulders. On crests and ridges up to 200mm of loose coarse quartz sand (A horizon) typically overlies bedrock, or less commonly, yellow brown sandy clay loam (B horizon). Total soil depth is usually less than 500mm. On side-slopes and benches locally deep pale sands may occur below the B horizon. Habitable shelters are much less common within this soil landscape. The highly acidic nature of soils within the Hawkesbury Landscape, combined with rainfall and drainage, also accelerates the breakdown of organic compounds found in archaeological deposits. This has implications for potential archaeological deposits (PAD) identified within shelters found in this soil landscape.

Towards the base of the mountains the landscape merges into dissected, gently undulating low rises formed on the Tertiary terraces of the Nepean River system. At Whitton Park remnants of the Berkshire Park soil landscape are likely to be present. Soils in this area are the result of three depositional phases that occurred during the Tertiary period. The lowest deposit is the St Marys formation, overlying the Rickabys Creek gravel formation topped by the Londonderry Clay formation. All are derived from sandstone and clay. In flat, low-lying areas a dark brown sandy loam or reddish brown to yellow brown sandy to fine sandy clay loam up to 500mm thick(A horizon) can be found above a 500mm thick brown sandy clay horizon containing up to 20% ironstone nodules (B horizon). Below this, brightly coloured clay with up to 90% of stones may be present (up to 900mm thick). In most areas brown sandy clay (B horizon) is found overlying the stone rich clay (B horizon).

A number of raw stone sources were available to local Aboriginal groups for the production of artefacts used to process plant and animal foods. These included the Nepean gravel beds, where silcrete and fine-grained volcanic material such as basalt were available. Basalt was commonly flaked and ground to create axe heads for wood processing and trade. Isolated deposits of ancient river gravels are also commonly found in the Lower Blue Mountains. These were part of an early Tertiary course of the Nepean River, deposited around 15 million years ago before the uplift of the Blue Mountains. During the uplift the Nepean migrated to the east leaving behind remains of

[7] ibid
[8] Rich 1986: 11
[9] Bannerman and Hazelton, 1990:57
[10] Ibid: 44

its old course. Relics of the ancient river system are present within Knapsack Reserve. Other sources include quartz pebbles found within the Hawkesbury Sandstone and cobbles and pebbles of the Rickabys Creek gravels, including quartz, quartzite, chert and metamorphic rocks.

3.4 VEGETATION

On dry exposed slopes and crests within Knapsack Reserve the vegetation is classified as low woodland with a dry sclerophyll shrub understorey[11]. Dominant canopy species include red and yellow bloodwood (*Eucalyptus gummifera and E. eximia*), scribbly gum (*E. haemastoma*), brown stringybark (*E. capitellata*) and iron bark (*E. fibrosa*) species. The understorey is dominated by Epacridaceae, Myrtaceae and Proteaceae shrub species and various Acacia and Casuarina species.

Wet scherophyll forest tends to dominate more sheltered positions such as lower slopes and gullies. Smooth-barked apple (*Angophora costata*) and Sydney Peppermint (*Eucalyptus piperita*) are often dominant canopy species in these areas. Scrub species, such as Crinkle Bush (*Lomatia silaifolia*), Grass trees (*Xanthorrhoea spp*) and Common Bracken (*Pteridium esculentum*) tend to be found in the understorey. Within Whitton Park the original vegetation is likely to have consisted of broad-leaved ironbark (*Eucalyptus fibrosa*), narrow-leaved apple (*Angophora bakeri*) and Scribbly gum (*E. sclerophylla*).

The majority of original vegetation within Knapsack Reserve has remained undisturbed with the exception of Knapsack Park, the path of the former railway zig zag at Lapstone and associated railway cuttings, Whitton Park, the Sewerage Treatment Works and former quarries near Lennox Bridge where vegetation has been cleared. Occasional rubbish has been dumped from elevated areas into side-slopes and gullies. A number of dirt jump bike sites are also present near Olivet Street.

[11] Ibid

4.0 HISTORY

4.1 RESEARCH METHODS

Comprehensive studies on the history of Glenbrook, early crossings over the Blue Mountains, the Zig Zag Railway, the Lapstone Hill Tunnel and the greater Lower Blue Mountains have been compiled by local historians including Mackaness[12], Karskens[13], Bayley[14], Pratten & Irving[15], Jack[16] and the Glenbrook & District Historical Society[17]. These sources were used as a starting point for research. Existing material was then supplemented, where necessary, with historic maps, plans, ethnographic accounts and other documentation that provided additional information regarding site specific occupation and use of Knapsack Reserve following European settlement. The following tasks were undertaken during research on the Reserve's history:

- Ethnographic accounts by early European explorers were reviewed to provide insights into the Aboriginal history of the area.
- The chain of title for the property was defined by sourcing records held at the NSW Lands and Titles Office;
- Original copies of Nineteenth Century historic maps and plans, showing occupation of the locality incorporating the site, were collected for review;
- Primary historical sources describing the locality incorporating the site were reviewed; and
- Relevant secondary historical sources were reviewed to augment existing data regarding site specific use and occupation, and to gain a contextual understanding of past land use and development in the locality incorporating the site.

Information was sourced from the following archives:

- NSW Lands and Title Office;
- Local Studies Collection, Blue Mountains Library;
- Mitchell Library;
- NSW State Records; and
- Glenbrook & District Historical Society.

The following sections are not designed to form a comprehensive narrative of the history of Glenbrook. Rather, they aim to provide a context for the site specific developments that occurred within Knapsack Reserve.

[12] 1965, Fourteen Journeys over the Blue Mountains of New South Wales 1813 – 1841.
[13] 1988, An Historical and Archaeological Study of Cox's Road and Early Crossings of the Blue Mountains.
[14] 2001, Lapstone Zig Zag Railway.
[15] 1993, Lapstone Hill Tunnel Conservation & Management Plan
[16] 2000, Blue Mountains Heritage Register Review
[17] 2005, The Glenbrook of Yesteryear

4.2 TRADITIONAL ABORIGINAL LIFE

The Sydney Basin was occupied and used by Aboriginal people for thousands of years prior to European settlement. In the Lower Blue Mountains, sandstone gullies, creeks, floodplains, swamps and woodlands provided Aborigines with a rich and varied resource zone and occupation area.

To-date, the earliest undisputed radiocarbon date for Aboriginal occupation of the Hawkesbury-Nepean is from a rock shelter site situated at Shaw's Creek near Springwood. A date of 14 700 years Before Present (BP) was recovered from the site[18]. Analyses of deposits indicate that people living in the shelter exploited food and resources from the river and surrounding countryside. This pattern of subsistence continued until the time of European invasion. Occupation sites, such as Shaw's Creek, provide tangible evidence and an on-going link with the long history of Aboriginal use and occupation in Western Sydney. Our current knowledge on habitation of the region, however, will continue to change as new sites are found and analysed.

Despite a proliferation of Aboriginal sites there is considerable ongoing debate about the nature, territory and range of pre-contact Aboriginal language groups in the greater Sydney region. These debates have arisen largely because by the time colonial diarists, missionaries and proto-anthropologists began making detailed records of Aboriginal people in the late 19th Century; pre-European Aboriginal groups had been broken up and reconfigured by European settlement activity. The following information relating to Aborigines in the lower Blue Mountains is based on such early detailed records. It should therefore be highlighted that these documents are inherently biased by the class and culture of the authors. When combined with archaeological information, however, they can provide a picture of traditional Aboriginal life in the region.

The first people known to have an association with this landscape were people of the *Darug* language group. *Darug* was first described as a language (or dialectic group) by pioneer surveyor, anthropologist and linguist R H Mathews in the early 20th century. He described the extensive range of this language group as follows:

> *'The Dharruk speaking people adjoined the Thurrawal on the north, extending along the coast to the Hawkesbury River, and inland to what are now Windsor, Penrith, Campbelltown and intervening towns'.*[19]

Since then, most historic and linguistic research has suggested that the *Darug* were principally an 'inland' group, associated with the Cumberland Plain and distinct from the Aborigines of Coastal Sydney.[20] A separate language group, known as the *Guringai*, is thought to have lived along the coast of Port Jackson and Broken Bay[21], although the extent of their territory continues to be debated[22].

Early European accounts indicate that the subsistence practices of hinterland and coastal groups differed significantly. Coastal groups, such as the Guringai, exploited marine and estuarine resources whilst hinterland groups like the Darug relied on freshwater and terrestrial animals and plants.

[18] Attenbrow 2002: 20
[19] Mathews, 1901: 135
[20] Ross, 1990: 31-33
[21] Ross in Powell and Banks, 2000: 31
[22] Attenbrow, 2002: 35

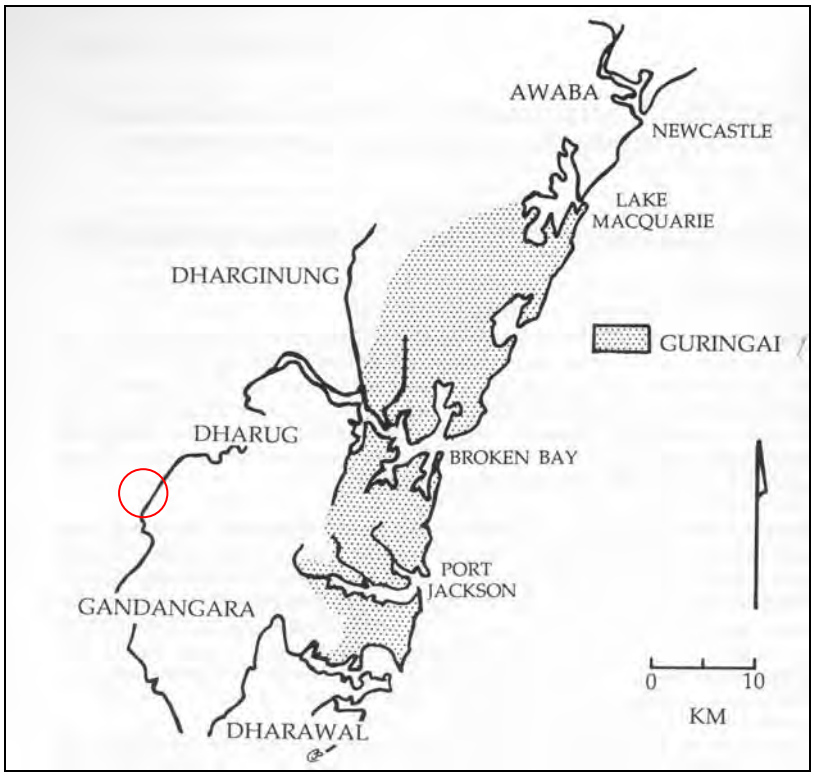

Figure 4.1: Aboriginal language groups defined by Ross using ethno-historical evidence (Powell and Banks, 2000:32)

One such account was written by Captain-Lieutenant Watkin Tench during his 1791 exploration along the Hawkesbury-Nepean River. During their search for Richmond Hill, Tench and his companions travelled northwest from Rose Hill (Parramatta) following the Hawkesbury River to Cattai Creek – 3.2 km south west of the study area. Guided and informed by Colbee, an Aboriginal man from the Cadigal tribe, Tench recorded the following information about the local Darug group living in the area to the north west of Parramatta:

> *We asked Colbee the name of the people who lived inland, and he called them Boo-roo-ber-on-gal; and said they were bad; whence we conjectured, that they sometimes war with those on the sea coast…..We asked how they lived. He said, on birds and animals, having no fish.*

On their return journey along the river the exploration party encountered a group of Aboriginal men in canoes. One member of this party introduced himself as Gom-beè-ree. He exchanged two stone hatchets and two spears for two hatchets from Governor Phillip and some bread and indicated a path along the river. After the explorers had crossed Bardenarang Creek Gomberee was joined by two other members of the canoe party, Yèl-lo-mun-dee and a boy called Dèe-im-ba. The women and children travelling with this group remained on the opposite side of the river throughout the encounter. Tench questioned Yèl-lo-mun-dee and wrote the following account about their lifestyle.

