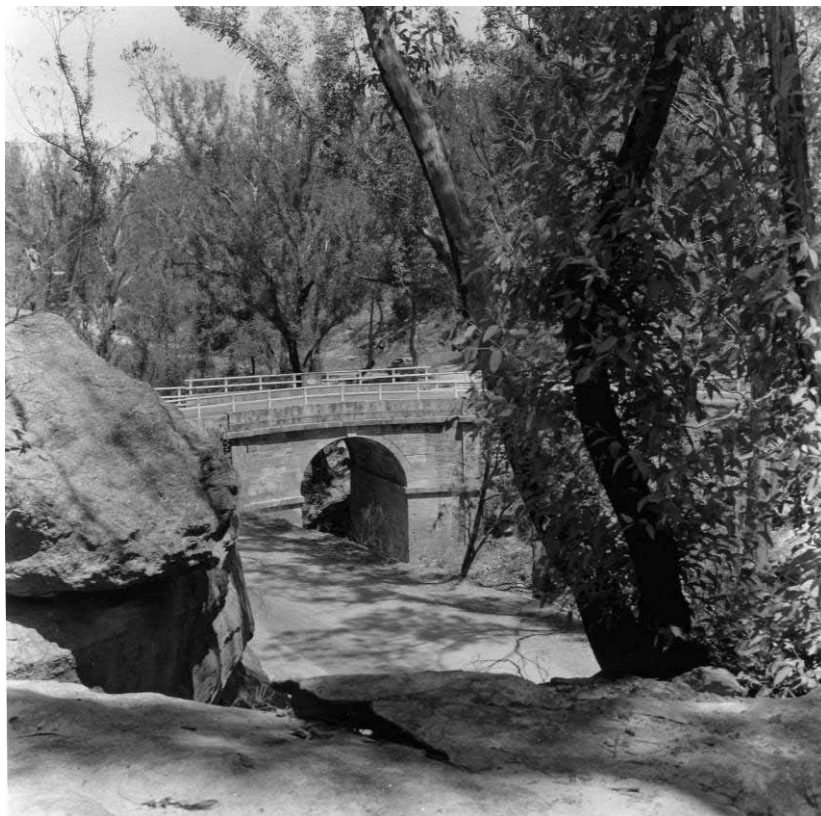


MITCHELL'S PASS HISTORIC PRECINCT



CONSERVATION MANAGEMENT PLAN

VOL 1

Final
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Prepared for:
**BLUE MOUNTAINS CITY
COUNCIL**
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Cover Photo: Lennox Bridge & Mitchell's Pass 1957
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TABLE OF CONTENTS

1	Executive Summary	1
1.1	History.....	1
1.2	Description	1
1.3	Significance.....	2
1.4	Management Issues	2
1.5	Conservation Policies.....	3
2	Introduction	14
2.1	The Brief.....	14
2.2	Definition of the Study Place and Setting	14
2.3	Methodology	14
2.4	Natural and Aboriginal Significance.....	14
2.5	Terms.....	14
2.6	Author Identification	15
2.7	Acknowledgements	15
2.8	Abbreviations	15
2.9	Bibliography	15
3	Historical Summary.....	18
3.1	Introduction	18
3.2	The First European Routes across the Blue Mountains, 1813-1827.....	18
3.3	Thomas Mitchell and the new road up Lapstone Hill, 1830- 1834.....	20
3.4	David Lennox and the Planning of Lennox Bridge.....	23
3.5	The Building of Mitchells Pass, 1823-1833.....	25
3.6	The Building of Lennox Bridge, 1832-1833.....	27
3.7	Road Railings on Mitchells Pass, 1830s to 1850s.....	31
3.8	The Western End of Mitchells Pass and Pilgrim Inn.....	33
3.9	Lennox Bridge and its Road Approaches, 1840s to 1950s	36
3.10	Plaquing Lennox Bridge and Mitchell's Pass, 1933, 1937, 1992.....	40
3.11	Conservation and Rebuilding of the Bridge, 1962 to 1983.....	41
4	Physical Summary.....	47
4.1	General	47
4.2	Mitchell's Pass	49
4.3	Bridle Trail.....	49
4.4	Lennox Bridge.....	50
4.5	Small Quarry.....	52
4.6	Retaining Wall and Culvert	52
4.7	Energy Dissipator.....	53
4.8	Large Quarry	53
4.9	Sedimentation Pond.....	54
4.10	Stone Culverts (Culverts 1, 2, 3, 6, 7, and 8).....	54
4.11	Culverts 4 and 5	55
4.12	Milestone.....	55
4.13	Drainage.....	55
5	Assessment of Significance.....	56
5.1	General.....	56
5.2	Mitchell's Pass (including Lennox Bridge, Milestone, 1832 Bridle Trail and the Small Quarry).....	57
5.3	Lennox Bridge.....	59
5.4	Milestone.....	61
5.5	1832 Bridle Trail (incorporating the Brookside Creek culvert and retaining wall)	62
5.6	Small Quarry.....	64
5.7	Brookside Creek Quarry.....	65
5.8	Surveyor's Mark	66
5.9	Themes.....	67

5.10	Ranking of Significance of Fabric.....	68
6	Constraints And Opportunities	70
6.1	Significance	70
6.2	Ownership	70
6.3	Statutory Issues.....	70
6.4	Condition	73
6.5	Maintenance Needs and Costs	74
6.6	Community Values and Desires.....	74
6.7	Location & Neighbourhood.....	74
6.8	Access.....	75
7	Conservation Policies	76
7.1	General.....	76
7.2	Definition of the Place.....	76
7.3	Burra Charter.....	77
7.4	Ownership	78
7.5	Management	78
7.6	Uses.....	78
7.7	Layout and Alignments.....	79
7.8	Conservation of Fabric.....	79
7.9	Protection of Fabric	79
7.10	New Elements.....	80
7.11	Signs	80
7.12	Landscape	81
7.13	Maintenance and Repair.....	81
7.14	Fencing.....	81
7.15	Views	82
7.16	Access.....	84
7.17	Vandalism	84
7.18	Traffic Management.....	85
7.19	Additional Investigation	85
7.20	Resources & Funding	85
7.21	Interpretation	86
7.22	Statutory Protection	88
7.23	Documentation.....	88
7.24	Policy for Adoption and Review of Conservation Policy.....	89
8	Implementation Strategy	90
8.1	Mapping of Site Features	90
8.2	Funding	90
8.3	Crack Management Database	90
8.4	Further Investigation	90
8.5	Priority Works.....	90
8.6	Future Works	90
8.7	Maintenance	90
8.8	Future Monitoring.....	91
8.9	Action Plan and Costings.....	91
9	Management Guidelines.....	94
9.1	Management.....	94
9.2	Statutory Approvals	94
9.3	Maintenance Strategy.....	94
9.4	Exemptions	95

1 Executive Summary

1.1 History

The escarpments at the eastern and western ends of the Blue Mountains proved the greatest challenge to Colonial road builders. Mitchell's Pass was the third vehicular route constructed on the eastern escarpment of the Blue Mountains. Construction commenced in 1832 and was finished in 1833 on a route proposed by the Colonial Surveyor General Thomas Mitchell. The pass at first had a detour along the present Brookside Creek until the construction of a bridge over the deep gully at the north of the creek was constructed to the design of David Lennox. The southern detour, referred to in this report as the 1832 bridle trail, survives today as a walking track along the creek. Close to the western branch of the 1832 bridle trail is a small quarry believed to be the source of some of the stone for Lennox Bridge. Another much larger quarry exists near the southern end of the 1832 bridle trail and is referred to in this report as Brookside Creek Quarry. No clear record has been found of when this larger quarry was established. It is thought that it provided stone for a number of houses in the Glenbrook area.

Mitchell's Pass became the preferred route over the eastern escarpment until 1926 when the main road over the eastern escarpment was diverted to the Knapsack Gully viaduct originally built for the railway zig zag.

The road was closed in 1967, primarily due to concerns about the structural stability of the bridge. After rebuilding the sub-structure of the bridge in concrete and refacing it with the original stone, Mitchell's Pass was reopened to vehicles in 1982.

1.2 Description

Mitchell's Pass runs east to west from the Great Western Highway at Emu Plains to the Great Western Highway at Blaxland. Most of the road follows the alignment of Lapstone Creek and is cut into the north sides of Lapstone Hill and Mount Sion. The focal point of the pass is Lennox Bridge, a sandstone bridge spanning the narrow gully over Brookside Creek. The bridge is remarkable for its horseshoe shape on the north side, accommodating a 180 degree change of direction in the road. On the eastern branch of the road is a rare, if not unique, milestone cut into the rockface on the south side of the road. The distances given on both sides of the milestone are to towns to the east, Penrith and Sydney. Six sandstone culverts survive below the roadway as well as two modern culverts.

The 1832 Bridle Trail extends about 600 metres south of Lennox Bridge, crossing Brookside Creek with a small culvert. Much of the original fabric of the culvert appears to have been replaced. A small retaining wall around the outlet of the culvert has been crudely rebuilt.

The small quarry adjacent to the 1832 Bridle Trail has a single bench one to one and a half metres high extending about 15 metres into the hillside.

The Brookside Creek Quarry is about three hundred metres long with cuttings up to four metres high.

To the west of Lennox Bridge is a surveyor's mark. Evidence suggests that this marks the northwest corner of Lot 299, Deposited Plan 751662.

The analysis has identified three places of significance; Mitchell's Pass Historic Precinct (incorporating Mitchell's Pass, Lennox Bridge, the 1832 bridle trail and the small quarry), Brookside Creek Quarry and a surveyor's mark.

1.3 Significance

1.3.1 Mitchell's Pass Historic Precinct

Constructed in 1832-33, Mitchell's Pass is the third European ascent of the east escarpment of the Blue Mountains and served as the main vehicular ascent of the eastern escarpment until 1926 when the road was diverted to the Knapsack railway viaduct. The pass is an important work of the Colonial Surveyor General Thomas Livingstone Mitchell (1792-1855) and the bridge that is a key installation in the pass is the first major work of Scottish mason David Lennox (1788-1873) in the colony of New South Wales and is the precursor to a series of significant bridges built in the colony under the direction of David Lennox.

Lennox Bridge, a key component of Mitchell's Pass, is New South Wales first arched bridge. The technical achievements of Lennox Bridge in spanning the gully at the point of a 180 degree bend in the roadway have been acknowledged by engineers both contemporary with Lennox and to the present day. Lennox's design is an excellent example of Colonial Georgian design applied to bridge building. The unusually tall proportions of the arch, resulting from the deep gully, are nevertheless an attractive element in the landscape.

Lennox Bridge and Mitchell's Pass are rare examples of convict road construction in New South Wales that survive in their original setting. It includes extant elements of road building from the early eighteenth century including the remarkable Lennox Bridge, stone culverts, retaining walls, methods of cutting into the rock of the hillside and macadamed road. The survival of the 1832 bridle trail gives additional interest indicating the character of the road prior to asphalt and bituminous road surfaces.

The site has great potential to provide further information about convict road building. It is known that there are at least six convict built culverts below the road surface. It is possible that there is evidence of other culverts beneath the road surface and possibly in the area of other twentieth century culverts. Other details of the convict built road that might be concealed include retaining walls and macadamed road surfaces. The small quarry might also provide further information beneath the re-growth of vegetation.

In addition to the roadway, the precinct includes two quarries; the smaller of the two is believed to be used for stone needed in the construction of the roadway. The large quarry near the south end of the 1832 bridle trail is of significance as a nineteenth and early twentieth century quarry used for stone in local construction.

1.3.2 Brookside Creek Quarry

The origins of Brookside Creek Quarry are unclear. There is potential for further research to establish where stone from Brookside Creek Quarry was used. This will assist with a better understanding of the original purpose of this quarry as well of the sources of stone for some important local buildings.

Brookside Creek Quarry demonstrates typical nineteenth period methods of quarrying stone for roadbuilding and construction purposes.

1.3.3 Surveyor's Mark

The surveyor's mark is a rare known example of a surveyor's mark engraved into sandstone benches across difficult terrain. It appears to relate to a subdivision of the reservation for public quarry.

1.4 Management Issues

Key management issues identified in this report for the Mitchell's Pass Historic Precinct (which includes the 1832 bridle trail and small quarry) and for the Brookside Creek Quarry and the surveyor's mark include:

- Areas of unstable rock in the rock cutting south of the pass need to be addressed.
- A system to monitor the stability of the rock face on the south side of the path and existing cracking in the stonework of the bridge needs to be established.
- Vandalism (mainly graffiti) is an ongoing problem.
- The 1832 Bridle Trail needs to be better protected against damage by motorised vehicles including motor cycles.
- A better system for slowing traffic approaching Lennox Bridge from the west than the present traffic island needs to be established
- Culverts below Mitchell's Pass and the 1832 Bridle Trail need to be cleaned so that remediation works for these can be scheduled.

1.5 Conservation Policies

The following are Conservation Policies for the study area. The numbers used for the policies and figures refer to the policy number as given in section 7 of this report and the figures as they appear in section 7 of this report.

7.2 Definition of the Place

Mitchell's Pass Historic Precinct includes the roadway and associated structure of Mitchell's Pass, Lennox Bridge, the 1832 Bridle Trail and the small quarry. The extent of the place should be as indicated in the map at Figure 49.



Figure 49

Curtilage of Mitchell's Pass Historic Precinct shown with a heavy dotted black line.

The quarry on the east side of the 1832 bridle trail should be known as Brookside Creek Quarry. The extent of Brookside Creek Quarry should be as indicated on the map at Figure 50.



Figure 50
Curtilage of Brookside Creek Quarry (shown by dotted red line).

The extent of the surveyor's mark should include the immediate area of the rock shelf on which the surveyor's mark is located.

7.3 Burra Charter

Mitchell's Pass Historic Precinct is a place of state significance and should be conserved in accordance with the Burra Charter.

Brookside Creek Quarry is a place of local significance and should be conserved in accordance with the Burra Charter.

The surveyor's mark is a place of local significance and should be conserved in accordance with the Burra Charter.

7.4 Ownership

7.4.1 Mitchell's Pass Historic Precinct

Ownership of the portion of Knapsack Reserve that includes the Mitchell's Pass Historic Precinct should remain as Crown Land.

7.4.2 Brookside Creek Quarry

Ownership of Brookside Creek Quarry should remain as Crown Land.

7.4.3 Surveyor's Mark

Ownership of the surveyor's mark should remain as Crown Land.

7.5 Management

7.5.1 Mitchell's Pass Historic Precinct

The management of Mitchell's Pass Historic Precinct should remain with Blue Mountains City Council.

7.5.2 Brookside Creek Quarry

The management of Brookside Creek Quarry should remain with Blue Mountains City Council.

7.5.3 Surveyor's Mark

The management of the surveyor's mark should remain with Blue Mountains City Council.

7.6 Uses

7.6.1 Mitchell's Pass Historic Precinct

Continue the use of Mitchell's Pass as a roadway for local traffic and emergency vehicles.

Continue use of the 1832 bridle trail as a walking track, for mountain bikes and as an off-leash area for dogs.

Prevent use of the 1832 bridle trail for motor bikes and trail bikes.

Continue use of the small quarry as a disused quarry within the otherwise natural landscape adjacent to the 1832 bridle trail.

7.6.2 Brookside Creek Quarry

Brookside Creek Quarry should remain as an element in the landscape.

Do not reopen Brookside Creek Quarry as a working quarry.

7.6.3 Surveyor's Mark

The surveyor's mark should continue to be a survey mark.

7.7 Layout and Alignments

7.7.1 Mitchell's Pass

Retain the alignment of Mitchell's Pass between Blaxland and Emu Plains where it follows the original alignment laid out by Mitchell.

7.7.2 1832 Bridle Trail

Retain the alignment of the 1832 Bridle Trail.

7.8 Conservation of Fabric

7.8.1 Fabric of Exceptional and High Significance

Fabric of exceptional and considerable significance as identified in section 5.11 of this report should be conserved using the principles of the Burra Charter.

Do not allow removal of fabric of exceptional or considerable significance unless essential for conservation works under the direction of a heritage consultant or archaeologist.

7.8.2 Fabric of Some Significance

Fabric of some significance as identified in section 5.11 of this report should be conserved using the principles of the Burra Charter.

Fabric of some significance may be removed as part of conservation works under the direction of a heritage consultant or archaeologist.

7.8.3 Fabric of Little or No Significance

Fabric of little or no significance as identified in section 5.11 of this report may be removed.

7.8.4 Intrusive Fabric

Intrusive fabric as identified in section 5.11 of this report should be removed.

7.9 Protection of Fabric

7.9.1 Fabric of Exceptional and High Significance

Protect features of exceptional and high significance according to the following guidelines:

- *Provide metal bollards with reflector markers near to culvert intakes to protect intakes from impact damage. Bollards should not be located where they will damage the fabric or interfere with the flow of drainage into the culvert.*
- *Either provide bollards to slow traffic at the island on the west side of Lennox Bridge and/or realign the island to prevent vehicles becoming airborne or otherwise being diverted into the southern parapet of the bridge.*
- *Provide metal bollards with reflector markers near the milestone to protect the milestone from impact damage. Bollards should not be located where they will damage the fabric or interfere with the flow of drainage into the culvert.*
- *Consider the installation of security cameras to monitor vandalism in the vicinity of Lennox Bridge (refer to policy*

7.9.2 Fabric of Some Significance

Protect features of some significance according to the following guidelines

- *Allow rebuilding of the retaining wall at the culvert for Brookside Creek on the 1832 bridle trail using existing stone in its original configuration as much as this can be determined. New stone matching as best possible the colour, strength and quality of the original stone may be used as necessary to complete the rebuilding of the retaining wall.*

7.9.3 Fabric of Little or No Significance

Fabric of little or no significance may be removed.

7.9.4 Intrusive Fabric

Intrusive fabric should be removed.

7.10 New Elements

7.10.1 General

Do not allow new elements that intrude on the natural bushland setting of the Mitchell's Pass Historic Precinct between the eastern alignment of Mount Sion Park and the Great Western Highway Emu Plains.