> *"What we were able to learn from them was, that they depend but little on fish, as the river yields only mullets, and that their principal support is derived from small animals which they kill, and some roots (a species of wild yam chiefly) which they dig out of the earth. If we rightly understood them, each man possesses two*

> *wives…Neither of the men had suffered the extraction of a front tooth. We were eager to know whether or not this custom obtained among them. But neither Colbee, nor Boladeree would put the question for us; and on the contrary showed every desire to wave the subject".*

The practice of tooth avulsion during male initiation ceremonies was a significant difference between the coastal Guringai and the inland Darug peoples. During Guringai ceremonies the upper right incisor of men were removed. This did not occur during initiation of Darug men. Given the ceremonial context of the practice it is not surprising that Colbee or Bolanderee refused to question the local Darug people.

Observations made by the early European explorer Barrallier in 1802 provide further insights into food resources and hunting practices of inland Darug tribes. In his journal Barrallier notes that swamps were important resource zones where *"enormous eels, fishes and various species of shell" were consumed by Aboriginal people.* Rivers were also *"teeming with different species of fishes and shells*[23]*"*. Pointed fishing spears and fishing lines were used during fishing. Possums and kangaroos were also staple foods. Whilst spears, clubs and boomerangs were used to hunt possums and other small terrestrial animals hunting kangaroo required the co-operation of large numbers of people.

> *"To hunt the kangaroo, they formed a circle….according to the number of natives assembled. They usually stand about 30 paces apart, armed with spears and tomahawks….each one of them holding a handful of lighted bark, at a given signal they set fire to the grass and brush…as the fire progresses they advance forward…narrowing the circle and making as much noise as possible, with deafening shouts. The kangaroo, which are thus shut into that circle and burn their feet… They then try to escape in various directions and the natives throw their spears at the one passing nearest them*[24]*."*

While the method described above was suitable for wood and grassland, it was not suited to the more elevated, rockier land where a different method of catching macropods was utilised. Mrs Felton Matthews, wife of the famous 19th century surveyor, wrote about life on the Hawkesbury while journeying with her husband in 1833. On one occasion near the MacDonald River, she recorded Aboriginal wallaby hunting on rocky ground above the river:

> *"The lofty rocky ranges which border this river on either side I have frequently described, and there is nothing either to describe or relate during this journey: the dead unbroken silence which prevailed all around was extremely oppressive, and the voices of some natives which broke on the ear after some time, was really quite a relief: on nearer approach we found they were hunting wallabi or what they call wallabunging, a number of them assemble, and while some run along the tops and sides of the rocky heights shouting and screaming, drive down the poor little frightened inhabitants to the flats below where others attack them with their spears and dogs; we saw three of these little creatures hopping along with speed, followed by dogs and blacks at full cry –".*[25]

The passage above describes the use of dingos as hunting dogs. Dingos were also food for Aborigines on occasion, as were other land animals including koalas, wombats, grubs and

[23] Barrallier, 1802 in Martin, 1986: 46
[24] Ibid
[25] Mathews in Havard, 1943c: 237

lizards.[26]

The Hawkesbury-Nepean River would have supported a diverse range of plant and animal species that could be eaten or used for other purposes such as providing shelter and medicines. The river supports a healthy population of mullet. Yams also grow in abundance along the river's terraces. As noted by Hunter[27], yams were a staple food item for groups living along the Hawkesbury-Nepean.

> *"the natives here appear to live chiefly on the roots which they dig from the ground….in considerable quantities, the yams being in greatest plenty on the banks of the River."*[28]

Other consumable plants species found in the area include figs, yams, fern roots, cycads, cabbage tree palm hearts and certain lilies. A number of tree species in the area supplied bark that could be used in the production of twine for nets and baskets.

Resource rich swamps and lagoons were resource zones of great importance to hinterland Aborigines. Within these small freshwater bodies were eels, fish and a variety of shellfish including freshwater mussels (*Velesunio ambiguus*, *Hyridella australis* and *Hyridella depressa*). The swamps also harboured water rats, frogs, echidnas, as well as a variety of bird life including ducks. Birds in particular were targeted in a number of ways and were harvested by nets, spearing, ensnared in pit-traps and hand caught by stationary Aborigines using fish pieces as bait[29]. Duck and quail were plentiful along the river and are likely to have formed a large component of the Darug diet. Bird species that may have been hunted include the wood duck (*Chenonetta jubata*), the chestnut teal (*Anas castanea*) the brown quail (*Coternix australis*), the black duck (*Anas superciliosa*) and the black swan (*Cygnus atratus*).

The following account written by Hunter described complex hunting traps used by the Darug to capture birds and other animals.

> *"At the foot of Richmond Hill I once found several places constructed expressly for the purpose of ensnaring animals and birds. These were wide enough at the entrance to admit a person without much difficulty; but tapering very gradually from the entrance to the end, and terminating at a small wickered grate. It was between forty and fifty feet in length; on each side the earth was thrown up; and the whole constructed of weeds, rushes and brambles; but so well secured that an animal once within it could not possibly liberate itself. We supposed that the prey, be it beast or bird, was hunted and driven into this foil; and concluded…that they force it to the grated end, where it is soon killed by their spears. In one I saw a common rat, and in another the feathers of a quail."*

In later years the ethnologist, R. H. Matthews collected a substantial body of information about the language, ceremony, mythology and social organisation of the Gandangara, Tharawal and Darug peoples. Gatherings of small and large numbers of people are likely to have taken place for ceremonial reasons or to share seasonally abundant resources[30]. Occasions for large gatherings may have included predictable seasonal events such as bird migrations, or one off events such as whale beachings. Such interactions between groups are likely to have varied with the seasons and availability of resources, but ultimately resulted in the sharing of resources,

[26] Attenbrow, 2002: 71; Ross, 1990: 37
[27] Hunter 1968 in Martin, 1986: 45.
[28] Ibid
[29] Ross, 1990: 37; Attenbrow, 2002: 88
[30] Attenbrow 2002

technology and knowledge. This is reflected in the relatively homogenous cultural features observed in the Sydney region, such as art motifs, technology and evidence of resource use[31].

4.3 ABORIGINAL CONTACT HISTORY AFTER 1788

Aboriginal traditional life in the Sydney region was broken through the course of the 19th century. The impact of smallpox and influenza decimated the Aboriginal population, with individual epidemics killing large numbers of people. Early white settlement of traditional hunting lands deprived Aboriginal groups of sources of food and access to camping and ceremonial sites. This forced individuals to either relocate into the potentially hostile lands of neighbouring Aboriginal groups, partially integrate into colonial society as fringe dwellers or to resist.

Given the relatively slow rate of European settlement west of Parramatta and the isolation of the Blue Mountains it seems likely that the area became a refuge for Aboriginal groups during the 19th century. Early accounts dating from 1813 to 1827 certainly indicate that Aboriginal people continued to occupy the Mountains during contact and post-contact periods.

In 1813, Blaxland, Wentworth and Lawson noted numerous groups of Aboriginal people living in the mountains. On their third day of exploration, following the crossing of the Nepean River, Blaxland noted a number of 'native huts' near the River[32]. The exploration party later encountered two large groups of Aborigines between Medlow Bath and Mount York. The first group consisted of about thirty men, women and children camped around fireplaces on the sandy banks of a swamp near Blackheath. The second group were camped in forest near Mount Victoria. Interestingly, Lawson commented that

> *"they appeared to have been very busy sharpening their spears from shavings and pieces of sharp stones they had left behind. They appear on this side of the Mountains to have no huts nor to bark or climb the trees like the natives on the other side. The only remains of food they have left round their fireplaces was the flower of the Honey suckle tree which grows like the bottle brush and are very full of Honey which they sucked out"*[33]

Similarly, in 1814 George William Evans noted the presence of Aboriginal people living in the Lower Blue Mountains. Although he could not see the groups, Evans commented on hearing their shouts around them[34]. Further along his journey, on the Bathurst Plains, Evans encountered two Aboriginal women and four children. Evans gave the group fish, fish hooks, twine and tomohawks, noting that both the women were blind in their right eye[35]. Numerous groups were also noted at the base of the Mountains, near Mount York.

Major Henry Colden Antill recorded the following observations on Aborigines living on the Bathurst Plains during Governor Macquarie's 1815 excursion across the Mountains, with Mrs. Macquarie and a party of gentlemen:

> *"They had nothing with them but a couple of rude spears which they threw down near one of the huts, and seemed perfectly careless about them. One old man was*

[31] McDonald 1992
[32] Blaxland, 1813 in Mackaness, 1965: 3
[33] Ibid, p10
[34] Evans, 1813 – 14 in Mackaness, 1965: 20
[35] Ibid, p28

> *blind of an eye, which the people stationed here said was frequently the case both with the men and women…They resembled the natives about Sydney, but did not speak the same language; they appeared, however, to be one degree more advanced towards civilisations than our old friends, possessing some art in manufacturing themselves cloaks of skins, very neatly sewed together by the sinews of the kangaroo and emue, and carved on the inside with a variety of figures. These cloaks were for the sole purpose of keeping themselves warm…*[36]"

On their 1819 journey to Bathurst three Frenchmen, Quoy, Caudichaud and Pellion encountered two Aboriginal men at Springwood: an old man known as *Karadra* – who was chief or king of that part of the mountains and a younger man. The older man boasted that

> "*No one had proved more dangerous to the English, many of whom had perished at this hand, without anyone ever being able to catch him in the act. For a long time, however, this man had been peacefully disposed towards the settlers; he even served them either in warring against inland aborigines when the latter wanted to approach the Nepean, or by warning the English depots of their approach.*[37]"

By 1827, very few Darug people had survived European settlement on the Cumberland Plain and numbers appear to have dwindled in the Mountains. William Dumaresq provided an extensive account of his ride to Bathurst in 1827. During his journey he encountered only three Aborigines living in the Blue Mountains.