Allow only residential development in land already zoned for that purpose west of the eastern alignment of Mount Sion Park.

Do not allow new elements that intrude on the bushland setting of the Brookside Creek Quarry.

7.10.2 Bollards and Barriers

Allow new bollards, gates and/or barriers to prevent motor bikes, trail bikes and motorized vehicles on the 1832 bridle trail.

Allow new bollards as set out in policy 7.9 (Protection of fabric)

New bollards, gates and barriers should be of a simple and unobtrusive design and should be coloured to avoid strong contrast with the surrounding vegetation, rockface or roadway as appropriate.

7.10.3 Services

New services such as security cameras should be discreetly located where they are not visible in important views within the Mitchell's Pass Historic Precinct.

7.10.4 Structure

Allow new structural elements where recommended by the Structural Report of 15 October 2007 by Hughes Trueman Pty Ltd and where recommended by the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd.

7.11 Signs

7.11.1 Interpretive and Commemorative Signs

Renew the interpretive sign on the south side of the bridge with accurate information about the history of the bridge.

Renew missing commemorative plaques using fixing methods to ensure the plaques are not removed by vandals.

Repair and refix the commemorative plaque in the possession of Glenbrook and District Historical Society or an accurate facsimile of it using fixing methods to ensure the plaque is not removed by vandals.

Limit new commemorative signs at the place to those previously fixed.

7.11.2 Road Signs

New road signs should be carefully located to avoid damage to fabric of historic significance such as stone culverts, convict cut drains, retaining walls and the sandstone fabric of Lennox Bridge.

New road signs should be carefully located to ensure they do not intrude on significant views within and from the Mitchell's Pass Historic Precinct.

7.12 Landscape

7.12.1 General

Continue maintenance of the natural bushland within the Mitchell's Pass Historic Precinct and within the Brookside Creek Quarry by the Knapsack Creek Bushcare Group.

Carefully remove saplings and trees in the rock cuttings of Mitchell's Pass as recommended by the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd.

Carefully remove saplings and trees in the small quarry and the Brookside Creek Quarry.

Remove shrubs and saplings on the south side of Mitchell's Pass at the base of the rock cutting.

7.13 Maintenance and Repair

Establish a program for regular maintenance and repair for the Mitchell's Pass Historic Precinct.

Repair of stonework to Lennox Bridge and significant features of Mitchell's Pass and the retaining wall associated with the culvert at the 1832 bridle trail should be undertaken using traditional methods and under the supervision of an architect or engineer experienced in working with structures of historic significance.

Undertake the following remedial works as recommended in the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd

- 1. Scaling or rock bolting of potentially unstable blocks and slabs*
- 2. Removal of trees growing in rock fractures of the southern rock face of Mitchell's Pass*
- 3. Underpinning of perched boulders above Mitchell's Pass*

Undertake the following repair works as recommended in the Structural Report of October 2007 by Hughes Trueman Pty Ltd

- 1. Realigning the southern parapet of Lennox Bridge*
- 2. Removal of iron and steel embedments in the north and south faces of Lennox Bridge*
- 3. Repair the scour below the north end of the invert under Lennox Bridge*

Reconstruct the retaining wall associated with the culvert on the western arm of the 1832 bridle trail using salvaged stone as much as possible.

Establish a regime of monitoring the stability of the rock face on the south side of Mitchell's Pass as recommended in Schedule 1 of the in the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd

Establish a crack mapping database for Lennox Bridge and update the database every 5 years.

Repoint the stonework of Lennox Bridge using a traditional tools and a traditional lime mortar.

7.14 Fencing

Replace the existing post and rail fence to Lennox Bridge.

Maintain the existing guard rail on the north side of Mitchell's Pass. Ensure future posts for the guardrail are not located where they will interfere with fabric of original culverts or retaining walls.

Construct new rock catch fences as recommended in part 5.4 of the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd

New fencing in the Mitchell's Pass Historic Precinct should be designed to be as unobtrusive as possible.

7.15 Views

The following views are significant and should be conserved:

7.15.1 Views within Mitchell's Pass Historic Precinct

Views of Lennox Bridge from Mitchell's Pass (refer Figure 51)



Figure 51

Location of views of Lennox Bridge from Mitchell's Pass

7.15.2 Views from Mitchell's Pass

Views east over the Cumberland Plain from Mitchell's Pass (Refer Figure 52)

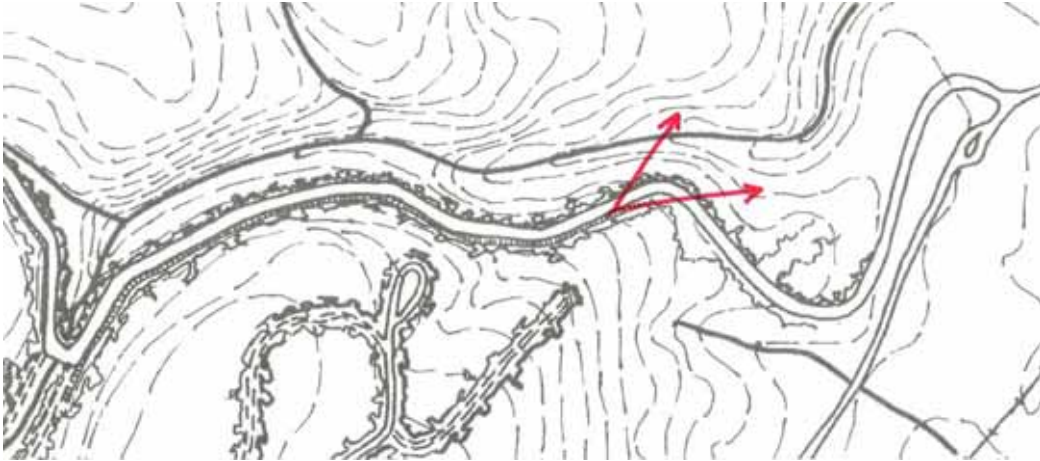


Figure 52
Location of views of the Cumberland Plain from Mitchell's Pass

Views north from Mitchell's Pass over Lapstone Creek into natural bushland (refer Figure 53).

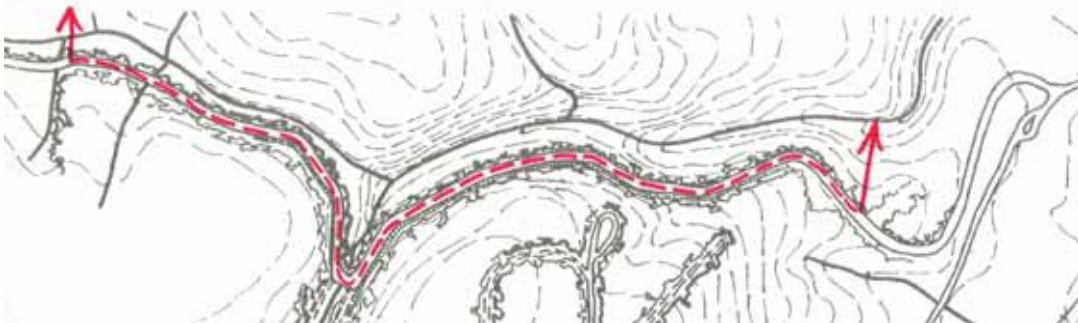


Figure 53
Location of views north from Mitchell's Pass over Lapstone Creek into natural bushland.

Views to Brookside Creek Quarry from the 1832 bridle trail (refer Figure 54)



Figure 54
Location of views of Brookside Creek Quarry from the 1832 bridle trail

7.15.3 Views to Brookside Creek Quarry

Views to Brookside Creek Quarry from the trail to Elizabeth Lookout (refer Figure 55).



Figure 55

Location of views to Brookside Creek Quarry from the trail to Elizabeth Lookout

7.16 Access

Retain public access to the roadway of Mitchell's Pass via Mitchell's Pass at Blaxland.

Retain the present limited parking area for visitors to Lennox Bridge at the north end of the 1832 bridle trail.

Restrict public access to the 1832 bridle trail to pedestrians via the parking area at the north end of the 1832 bridle trail or from the walking tracks near the south end of the 1832 bridle trail.

Retain access to the Brookside Creek Quarry via the walking trail from the east and from the 1832 bridle trail

7.17 Vandalism

7.17.1 Patrols

Include Lennox Bridge on regular security patrols in the area.

7.17.2 Security Cameras

Allow installation of discreetly located security cameras to monitor visitors to Lennox Bridge.

Security cameras at Lennox Bridge should be of a type that does not require a separate large structure for recording equipment.

7.17.3 Removal of Graffiti

Check regularly for graffiti at the base of Lennox Bridge and remove it as quickly as possible.

Graffiti on sandstone should be removed by solvent based (non-caustic) poultice systems that are purpose made for removal of paint from stonework.

Do not use pressure sprays or abrasive methods to remove graffiti.

Avoid using caustic strippers to remove graffiti.

7.18 Traffic Management

Retain the existing 2 tonne load limit for Lennox Bridge

Retain the existing restriction of one-way traffic east of Lennox Bridge

Control access to the 1832 bridle trail by motorised vehicles.

Investigate methods of controlling traffic approaching Lennox Bridge from the east to reduce the potential for vehicles damage the southern bridge parapet by hitting the existing island and become airborne.

7.19 Additional Investigation

Undertake additional investigation of potential settlement below Lennox Bridge as recommended in part 7.0/9 of the Structural Report of October 2007 by Hughes Trueman Pty Ltd

Commission a geotechnical engineer to undertake a detailed inspection of the upper slopes to the south of Mitchell's Pass and prepare a schedule of remedial works for the upper slopes and undertake the works.

Following cleaning of culverts and culvert intakes, prepare a schedule of remedial works.

7.20 Resources & Funding

Funding for general maintenance of the road surface, cleaning of culverts and drains, cleaning and maintenance of stonework etc. should be made available from Blue Mountains City Council.

Funding should also be set aside for periodic maintenance and monitoring including re-pointing of stonework to the bridge, monitoring of structural cracks etc.

Opportunities for funding assistance from external sources such as the Heritage Office, Department of Planning and the Australian Heritage Commission should be monitored. Where appropriate, applications should be made for funding under these programs for major conservation projects relating to the Mitchell's Pass Historic Precinct.

7.21 Interpretation

7.21.1 Mitchell's Pass Historical Precinct

Interpretation of Mitchell's Pass Historical Precinct should include the following:

- 1. Continued conservation of the significant fabric of the place*
- 2. Continued use of the pass as a roadway between Blaxland and Emu Plains*
- 3. Changing the name of Layton Avenue to Mitchell's Pass*
- 4. Renewal of interpretive sign southwest of Lennox Bridge to provide accurate historical information and information about the 1832 bridle trail*
- 5. Protection of the natural setting of Mitchell's Pass by restricting further development adjacent to the pass*
- 6. Continued historic walks of the precinct highlighting significant site features*
- 7. Information about the place on the Local History page of the Blue Mountains City Council website*
- 8. Refix commemorative signs acknowledging the significance of the bridge*
- 9. Maintain an archive of historical material relating to Lennox Bridge and Mitchell's Pass*
- 10. Ensure local historical societies such as the Glenbrook and District Historical Society have access to the archive of historical material*
- 11. Recognition of the precinct (as indicated in figure 49) by listing on the State Heritage Register*

7.21.2 Brookside Creek Quarry

Interpretation of Brookside Creek Quarry should include the following:

- 1. Additional research to establish when this quarry was used and where the material from this quarry was used*
- 2. Inclusion of the quarry in historic walks in the area*
- 3. Maintaining an archive of information about this quarry in the Local Studies Collection of Blue Mountains Library.*

4. *Ensure local historical societies such as the Glenbrook and District Historical Society have access to the archive of historical material*

7.21.3 Surveyor's Mark

Interpretation of the surveyor's mark should include the following:

1. *Conservation of the surveyor's mark*
2. *Location and recording of the surveyor's mark using GPS coordinates*
3. *Further research of the original purpose of the surveyor's mark.*

7.22 Statutory Protection

7.22.1 Zoning

Retain the zoning of Knapsack Reserve (that includes the Mitchell's Pass Historic Precinct, Brookside Creek Quarry and the surveyor's mark) as Recreation – Environment Protection under the Local Environmental Plan.

Future Local Environmental Plans should have a zoning that provides similar protection to that provided by the existing Recreation – Environment Protection

7.22.2 Statutory Heritage Listing

The Mitchell's Pass Historical Precinct should be listed as a heritage item on the Heritage Schedule of the Local Environmental Plan.

The 1832 bridle trail, the Brookside Creek Quarry and the Surveyor's Mark should be listed as a heritage items on the Heritage Schedule of the Local Environmental Plan.

Nominate the Mitchell's Pass Historical Precinct for listing on the State Heritage Register.

Nominate the 1832 bridle trail for listing on the State Heritage Register.

7.23 Documentation

Establish an archive of all historical documents relating to the Mitchell's Pass Historic Precinct. The archive should include:

1. *Copies of all documents relating to the construction of the bridge*
2. *Subsequent documentation relating to the condition of the bridge*
3. *Copies of all drawing relating to the rebuilding of the bridge in the 1970s.*
4. *Any other primary and secondary historical material relating to the Mitchell's Pass Historical Precinct.*

7.24 Policy for Adoption and Review of Conservation Policy.

7.24.1 Adoption of Conservation Policy

Adopt this Conservation Management Plan for the place to guide the operation and management of the place. Should this Conservation Management Plan not be adopted, revise this policy and adopt the revised policy before further works or activities are carried out at the place.

7.24.2 Review of Conservation Policy

The conservation policy should be reviewed after the first major works at the place and, in any event, at regular intervals of no more than ten years.

Ad hoc changes to the Conservation Management Plan are to be avoided. Any changes to policy are to be consistent with a complete revision of the Conservation Management Plan.

7.24.3 Distribution of Conservation Management Plan

This conservation management plan should be distributed to the following:

- *Council*
- *Library Local Studies Collection*
- *Glenbrook and District Historical Society*

- *Springwood Historical Society*
- *Blue Mountains Historical Society*
- *National Trust of Australia (N.S.W.)*

Any persons involved in the future management or maintenance of the Mitchell's Pass Historic Precinct, the Brookside Creek Quarry, the surveyor's mark and of Knapsack Reserve.

2 Introduction

2.1 The Brief

The brief for this Conservation Management Plan for the Mitchell's Pass Historic Precinct was prepared by Blue Mountains City Council. The brief is included as Appendix 1.

2.2 Definition of the Study Place and Setting

A map of the study area is at Figure 1.

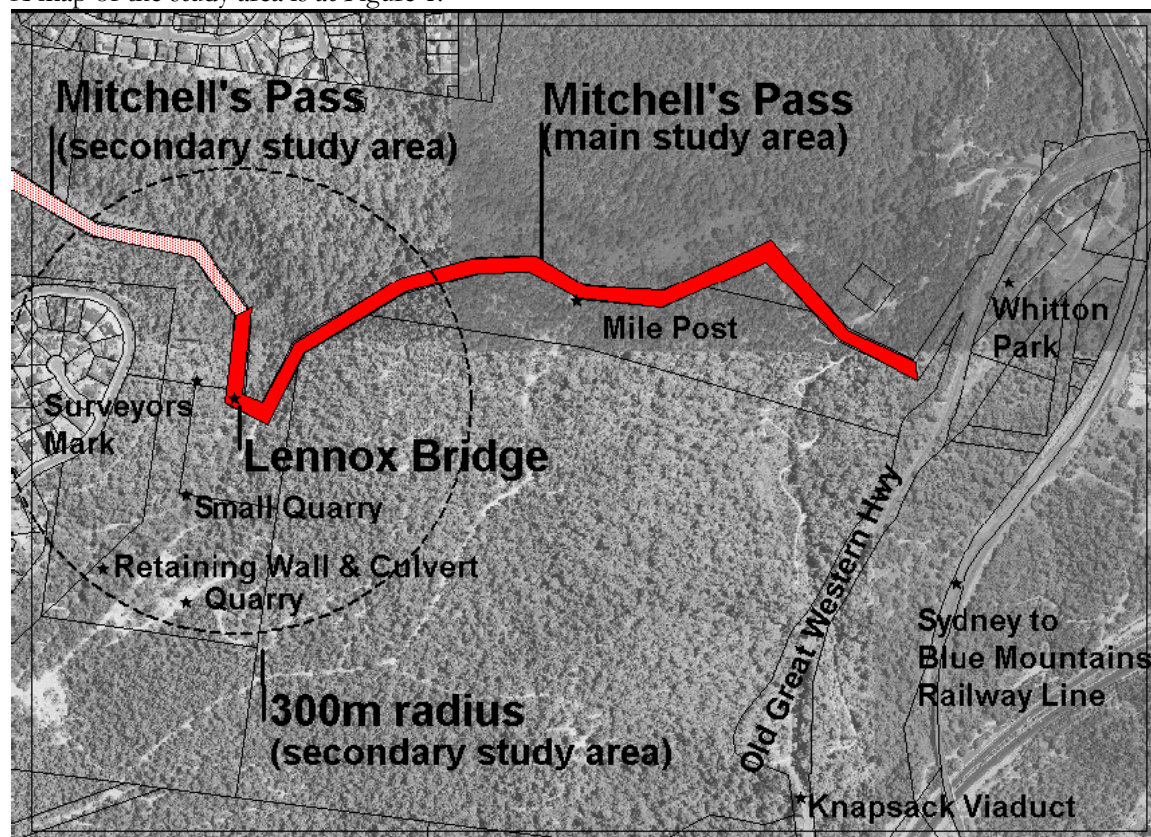


Figure 1

Location Plan –

Source: Lennox Bridge and Mitchell's Pass Conservation Management Plan - Consultancy Brief

2.3 Methodology

This study and report generally follow the methodology and structure outlined in J S Kerr, *The Conservation Plan*, the National Trust of Australia (NSW), fifth edition, 2000. The report is also consistent with the principles of the *Australia ICOMOS Burra Charter for the Conservation of Places of Cultural Significance* (1999) and its Guidelines. Additional documents considered in the preparation of the report include NSW Heritage Office *Assessing Heritage Significance* 2001.

2.4 Natural and Aboriginal Significance

This report only addresses the European cultural significance of the place.

2.5 Terms

The terms fabric, conservation, maintenance, preservation, restoration, reconstruction, adaptation, compatible use, and cultural significance used in this report are defined in the *Burra Charter: The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance* 1999, which is included in this report as Appendix 2.

2.6 Author Identification

This report was prepared by Pamela Hubert of Hubert Architects Pty Ltd in conjunction with Ian Jack of R. Ian Jack Heritage Consulting Pty Ltd, Simon Wiltshier of Hughes Trueman Pty Ltd (Structural Engineers) and John Braybrooke of Douglas Partners Pty Ltd (Geotechnical Engineers).

The physical survey of the fabric of the place was undertaken on September 12 2007 by the above study team with additional survey work undertaken by Pamela Hubert on September 25 2007.

Unless otherwise stated, photographs reproduced in this report are by the author.

2.7 Acknowledgements

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Glenbrook and District Historical Society

Springwood Historical Society

Patricia Gonzalez, Blue Mountains City Council

Soren Mortensen, Blue Mountains City Council

2.8 Abbreviations

Abbreviations used in this report

BMCC Blue Mountains City Council

ML Mitchell Library

SRNSW State Records, New South Wales

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3 Historical Summary

3.1 Introduction

The Blue Mountains constituted a visible and real boundary fence to the young colony of New South Wales. They also presented a challenge: could the mountains offer an escape route for a convict, perhaps, it was rumoured, to the safety of China? was there good grazing land for European herds beyond the Mountains? should exploration follow the waterways and the gorges or follow the ridges above? what policy about exploration was it expedient for the administration of the colony and the empire to implement?¹

A mixture of curiosity and due diligence created pragmatic interest in the mountain barrier from the very beginning of British settlement. Governor Phillip himself travelled up the Hawkesbury-Nepean in 1788-9 and Lieutenant Dawes climbed the escarpment and explored as far as Linden in 1789. Over the next twenty years, there were numerous informal explorations and it was realised that the gorge of the Grose River, running east-west through the heart of the Mountains and joining the Cumberland Plain where the Nepean changed its name to the Hawkesbury, created an impassable gulf. A route to the south of the Grose, clinging to the ridges, was finally established with the aid of Aboriginal people in 1813.²

3.2 The First European Routes across the Blue Mountains, 1813-1827

The successful expedition of 1813 was headed by William Lawson, Gregory Blaxland and William Charles Wentworth. It started from the crossing of the Nepean River south-east of the later settlement of Emu Plains and climbed the ridge through the later Glenbrook, passing to the west of Glenbrook Lagoon. The route was surveyed and refined in 1814 by George William Evans, the government surveyor, who extended it to the site of Bathurst. Later in 1814 William Cox and a group of convicts started to construct a rough road along Evans' line and reached Bathurst in 1815.³ The major problems of any road across the Blue Mountains were encountered in the initial ascent from Emu Plains and in the descent from Mount York. The ascent of the Lapstone Monocline above Emu Plains constitutes a challenge to all road-builders, but especially to the surveyors and convict gangs seeking to maintain in trafficable order the road surveyed by Evans and built by Cox.

With the opening up of the western plains, traffic over the Mountains increased sharply in the 1820s, and a radically different route up the Monocline was created. The new road started and ended at more or less the same places as the Evans-Cox road, but it lay farther to the north (Figure 2).

The making of this new road of 1826, now called the Old Bathurst Road, is poorly documented. Although it is sometimes known as Lawson's road,⁴ it is likely to have been constructed by convict labour under the aegis of William Dumaesq, Governor Darling's brother-in-law, who had been appointed inspector for roads and bridges in 1825.⁵ In April 1826 the Australian newspaper reported that Dumaesq had marked out another line for the crossing of the Mountains, specifically mentioning only Mount York and Mount Blaxland, but it is likely that he also laid out the new ascent of Lapstone Hill at this time.⁶ The new road was completed by the end of 1826, for it is referred to as the new 'zig zag' on a map of Emu Plains prepared by surveyor Kinghorne in 1826.⁷ Despite its

¹ Beverley Kingston, *A History of New South Wales*, Cambridge University Press, Melbourne 2006, 14.

² Cf Introduction to George Mackaness, *Fourteen Journeys over the Blue Mountains of New South Wales, 1813-1841*, Australian Historical Monographs 20, author, Sydney 1950, reprinted as new series 22, Review Publications, Dubbo 1978, 6, 8.

³ Mackaness, *Fourteen Journeys*, new series 22, 9-70.

⁴ Allan Searle, *Places of Historic Interest on the Lower Blue Mountains*, Springwood Historical Society, Springwood 1977, 11.

⁵ Nancy Gray, 'Dumaesq, Henry (1792-1838) and William John (1793-1868)', *Australian Dictionary of Biography*, I, Melbourne University Press, Carlton 1966, 333.

⁶ Cf. Grace Karskens, *Cox's Way*, Sydney 1988, 48.

⁷ State Records NSW, Map 2661.

steepness and series of very sharp bends, supported by high retaining walls, it was extravagantly praised by a correspondent in *The Australian* in March 1827:

"Tis 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, now to the right and then to the left; good enough for a battering train to pass over, but every five minutes you will find it is well to turn round, and, as we called it, take a view of nature, or, in other words, stop a little to take a breath."⁸

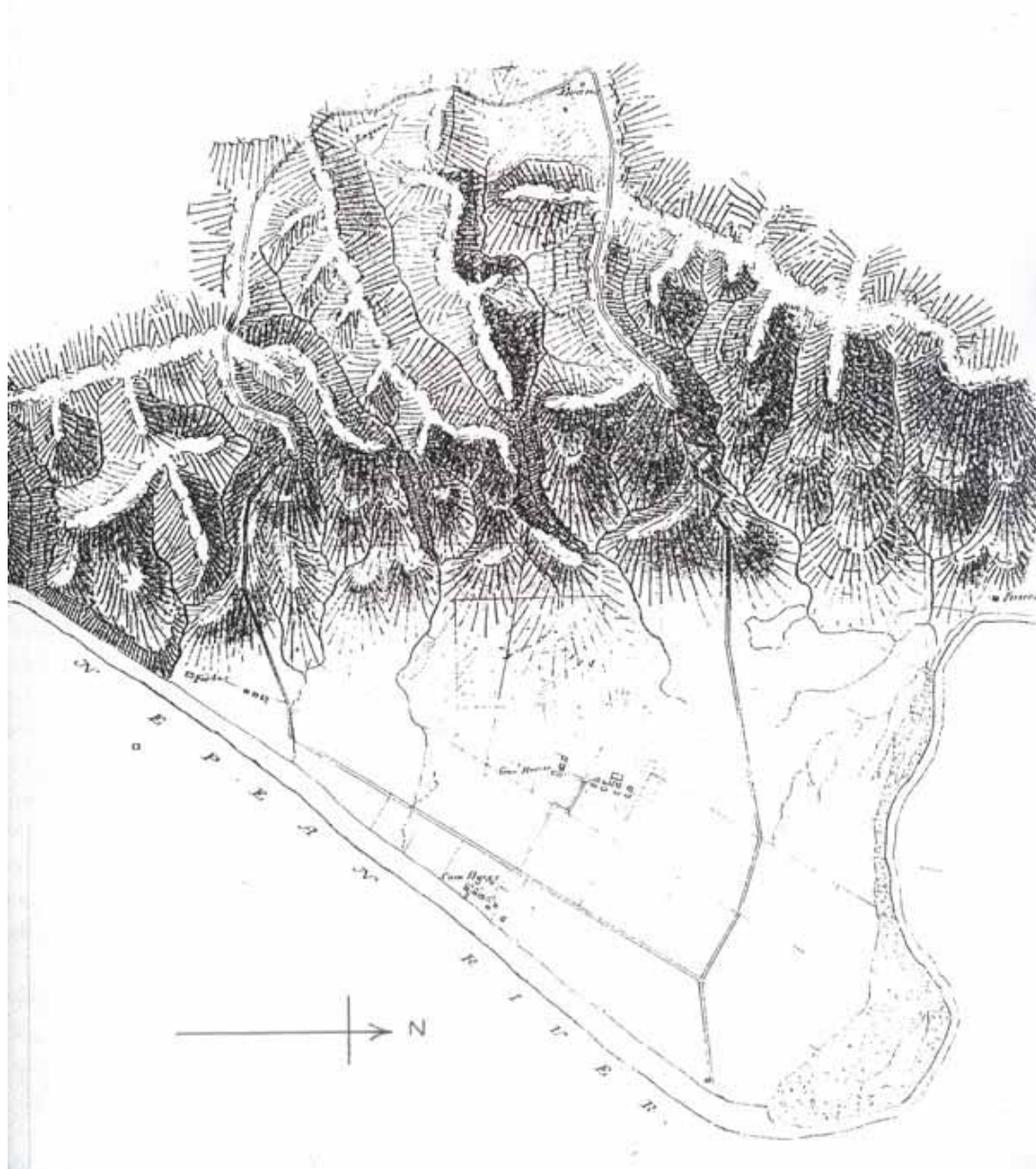


Figure 2

Surveyor Rusden's map of 1831, showing Cox's Road to the left and Dumaresq's Lapstone Hill road to the right. Chief Justice Forbes' house is near the river to the far left; Emu Plains government establishment is in the middle of the lower part of the map.

Source: State Records NSW, Map 2670.

Not everyone agreed about the qualities of the road. In the 1833 and 1834 issues of the *New South Wales Calendar and Directory*, the ascent of Lapstone Hill using the 1826 road was described as "a

⁸ Mackaness, *Fourteen Journeys*, new series 23, 80.

day's work for a loaded dray with sixteen bullocks".⁹ Early in 1834, David Lennox described it scornfully as a road "cut in traverses up the steepest part of the Hill like flights of Stairs. The ascent of the road in some places is 1 in 5".¹⁰

3.3 Thomas Mitchell and the new road up Lapstone Hill, 1830- 1834

When Thomas Mitchell became Surveyor General of the colony in 1828, he immediately began to plan a new system of major roads to the north, south and west. Unimpressed by Dumaresq's route, Mitchell proposed a third line of road up Lapstone Hill. In his original ride around the western road in May 1830, he had noticed a gully descending from the Pilgrim Inn which he thought "would admit of the most direct and least inclined road that can be possibly made between that point and Emu Plains".¹¹

A protracted quarrel with Governor Darling, who tried to separate road construction from the Surveyor-General's responsibilities, diverted Mitchell's attention for a while,¹² but in May 1832 H.F. White, an assistant surveyor, completed a survey and plan of the new line of road which Mitchell had selected in 1830 (Figure 3).¹³

In June 1832, Mitchell took a step closer to ordering the construction of this new eastern approach to the Mountains and advised the Colonial Secretary that "the existing ascent of Lapstone Hill, inconvenient in its best state for the passage of heavy carriages, would require a gang stationed continually on the spot, to keep it in repair".¹⁴

Mitchell, however, was immensely busy; simultaneously creating great roads to the north and the south as well as Victoria Pass to the west and in mid 1832 he was concentrating resources on the Razorback part of the southern road.¹⁵ The main influences in having these resources moved to Emu Plains to begin the new Lapstone deviation in the winter of 1832 were Sir John Jamison and Chief Justice Forbes. Both lived close to Emu Plains. Jamison was based at Regentville on the east side of the Nepean, but he had wide acres across the Mountains at Bathurst and Capertee, so had a keen interest in road improvements.¹⁶ Chief Justice Forbes, who had had, like Mitchell, a stormy relationship with Governor Darling, lived close to Emu Plains at a house called Edinglassie, just south of the beginning of Cox's Road: the house is marked "Forbes" on the 1831 map (Figure 2).¹⁷

As a result of pressure from Governor Bourke, influenced by Jamison and Forbes, Mitchell was obliged to reorganise his priorities a little and in August 1832 his road gang at the Razorback was transferred to Emu Plains to begin the new road.¹⁸ According to Jamison "Major Mitchell appeared sadly annoyed that the Razorback gang was withdrawn".¹⁹

⁹ *The New South Wales Calendar and General Post Office Directory, 1833*, 108; 1834, 88.

¹⁰ David Lennox, letter to Sir Thomas Telford, 5 April 1834, Mitchell Library, State Library of New South Wales, ML DOC 2669.

¹¹ William C. Foster, *Sir Thomas Livingston Mitchell and his World, 1792-1855*, Institution of Surveyors NSW, Sydney 1985, 162.

¹² Foster, *Sir Thomas Mitchell*, 139-153.

¹³ SRNSW, Map 2666.

¹⁴ T.L. Mitchell. *Report upon the Progress made in Roads, and in the Construction of Public Works, in New South Wales, From the Year 1827 to June, 1855*, Sydney 1856, 15-16

¹⁵ Foster, *Sir Thomas Mitchell*, 162.

¹⁶ G.P. Walsh, 'Jamison, Sir John (1776-1844)', *Australian Dictionary of Biography*, II, Melbourne University Press, Carlton 1967, 11.

¹⁷ C.H. Currey, 'Forbes, Sir Francis (1784-1841)', *Australian Dictionary of Biography*, I 395-397.

¹⁸ Foster, *Sir Thomas Mitchell*, 162.

¹⁹ Foster, *Sir Thomas Mitchell*, 162.



Figure 3

H.F. White's map of Mitchell's proposed line of road to the left and Dumaresq's 1826 road (now known as Old Bathurst Road) to the right, 20 May 1832. Roads are shown in red. The blue line running from west to east (i.e. down the page) is Lapstone Creek. The westerly part of the grid-plan of Emu Plains is at the bottom. North is to the right.

Source: SRNSW, Map 2666.

Mitchell assigned Assistant Surveyor John Abbott to take charge of the works at Emu Plains and Lapstone in August 1832.²⁰ The convicts assigned to build the new road were stationed at Emu Plains. Working in leg-irons, a gang twenty strong completed the initial, comparatively easy, part of the road immediately west of the government town. This road had been cleared of brushwood and stumps to the width of 100 feet by 30 August as far as the sharp rise on to the monocline. To prepare for the actual road-building up the ridge on the south side of Lapstone Creek, a bridle track

²⁰ Abbott to Mitchell, 21 August 1832, SRNSW, Surveyor-General. Correspondence from Surveyors, Reel 3051, 2/1509.1, p.136

was constructed as far as the Pilgrim Inn (discussed below), where the new road met both Cox's road and Dumaresq's road.²¹

The clearing of the bridle track engaged an expanded work gang for over three months. By 23 October 1832 the work was sufficiently advanced to allow Governor Bourke, accompanied by his daughter Anne and Sir John Jamison, to ride from Emu Plains to the Weatherboard Inn at Wentworth Falls and on to Collett's Inn at Hartley Vale, using the new line of road.²² Assistant Surveyor Abbott, who rode with them as far as the Pilgrim Inn, was able to report that the governor "was pleased to express his appreciation of the line of road and of the work which had been done".²³

The bridle track was completed in November 1832 and was already being widened to allow the passage of four-wheeled carts.²⁴ This was urgently required because the main obstacle in the new line was the deep gully cut by Brookside Creek, a small tributary of Lapstone Creek.²⁵ Brookside Creek runs from Glenbrook Lagoon north-eastwards to Lapstone Creek and, as White's map (Figure 4) shows, a bridge had already been recognised as highly desirable before roadworks began at all. To build a bridge called for a short deviation in the road: to avoid building a bridge would have involved a longer deviation, shown on White's map. This longer route was necessary for the initial bridle-track, but Mitchell was not much in favour of such deviations, so a competent bridge-builder was an urgent need.

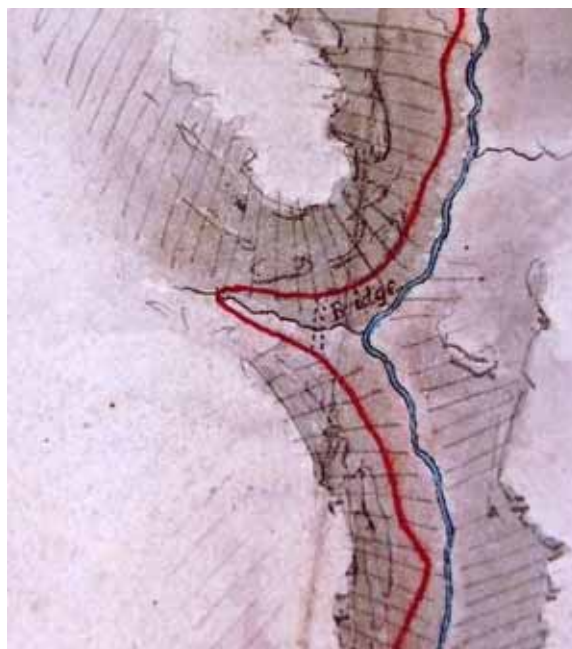


Figure 4

Detail of H.F. White's map of 20 May 1832, showing the chosen location of Lennox Bridge and the line of the bridle track along Brookside Creek to a level crossing-place, the loop-road which still exists.

Source: SRNSW, Map 2666

The present loop road which leads from Lennox Bridge to both the early quarry and the later quarry therefore dates back to mid-1832, when the bridle track was constructed. It represents the earliest configuration of the new road.

²¹ Abbott to Mitchell, 30 August 1832, SRNSW, Lands, Miscellaneous Branch, Correspondence, 20/8746, 15/7953.

²² Abbott to Mitchell, 23 October 1832, SRNSW, 20/8746, 15/7953; Max Waugh, *Forgotten Hero: Richard Bourke. Irish-born Governor of New South Wales, 1831-1837*, Australian Scholarly Publishing, Melbourne 2005, 51.

²³ Abbott to Mitchell, 23 October 1832, SRNSW, 20/8746, 15/7953.