> "*These were stout athletic fellows, clothed in large cloaks of opossum skins, neatly sewed together, and whose beards were eight or nine inches long. The black race is visibly declining in numerical strength every year....The tribes who occupy the country two and three days journey from Wellington Valley have been engaged in war several years with the tribes living further west and north west; but owing to the death of one of the chiefs, peace has been at length restored between them*[38].

Many of the traditional groups broke up and scattered or re-aligned themselves by the time that colonial diarists, missionaries and early visitors to the area made detailed records of the Aboriginal inhabitants. The various 'tribes' referred to by colonists in the 19th Century were the result of major post-Contact social reorganisation. Some researchers have argued that by as early as the 1820s, the pre-contact clans and bands no longer existed as identifiable groups.[39] As indicated above, early accounts suggest that clans continued to live semi-traditional lives in the Blue Mountains until at least the 1830s.

4.4 EUROPEAN EXPLORATION

Unlike many other localities in the Sydney region the lower Blue Mountains were not 'discovered' by famous settlers who decided to start a developing town. Rather it was seen as difficult, rugged terrain which had to be crossed to access areas where the land was more fertile or contained gold[40].

[36] Antill in Mackaness, 1965: 83
[37] Quoy, Gaudichaud and Pellion 1819 in Mackaness, 1965: 95
[38] Dumaresq 1827 in Mackaness, 1965: 187
[39] Attenbrow, 2002: 56;
[40] Aston, 1986: 1

The first Europeans to utilise the area were explorers, trying to discover routes up gullies and over the steep cliffs, and a few escaped convicts who hid amongst shelters in the area. Kangaroo hunters also set up temporary camps in the area, particularly around Glenbrook Lagoon where kangaroo populations were guaranteed. Notable attempts to cross the sandstone barrier and explore the region include Dawes and Johnston in 1789, Tench and Dawes in the Warragamba area in 1790, Peterson's journey through the Grose Valley in 1793, Hacking's attempt to cross the mountains in 1794, followed by George Bass in 1796. Francis Barallier and botanist, George Caley also made several attempts. Following Caley's difficult journey, exploration activity ceased until after 1805. Governor King became convinced that the Blue Mountains were "so difficult as to be not worthwhile"[41].

Between 1810 and 1820, however, drought, insect plagues and the deterioration of native grasses on the Cumberland Plain led to a desperate need for pasturage to graze cattle[42]. In response, wealthy graziers, Gregory Blaxland, Lieutenant William Lawson and 'young' William Charles Wentworth mounted an expedition to cross the Blue Mountains to find suitable grazing land. Unlike previous journeys, the explorers kept to the heights, followed the ridges rather than the valleys. The new method was a success. On May 11, 1813 the three explorers, four other men, four horses and five dogs crossed the Nepean River at Emu Ford and ascended the main ridge between the Grose and Cox Rivers (now the route of the Great Western Highway between Glenbrook and Mount Victoria). On May 29 they reached Mount York and began their descent into Kanimbla (Hartley) Valley where they found suitable grazing land. In the valley the explorers observed *"forests all around them, sufficient to feed the stock of the colony, in their opinions, for the next thirty years*[43]. After climbing Mount Blaxland on the 31st May they retraced their steps, arriving back to Blaxland's Farm on South creek on the 6th June.

Soon after this discovery Governor Macquarie sent the Assistant Surveyor at the time, George Evans, to 'confirm and extend' the boundaries of these forests. Evans found good pasture around Bathurst, but made little comment about the Lower Blue Mountains. Macquarie did not officially recognize Blaxland, Lawson and Wentworth's expedition until June 1814, at which time he granted each man one thousand acres of land.

4.5 CROSSING THE MOUNTAINS

In July, 1814, Macquarie appointed William Cox as the Superintendent of Works for a road over the Blue Mountains. Cox was born in Dorcester in 1797, joined the NSW Corps as a Lieutenant and was appointed paymaster before leaving England. By 1803, Cox owned 1, 380 acres of land, 100 cattle, 2, 000 sheep and 4,000 pounds worth of property. After resigning from the Corps in 1807 Cox settled down at his farm at Clarendon near Windsor. By the time Macquarie appointed him as Superintendent of Works, he had considerable road-making experience in the County of Cumberland[44].

Cox was given limited provisions and time to complete the road to Bathurst. He was provided with fifty [50] men, only 22 or which were labourers[45]. Work on the road commenced on the

[41] King in Karskens, 1988: 6.
[42] Karskens, 1988: 6
[43] In Aston, 1986: 1
[44] Mackaness, 1965: 34
[45] Karskens, 1988: 18

18th July, 1814[46]. Macquarie instructed Cox to follow the "track laid down on Mr. Evans map" with the road to be "at least 12 feet (3.66m) wide so as to admit 2 carts or other wheeled carriages to pass each other"[47]. Cox's journal, however, clearly indicates that detailed reconnaissance of Evans' line had not been completed before work began and there the track was far from clear. Cox followed Evans line along the mountain ridges fairly closely. However, on the plains Cox was forced to locate his own line from Mount York to Cox's River and Mount Blaxland to Bathurst[48].

The ascent of Lapstone Hill began near the present-day creek in Leonay Golf Course, where Cox remarked on the stony soil and hard ironbark timber[49]. The construction of the road essentially involved clearing timber to at least four feet (1.2m) on either side of the road. The stumps were then meant to be removed and the holes filled so that four wheeled carriages could pass through safely. Later records suggest that the stumps were actually cut 15-30cm below the surface[50]. Cox's construction gang was provided with felling axes, cross-cut saws, grub hoes and common hoes to clear the path. Crow bars, tomahawks and sledgehammers were used to break and remove stone. Stone was quarried using a single iron maul and twelve iron wedges, saws were maintained using saw files and sawsets and cart wheels replaced using a spoke sheave. While the construction gang continued their work on Emu Plains Cox travelled ahead to examine the ground and locate suitable places to cross creeks and ascend the Hill. The final line of the road ran up towards the top of the ridge at Glenbrook. The steepness of the slope however, forced Cox to follow along the side of the slope rather than directly ascend the hill. This usually involved side cutting and embankment works.

Aston[51] describes the initial route of the Bathurst road in detail (see Figure 4.3):
"The road itself crossed the Nepean River at Emu Ford and followed the bank nearly as far as Tunnel Gully. Then it climbed the long, steep mountain spur and up Knapsack St to the top of the ridge. It more or less followed Mount Street and Lucasville Road until in crossed Glenbrook Park and went on past the First Depot to Blaxland. Beyond that, the main ridge was so narrow that it could only follow the route still used by the Highway and Railway."

Despite the difficult terrain and the limited size of the construction gang, Cox completed the road to Bathurst in a record six months. The road was not designed to be easily traversable. Macquarie did not wish to open up the lands to the west as this provided a security risk for escaped convicts and cattle thieves[52]. Merely, a cleared track was required to move cattle to new pastures and allow Macquarie to inspect the new land. At the official opening of the road Macquarie's intention to restrict access to pastures in the west was made clear. He warned that "*he did not intend to make any grant of land to the westward of the Blue Mountains*".

A guarded depot with a store-house was established at Glenbrook Lagoon to prevent unauthorized crossings. During Governor Macquarie's first inspection of the road the post was described by Major Henry Antill as "*a good log hut with two rooms, one of which answers as a store. It is placed about 100 yards on the right of the road near a small lagoon of fresh water*"[53]. This post is considered to be the first settlement in the Lapstone / Glenbrook area.

[46] Cox in Mackaness, 1965: 34
[47] Karskens, 1988: 18
[48] Ibid: 27
[49] Cox in Mackaness, 1965: 34
[50] Karskens, 1988:29
[51] 1986: 3
[52] Karskens, 1988: 18
[53] Ibid: 3

After selecting and naming the future city of Bathurst in 1815 Governor Macquarie proclaimed:

> *"Such gentlemen or other respectable free persons as may wish to visit this new country (Bathurst) will be permitted to do so on making written application to the Governor….The military guard stationed at the first depot on the mountains will receive full instructions to prevent the progress of any persons who shall not have obtained regular passes"*

The area therefore first served as a gateway from the convict colony on the coast to new grazing land to the west.

Between 1815 and 1830 Cox's road continued to be used by herds of cattle, sheep flock and supply carts. In 1819 William Lawson accompanied three Frenchmen, Messr. Quoy, Gaudichaud and Pellion, to Bathurst. Along the ascent of Lapstone Hill Cox's road was described as "*a magnificent road….both well-kept and well-marked*". They admired its *"successive turns in one direction or another….but kept imperceptibly rising*"[54]. By 1820, the first large-scale improvements were made to Cox's line to carry the increasing traffic of horses and bullock team carrying settlers and their families. As the traffic across the mountains increased reports of new lines emerged. In 1826, Captain William Dumaresq – an engineer and the appointed Inspector of Roads and Bridges, wrote an account of a new zig-zag ascent of Lapstone Hill (now Old Bathurst Road).

> *"It is really worth going from Sydney to see this beautiful bit of road up the mountain. It winds first one way and then another, broad and level,…..good enough for a battering train to pass over…."*[55]

Cox's original ascent and the new zig zag route are shown in Rusden's survey in 1831 (Figure 4.2). It is likely that the road with its substantial rubble-stone walling was laid out by Dumaresq himself as an alternate route to avoid the flooded creeks near the Nepean River[56]. The new route, however, was only used for nine years as the bends were too sharp for bullock teams.

In 1825 Barnett Levey was the first settler to buy land at the top of Lapstone Hill, a portion totalling 960 acres. Although Levey did not live on the land he left a lasting impression by naming numerous streets and parks. He named the gully beside Mitchells Pass the 'Jehosaphat Valley' and the associated creek 'Brook Kedron' (now known as Lapstone Creek). Before further subdivision, the Pilgrim Inn was built in the western corner of Levey's property and run by a Mr James Evans, the first permanent resident of Lapstone Hill. The old stone building was demolished in 1912.

In 1832 Major Thomas Mitchell decided to build a new road through Lapstone and Glenbrook, as both the existing Lapstone Hill routes at the time were extremely difficult to traverse and considered to be unsatisfactory. Plans for the road were drawn up and clearing work commenced in August of the same year.

The new road, now know as 'Mitchells Pass', travelled "*up the gully pointing to the Pilgrim (Inn)" to the north of Lapstone Hill*" The construction of the road required the blasting of rock and the building of drains. The road was carefully edged with stones which can still be seen under the tar in places (Figure 4.3).

[54] Karskens, 1988:44
[55] Dumaresq, 1827 in Karskens, 1988:48
[56] ibid

David Lennox was commissioned to build a bridge across Brookside (now Lapstone) Creek. Lennox was appointed Sub-Inspector of Bridges in New South Wales seven weeks after arriving in the colony. His first commission was to plan and organise the construction of a bridge across Brookside Creek on Mitchell's Pass. By November 1832 Lennox had selected twenty convicts with construction experienced, begun quarrying near the creek and cut a number of stone blocks in preparation for construction of the bridge. To provide optimum strength Lennox employed a horseshoe shape design. In March 1833 the bridge keystones were ready to be carved. Mitchell decided that on the upstream side the stone should commemorate its designer – 'David Lennox'. The date - AD 1833 – was marked on the north side. The bridge was completed in March 1834 and formed the centrepiece of the pass (Figure 4.4).