²⁴ Abbott to Mitchell, 10 November 1832, SRNSW, 20/8746, 15/7953.

²⁵ For the name Brookside Creek, see Jim Low, *Lennox Bridge: Spanning the Past into Tomorrow*, author 1983, 1.

3.4 David Lennox and the Planning of Lennox Bridge

The construction of the bridge over Brookside Creek was a major issue. When Mitchell arrived, the only stone-arched bridge in the colony was Richmond Bridge in Tasmania which had six arches, begun in 1823 and completed in 1825.²⁶ Clare's Bridge on Mitchell's Great North Road was constructed in 1832, but is not arched: it has stone piers and horizontal beams carry the carriageway. At the end of his life, in 1855, Mitchell looked back at the situation of 1832:

The construction of substantial bridges, in a country where convict labour was abundant, for the formation of roads, depended, first, on careful selection of the general line of road; and, secondly, on the skill and ability of superintendents. After some pains had been taken to ascertain the proper directions of great roads, the Surveyor General, with the Governor's sanction, appointed a skilful Scotch mechanic, who had assisted at the building of some important arches at home, to be superintendent of bridges. Mr. Lennox was acquainted with the construction of arches, and could furnish the designs, construct the centering, and direct the application of convict labour to stone-cutting and setting, and to all the branches of carpentry and masonry necessary for the construction of a bridge.

The first work of this kind was the bridge in the new ascent from Emu Plains - a somewhat experimental work, which Mr. Lennox executed extremely well.²⁷

David Lennox was an experienced Scottish bridge-builder, born in 1788, who had worked with his fellow lowland Scot, Thomas Telford. Telford was the greatest of the engineer-designers of the transport revolution in Britain and the foundation President of the Institution of Civil Engineers in Britain. Lennox had experience in the 1820s under John Wilson, the masonry contractor for Telford's Menai Bridge in Wales, "one of the great works of art and engineering of all time". Lennox later became foreman to John Cargill, the contractor who constructed the Gloucester bridge over the River Severn, with arches designed by Telford.²⁸

Lennox left Britain in 1832. His wife had died in 1828, leaving two daughters aged only five and seven. The girls were cared for by his brother, who managed the poorhouse in Ayr, while his sister, Janet, married to James Dalziel, also kept a protective eye on them while the father was working in Gloucester. There were problems of employment in England in the early 1830s, John Dunmore Lang had trumpeted among his fellow-Scots the advantages of settling in Australia and at the age of 44, Lennox came alone to Sydney, arriving on 11 August 1832.²⁹

He brought with him a warm commendation from Cargill. Cargill wrote a testimonial recounting how Lennox had worked on the Gloucester bridge for three years from 1825 to its completion in 1827. During this time Lennox "behaved in the most exemplary manner and quite to my satisfaction that he is an excellent workman and very capable of conducting any works where he may be employed".³⁰ Thomas Telford had himself given Lennox a letter of introduction to the prominent architect, Edward Hallen, who designed the original part of Sydney Grammar School.³¹ Edward Hallen's brother, Ambrose, was the Colonial Architect, partly as a result of Telford's patronage.³²

²⁶ Colin O'Connor, *Spanning Two Centuries: Historic Bridges of Australia*, University of Queensland Press, St Lucia, 1985, 70.

²⁷ Mitchell, *Report upon the Progress made in Roads*, 90.

²⁸ Frank Bloxham, 'David Lennox, a Man of Note - a Parramattan', *Journal of Parramatta and District Historical Society*, 5, 1991, 3; Henry Selkirk, 'David Lennox, the Bridge Builder, and his Work', *Journal of Royal Australian Historical Society*, 6, 1920, 203-204.

²⁹ Bloxham, 'David Lennox', 3-4

³⁰ Bloxham, 'David Lennox', 4; Selkirk, 'David Lennox', 203-204.

³¹ Lennox to Telford, 1834, Mitchell Library, ML DOC 2669.

³² Morton Herman, 'Hallen, Ambrose (d.1845) and Edward (1803-1880)', *Australian Dictionary of Biography*, I 504.

The Hallen brothers did not find a job for Lennox in Sydney, so after four weeks, as he told Telford in a letter, "I had recourse to my old friends the Mallet and Tools for about another month".³³

Lennox was employed by the government in cutting the coping stones for the low wall outside the Legislative Council building in Macquarie Street, when Mitchell first met him. Many years later, Mitchell said that Lennox "left his stone wall and with his shirt sleeves still tucked up - and trowel in hand - undertook to plan stone bridges".³⁴ This romantic story seems to have been embellished by Mitchell, however, since Lennox himself told Telford that he had a letter of introduction to the Colonial Treasurer, who was another Scot, Campbell Riddell, and Lennox says that Riddell "recommended me to the Surveyor General".³⁵ It is likely, therefore, that Mitchell already knew of Lennox and deliberately sought him out in September. On 13 September 1832, immediately after the encounter, Mitchell wrote to the Colonial Secretary, urging the appointment of Lennox to supervise masonry construction: "A very well qualified person lately arrived in the Colony has been strongly recommended to me and I have examined his working plans of arches of the greatest magnitude on which he has been employed in England."³⁶

On 1 October 1832, Governor Bourke appointed Lennox to the new position of Superintendent of Bridges with a salary of £120 a year.³⁷ Although the appointment was subject to ratification from the British government, which did not arrive in the colony until June 1833,³⁸ Lennox was busy selecting suitable convict stoneworkers for the construction of a bridge on Mitchell's Pass by October 1832 and was at work at Emu Plains by November.³⁹

On 10 November, John Abbott, who was in charge of the overall operation, reported that "Mr Lennox is getting on in laying stone, a great quantity of which is cut and ready (cf. Figure 5). There is about 20 (convicts) selected by him from the gang, and he is indefatigable in instructing them how to work".⁴⁰

The stone blocks shown in Figure 5 would have been brought from the small quarry (which is still clearly visible) about 200 metres away on the old bridle track to the south of the bridge and on the west side of Brookside Creek. Because a sustaining wall (or possibly part of the bridge) is being built in the foreground, this is not a view of the actual quarry.

³³ Lennox to Telford, 1834, Mitchell Library, ML DOC 2669.

³⁴ Thomas Mitchell Papers, vol. 8, Mitchell Library, A 295-3, p.601. This is in Mitchell's own handwriting: a printed version is in *The Athenaeum*, 6 October 1855, 1163, cited in Selkirk, 'David Lennox', 202-203.

³⁵ Lennox to Telford, 1834, Mitchell Library, ML DOC 2669.

³⁶ Royal Australian Historical Society, MSS Red M 55.

³⁷ J.M. Antill, 'Lennox, David (1788-1873)', *Australian Dictionary of Biography*, I 106.

³⁸ *Historical Records of Australia*, series 1, XVII 5, 152

³⁹ Abbott to Mitchell, 25 November 1832, SRNSW, 20/8746, 15/7953.

⁴⁰ Abbott to Mitchell, 10 November 1832, SRNSW, 20/8746, 15/7953.

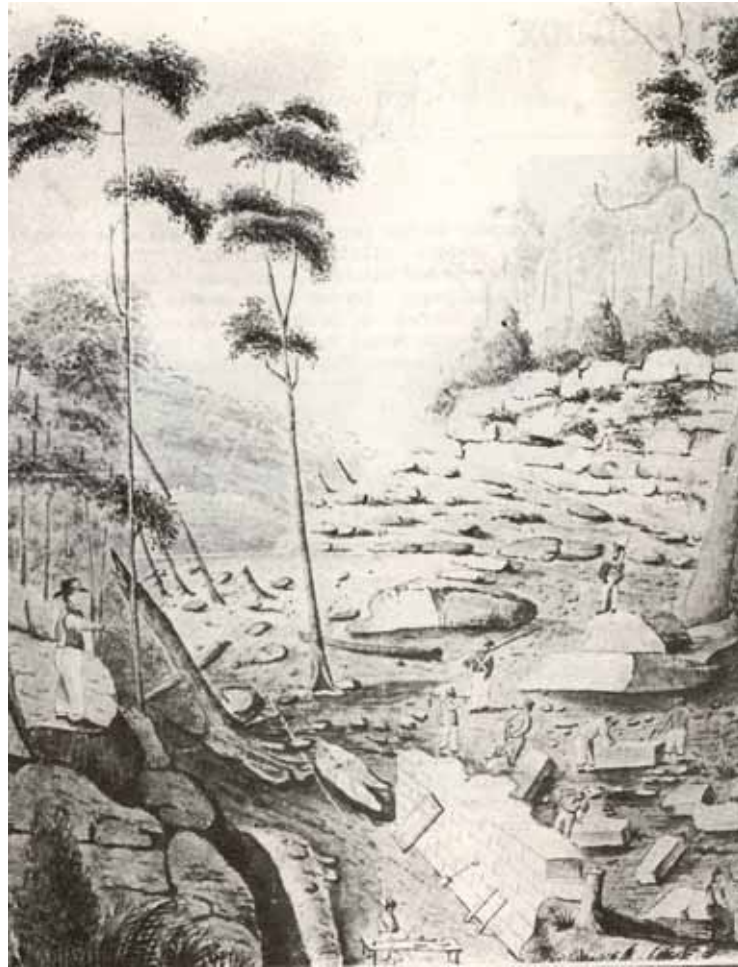


Figure 5

Convicts at work on Mitchell's Pass road, cutting stone blocks for the bridge in December 1832.
Source: Mitchell Library, Small Picture File.

3.5 The Building of Mitchell's Pass, 1823-1833

Work on widening the bridle track went hand in hand with Lennox's bridge-building. The shaped stone used for the main section of the bridge had to be supplemented with rubble stone, which was a by-product of the removal of rock on the ascent from Emu Plains. A fine sketch by the convict artist, Charles Rodius, shows work continuing on rock-cutting for widening the road in 1833 (Figure 6).

Most of the removal of rock was intended to be done with the assistance of gunpowder and there were stocks of powder at Emu Plains until the end of 1832.⁴¹ But fresh supplies were not delivered early in 1833, so the road overseer, Thomas James, was “obliged to Quarry out the Rocks with great labor, but which serves at the same time to back up the sides of the Bridge, and to make the road leading to it of the necessary width”.⁴²

The supply of gunpowder remained unstable. More was delivered but ran out in August 1833. Only a small quantity was sent late in August which ran out about 7 September. Abbott complained that “when we are without Gunpowder considerable delay and inconvenience is felt. I anticipate that the

⁴¹ Abbott to Mitchell, 5 December 1832, SRNSW, Reel 3051, 2/1509.1, p.175

⁴² Abbott to Mitchell, 8 March 1833, SRNSW, 20/8746, 15/7953.

Road will be finished up to the Bridge in the course of three Months (i.e. by December 1833 if powder supplies were regular)".⁴³



Figure 6

The convict gang at work on Mitchell's Pass below the bridge.

Drawing by Charles Rodius, 1833.

Source: Hugh Speirs, *Landscape Art and the Blue Mountains*, Alternative Publishing Cooperative, Sydney 1981, fig.24 p.48.

Abbott had estimated in August 1833 that to complete the extraction of rock necessary for road-making and quarrying, he would require 100 barrels of gunpowder, 20 "jumpers" (i.e. iron drills) eight feet long, 100 quarry wedges, 50 grubbing picks, 20 quarry picks and 60 shovels.⁴⁴ The marks of the eight-foot drills can still be seen in the small quarry.

The convict in charge of loading the drill-holes with gunpowder and then firing the charge was John Sheppard, then at the end of his second year in an iron gang. In November 1832 he was standing on a rock above the loaded drill-hole where the fuse was already burning when he tripped over his leg-irons "and he was thrown down from the rock within a yard or two of the explosion (the fragments of which fortunately took [off] in the opposite direction), being very severely bruised".⁴⁵

The gangs set out from Emu Plains early in the morning and normally stayed all day, returning to Emu Plains about 4 p.m. for an evening meal.⁴⁶

Water was a constant preoccupation and as soon as a vehicle could traverse the new road, a cart with a water barrel filled at the Nepean travelled the route daily. This was particularly vital during the dry weather of early 1833, when there was little water in the creeks.⁴⁷ In September 1833 the water-cart hauled by three bullocks fell over the edge of the road into the gully, killing two of the bullocks, and

⁴³ Abbott to Mitchell, 8 September 1833, SRNSW, 20/8746, 15/7953.

⁴⁴ Abbott to Mitchell, 15 August 1833, SRNSW, 20/8746, 15/7953.

⁴⁵ Abbott to Mitchell, 28 November 1832, SRNSW, Reel 3051, 2/1509.1, p.249.

⁴⁶ Abbott to Mitchell, 11 November 1832, SRNSW, 20/8746, 15/7953.

⁴⁷ Abbott to Mitchell, 23 January 1833, SRNSW, Reel 3051, 2/1509.1, p.184.

for a time three men had to supply the workers with water in pails.⁴⁸ This is the only serious accident recorded during the twelve months which the main road-works occupied.

3.6 The Building of Lennox Bridge, 1832-1833

A bullock cart was also needed throughout the building of the bridge to deliver lime. Rather than obtain lime from the stores, it was found to be dramatically cheaper to have it shipped from Sydney up the Hawkesbury to Windsor in George Thomas' boat. A stock-pile was held at the Commissariat stores in Windsor. A dray was regularly going to Windsor from Emu Plains to take sick convicts to the hospital, so this dray was loaded with 25 bushels of lime on the return journey. Lennox estimated that 500 bushels would be required overall. Once the dray reached Emu Plains with the current supply, the lime was carted up the Mitchell's Pass road to the bridge.⁴⁹

The timber for the bridgeworks was cut on the road and was processed by an experienced convict sawyer, who was, however, prone to abscond.⁵⁰

David Lennox himself began work in October 1832. After selecting promising convicts, he continued with a programme of teaching men the techniques of working in stone. Good pupils were offered the inducements of Saturdays off.⁵¹

Lennox seems to have had carte blanche from Mitchell in relation to the design of the bridge. There is no mention in surviving documentation that one side of the bridge was a horseshoe curve, but there can be no doubt that this was Lennox's intention from the start. By March 1833, with the arch largely complete, Lennox was beginning to wind up operations at Lapstone, since the greater operations at Lansdowne Bridge at Prospect were now in the planning stage. The impressive list of lifting equipment to be made or purchased for the six cranes and two "crabs" (portable winches) which were to be employed at Lansdowne has no parallel at Lapstone.⁵² The winches and cranes were, however, already in existence. Only the wheels, pinions and chains for lifting heavy blocks had to be specially made for Lansdowne. It is likely that some of these cranes and winches were used at Lapstone in 1832-3. The hoisting equipment used by Lennox had nippers which bit into notches cut in the stones; once raised to the scaffolding, a 'scaffold jib' manoeuvred the blocks into position. The keystones had to be lifted directly into their position and for this purpose Lennox used a 'lewis', which is "a dovetail shaped block and a spike let into a special hole cut into the top bed of the keystone".⁵³

When Mitchell told Lennox that the governor wished to have a suitable inscription on the bridge at Lapstone early in 1833, Lennox responded that:

I think that the most appropriate place will be on the Dado of the Parrapet wall over the key stone, and I will select a good white stone for the purpose and let it project forward about two inches as I have done with the key stone - I have allowed a space of 4 ft. by 2 ft. for the inscription, but that is as much as we can conveniently get in one stone, as there is no stone near the Bridge of a proper quality.⁵⁴

⁴⁸ Abbott to Mitchell, 20 September 1833, SRNSW, Reel 3051, 2/1509.1, p.235.

⁴⁹ Abbott to Mitchell, 4 October 1832, SRNSW, Reel 3051, 2/1509.1, p.149.

⁵⁰ Abbott to Mitchell, 26 October 1832, SRNSW, 20/8746, 15/7953.

⁵¹ Abbott to Mitchell, 14 and 16 March 1833, SRNSW, Reel 3051, 2/1509.1, pp.197, 199.

⁵² Lennox to Mitchell, 12 March and 13 May 1833 and enclosure, SRNSW, 20/8746, 15/7953.

⁵³ Henry Kullas, '150th Anniversary of Lennox Bridge (Horseshoe Bridge)', *Local Government Engineers Association of NSW Journal*, July 1983, 81-2.

⁵⁴ Lennox to Mitchell, 12 March 1833, SRNSW, 20/8746, 15/7953

Lennox sent Mitchell his own sketch of the bridge “that you may get marked upon it the inscription required”.⁵⁵ The whereabouts of the original sketch are not known, but Mitchell had copies made and these survive as illustrations to the Mitchell Library copy of the manuscript of his 1855 report on his lifelong achievements (Figure 7).⁵⁶

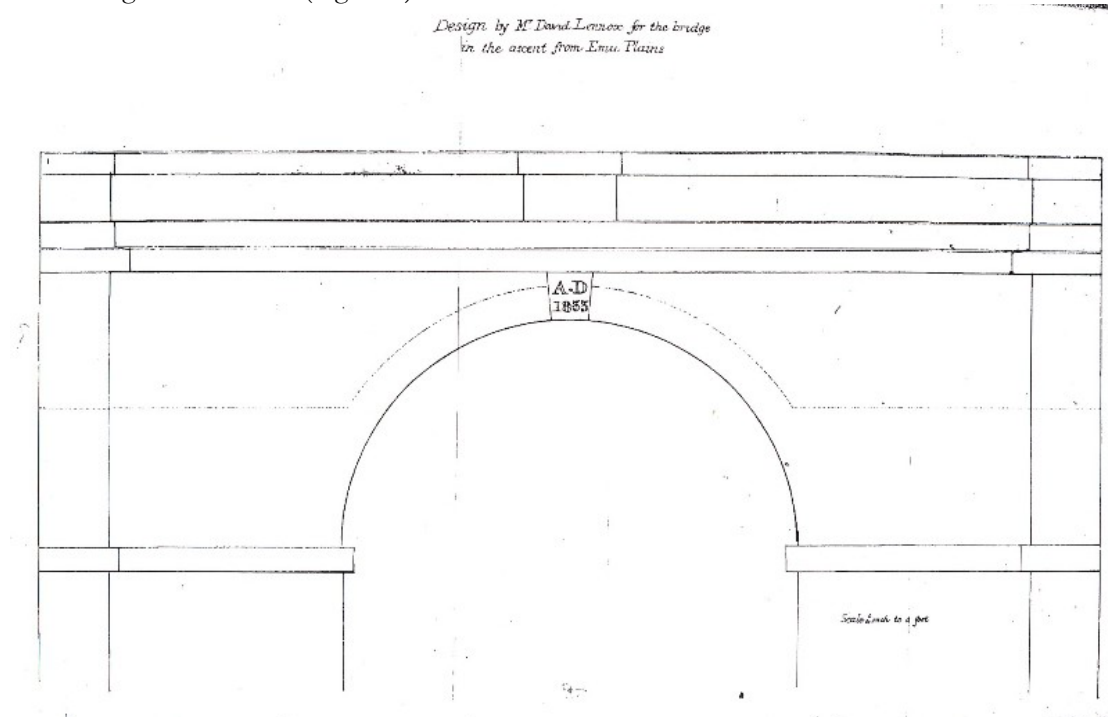


Figure 7

David Lennox's own drawing of his projected bridge at Lapstone, March 1833, with the design of the keystone inscription added a little later. This copy of Lennox's holograph is included with the manuscript version of Mitchell's Report upon the Progress made in Roads.