In the 1830s stockades were established at "Bulls Camp" adjacent to the current Woodford Academy to house the numerous road gangs who continued to work on sections of road between present day Blaxland and Leura, repairing bridges and straightening road sections to reduce travel distance. From the 1840s to the 1860s Mitchell's Pass continued to be used by people travelling to and from Bathurst. In 1851, following the discovery of gold in Bathurst, hundreds of prospectors travelled through the Lapstone area. Many camped along the way in caves alongside Mitchell's Pass.

By 1862 very little of Cox's original road was still in use, and those sections that were had become impassable and were difficult to maintain. An alternate form of transport was sorely needed to travel through the Blue Mountains.

Mitchell's Pass continued to carry heavy traffic until 1926 when a new road up Lapstone Hill was opened to divert traffic. Lennox Bridge carried motor vehicles until 1975 when it required substantial safety improvement works. Following renovations the bridge was re-opened and is still in use today.

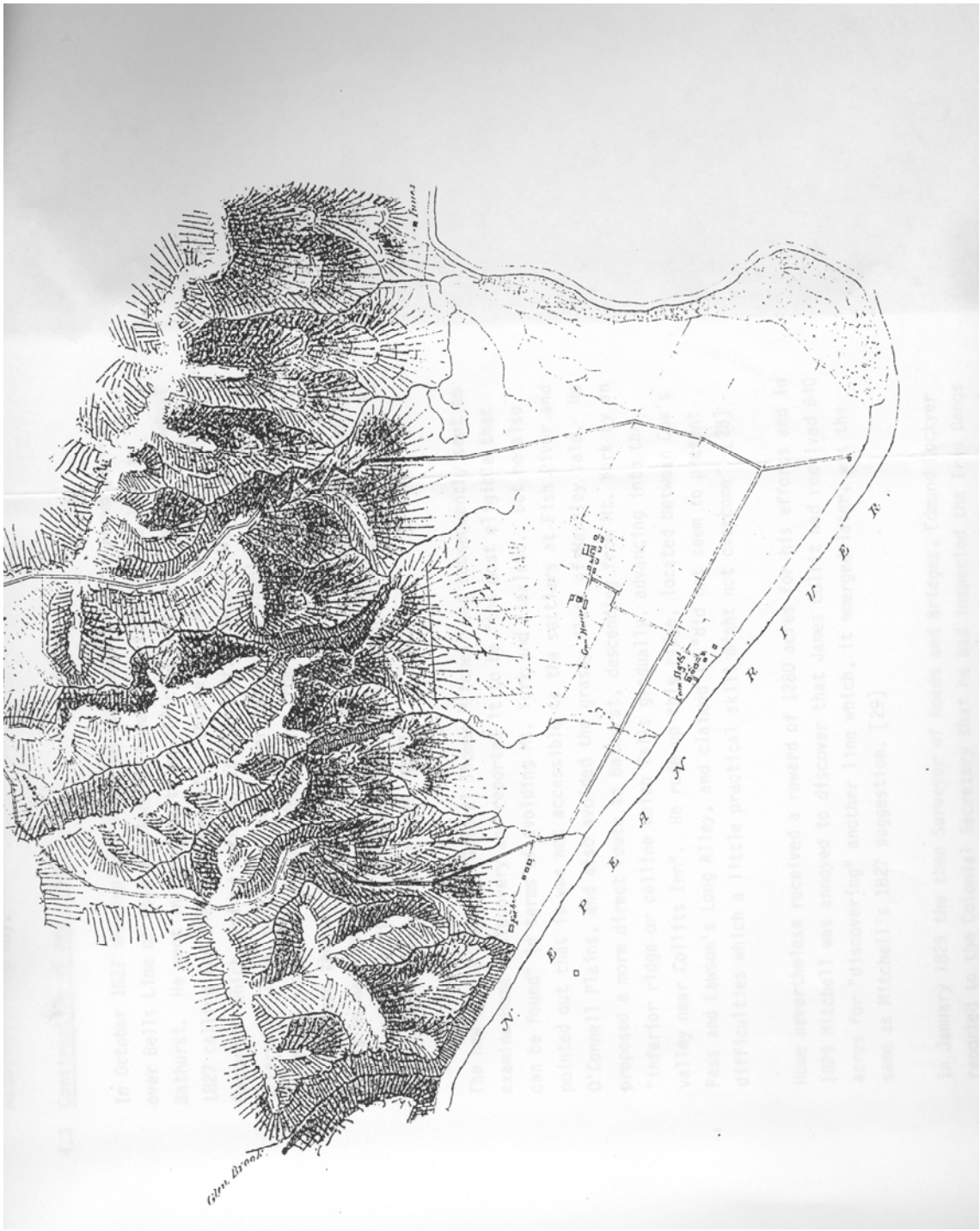

Figure 4.2: F. Rusden's 1831 "Plan of Emu Plains" showing Cox's original road and the new zig zag ascent of Lapstone Hill (NSW State Records: AO2670 reproduced from Karskens, 1988: 48).

Figure 4.3: Charles Rodius "Convicts building a road over the Blue Mountains, 1833" showing Mitchell's Pass under construction (Rex Nan Kivell Collection, National Library of Australia: reproduced from Karskens, 1988: 53).

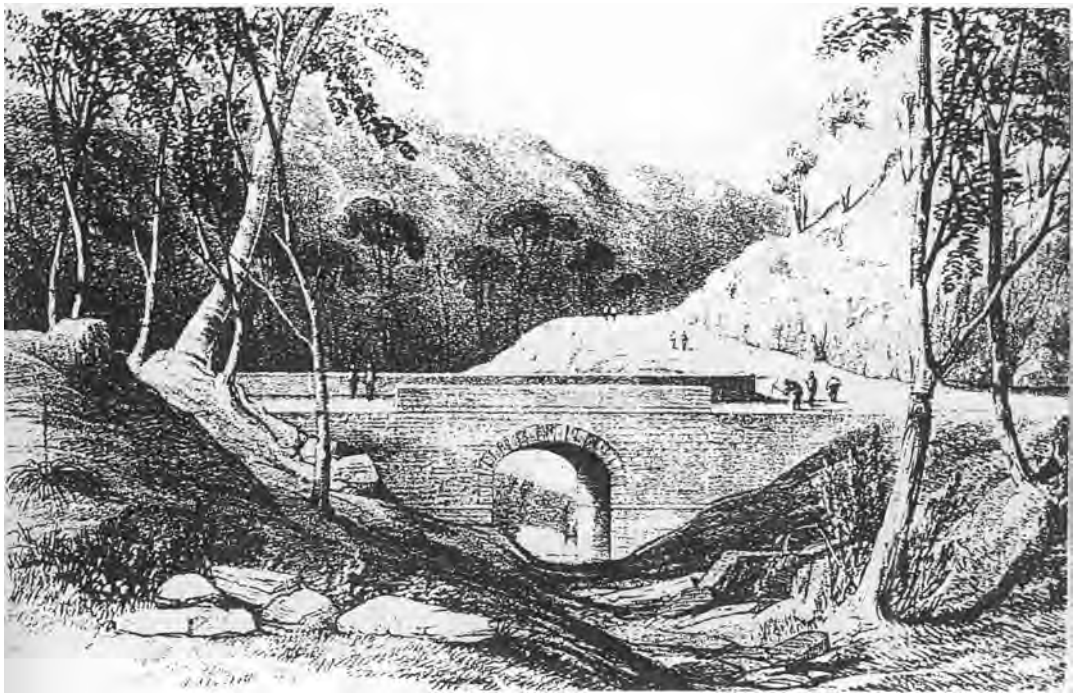

Figure 4.4: R. M. Westamacott "Road from Emu Plains over the Blue Mountains. First Stone Bridge built in New South Wales. C1834" showing David Lennox Bridge designed by David Lennox and built in 1833. (Dixon Library: reproduced from Karskens, 1988: 54)

4.6 THE RAILWAY

In 1855 the railway from Sydney to Parramatta was officially opened and, shortly after, the western extension to Penrith. The ascent of Lapstone Hill, however, posed significant difficulties to railway engineers. After much deliberation a solution was found: the construction of a zig zag – *"a type of railway construction designed to negotiate very abrupt ascents. The lines are laid in the form of one or more z's with reversing points where the line doubles back to enable the train to reverse in direction*[57]*"*. This solution avoided tunnelling through the mountain, an option that was not feasible for the colony at the time.

Surveys for the proposed railway began in 1860. The design and construction of the Lapstone Zig Zag was supervised by the NSW Engineer-in-Chief John Whitton. Whitton was born in Yorkshire in 1819 and worked on English railways for many years before becoming the engineer on the Oxford, Worcester and Wolverhampton lines. Following a recommendation from the Board of Trade, the colony of New South Wales appointed him Chief Engineer of Railways in March 1856.

Before work on the Zig Zag could commence, however; a bridge across the steep ravine known as Knapsack Gully was required. At the time, the viaduct was one of the largest bridges in the colony featuring five arches rising more than 120 feet above the gully (Figures 4.5 and 4.6). On July 21, 1863, The Sydney Morning Herald reported on construction of the Knapsack Viaduct. The following extract describes its size and construction:

> *"The bridge will be carried over by five arches of fifty feet span, and two of twenty five feet span at a height of more than 120 feet above the bed of the gully… The sides of the gully are extremely rough and precipitous….it was expected that the material for the piers could be obtained in the gully but the stone procured there was not suitable for the work, and after several quarries had been tried some excellent stone was found at a distance of more than two miles from the gully and a road had to be made along the side of the mountain for that distance. It was estimated that the extra cost of the viaduct…. will be at least 5000 pounds. The stone is carted to the gully in blocks and then squared into the required sizes".*

[57] In Bayley, 2001: 4.

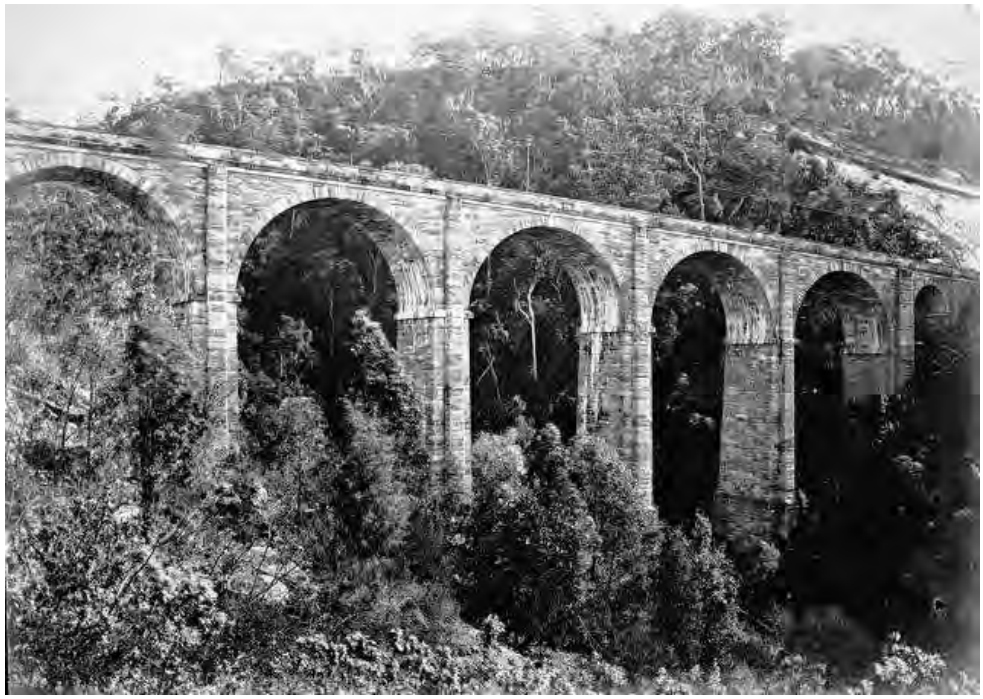

Figure 4.5: "The Viaduct over Knapsack Gully on the Zig Zag Railway" 1878 (Museum Victoria: http://mview.museum.vic.gov.au)

Figure 4.6: View of the Knapsack Viaduct, Lapstone. n.d. from Emu Plains (NSW State Records: http://investigator.records.nsw.gov.au)

Construction of the Zig Zag also required considerable quarrying and cutting to acquire the required gradient for the railway. William Watkins was contracted to undertake the job in March 1863 and by mid 1867 the railway was ready to be trialled. The first excursion took place on Monday June 17[58]. The train carried passengers travelling to the Weatherboard Inn and a number of police officers. The trip was a success. Further use of the new rail line; however, halted during flooding of the Nepean River. The June 1867 flood proved to be one of the largest floods ever seen, washing away dams and piers of the new bridge constructed at Emu Plains. The official opening of the Great Western Railway extension to Weatherboard (Wentworth Falls) was delayed until August 27 1867. The Lapstone Zig Zag was described in detail in The Sydney Morning Herald on November 4, 1968 (See Figure 4.7).

> *"The ascent of the Blue Mountains by the ordinary road is so steep that it was found necessary to make a wide detour to carry the line round the face of the mountain, across a precipitous gully and of introducing a zigzag for the purpose of obtaining the required elevation. The line after crossing the Lapstone Hill Road at a distance of a mile and a half from the River, is carried through a heavy rock cutting, the high light face of which can be seen from Penrith. This takes the line to the edge of Knapsack Gully which is bridged by an enormous stone viaduct….a quarter of a mile beyond the viaduct the line continues to ascent the gradient of 1 in 30 to the first reversing station of the zigzag…The line after proceeding about a quarter of a mile beyond the viaduct comes to a full stop and trains are shunted off to another line which is carried back to the head of the gully and thus an ascent of 160 feet is gained. Here (at the second reversing station) the trains are again shunted off to another line and proceeding in a south-westerly direction round the fact of the mountain…come upon the main western road near Wascoe's Inn 728 feet above high water level"*

Not surprisingly, the Zig Zag became an instant tourist attraction. Visitors took day trips from Redfern Railway Station to experience the railway and visit the mountains beyond, returning in the afternoon. During the first years of its operation, however, the Zig Zag could only be used by short passenger/goods trains carrying engines at both the front and rear. The climb required large amounts of water making frequent re-filling necessary. At the top of the Zig Zag a relatively level stretch was the ideal location to replenish the engines' water supply. Water from Blaxland Lagoon was directed into a tank near Hare Street at this location and passengers could board or leave the train[59]. The stop became known as Watertank. A public railway station was soon added; featuring a slab hut residence. The station became known as Wascoe's siding. The station was later renamed Brookdale, and then Glenbrook.

[58] Bayley, 2001: 18
[59] Ibid: 22

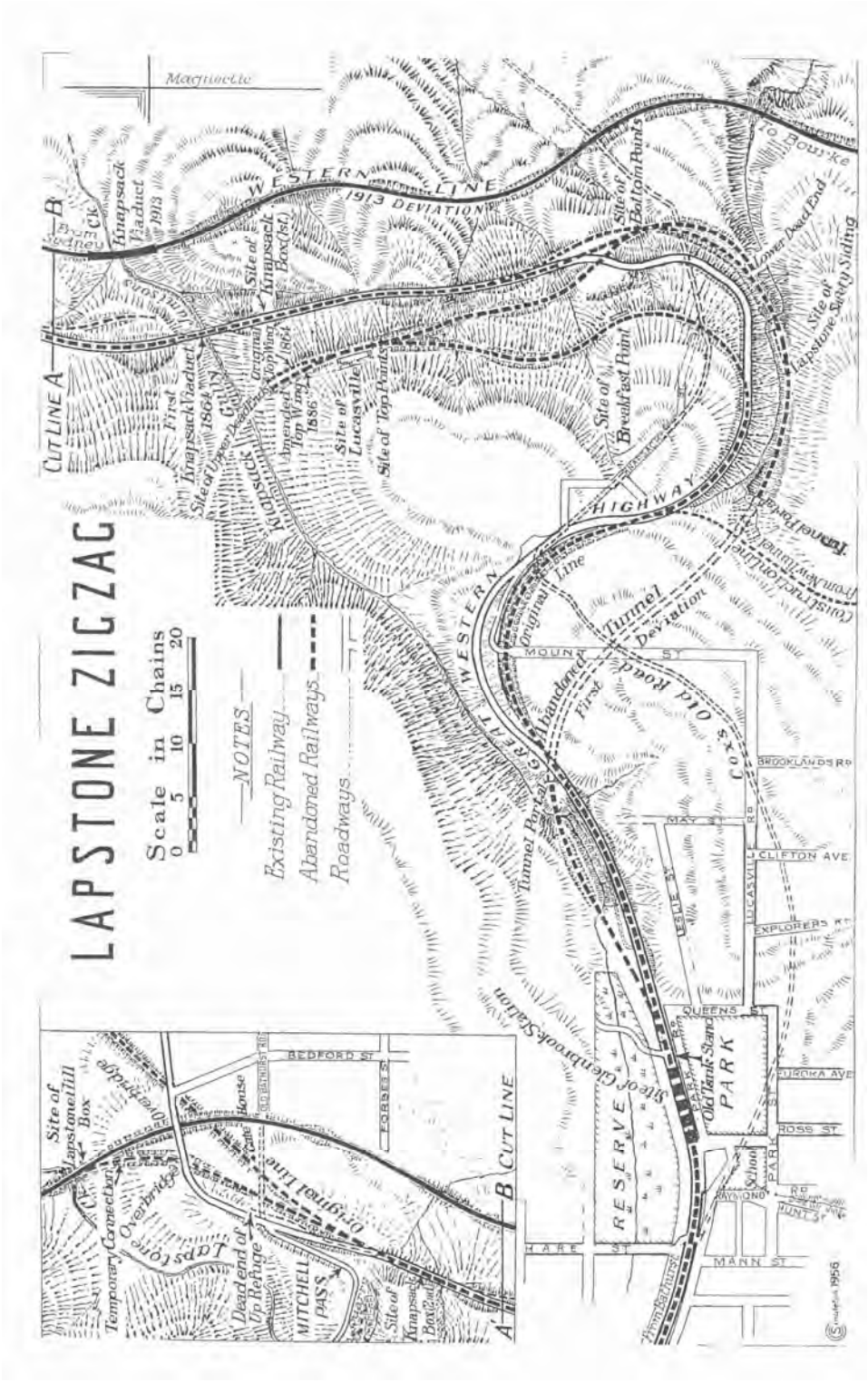

Figure 4.7: Route of the Lapstone Zig Zag (The Australian Railway Historical Society: Bulletin No.227 – September 1956)

In 1874 Hon. John Lucas MLA built a mountain cottage known as 'Lucasville' above the top point of the Zig Zag[60]. A concrete platform named 'Lucasville' Station was shortly added directly below his cottage. Similarly, in 1877 an additional passenger station was added further along the line, this time near the top end of the Zig Zag near the current Knapsack Street. The station was named 'Breakfast Point', and served local residents, including the occupants of 'Ulinbawn' - a stone cottage built nearby[61]. The property was sold to the Yeomans in the 1880s and the station was known to the railwaymen as 'Yeomans' Corner'[62].

Two of the seven gate-houses were also built in the Lapstone Hill district. The first of these houses was built in 1867 on the banks of the Nepean River where the railway now crosses the road near Mitchell's Pass. The house was a well-built stone cottage with a permanent gate-keeper who was employed to open and shut the railway gates when people wanted to cross the line. Early photographs of the Zig Zag also indicate that a cottage was constructed for the Pointsman below the lower railway line (Figures 4.8 & 4.9).

During its brief period of operation only one serious accident occurred on the Lapstone Zig Zag. On March 22 1886 the air brakes on a train failed during the train's descent down the Lapstone Hill. The driver applied the hand-break and reversed the engine. However, the train ran into the buffer stops at the Upper Points. The train was damaged and three passengers injured. To prevent further incidents a new dead-end was added to the siding. An article by C. C. Singleton[63] indicates that further improvements to signals were made on the Zig Zag in 1890:

> *"On the 6th February 1890, signal boxes, with full interlocking, were provided at Lower and Upper Points (the latter by then named Lucasville) which had formerly been unsignalled and operated by pointsmen working ground levers only. In addition to the conventional home and distant signals, Lower Points had repeating signals near the dead-end as the signals for departure, as the points themselves, were well out of sight of the engine. Both boxes also had "stop" signals by which the signalman notified drivers that the rear of the trains had cleared the points. The presence of a down advanced starter at Lucasville rather indicates that down goods trains may have been worked through in double loads with bush up engines and worked up the zig zag in two portions, to be combined at Upper Points. However, no record can be found of this working"*

[60] Bayley, 2001: 23
[61] ibid
[62] ibid
[63] In Bayley, 2001:30

Figure 4.8: c1870 photograph of the Lapstone Hill Zig Zag Railway from Bottom Points showing the lower and middle lines. Note the Pointsman and small cabin in the foreground and a larger cottage on the hill slope. (NSW State Records: Digital Image ID 17420_a014_a014000721)

Figure 4.9: The Lapstone Hill Zig Zag showing railway trolley on the top road and visitors overlooking the middle road and Pointsman's cottage to Emu Plains below (Mitchell Library: reproduced from Bayley, 2001: 21).

Despite the popularity of the Lapstone Zig Zag it was considered much too slow for trains using the line and the need to reverse direction became a hindrance. Longer trains with more powerful engines simply could not be used on the western railway. Surveys to find an alternative was undertaken by J. P Sharkey. Sharkey concluded that a deviation was achievable by tunnelling through the ridge and rejoining the original line near Glenbrook station. Whitton's original idea of tunnelling through the hill was finally adopted.