Source: Mitchell Library, A331 Ms Rm, p.277a.

As Ward Havard acutely commented over seventy years ago, this proposed inscription on the bridge is quite separate from the use of the keystones.⁵⁷ The drawing sent by Lennox in fact shows “A.D. 1833” already carved on the downstream keystone and the large stone immediately above is presumably the place where the further inscription might be inserted (Figure 7).

The stone specially selected in the dado was never inscribed, but the upstream keystone received the inscription “DAVID LENNOX BUILDER”. It is not known whether this happened as a result of “generous minds in high places”, but it seems likely that the naming of the man responsible for the beautiful bridge was authorized either by Mitchell or by Bourke.⁵⁸

The carving of both keystones was the work of an ex-convict William Weston. Weston had been given a life sentence at Lancaster Assizes in England in 1814 and arrived in Sydney on the *Indefatigable* in 1815.⁵⁹ By 1828 he was on a ticket of leave and was described as a professional stonecutter, aged about 40. He apparently then re-offended and was a convict again in 1833, when he joined Lennox's team of tradesmen. He was specially selected for the task of carving the inscriptions on the Parramatta boundary stones, supplied by Lennox in 1839, and the explanation

⁵⁵ Lennox to Mitchell, 12 March 1833, SRNSW, 20/8746, 15/7953.

⁵⁶ Mitchell Library, A331 Ms Rm, pp.277a, 277b.

⁵⁷ Ward L. Havard, 'Mitchell's Pass, near Emu Plains', *Journal of Royal Australian Historical Society*, 19, 1934. 357-8.

⁵⁸ Havard, 'Mitchell's Pass', 358; Selkirk, 'David Lennox', 206.

⁵⁹ National Archives, Kew, HO11/2, p.179 (fo. 91r), convict list for *Indefatigable*, PL26/74, 75, Lancaster assize records, 1814: these legal records are incomplete and Weston's case is not preserved.

given by Thomas Mitchell for the choice of Weston is the distinction with which he had done carving at an earlier Lennox bridge. There is no early inscription on Lansdowne Bridge, so this must refer to Lapstone.⁶⁰

On the evidence of this other work, firmly attributed to Weston, he was almost certainly responsible for carving also the fine milestone which survives on Mitchell's Pass 500 metres east of Lennox Bridge, giving distances from Parramatta and from Sydney. This unique milestone, carved from living rock beside the new road in 1833, is an exceptional monument to the stonemasons employed by David Lennox.

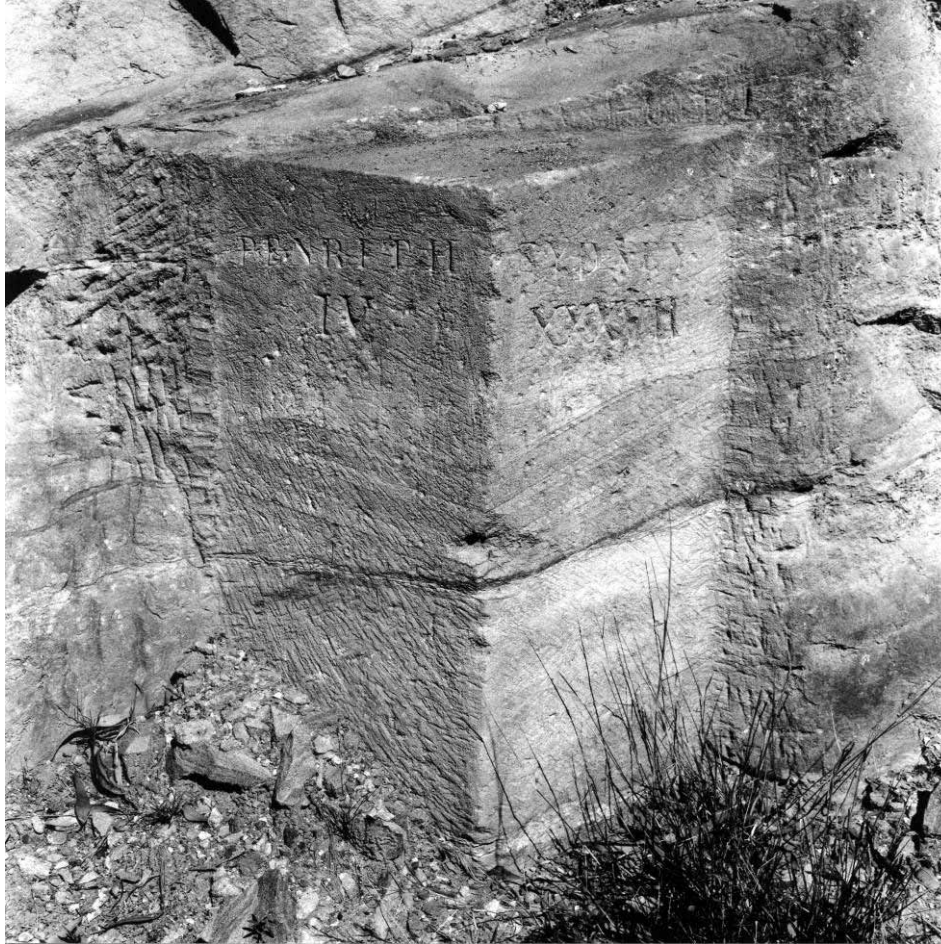


Figure 8

The milestone near the east end of Mitchell's Pass in 1957. The milestone gives distances to Penrith (4miles) and Sydney (37 miles) both to the east with no distance to destinations in the west.

Photograph by Allan Searle reproduced courtesy Springwood Historic Society

Lennox moved to Lansdowne early in May 1833 and started withdrawing his bridge gang from Emu Plains soon afterwards. He left his young convict overseer in charge of the remaining unfinished business at Lapstone, but this overseer, George Neilson, finally completed the work on 28 June 1833 and withdrew the remaining men and equipment.⁶¹

⁶⁰ Selkirk, 'David Lennox', 216, 228-9; Malcolm R. Sainty and Keith A. Johnson, *Census of New South Wales, November 1828*, Library of Australian History, Sydney 1980, 389 no.W1074 One of the nine Parramatta boundary stones carved by Weston survives in the grounds of Hambledon Cottage: see Parramatta and District Historical Society, *Hambledon Cottage. "The Cottage on the Plain", built by John Macarthur in 1824*, author, Parramatta 1992, 24, with plate.

⁶¹ Abbott to Mitchell, 17 May and 27 June 1833, SRNSW, 20/8746, 15/7953; Abbott to Mitchell, [early May] 1833, SRNSW, Reel 3051, 2/1509.1, pp. 212-3; John Low, 'The Bridge at Emu Pass', *Heritage Conservation News*, 2 iv, Summer 1984, 7.

In October 1833 Mitchell visited Lennox Bridge and pointed out some deficiencies, paraphrased by Assistant Surveyor Abbot as “there being large holes between the stones some of which having the appearance as if the stones have fallen out, which being filled in with small stones and mortar and the whole surface Plastered over and slightly strewn with sand will give the Whole the appearance of stone Work”.⁶²

Abbott reported that a convict at Emu Plains, who was a plasterer by trade, had estimated that 100 bushels of lime would be required for this work. Mitchell wrote on the back of the letter: “Is there any authority for purchasing 100 bushels of lime?” to which the answer was “None”.⁶³ It is not known whether the plastering eventually went ahead or not.

In December 1833, however, there was anxiety about the bridge. A crack had been noticed “opposite the back of the abutment”. The Colonial Architect, Ambrose Hallen, had apparently inspected it and suggested that remedial action was needed: the embankment, Hallen argued, should be “cleared away for the purpose of building a sunken wall”. Mitchell asked Lennox to go out and report. Lennox’s reply on Boxing Day 1833 said that he entertained “not the smallest doubt of the stability of the Bridge as it stands at present” and gave a devastating critique of Hallen’s proposed remedial action. Because this is the only surviving contemporary statement touching on the geometry and engineering of the bridge, a full transcript of Lennox’s letter is given.

It is true there is a small crack in the wall opposite the back of the abutment. The reason for which I attribute to the abutment being founded in the bottom of the Gully 7 or 8 feet lower than the wing wall, the additional depth of the Masonry in the abutments have compressed a little - while the rock which is on the same level under the wing walls could not compress any - I am well aware of the objections of having foundations of different heights, but in this case it could not be accomplished without a great deal of labour and I am quite satisfied that it will be of no detriment to the strength of the Bridge.

As to the suggestion of the Colonial Architect regarding sunken walls abutting against the inside of the Piers - I have to remark that the Piers are only calculated to support the perpendicular pressure of the Arch - The embankment is calculated to support the horizontal pressure.

If the embankment was cleared away for the purpose of building a sunken wall, the Pier would not be sufficient to support the horizontal pressure of the Arch while the work was being performed.

I can assure you that no such work is necessary.

If there was any water lodged behind the Pier it must show through the crack which is not the case.

If there was any water it must escape through the dry stone wall immediately behind, and founded as low as any part of the wing wall.

The crack has not the appearance of one wall separated from another by the pressure of an embankment. If that was the case the stones would be pulled asunder at the joints which is not the case here. It is a crack nearly perpendicular.

⁶² Abbott to Mitchell, 8 October 1833, SRNSW, 20/8746, 15/7953.

⁶³ Abbott to Mitchell, 8 October 1833, SRNSW, 20/8746, 15/7953.

I have not the slightest doubt of the stability of the Bridge as it stands at present.⁶⁴

The bridge stood without any known major works until the pressure of motor vehicles prompted the massive works of the 1970s and early 1980s, so it is likely that Lennox was right and Hallen was wrong.

3.7 Road Railings on Mitchells Pass, 1830s to 1850s

The new road still lacked a rail to prevent any more vehicles toppling into the steep gully. In February 1834 Surveyor Percy Simpson was instructed to send a carpenter. The work was impeded because large logs of timber were necessary to form the foundation of the fence. There was little suitable timber left in the area, so Abbott sought the use of a timber jinker. The outcome is not known, but a post and three-rail fence is featured in the drawings of the pass by S.T. Gill and James Sawkins in the 1850s.

On the other hand, the very precise drawing of the bridge and its immediate surroundings in the 1840s by Captain Westmacott shows no railing of any sort beyond the bridge parapet.



Figure 9

Mitchell's Pass in the 1850s, painted by S.T. Gill.

Source: Mitchell Library, Small Picture File; original in Dixon Library, DG V*/Spec. Coll./Gill 12.

⁶⁴ Lennox to Mitchell, 26 December 1833, SRNSW, 20/8746, 15/7953.



Figure 10

View of the lowest part of Mitchell's Pass, painted by James Sawkins in 1851 or 1852. For the date, see Joan Kerr, ed., *The Dictionary of Australian Artists*, Oxford University Press, Melbourne 1982, 698.
Source: Mitchell Library, Small Picture File.

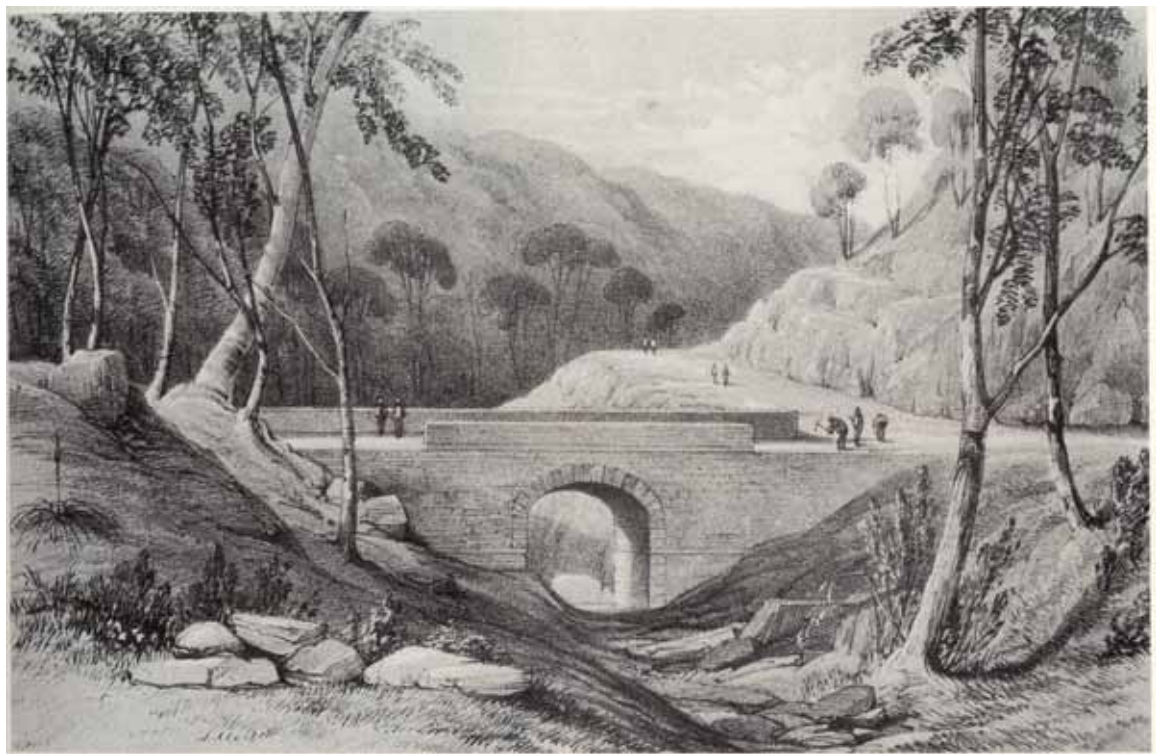


Figure 11

View of Lennox Bridge by Captain R.M. Westmacott, 1840s.
Source: Hugh Speirs, *Landscape Art and the Blue Mountains*, Alternative Publishing Cooperative, Sydney 1981, fig.25, p.49.

It is therefore possible that the highly desirable erection of fencing along the north side of the lower part of the road, shown by Gill and Sawkins, was not done until the increased traffic created by the gold rush at the beginning of the 1850s prompted government action.

3.8 The Western End of Mitchells Pass and Pilgrim Inn

At the west end of the new road, the alignment planned in 1832 and shown on H.F. White's map (Figure 12) seems to have been changed as the road was completed. The original plan was for the new road to skirt the cluster of house and outbuildings known as The Pilgrim or The Pilgrim Inn on its southern side: the front of the inn faced north. The line of road in White's map in fact stops within the south-east part of a fenced area just east of the inn.⁶⁵

Later in 1832 John Wood bought Barnett Levey's Pilgrim estate and was incensed at the plan to direct the new road behind his inn. He wrote on 5 November 1832, claiming that the new line of main road "will cause me the expense of removing the elegant stabling, stores, etc., as well as cause me to put up a new front to the Inn, besides destroying the garden, stock-yard, etc".⁶⁶

Abbott therefore made a new survey early in 1833 (Figure 13). His map shows the projected line of road going through the middle of Wood's large paddock 3, which Abbott describes as "all thick scrub and scarcely a Yard". It then crosses the south-east corner of paddock 1, which is "cleared, stumped and cultivated".⁶⁷ If the road were continued in a straight line, it would, as in White's map (Figure 12), pass The Pilgrim Inn at the rear.



Figure 12

Detail of map of Mitchell's Pass road by H.F. White, May 1832. North is to the right.
Source: SRNSW Map 2666.

⁶⁵ SRNSW Map 2666.

⁶⁶ H. Selkirk, 'The Pilgrim Inn', *Journal of Royal Australian Historical Society*, 8, 1922, 337.

⁶⁷ SRNSW, reel 2778, X752, Surveyors' Sketch Book 2, fo.35; Abbott to Mitchell, 13 February 1833, SRNSW, 20/8746, 15/7953.