The new route involved significant cutting into the side of Lapstone Hill from the bottom end of the Zig Zag. From there the line followed the creek bed of Tunnel Gully Creek until it reached a point where a tunnel could be excavated through the ridge. At the northern end the line crossed the head of Knapsack Creek, swinging around in another deep cutting to meet the former Zig Zag line at the eastern end of Glenbrook station. The contract for the job was awarded to George Proudfoot for 43,096 pounds in March 1891[64]. Proudfoot's company was experienced in railway construction work having successfully completed contacts in the Hunter Valley in previous years.

Construction of the Lapstone Deviation commenced in April 1891, under the direction of Mr. Butt (engineer) and Mr Greig (manager). The Lapstone Ballast Siding had reportedly been completed in September of the previous year, extending from the main line to the tunnel portal. The siding was essential for the supply and delivery of bricks and other materials between Sydney and Glenbrook. The east tunnel approach required a new alignment from Bottom Point up a creek bed to the tunnel portal. The creek (now known as Tunnel Gully Creek) was diverted to the east side of the gully through a major cutting in the sandstone. A construction camp was quickly established to undertake the works.

Arthur Streeton, one of Australia's greatest landscape artists, lived in Glenbrook for three months during construction of the Lapstone Hill Tunnel. During his stay he regularly visited the works to paint the scenery. In a letter to his friend, Fred McCubbin, Streeton described one of his visits:

> *I follow the railway line for ¾ of a mile through a canyon or gully where big brown men are toiling all the hot day excavating and making a tunnel, which will cost thousands (about ½ mile long) and will save (apparently) wearing out a great number of engines on the first Zig Zag. I've past the west mouth and now am arriving at my subject, the other mouth, which gapes like a great dragon's mouth at the perfect flood of hot sunlight. There is a cutting through the vast hill of bright sandstone, the walls of rock run high up and are crowned by gums bronze-green, and they look quite small, being so high up…right below me the men work, some with shovels, others drilling for a blast. I work on the W.Color drying too quickly and the ganger cries 'Fire', 'Fire's On'; all the men drop their tools and scatter and I nimbly skip off my perch and hide behind a big safe rock. A deep hush is everywhere – then 'Holy Smoke!', what a boom of thunder shakes the rock and me. It echoes through the hills and dies away 'mid the crashing of tons of rock; some lumps fly hundred of feet sometimes and fall and fly everywhere among the trees; and then a thick cloud laden with fumes of the blasting powder….I'll soon begin a big canvas (oilcolor) of this[65].*

During his stay at Glenbrook, Streeton witnessed a man killed in a blast during work on the cutting. This event features in his great painting entitled "Fire's On" (Figure 4.10).

[64] Pratten & Irving, 1993: 11
[65] Streeton in Pratten & Irving, 1993: 14

Figure 4.10: Painting by Arthur Streeton, entitled Fire's On (Lapstone Tunnel) 1891 (The Art Gallery of New South Wales http://www.artistsfootsteps.com)

At least one other fatality and numerous injuries were reported during construction of the tunnel. On May 12th 1892 the work was largely complete. The 634m long S-shaped tunnel was bricked and earthworks and bridges along the deviation completed by July 1892. The tunnel was opened to traffic on 18th December 1892 and the Lapstone Zig-Zag closed (Figure 4.11).

Despite its initial heralded success problems with Lapstone Tunnel soon arose. Singleton reported that water dripping on the tracks caused engines to slip and the smokes and fumes in the Tunnel were 'dreaded' by enginemen and passengers (Figure 4.12).

Trains who failed to negotiate the tunnel, through the enginemen being overcome by smoke and unable to work regulator and sandgear, had to back out of the tunnel and divide the train and double to Glenbrook. To minimise the risk of the detached portion running back down the steep grade, a short dead-end, known as Lapstone Safety Siding, was added on the 10th August 1903, near the Sydney end of the tunnel.

Figure 4.11: First Glenbrook Tunnel showing Railway trollies with bridge over Knapsack Creek in the foreground. Former line above. 1893. (Town and Country Journal: 21 /1 /1893: reproduced from Bayley, 2001: 36)

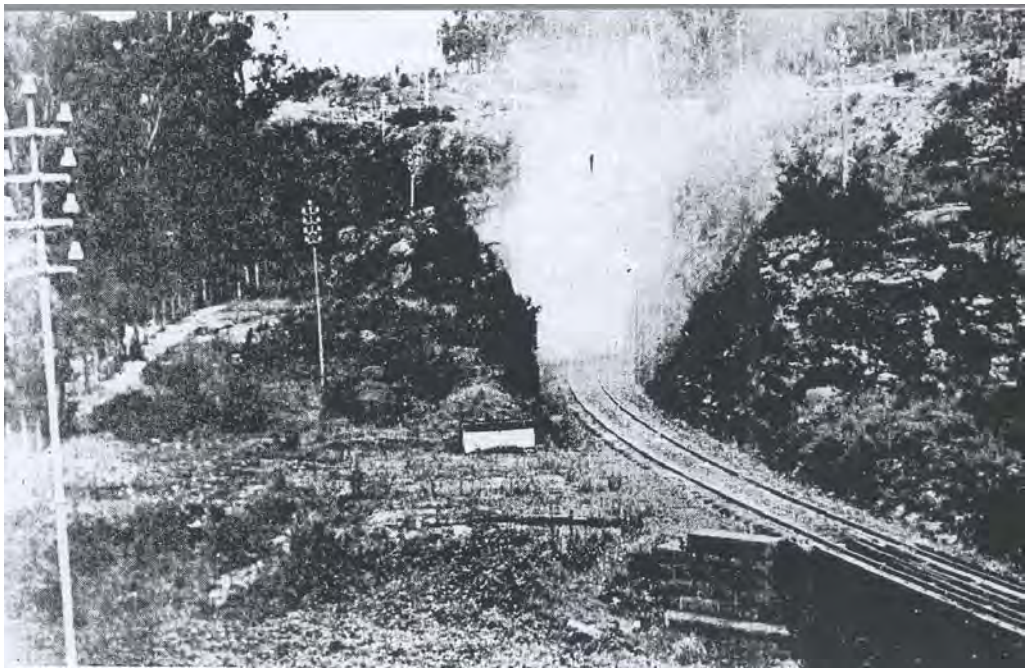

Figure 4.12: Smoke and steam issuing from the 1892 Glenbrook Tunnel after a train had passed through (O. B. Bolton: reproduced from Bayley, 2001: 39)

To overcome this problem and the increasing number of trains travelling across the Mountains the rail line was duplicated. To ease congestion on the single line a new steel double lined railway bridge was constructed in 1907, leaving the original Victoria Bridge to road traffic. Attractive new island platforms with tourist facilities were also constructed from Glenbrook to Newnes Junction. The Glenbrook to Springwood section of the new line was opened in January 1902[66]. The old line through Lapstone Hill Tunnel was retained for use by working trains until 1913, when a new double line was opened on the duplication.

A new deviation was found through Glenbrook Gorge. The new line ran parallel but at a lower level to the existing track, crossed Knapsack Gully on a new brick viaduct and, after crossing Tunnel Gully Creek, ran directly along the side of Glenbrook Gorge. The new viaduct was much lower than the first, reaching a maximum height above the gully of 75 feet and was built on a curve, whereas the original viaduct was straight[67]. The new line required only one tunnel to travel through the end of Lapstone Hill, known as the Bluff. While work on the new line progressed, alterations were made to existing lines to allow trains to pass at Knapsack Hill on the Sydney side of the viaduct.

> *"Knapsack Signal Cabin was erected beside the line and trains proceeding up the mountain would draw off the main line into a siding just east of the line which, being about level, ended at a dead-end buffer on the hillside at the beginning of but below rail level of the viaduct, the last cutting still being there whilst the line itself has been filled for the present road. Trains would then reverse past the signal box across the main line into another dead end siding above the main line and ending on a trestle above Mitchells Pass Road. There they would stand until passed and have a sort of 'flying start' on taking off for the climb to the tunnel, having climbed a miniature zig zag. "*

Since 1914, the railway from Sydney to Lithgow has remained on the same route through Glenbrook Gorge. During World War 2 the RAAF base used Glenbrook tunnel to store ammunition. Since this time the tunnel has been leased to mushroom growers. This practice continues to the present day.

4.7 SETTLEMENT AND MINING ON LAPSTONE HILL

The construction of the Lapstone Zig Zag brought hundreds of temporary residents to the Lower Blue Mountains and later permanent settlers to service the rail line. Sydney residents also started to build holiday homes in the area to take advantage of the fresh air and views.

Strathdon parish maps clearly show early land grants made on Lapstone Hill Title documents confirm that Hon. John Lucas was originally granted forty-five (45) acres of land on 16th of December 1867 (Figures 4.13 and 4.14).

Lucas was born in Camperdown in 1818, initially trained as a carpenter but later became an inn-keeper and building contractor. In 1860 he entered politics becoming a member of the Lower House for Canterbury, Hartley and then Canterbury again. Lucas was an interesting character. He had a reputation for 'mischief and obstruction' and was known for his dubious land dealings and 'bullying manner'. Despite his reputation, Lucas was dedicated to protecting

[66] Bayley, 2001: 46
[67] Ibid:48

open space, was a trustee of the Royal National Park and was involved in saving Belmore Park in Sydney[68]. In the late 1870s he was also regarded as '*distinguished for the attention he has paid to inland communication*[69]'. In 1880 he was appointed to the Legislative Council and remained an MLC until his death in 1902. Lucas was 83 when he passed away.

On 12 March 1874, five [5] acres of Lucas' original 45 acre grant, together with a Right-of-Way, was transferred to Randolph Charles Want, a solicitor from Sydney[70]. The Certificate of Title clearly shows the position of Want's property within Lucas' grant and indicates that the property was contained within the current boundaries of the RAAF base, outside the current boundary of Skarratt Park. Want transferred his five acre property back to John Lucas on the 18th December 1875, only 21 months after he purchased the land.

During his appointment as Minister of Mines, from 1875 to 1877 Lucas built a mountain cottage on his Lapstone Hill property above the top point of the Zig Zag (Figure 4.15). The estate was known as 'Lucasville'. Shortly after constructing his cottage Lucas used his political clout to have a railway station built on the top road. Lucasville Station, which consisted of a substation concrete platform and rock cut steps leading into the grounds of Lucasville, was opened in 1877. The platform and steps are highly visible today[71]. An early photograph indicates that a small station building was also built on the platform; however, no traces appear to have survived (Figure 4.16). Lucasville was a public platform used by visitors to access Lucas' cottage and nearby Ulimbawn and Want's cottage further along the Zig Zag. It remained in use until 1892, when the Zig Zag was abandoned. Presumably after this period the platform fell into disuse.

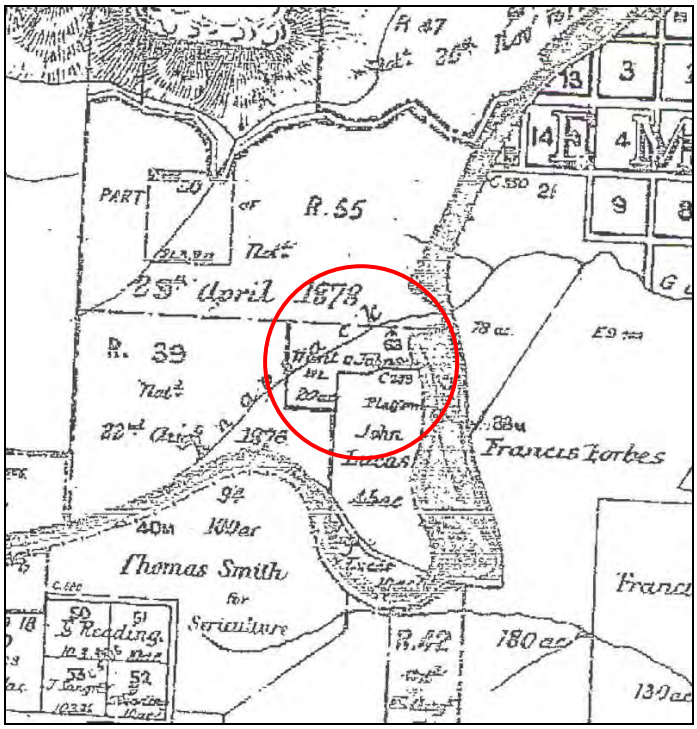

Figure 4.13: Extract of the c1897 Map of Strathdon Parish, County Cook (Source: Mitchell Library)

[68] Australian Dictionary of Biography, V108-9
[69] Heaton, Australia Dictionary of Dates, 1879:121
[70] Vol CLXXVII Fol 250
[71] Bayley, 2001: 23

Figure 4.14: Extract of the 1927 Map of Strathdon Parish, County Cook (Source: LPI NSW: Image No. 14034301)

Figure 4.15: Lucasville cottage (NSW State Library: GPO 1 06096)

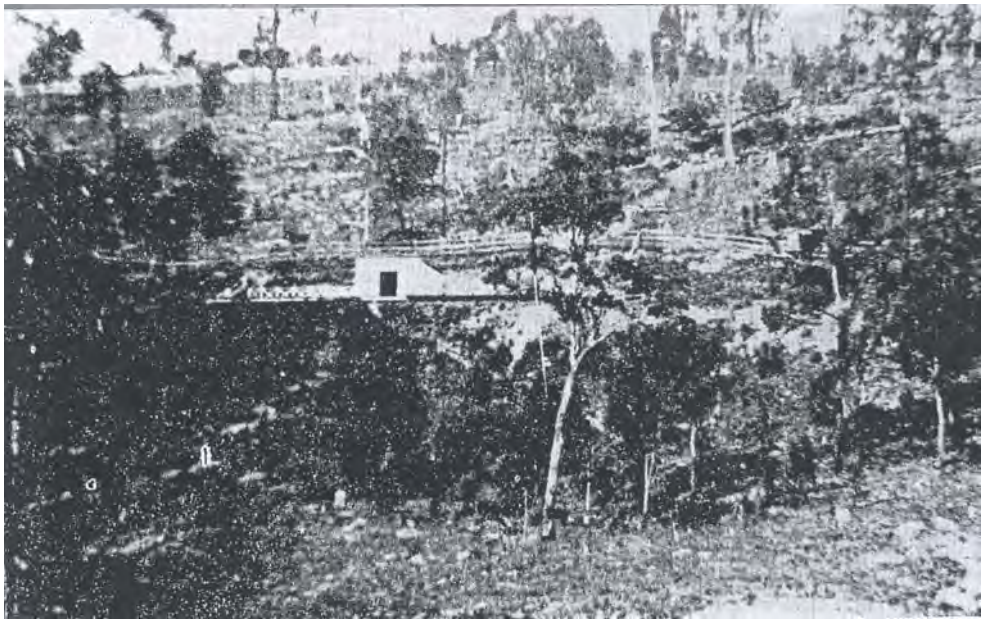

Figure 4.16: Lucasville Railway Station at Top Points of the Lapstone Zig Zag in the 1880s. (NSW Government Printer: reproduced from Bayley, 2001: 23)

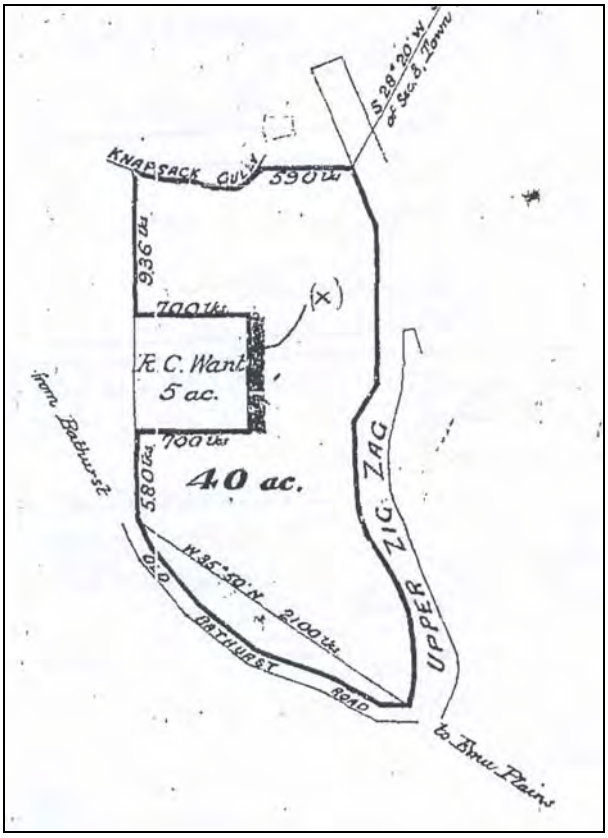

Figure 4.17: Extract from John Lucas' Certificate of Title showing the position of R. C. Want's property within Lucas' original 45 acre grant (Source: Vol CLXXVII Fol 249)

In 1877 an additional passenger station named 'Breakfast Point' was added near the top end of the Zig Zag near the current Knapsack Street. This station served local residents who purchased property and land from Lucas between 1879 and 1883.

A year later, on 16 May 1878, Lucas sold 20 acres of his 45 acres grant to Charles Smith of Sydney. The property was situated in the middle of Lucas' grant, the eastern boundary of which is situated within Skarratt Park (See Figure 4.18).

Charles Smith was a shipping merchant, born in Scotland in 1816. He arrived in New South Wales in 1832 with his father, who migrated to the colony to become a grazier. After joining the merchant navy and serving in the Baltic and West Indies, Charles retuned to New South Wales and turned to whaling. In the early 1850s Smith purchased a wharf at Millers Point and maintained a regular service to Gilbert Islands. By 1863 he had founded Macdonald, Smith & Co, general merchants. Between1876-78 Smith was President of the Chamber of Commerce, advocating the connection of the northern and southern railways. In 1890 he was Director of the Bank of New South Wales and a commissioner for the Calcutta Exhibition. Smith retired in 1888 and died at his home, Goderich in King's Cross, Sydney in 1897 at the age of 80. Smith was survived by his three sons and two daughters.

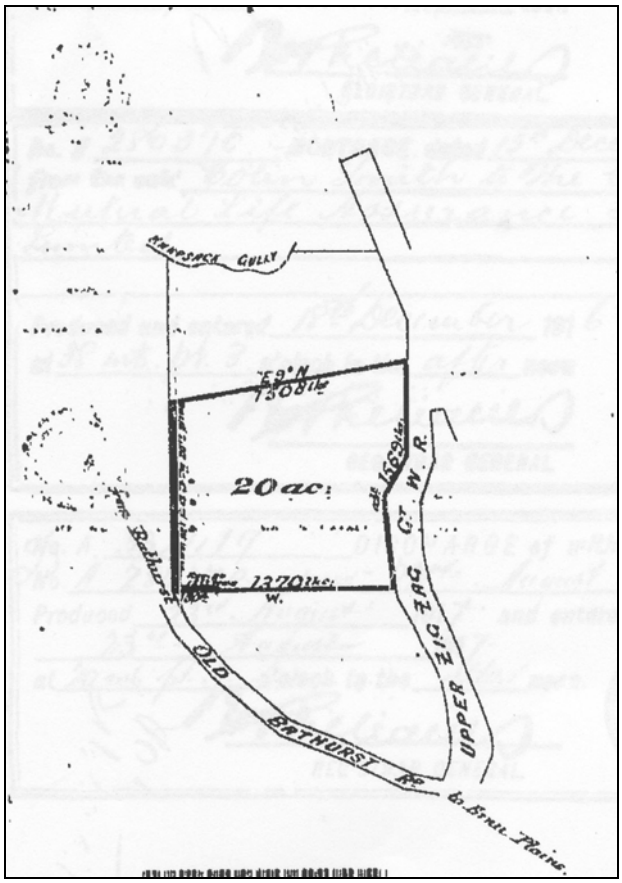

Figure 4.18: Extract from Charles Smith's Certificate of Title showing the position of his 20 acre property within Lucas' original 45 acre grant (Source: Vol 342 Fol 23)

Further allotments, situated outside the boundaries of Skarratt Park, were sold between 1882 and 1883. Lucas sold Lot 23 to George Hubbord Cooper and lots 15 to 17, 24 to 27 to William Lovel Davis. The final subdivision took place on the 7 May 1883, with Lots 12 to 14 were transferred to George Yeomans. Prior to selling the land, Lucas is believed to have constructed a stone cottage named 'Ulinbawn'. The cottage was later sold to Donald Skarratt c1906 and is still standing today. Breakfast Point station became known as 'Yeoman's Corner'[72].

On 19th May 1885 Randolph Charles Want purchased 2 acres, 5 roods and 6 perches of land directly north of John Lucas' 45 acre grant and Lucasville. The grant included the right to search, obtain and remove Minerals in and under the land. Parish Maps also indicate that Want (and Johnson) leased a further 20 acres directly north of Lucas' property. The mining lease extended from the viaduct directly west along Knapsack Gully (Figure 4.19).

Very little is recorded of Randolph Charles Want. However, his father Randolph John Want was a prominent Sydney solicitor. John Want had worked on two famous trials before being appointed to the Legislative Council in 1856 for five years. Interestingly, John was very interested in mining and mining law and was a pioneer of shale-mining. In the 1860s he was chairman of the Ophir Copper Mining Co., the Moruya Silver Mining Co and the Hartley Kerosene Oil and Paraffin Co. John died on the 28th June 1869. Charles was one of five sons and four daughters. It is possible that he shared his father's interest in shale-mining. His purchase of allotment 41 and its mineral resources undoubtedly resulted in the attempt to find high quality shale – as evidenced by the mine shaft situated near Knapsack Creek.