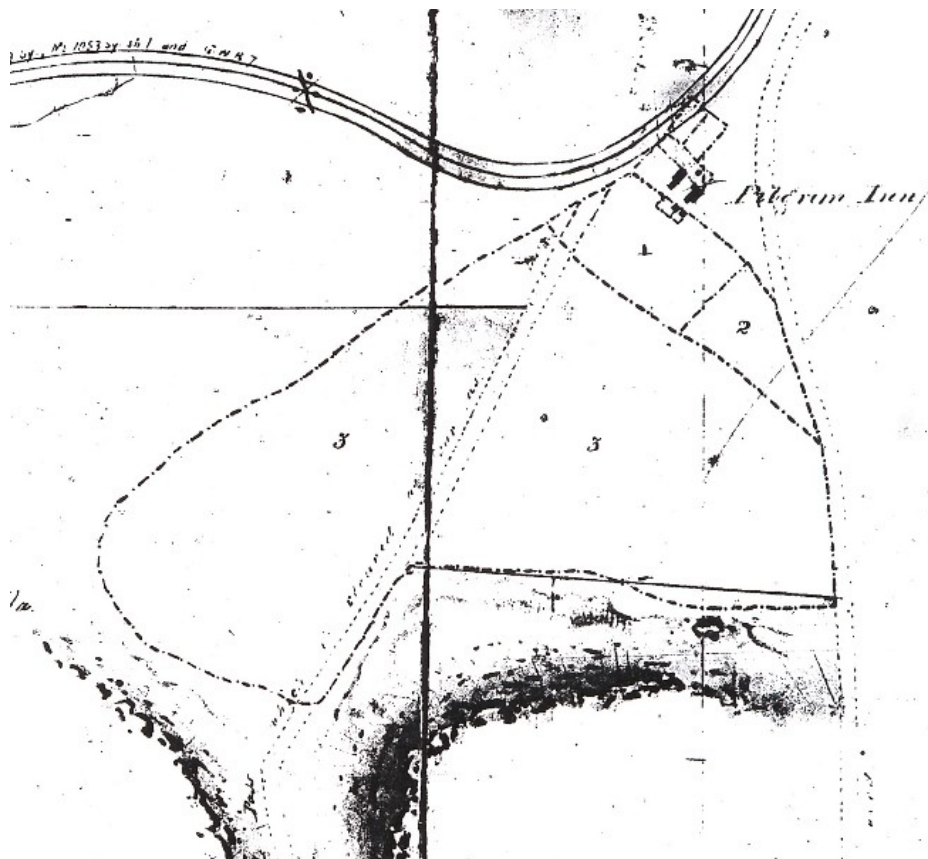


Figure 13

Map of fenced farmlands around The Pilgrim Inn in February 1833, showing the projected line of Mitchell's Pass road, which cuts diagonally across the middle, and to the right the existing Dumaresq road.

Source: SRNSW, reel 2778, X752, Surveyors' Sketch Book 2, fo.35.

Mr Wood then wrote to Mitchell on 14 March 1833 asking that the road be rerouted to pass the front (north) side of the inn. No formal reply seems to have been made but there is no doubt that at some stage, probably quite soon after this interchange of 1833, Mitchell's Pass road was diverted as John Wood requested. A map prepared by Henry Selkirk in 1919 shows both the original intention (marked C to D) and the subsequent deviation of the new road, which now took a more northerly route through paddock 3 and then paddock 2 to pass right in front of the inn.⁶⁸ This involved the reconfiguration and partial refencing of Wood's paddocks 1 and 2.

⁶⁸ 'Notes and Comments', *Journal of Royal Australian Historical Society*, 4 ix, 1919, 475.

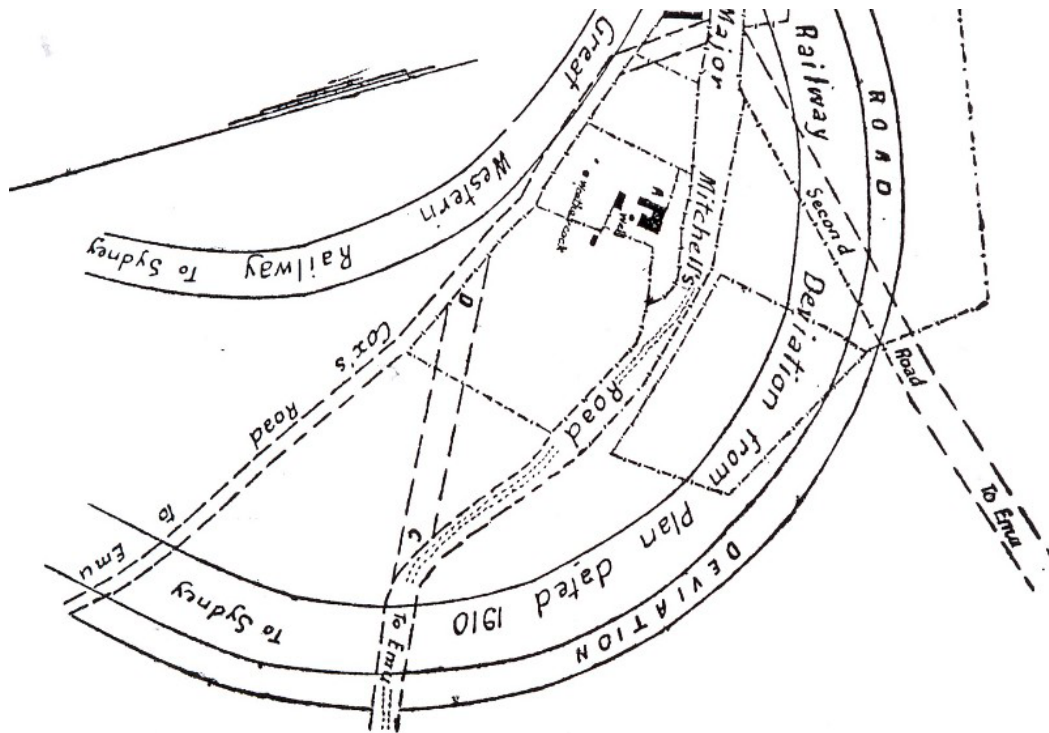


Figure 14

The three roads (Cox, Dumaresq, Mitchell), the Great Western Highway and the railway at the Pilgrim Inn, Blaxland. Drawn by Henry Selkirk, 1919. Inverted to match the 1832 map, Figure 12, and the 1833 map, Figure 13.

Source: "Notes and Comments", Journal of Royal Australian Historical Society, 4 ix, 1919, 475.



Figure 15

Mitchell's Pass c.1880. The precise location of where this photo was taken is not recorded.
Source: Blue Mountains Library Local Studies Collection File 000/000186B

3.9 Lennox Bridge and its Road Approaches, 1840s to 1950s

The road and its stone bridge, both completed in 1834, retained a great deal of integrity throughout the next 140 years. There is a good series of historic photographs, which show discreet changes over time.

One of the earliest photographs, from the south-east, is dated 1880 and contains a slight puzzle (Figure 16). On the east side of the southern parapet of the bridge there is a series of nine upright stones. There seems to be a similar line of upright stones on the west side of the parapet as well. No such stones appear in Westmacott's view of the 1840s, which is also looking at the south side of the bridge (Figure 11). But after Mitchell had visited the bridge early in 1833, Lennox had written to him saying "I wish to know if you think it necessary to put parapets on the rough walls at the ends of the bridge. I would not make them the same as the other parapets but put stones on end without mortar about three feet high".

This is a very accurate description of what is shown in the 1880 photograph. One can only assume that, for whatever reason, Westmacott is misleading and that the 1880 photograph is evidence that Lennox's suggestion was carried out in 1833.

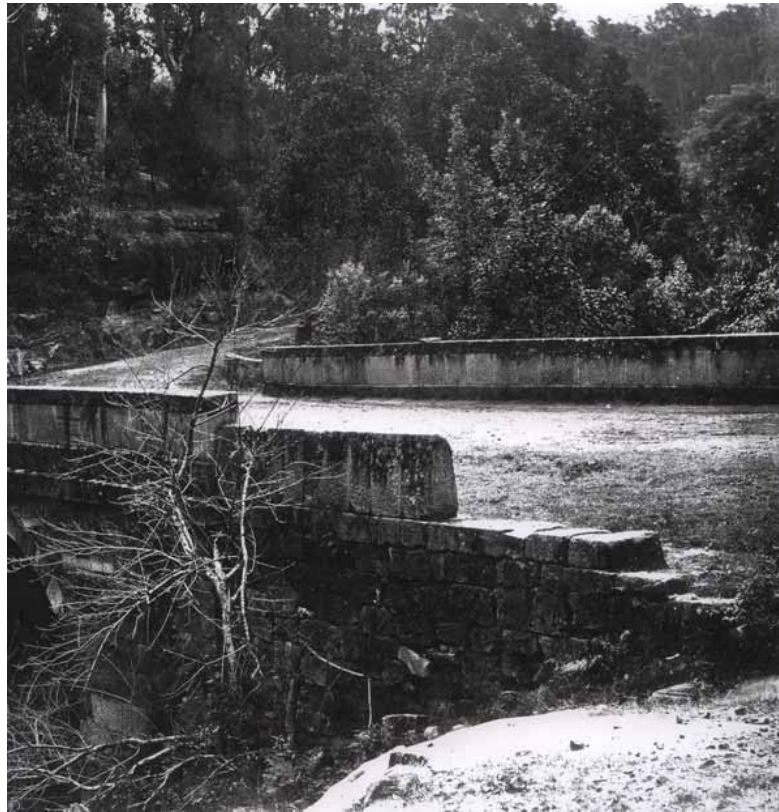


Figure 16

Lennox Bridge in 1880, from the south-east.

Source: Mitchell Library, Small Picture File, and X981/3 p.38.

These upright stones, so evident in 1880, had disappeared by 1905. A photograph of the south side of the bridge (Figure 17) appears on a postcard which was franked in 1905 and shows no such stones flanking the main parapet.



Figure 17

Lennox Bridge from the south-east, in 1905 or earlier.

Source: Mitchell Library, Small Picture File.

Another photograph (Figure 18), showing a small buggy on the bridge, which has now got protective wooden railings both beside and on top of the parapet, is likely to be only a year or two later than Figure 17.



Figure 18

Lennox Bridge from the south-east, soon after 1905 .

Source: Mitchell Library, Small Picture File.

There is a good historic reason for the introduction of fencing around the bridge in 1905 or soon after. On 8 December 1904, a Valley Heights man called George Wilkinson was riding in his trap across the bridge, when his horse “shied at a heap of metal”, hit the side of the bridge and threw Wilkinson out of the trap over the parapet down to the creek bed. He was critically injured.⁶⁹ He then claimed damages from the crown “on the ground that the railing was not high enough for public safety”. The crown's case was that “There had been no carelessness in respect of the bridge, which was in the same condition as when handed over for public use in 1833, and that there had been no previous accidents”.⁷⁰

Despite the withdrawal of Mr Wilkinson's claim, it is likely that a protective railing was erected as soon as the case had ended: any earlier would have constituted an admission of possible guilt. According to the editor of the *Nepean Times*, work of this sort was promised as early as March 1905.⁷¹

This rail was still in place in the days of the charabanc (Figure 19).

⁶⁹ *Nepean Times*, 10 December 1904, 24 December 1904.

⁷⁰ Royal Australian Historical Society, MSS Red M 18; SRNSW, 20/8746, 15/7953.

⁷¹ *Nepean Times*, 1 April 1905.



Figure 19

Lennox Bridge from the north-east, c. 1920.
Source: Mitchell Library, Small Picture File.

The rail continued to exist in the 1950s, to judge by the vehicle in an undated photograph (Figure 20) and by the 1957 photograph of the bridge by local historian Allan Searle (Figure 21).



Figure 20

Lennox Bridge from the north-east, c. 1940.
Source: Mitchell Library, Small Picture File.



Figure 21

Lennox Bridge and Mitchell's Pass 1957. A recent bushfire allowed a good view of the bridle trail south of the bridge.

Photograph by Allan Searle reproduced courtesy Springwood Historic Society

After 1926, the main road to the west was diverted across the old Knapsack Gully Viaduct, built originally for the railway line. This relieved Mitchell's Pass and Lennox Bridge of much of the increasingly heavy motor-car traffic.⁷²

A degree of further relief was offered by the reopening of the Old Bathurst Road, Dumaresq's route up Lapstone Hill which had been neglected from 1835 onwards. Vehicular traffic was permitted again in the 1950s and Dumaresq's road was soon bituminised.⁷³ For the past fifty years it has been a useful ancillary route for cars from Emu Plains or for vehicles travelling over the Nepean on Victoria Bridge and heading for Blaxland and Mount Riverview. But in the 1950s it made little difference to the amount of traffic still using Mitchell's Pass.

3.10 Plaquing Lennox Bridge and Mitchell's Pass, 1933, 1937, 1992

The centenary of the opening of Lennox Bridge and Mitchell's Pass coincided with a period when the Blue Mountains Shire Council was paying unusual homage to its past and the attractiveness for tourists of Mitchell's achievements first at Victoria Pass in 1832, then at Lennox Bridge in 1833. The Shire President was Percy Wilson, who organized the Governor, Sir Philip Game, dignitaries of the Royal Australian Historical Society and the President of the National Roads and Motorists Association, to speak at a grand celebration of the bridge's centenary on 22 July 1933, including the opening the Lapstone Hill Reserve. Descendants of David Lennox and his siblings, including the Dalziels of Kanimbla Valley, who were well-known for their historical work in the Mountains, attended and a tablet was unveiled by the Governor.⁷⁴

⁷² Havard, 'Mitchell's Pass', 363.

⁷³ Searle, *Places of Historic Interest on the Lower Blue Mountains*, 11, 13.

⁷⁴ *Katoomba Daily*, 27 July 1933.

The wording on the oval monument, provided by Karl Cramp, Honorary Secretary of the Royal Australian Historical Society, said, quite simply and quite erroneously:

THE
OLDEST BRIDGE
IN AUSTRALIA
-
CONSTRUCTED BY
DAVID LENNOX
1833
R.A.H.S.⁷⁵

The mistake of ignoring Richmond Bridge in Tasmania was spotted and remedied. The new plaque, inserted in the same stone surround, substituted for

IN AUSTRALIA

ON THE MAINLAND OF
AUSTRALIA,

and continued to give credit to the Royal Australian Historical Society.⁷⁶ The need to stipulate further that this was the first arched bridge on the mainland was not recognized.

Four years later, in October 1937, a further plaque was unveiled close to the bridge, this time to commemorate Mitchell's Pass itself. The ceremony, more restrained than the gubernatorial occasion in 1933, was organized jointly by the Royal Australian Historical Society, the Glenbrook Progress Association and the Blue Mountains Shire Council. Karl Cramp, who was now President of the RAHS, unveiled the plaque which had been donated by the Glenbrook Progress Association. The wording was not controversial.⁷⁷

In April 1981, as stage 2 work on the bridge was finally on the homeward stretch, the Heritage Council reminded the City Council of procedures recently stipulated by the state Premier for projects assisted by state funding. The council was informed that it would be appropriate for:

a plaque to be erected which recognizes the assistance provided by the N.S.W. Government on the advice of the Heritage Council of N.S.W., the work of the Public Works department, and the names of the 2 Ministers concerned – The Minister for Planning and Environment and the Minister for Public Works.⁷⁸

This plaque was duly installed.

In 2002 the Institution of Engineers Australia awarded the Pass and the Bridge a joint Engineering Heritage Plaque, which was unveiled by the Mayor of the Blue Mountains City council, Jim Angel, on 1 December 2002.⁷⁹

3.11 Conservation and Rebuilding of the Bridge, 1962 to 1983

The Blue Mountains Council was concerned by the effect that motor vehicles had had on Lennox Bridge throughout the twentieth century and the bridge was closed to all vehicular traffic on 7 December 1962.

⁷⁵ Photograph of the Governor and President Wilson with the new plaque in an unnamed newspaper, Mitchell Library, Small Picture File, *sub* Lapstone Hill Bridge.

⁷⁶ Undated photograph of the plaque in Mitchell Library, Small Picture File, *sub* Lapstone Hill Bridge.

⁷⁷ *Katoomba Daily*, 28 October 1937.

⁷⁸ Blue Mountains City Council [BMCC], file OF 02821, Denis McManus to Town Clerk, 9 April 1981.

⁷⁹ *Blue Mountains Gazette*, 27 November 2002; *Penrith Press* 3 December 2002.

The National Trust was concerned and was instrumental in arranging a meeting held in April 1964 between the Department of Local Government, the Government Architect and the Department of Main Roads. As a result of these activities, state government funds from various sources were offered to the Council to meet half the cost of solving the problem. The solution was seen at that stage to include a stretch of diversionary road and a “new structure across Lapstone Creek” as well as repairs to David Lennox’s bridge itself.⁸⁰

Although in October 1965 the Department of Main Roads declared Mitchell’s Pass as a Tourist Road, TR 4039,⁸¹ the historic bridge remained closed and no final decisions were taken about future access. The new Expressway then in the planning stage to replace the Knapsack Viaduct route was expected to “obliterate” Mitchell’s Pass so the existing track from High Street, Glenbrook, to the quarry on the original bridle track to the south of the bridge would become the sole entry for tourists. By 1972 Council officers were contemplating the development of this route from the south terminating at the large quarry site which would be turned into a carpark once the quarry was finally closed. There would be pedestrian access only to the bridge, where barbecue facilities would be provided and the existing toilets, close to the bridge on the south-east side of the track to the large quarry, would be maintained.⁸²

Until these changes happened, contingent on the Expressway being built as then planned, Mitchell’s Pass would remain open, the old bridle track would be rebuilt and sealed and parking for five cars would be provided beside the toilet block.⁸³

At the same time in 1971, the Government Architect’s Office was examining the fabric of the bridge and moving towards the preparation of a tender document for necessary works. There was concern over an increasing number of cracks in the stonework and it was claimed that “it is obvious that the structural stability of the stone bridge is rapidly deteriorating, causing the inner walls to creep inwards”.⁸⁴

In September 1973 the tender notices were issued for the excavation of the material behind the bridge and “tying the bridge” to prevent collapse and to restore it to its “original shape”. This was to be stage 1 of the project: stage 2 would be “structural restoration to ensure further stability of the Bridge ...and the subsequent aesthetic restoration of the existing stone-work”.⁸⁵

On 23 October 1973, the City Council awarded the contract for stage 1 to the cheapest of the four tenderers, Jack Parkinson of East Lambton, who quoted a total of \$15,200: Parkinson estimated that 14 weeks would be required to complete the first stage.⁸⁶

⁸⁰ BMCC, file OF 02736 (3), report by City Engineer, 13 October 1969.

⁸¹ BMCC, file OF 02736 (3), report by City Engineer, 13 October 1969.

⁸² BMCC, file OF 02736 (3), report by City Engineer, 3 August 1971; S. Perry, 14 December 1972.

⁸³ BMCC, file OF 02736 (3), report by City Engineer, 3 August 1971.

⁸⁴ BMCC, file OF 02736 (3), City Design Engineer to City Engineer, 29 November 1971, quoting Department of Public Works.

⁸⁵ BMCC, file OF 02963, report by City Engineer, 11 September 1973; tender, 27 September 1973;

⁸⁶ BMCC, file OF 02963, Council meeting papers, 23 October 1973.

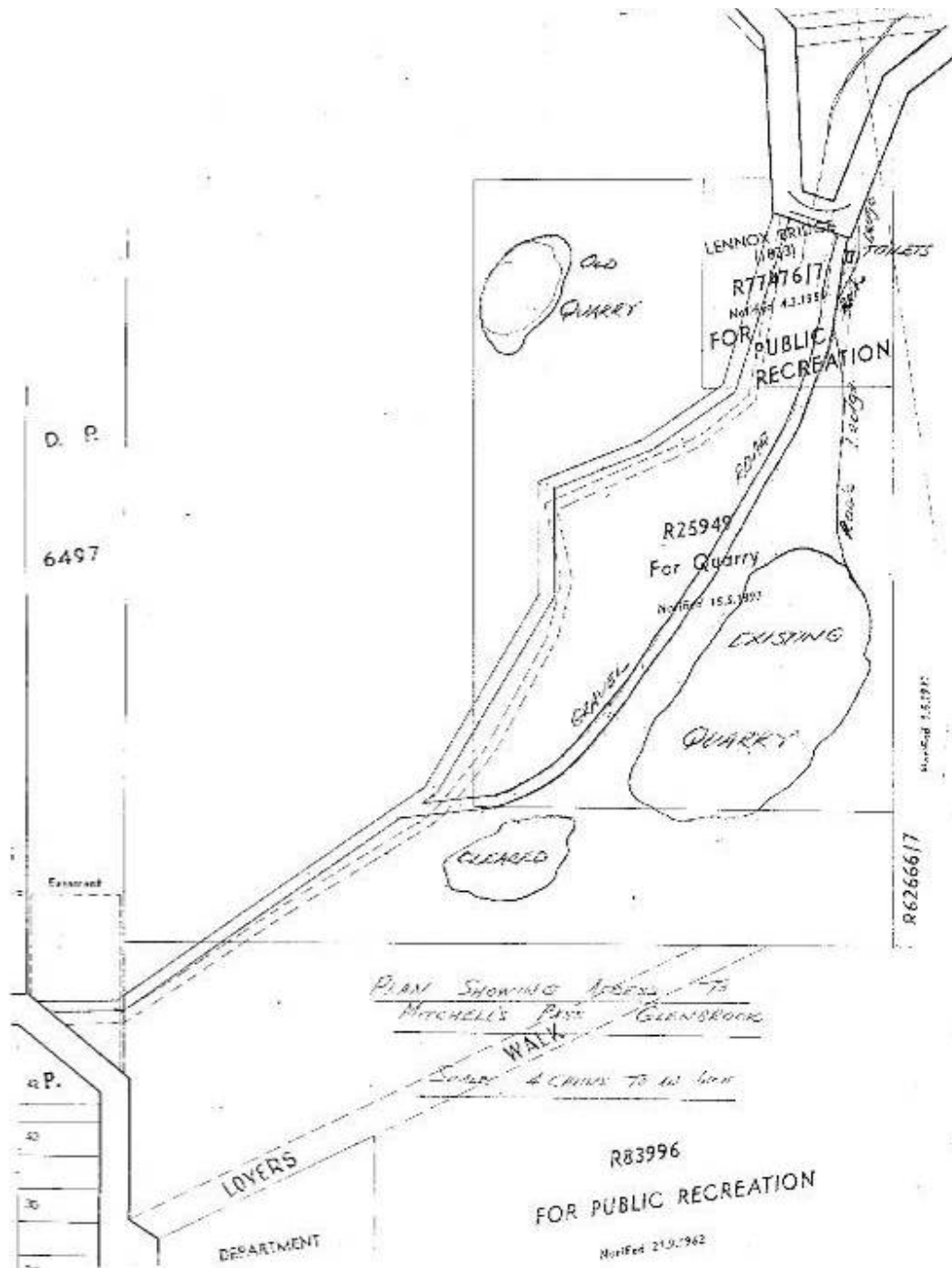


Figure 22

Plan of Lennox Bridge, bridle track to south, the quarries and the toilet block in 1971.
Source: BMCC, file OF 02736(3), plan 1971.]

The completion date for stage 1 was revised to 29 April 1974, due to bad weather and a delay in signing the contracts, but Parkinson managed to finish the work ten days early to Council's satisfaction. He was then responsible for three months of maintenance, checking the bridge regularly and tightening the bolts, while maintaining the two "Road Closed" signs which had been erected at

the intersection of Glenbrook Road and Mitchell's Pass and at the junction of High Street and Kent Street in north Glenbrook.⁸⁷

Council then moved on to stage 2 of the bridge work, defined in early 1975 as primarily "the provision of an internal structure to relieve all loading from the existing structure". The design plans, specifications and contract documents were all prepared by the Department of Public Works at no cost to the City Council. Tenders were invited in April and in May 1974 the successful tenderer was again Jack Parkinson. The total cost (excluding "aesthetic restoration") was \$64,280.40, of which \$50,000 was promised by the federal government.⁸⁸

A completion date of 8 September 1975 was initially agreed, but this proved to be unrealistic. The state of the bridge foundations required more hand-work than had been budgeted for, and excavations had to go some three metres deeper than expected. When Parkinson's men were drilling into the original sandstone blocks to affix anchor bolts, they found "that the middle of the walls had been filled with clay and rubble and in some place nothing at all". The rubble jammed the drills and to secure the bolts the Department of Public Works ultimately agreed to use araldite siphoned into the drill-holes. The contractor therefore sought payment of an additional \$127 for each of the 121 anchor bolts and a further extension of time to 14 March 1977.⁸⁹

As a result the price for stage 2 rose by 50%. An extra \$24,550 was supplied as a National Estate grant but this was insufficient and at the end of 1976, with the work still incomplete, Council sought an additional \$32,000 from the State Government. The City Engineer reported in December 1976:

Although a great deal of re-design and structural expertise has been offered by my own engineering staff, particularly Mr. Kullas, it is contended, that as the State Government, being both the designers for this bridge and also one of the authorities responsible for the structure, have also incurred this over-expenditure, they should offer the required funding - \$32,000.⁹⁰

A total of \$88,835 was therefore available to Jack Parkinson, the contractor, but no more until additional public funds were supplied to the City Council.

Although liaison between the Council, the Government Architect and the Government Design Branch remained close, there were tensions over the cost implications of the work and in March 1977 the Deputy Town Clerk wrote to Parkinson reminding him that he should accept instructions only from the City Council officers and not from Public Works.⁹¹ Two days later the Town Clerk sent a five-page letter to Public Works listing proposed deletions from Parkinson's contract (to save nearly \$19,000) and detailing the cost of variations amounting to over \$81,000 already implemented on the advice of Public Works. If the contract with Parkinson were taken to finality, then not only would the deletions totaling \$19,000 be reinstated but an additional \$40,883 would be needed to pay for eleven items which the engineers and architects of Public Works had advised would be necessary.⁹²

In March 1977, the Council prepared a comprehensive ten-page summary of progress on the bridge over the previous four years. At this time the carriageway had been removed and the original arch was exposed. Concrete piers had been then inserted to take all strain off the original arch. But the

⁸⁷ BMCC, file OF 02963, Town Clerk to Parkinson, 13 March 1974 and 22 April 1974; file OF 02823 (1), report by City Engineer, 3 December 1976.

⁸⁸ BMCC, file OF 02823 (1), report by Town Clerk, 13 May 1975.

⁸⁹ BMCC, file OF 02823 (1), Parkinson to Town Clerk, 8 October 1976; Council Projects Engineer to Deputy City Engineer, 15 October 1976; Parkinson to Town Clerk, 30 November 1976.

⁹⁰ BMCC, file OF 02823 (1), report by City Engineer, 3 December 1976.

⁹¹ BMCC, file OF 02736 (4), Deputy Town Clerk to Parkinson, 1 March 1977.

⁹² BMCC, file OF 02736 (4), Town Clerk to Public Works, 3 March 1977.

north-east wing wall was in danger of collapsing and unless work could proceed with all speed, it was likely that further rapid deterioration of the structure would occur due to weather and vandalism, and this could result in the partial or complete collapse of the structure.⁹³

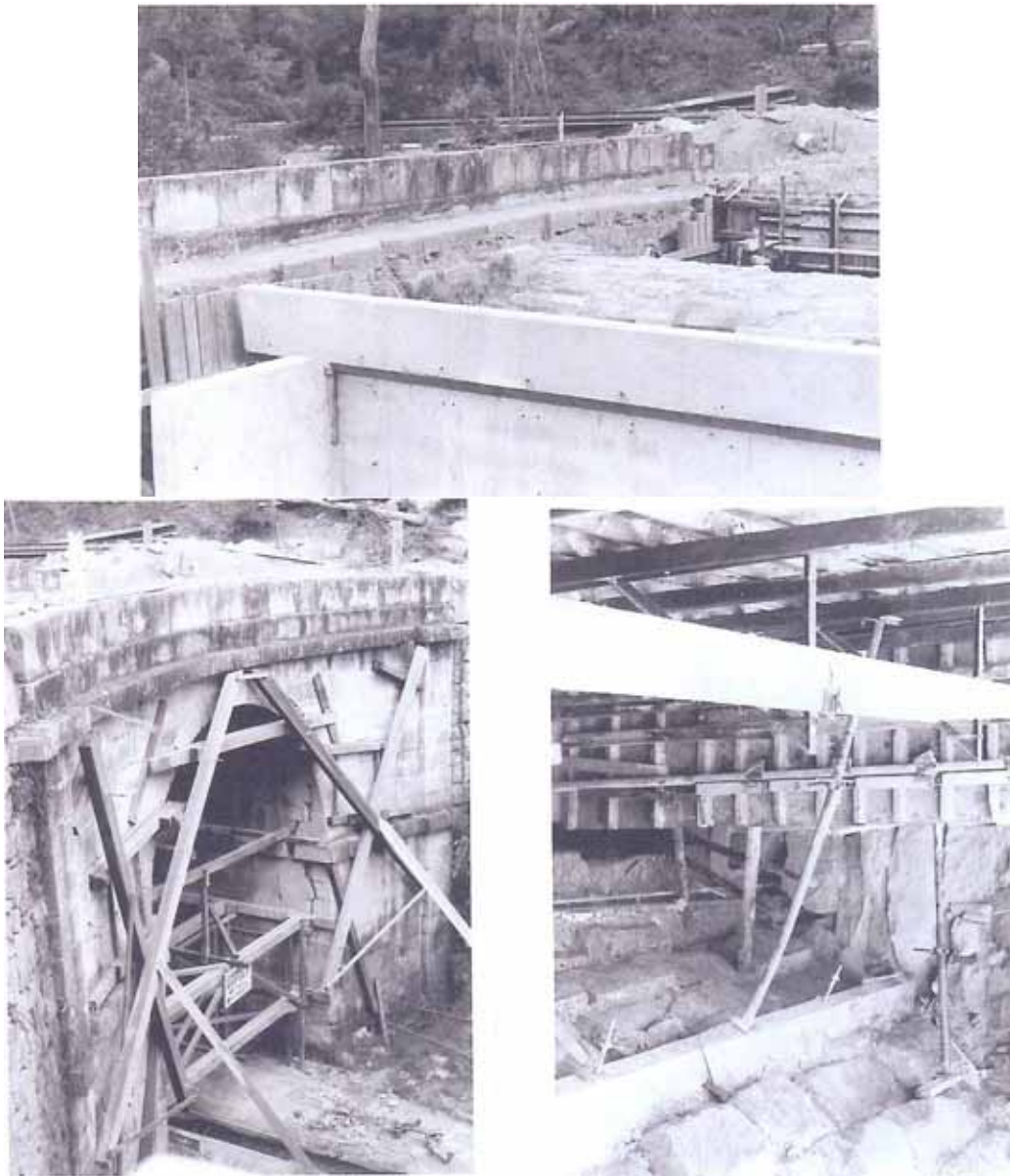


Figure 23

Lennox Bridge in March 1976, after Parkinson had revealed the top of the stone arch, installed concrete supports above the arch and maintained wooden formwork on the exterior.

Source: Photographs by Maureen Byrne and Ian Jack, March 1976.

Expenditure of \$6,000 was immediately authorised by the City Council to secure the north-east wing and Parkinson acted promptly and efficiently, but in July 1977 the Council moved to terminate Parkinson's contract. By December, Parkinson had still not submitted his final claim for stage 2.⁹⁴

Stage 2 ended in bitter acrimony. Parkinson in a long letter early in 1978 outlined his position. The repudiation of his contract left him with the options of recovering damages through a law-suit or of

⁹³ BMCC, file OF 02823 (2), Council submission, March 1977.

⁹⁴ BMCC, file OF 02823 (2), report by City Engineer, 27 June 1977; Deputy Town Clerk to Parkinson, 28 July 1977; Town clerk to Parkinson, 21 December 1977

seeking payment from Council on a real-cost basis. Parkinson's total claim, after making all allowances, amounted to an additional \$302,307.71.⁹⁵ This led to lengthy discussion within the Council.

No compromise was reached with the unfortunate Parkinson and in October 1978 the Department of Public Works took over the completion of the work, fortified by an additional \$60,000 in state and federal grants.⁹⁶ Parkinson died, still unsatisfied, in August 1983 and his widow then sued the Council in the Supreme Court at Newcastle, for the outstanding claim of \$302,000. The case was finally heard in 1986.⁹⁷

Public Works, with Donald Ellsmore as the project architect, recommenced stage 2 on the bridge on October 1978. By the end of November the exposed stone arch had been cleaned and the stonework was tied to the concrete buttresses of the new carriageway. The space between the new concrete vertical buttresses and the arch was filled with concrete and gap between the buttresses and the rock abutments was filled with river sand. The pre-stressed deck beams for the horizontal carriageway had been cast by Humes Pty Ltd for Parkinson in 1974 (but not paid for): they were now acquired.⁹⁸

The restoration works needed to enhance the appearance of the bridge and its approaches were recognised in July 1981. Work on the original stonework of the bridge had been delayed because of the increasing expenses, but tender documents were finally issued in August 1981. The proposed landscaping of the area around the bridge, the possibility of an extensive carpark in the large quarry and the development of better road access from High Street, Glenbrook, were all shelved. The toilet block was demolished for health reasons, but was not replaced.⁹⁹

The contract to remove and replace some fifty cracked and broken sandstone blocks to enhance the aesthetics of Lennox's bridge was given to the long-established Sydney firm of stonemasons, Loveridge and Hudson. The project manager, John Supple, went to extensive pains to find matching stone, since the original quarry on Brookside Creek seemed to be no longer suitable. Supple found the right stone at Somersby (now Gosford Quarries) and was confident that "when the new blocks of stone have weathered, it will be difficult to distinguish them from the original stone". Under the supervision of Ted Alderson, and led by the foreman, Harry Clark, Loveridge and Hudson's team of stonemasons completed the enhancement in 1983 in time for the sesquicentenary of the bridge.¹⁰⁰ After more than a decade, the bridge was officially reopened to eastward traffic at a ceremony in October 1983. Two-way traffic was permitted on Mitchell's Pass west of the bridge, but the eastern part of the pass, descending to Emu Plains, became one-way only going eastwards.

⁹⁵ BMCC, file OF 02823 (3), Parkinson to Town Clerk, 8 January 1978

⁹⁶ BMCC, file OF 02823 (3), report by City Engineer, 9 October 1978.

⁹⁷ BMCC, file OF 02823 (3), legal documents, 25 August 1983, 17 December 1985.

⁹⁸ BMCC, file OF 02821, District Engineer, Metropolitan, to Town Clerk, 5 December 1978, 16 February 1979.

⁹⁹ BMCC, file OF 01281, meeting minutes 28 July 1981; tender August 1981

¹⁰⁰ *Melocco Matters*, 1 iii, September 1982, 3; *Main Roads*, 48 ii, June 1983, 54.

4 Physical Summary

4.1 General

The study area includes a range of site features most of which directly relate to the construction of Mitchell's Pass in 1832. The pass runs east-west from Lapstone to Blaxland. Most is cut into the north slope of Lapstone Hill and part of Mount Sion. The pass includes Lennox Bridge where it crosses Brookside Creek. South of Lennox Bridge and forming a loop around Brookside Creek is the bridle trail that served as part of the pass until the completion of Lennox Bridge.

The main built features on the site are identified on the plans at Figures 24 to 26.

All photographs were taken by Pamela Hubert of Hubert Architects Pty Ltd on September 25 2007 unless otherwise noted.