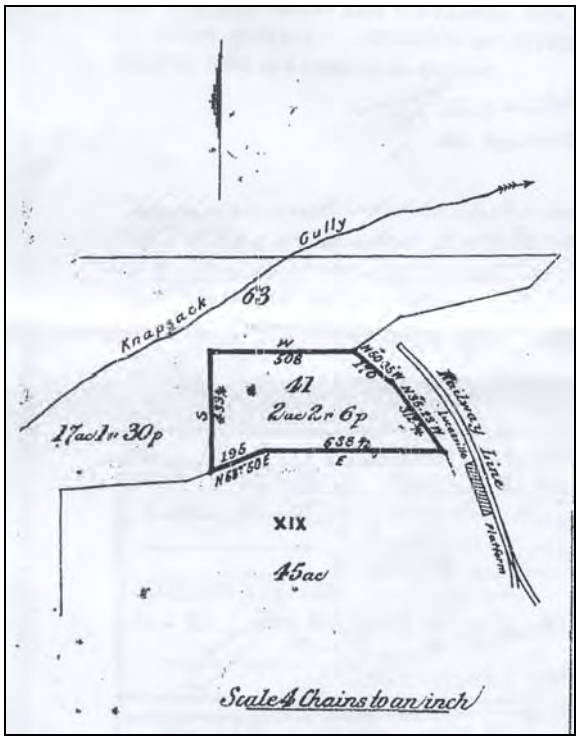

Figure 4.19: Extract from Randolph Charles Want's Certificate of Title showing the position of his 41 acre property directly north of Lucas' 45 acre grant (Source: Vol 765 Fol 132)

[72] ibid

On 19th February 1886, Want sold the land and mineral rights to Thomas Fisher of Sydney, Esquire. Fisher held on to the land until October 1894 when it was sold to Henry Augustus Crouch of Orange, District Surveyor. Crouch then sold the land to Colin Smith, son of Charles Smith, on the 23rd September 1910.

From 1892 onwards, following the closure of the Lapstone Zig Zag and its associated stations, access to Lucasville, Ulinbawn and surrounding properties became more difficult. Following Lucas' death in 1902, remaining portions of his estate were passed on to his three sons: Percy Charles Lucas – a wine and spirit merchant, John Hector Lucas – licensed surveyor and Edgar Lucas – a solicitor[73]. Whether Lucas' children continued to use Lucasville cottage is unclear. On 28th October 1910 the sons sold Lots 1 to 11 to Donald Frederick Skarratt, an alderman on the Blue Mountains (1920 – 1937) and remaining portions to Colin Smith. The cottage was later destroyed in a bush fire (date unknown)[74].

Land directly north of Lucas' original grant was declared a Reserve (No. 55) on 28th April 1878. The remaining 125 acres to the south and west were also declared part of a reserve (No. 39) on 22nd August 1878.

Early parish maps indicate that land directly south of Lennox Bridge was declared a Public Quarry (No. 25949) on the 15th May 1897. The quarry continued operation until c1930 when it was combined with the surrounding Reserve and transferred to Blue Mountains Council.

In c1930, Donald Frederic Skarratt's contribution to the local community was recognised by Blue Mountains City Council by naming land below Lapstone Hill 'Skarratt Park'. Three years later (1933), Lapstone Hill Reserve was officially opened to commemorate the centenary of Lennox Bridge. The two lookouts within the Reserve were named at the same time, after relatives of local politicians. Elizabeth was the wife of Donald Frederic Skarratt Senior, an alderman on the Blue Mountains City Council from 1920 until 1937. Marge was the daughter of Simeon Henry Walker a long-standing alderman of Blue Mountains City Council who died in 1941.

From the 1930s onwards the land collectively referred to as 'Knapsack Reserve' has been used primarily for recreation, with walking trails established along the former Zig Zag railway, public quarry and Elizabeth and Marge's Lookouts.

[73] Vol CLXXVII Fol 249 and Morrison, Aldine Centennial History of NSW
[74] Aston, 1992

5.0 ARCHAEOLOGY

5.1 REGIONAL ARCHAEOLOGICAL CONTEXT

5.1.1 Aboriginal Heritage

Archaeologists examine regional and local trends in the distribution of known Aboriginal sites in relation to environment and topography to make predictions about Aboriginal site types and locations within a given area.

In terms of its regional archaeological setting, the study area falls within the Lower Blue Mountains. Rock shelters are common in this geological region and numerous have been have been investigated in the Lower Blue Mountains, including Shaw's Creek, Springwood Creek, Kings Table, Lyre Bird Dell, Walls Cave, Blackfellows Hand shelter, Capertee 1-5, Emu Plains Shelter and Lapstone Creek[75]. Aboriginal occupation in this region dates back well into the Pleistocene period (ie. more than 10,000 years ago). This evidence comes from C14 dates retrieved from excavated sites such as Shaw's Creek K2 (14,700 years before present) located near Springwood in the Lower Blue Mountains[76]. It appears that no other sites have been dated.

Occupation of shelters in the region appears to have been sporadic, although trends in their use are consistent. Early industries tend to be dominated by poorer quality raw stone material including quartz, tabular and granular chert and river pebbles. About 5,000 to 4,000 BP, rock shelters site use intensified[77]. Assemblages at this time contain a much larger proportion of fine-grained raw materials, with backed implements appearing before 3,000 years BP. Flake debris and artefacts also tend to be smaller in size. In the last 1,000 years there is a marked increase in the presence of quartz flakes and quartz bipolar cores, and a decline in fine-grained materials. Bondi points and geometric backed artefacts were less common and there was a shift towards the production of eloueras[78].

In contrast to shelters, open sites in the Lower Blue Mountains are rare and are characterised by low density surface scatters dominated by quartz. The sites are often found in elevated areas above swamps or creeks and rarely contain diagnostic tool types such as Bondi points[79]. Most assemblages contain between 10 and 30 artefacts consisting of amorphous broken flakes and flaked pieces. Open sites that have been excavated in the area include Lamberts Creek and Lyell Dam[80].

In 1984 Dr Jim Kohen conducted intensive PhD research in the surrounding region, comparing sites along the Nepean / Hawkesbury system (including Emu Plains) with those to the east across the Cumberland Plain. In contrast to the small low-density open sites commonly found in the

[75] McCarthy 1964, Stockton 1970, Stockton & Holland 1974, Johnson 1974, Kohen et al., 1981, 1984
[76] Attenbrow 2002: 20-21
[77] Attenbrow 1981
[78] McDonald 1997
[79] Kohen 1978: McDonald 1997
[80] McDonald 1995

neighbouring Blue Mountains a very large significant open site was located on the Nepean River terrace beside Jamisons Creek. A surface collection of the site recovered almost 10,000 stone artefacts over an area of 775 square metres. All major categories of stone tools were found including stone axe heads, uniface pebble tools, elouera adze flakes, bondi points, geometric microliths, thumbnail discoid scrapers, bipolar cores, single and multiplatform cores and blade cores. Raw material types included chert, basalt, quartz from the Nepean gravels, quartzite, silcrete and siliceous wood. In addition to stone artefacts, post-contact artefacts were also found, including clay pipe bowl fragments and ceramics indicating that the site had been continuously used until at least the 1830s. Excavations at the site revealed a 1.5 metre deep deposit produced radiocarbon dates ranging from 7,000 to 1,500 years BP. The site is located less than 1.5 kilometres northeast of the current study area and is considered one of the most significant open sites in the Sydney region. The site was largely destroyed in 1984 during the development of a sporting complex.

5.1.2 Historic Heritage

The history of the Lower Blue Mountains has been researched by a number of academics and local historians and a handful of historical archaeological sites in the region have been investigated. Of particular relevance to the current study is Dr. Grace Karskens research on the history and archaeology of Cox's Road and early Blue Mountain crossings[81].

In her comprehensive study Dr. Karskens located, identified and interpreted the remains of Cox's Road through historical research and archaeological survey. Eighteen [18] historic precincts containing sixteen [16] associated archaeological sites were identified by Karskens. Sites included buildings at Emu Plains, the 1826 pass of Lapstone Hill, Mitchell's Pass, the Woodford Academy, Explorers' tree at Katoomba and wells along Mount York Road. The greatest constraint encountered by Karskens was local topography. She found that the numerous routes followed by Cox, Mitchell, railway engineers and road engineers were very similar resulting in the destruction of Cox's road in many places making the physical identification of his original route difficult. Despite detailed mapping and survey Karskens was unable to find traces of Cox's original ascent of Lapstone Hill. She did, however, list the ascent as having some archaeological potential, requiring more detailed replotting and further field survey.

Another invaluable resource for the Lapstone Hill area is William Bayley's publication on the Lapstone Zig Zag Railway[82]. The publication provides a detailed history of rail development on Lapstone Hill using extracts from local print media and historic photographs. The construction of the Zig Zag is described in detail, as are later deviations through Tunnel Gully and Glenbrook Gorge. Incidents on the railway and information on local residents are also including providing an interesting historic context for the local area.

A more general history of the Blue Mountains is provided in R. Ian Jack's review of the area's Heritage Register[83]. The study provides a summary of major developments that have occurred in the Mountains, including Aboriginal contact history, Cox's Road, construction of the Western Railway, Tourism, Mining and Timber. Historic themes associated with the area include: exploration, recreation, transport & mining heritage.

[81] Karskens, 1988
[82] *Lapstone Zig Zag Railway*, 2001
[83] January 2000

5.2 HERITAGE REGISTER SEARCHES

5.2.1 Aboriginal Heritage Information System (AHIMS)

A search of the DEC Aboriginal Heritage Information Management System (AHIMS) for a ten kilometre area around the Reserve indicates that a moderate density of Aboriginal sites have been identified and recorded in its vicinity, although this result probably reflects the limited number of studies conducted in the area and the difficult terrain rather than site distribution patterns. A total of 108 sites have been recorded within the search area (Table 5.1; Figure 5.1). Site types and frequency are as follows;

Table 5.1: DEC AHIMS Search Results

Site Type	Number
Open Camp Site	56
Shelter with Deposit	14
Shelter with Art	11
Axe Grinding Grooves	10
Scarred Tree	5
Shelter with Art and Deposit	3
Stone Arrangement	3
Axe Grinding Groove, Shelter with Deposit	2
Rock Engraving	2
Open Camp Site, Stone Arrangement	1
Shelter with Art, Stone Arrangement	1
Total	**108**

GIS Mapping initially suggested that nine [9] of these 108 sites were present within Knapsack Reserve. Closer inspection of DEC AHIMS Site Cards, however, indicated that only four [4] of these sites were actually recorded within the Reserve. These sites are listed below:

- Rock Engraving (man figure) – Lennox Bridge, Blaxland (Site ID 45-5-0120)
- Open Camp Site (Isolated Find) – Axe found on Lapstone Creek, Blaxland (Site ID 45-5-0122)
- Glenbrook Site 2 – Shelter with Deposit (Site ID 45-50-0603)
- Lennox Bridge – Axe Grinding Grooves (Site ID 45-5-0862 & 45-5-0975)