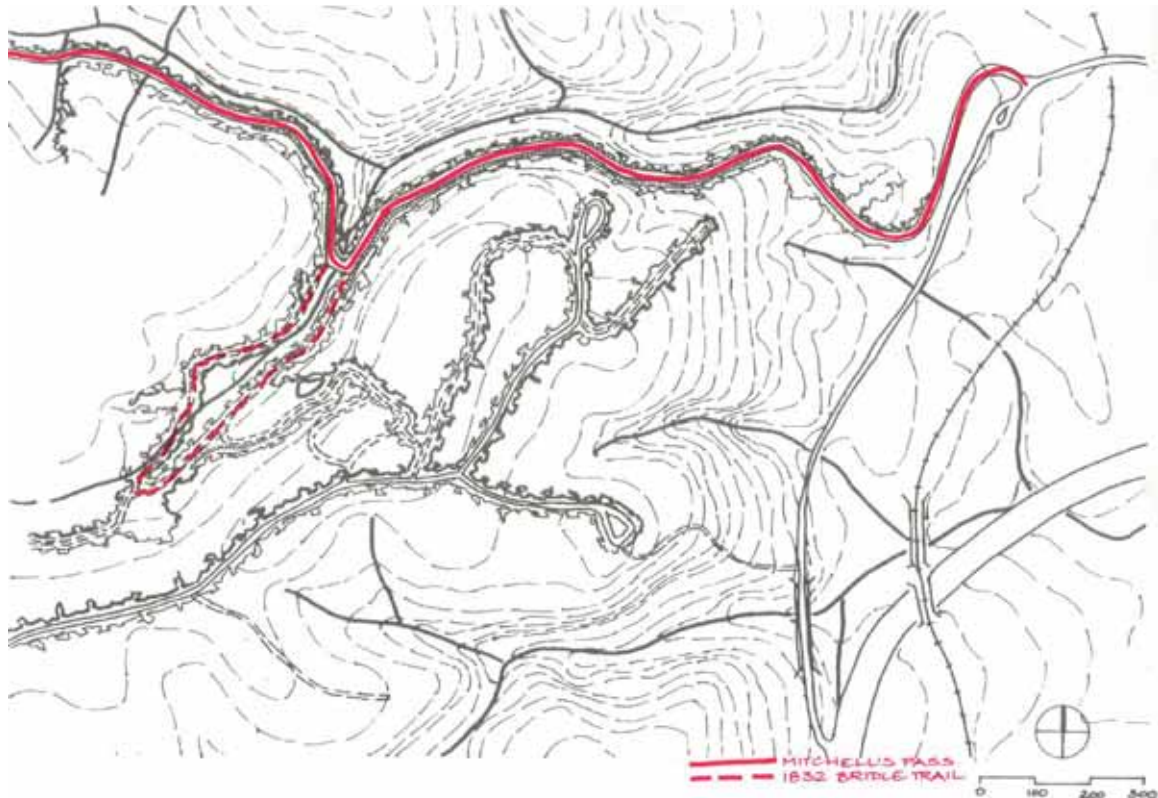


Figure 24
Site Plan showing location of Mitchell's Pass and 1832 bridle trail



Figure 25
Detailed site plan showing site features along and near Mitchell's Pass



Figure 26
Detailed site plan showing site features along and near the 1832 bridle trail

Legend for detailed site plan

1	Lennox Bridge	9	Culvert 2
2	Surveyor's Mark	10	Culvert 3
3	Small Quarry	11	Culvert 4
4	Retaining Wall & Culvert	12	Culvert 5
5	Energy Dissipater	13	Culvert 6
6	Large Quarry	14	Culvert 7
7	Sedimentation Pond	15	Culvert 8
8	Culvert 1	16	Milestone

4.2 Mitchell's Pass

Mitchell's Pass is the third attempt by colonial roadbuilders in New South Wales to establish a trafficable road that successfully negotiated the steep Lapstone monocline at the east end of the Blue Mountains. It is cut into the north escarpment of Lapstone Hill at the east end and of Mount Sion at the west end. Between Lapstone Hill and Mount Sion, the cuttings are connected by Lennox Bridge.

The rock cutting on the south side of the pass shows clear evidence of the early nineteenth century techniques of excavation where a hole was drilled into the stone by hammering a series of metal rods into the stone to form a hole. Gunpowder in paper cartridges was forced into the hole which was then sealed with material such as clay or finely broken rock. A fuse was lit to blast away the stone. The drill holes remain in the rock face as evidence of the excavation technique. (Refer figure 28)

On the north side of the pass, small areas of retaining wall were constructed to build up the roadway. These are associated with culverts that are described in greater detail below.

At the base of the excavation, mainly at the east end of the pass, are areas of drainage channels cut into the rock at the base of the excavated escarpment. These are also described below.

Areas of instability on the rock cutting on the south side of the pass have been identified in the Report on Geotechnical Investigation by Douglas and Partners (Appendix 3)



Figure 27
East end of Mitchell's Pass

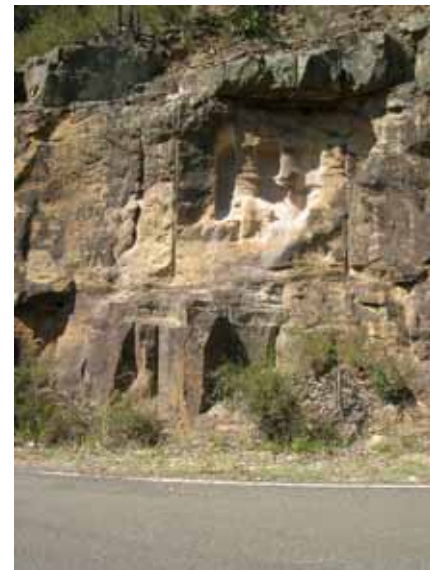


Figure 28
Mitchell's Pass showing area of erosion in rock cutting. Drill holes from the excavation of the escarpment to create the pass can be seen either side of the eroded area.

4.3 Bridle Trail

The bridle trail is the original track for the pass extending along Brookside Creek crossing it upstream where the gully necessitated only a culvert rather than a bridge. The trail appears to follow the 1932 alignment. Some areas of the west track retain some of the original macadam construction.

On the west side, the bridle trail provides access to the small quarry about 200m from Lennox Bridge. It continues curving away from the creek for a short section before crossing the creek with a culvert reinforced on the east side with a small retaining wall. North of the culvert and retaining wall, the bridle track is badly eroded.

South of the retaining wall and culvert, the bridle track loops around to return towards Lennox Bridge. About 100 metres to the north of the loop it passes the large quarry and a more recent track leading to Elizabeth's Lookout, Marge's Lookout and beyond to the Lapstone Zig Zag.



Figure 29
East track of bridle trail from south

On the east side close to Lennox Bridge, the cutting into the side of Lapstone Hill extends south of the bridge adjacent to the track for a short distance.



Figure 30
East track of bridle trail from north



Figure 31
West track of bridle trail showing area of
macadam construction.

4.4 Lennox Bridge

The following diagram indicates the terminology of the components of the bridge. These terms are used in the following description as well as in the Structural Report at Appendix 4.

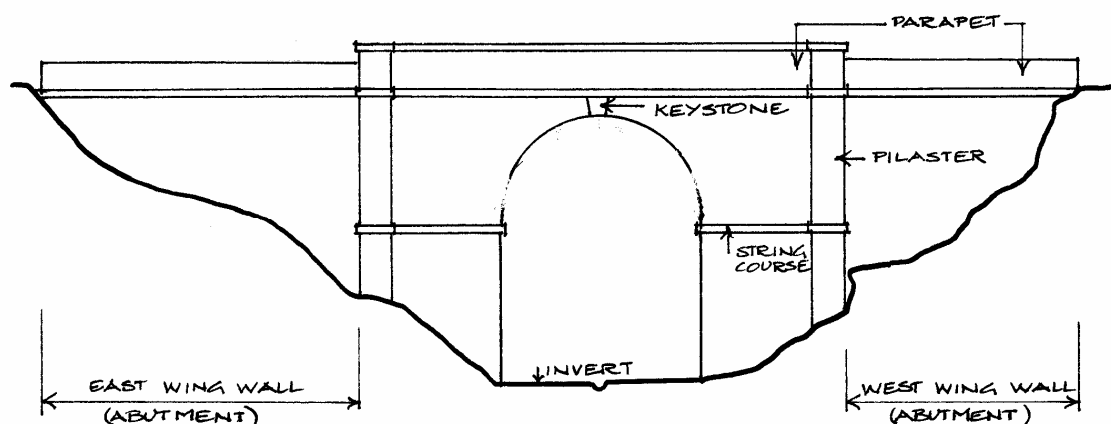
**Figure 32**

Diagram of Lennox Bridge (based on north elevation in drawing A1-3512 by the Government Architect 1970) showing terminology of bridge components.

Not to scale

Lennox Bridge is a single arched bridge built in 1832 in the Colonial Georgian style. The bridge was substantially rebuilt between 1967 and 1982. The interior structure of the bridge that resulted from the rebuilding is reinforced concrete and is described in more detail in the engineering report included as Appendix 4.

The bridge has a single arch spanning Brookside Creek, south of its junction with Lapstone Creek and links the roadways formed by cutting into the north slopes of Mount Sion to the west and Lapstone Hill to the east. To accommodate a 180 degree change of direction in the roadway, the north side of the bridge has a curved face.

The central structure of the bridge is faced with dressed sandstone with a string course at the springing of the arch and at the base of the parapets. The keystone of the arch on the north side gives the completion date of AD 1833. The keystone on the arch on the south side gives the name of the bridge's designer, David Lennox.

The wings of the bridge are constructed of random coursed sandstone. At the base of the bridge, and for approximately four metres to the north and south, the base of the creek has been paved with concrete and flagged with sandstone, probably as part of the 1970s work to the bridge. A semi-circular concrete drainage channel runs through the middle of the flagging.

Sandstone for the bridge was quarried locally. It is assumed that the small quarry to the south of the bridge was the main source of stone for the structure. Other stone would have come from the rock cutting for the pass itself. It is not clear whether the large quarry was also used to supply stone for the bridge.

**Figure 33**

Lennox Bridge from north

**Figure 34**

Lennox Bridge from southwest

**Figure 35**

View from north showing concrete at base of bridge with sandstone flagging

To the south of the bridge connecting the west track of the bridle trail to the base of the bridge is a stone stair constructed by the Rotary Club of Lower Blue Mountains in conjunction with Blue Mountains City Council.

At the base of the gully are a number of stone blocks that appear to have been discarded during the 1970s work to the bridge.

A number of plaques have been fixed to the bridge. Most of these have been removed, presumably by vandals. A marble plaque that was removed and left broken in the gully was salvaged by a local and given to the Blue Mountains Historical society who have forwarded it to the Glenbrook and District Historical Society. Other plaques were fixed to the rock cutting on the east side of the bridge.

Condition

The structural condition of the bridge is discussed in detail in the Structural Report at Appendix 4.

It is also noted that the bridge is constantly subjected to graffiti attack. Anecdotal evidence suggests that this has increased since the construction of new stone steps to the base of the bridge in 2005.

4.5 Small Quarry

The small quarry is located on the west side of the west arm of the 1832 bridle track. It has a single bench 1-1.5m high cut into the hillside and extending northwest approximately 15 metres.

It is assumed that this quarry was a source of stone for the construction of Lennox Bridge. However, this quarry is not large enough to have supplied all the stone for the bridge. Other stone, particularly for the rubble fill, could have come from the cuttings for the pass itself.

4.6 Retaining Wall and Culvert

The west arm of the 1832 bridle trail crosses Brookside Creek with a retaining wall and culvert. The retaining wall is constructed of roughly coursed sandstone, possibly rebuilt when the present concrete culvert was installed. The concrete pipe culvert appears to date from the mid twentieth century.

The retaining wall has been crudely rebuilt. Parts of the wall to the north have collapsed.



Figure 36
Sandstone steps constructed by Rotary in 2005



Figure 37
Small Quarry
12 Sept 2007



Figure 38
Culvert on Brookside Creek



Figure 39
Retaining wall south of the culvert outlet.

4.7 Energy Dissipator

An energy dissipater located to the west of the east arm of the bridle trail is believed to be a remnant of a former Sydney Water sewerage treatment system in the vicinity. The large concrete structure includes a cylinder of concrete at the centre that would slow down the flow of treated water before it entered the creek. It is no longer in use.



Figure 40
Energy dissipator

4.8 Large Quarry

A large quarry is located near the south end of the east arm of the 1832 bridle track. The main face of the quarry is on the south side of the track connecting the 1832 bridle trail to the road to Marge's Lookout and to the Lapstone Zig Zag. The cuttings for the quarry are up to four metres high and extend about three hundred metres. Vertical drill marks indicate the use of nineteenth century techniques of drilling and blasting to break off the stone.

It is not clear from documentary research when this quarry was opened or what the stone was used for. It is possible that the quarry supplied stone for the Lapstone Zig Zag although contemporary reports refer to a quarry about two miles from the stone viaduct reached by a track in the side of the hill. It is likely that at least some stone from this quarry was used by the local stonemason John C. Dunn whose stone house Bonnie Doone survives in Moore Street, Glenbrook.



Figure 41
North face of Large Quarry from northwest
12 September 2007



Figure 42
North face of Large Quarry
12 September 2007

4.9 Sedimentation Pond

A sedimentation pond is located to the north of the quarry, and east of the 1832 bridle trail. It is probably a late twentieth century feature, intended to allow silt and other runoff to collect and settle in a pond rather than affecting the water quality of the stream below.



Figure 43
Sedimentation pond from northeast

4.10 Stone Culverts (Culverts 1, 2, 3, 6, 7, and 8)

Six stone culverts are located under Mitchell's Pass, three each to the east and west of Lennox Bridge.

The design of each of the stone culverts is similar and is described in detail in the *Lennox Bridge and Mitchell's Pass Structural Report* by Hughes Trueman Pty Ltd (refer Appendix 4). The approximate locations of the culverts is indicated on the north detailed site plan.

Culvert 1 retains the arched stone lid to the intake. The top of the lid is cracked and a build-up of leaves reduce the drainage capacity. The outlet has a small retaining wall with three courses of stone over the outlet. The outlet is also silted with sand. The culvert drains a natural drainage line from Mount Sion.

Culvert 2 has a stone slab over the intake which is then topped with a concrete block. The outlet is capped with stone and has stone walls.

Culvert 3 retains its original arched lid and has low sandstone walls building up the road on the intake side as well as the outlet. The stone rockface above the intake has been cut to direct water to the intake. The outlet of this culvert has been replaced with a concrete pipe and the sandstone retaining wall around the outlet has been crudely rebuilt.

Culvert 6 has lost the stone cap over the intake. On the outlet side, it has a well built retaining wall. The outlet has a stone sill to ensure water is thrown away from the retaining wall (Refer figure 46).

Culvert 7 has lost the stone cap over the intake. Pickmarks at the base of and adjacent to the rockface indicate convict cutting of the drain into the culvert.

Culvert 8 retains the stone capping over the intake. The culvert runs diagonally across the road and roughly coursed sandstone retains the downhill side of the road.



Figure 44
The intake of culvert 7 from south side



Figure 45
Structure of stone culvert below road surface

Photo: Simon Wiltshier, Hughes Trueman Pty Ltd 12 September 2007



Figure 46
North face of culvert 6

Photo: Simon Wiltshier, Hughes Trueman Pty Ltd 12 September 2007

4.11 Culverts 4 and 5

Culvert 4 is a concrete culvert on the eastern branch of Mitchell's Pass just north of Lennox Bridge. It appears to be related to the 1970s work on the bridge. The culvert is a concrete pipe running under the road surface. Its discharge is crudely cut into the rock on the west side of the road.

Culvert 5 has a terracotta pipe. The pipe is broken at the intake. A U section from a post of a former guardrail has pierced the pipe near the outlet.

4.12 Milestone

The milestone is a very unusual if not unique example of a milestone cut into the rockface. It gives the distance from Penrith on its east face and the distance to Sydney on its west face. The lack of marking for a distance to a town in the west indicate that Bathurst, which had been established by that time, was not of sufficient importance at that time or was too far away to warrant marking the distance.

The west face of the milestone has been damaged, obscuring the carving of SYDNEY XXXVII.



Figure 47
Milestone from east

4.13 Drainage

Areas of drainage cut into the sandstone bedrock survive on the south side of the road. It is possible that some drains were constructed of timber slabs or of earth but these have disappeared over time with erosion, rot and continued road surfacing.

Other areas of drains in the vicinity of the culverts east of Lennox Bridge appear to be largely silted up.



Figure 48
Drainage at base of rock cutting

5 Assessment of Significance

5.1 General

The Heritage Office, Department of Planning has established criteria for assessing heritage significance. The criteria are set out in the guidelines *Assessing Heritage Significance*, 2001 edition and are:

Criterion (a)

An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (b)

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (c)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

Criterion (d)

An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

Criterion (e)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (f)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (g)

An item is important in demonstrating the principal characteristics of a class of NSW's

- cultural or natural places; or
- cultural or natural environments.

(or a class of the local area's

- cultural or natural places; or
- cultural or natural environments.)

These criteria have been used to assess the significance of each of the following items within the study area:

Mitchell's Pass (including Lennox Bridge, Milestone, Small Quarry and the Surveyor's Mark)
Lennox Bridge
Milestone
1832 Bridle Trail
Small Quarry
Surveyor's Mark
Brookside Creek Quarry

5.2 Mitchell's Pass (including Lennox Bridge, Milestone, 1832 Bridle Trail and the Small Quarry)

5.2.1 Criterion (a)

An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

Constructed in 1832-33, Mitchell's Pass is the third European ascent of the east escarpment of the Blue Mountains, replacing Dumaresq's 1826 road and Cox's 1815 ascent. Mitchell's Pass served as the main vehicular ascent of the eastern escarpment until 1926 when the road was diverted to the Knapsack railway viaduct.

Lennox Bridge, a key installation in the pass, is Australia's second arched bridge (the first being Richmond Bridge in Tasmania) and New South Wales first arched bridge. It is the precursor to other bridges built in the colony under the direction of David Lennox. Other extant examples include Landsdowne Bridge at Liverpool and Lennox Bridge at Parramatta.

Mitchell's Pass is of state significance under this criterion.

5.2.2 Criterion (b)

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

Mitchell's Pass is an important work of the Colonial Surveyor General Thomas Livingstone Mitchell (1792-1855). Mitchell served as Surveyor General for New South Wales from 1828 until his death in 1855. Mitchell's ascents of the eastern and western escarpments of the Blue Mountains remained in use until the early twentieth century, the western pass at Mt Victoria having returned to use after World War II and being the pass used at the present day. The entry for Mitchell in the Australian Dictionary of Biography Online is included in this report as Appendix 5.

Lennox Bridge is the first major work of David Lennox (1788-1873) in the colony of New South Wales who arrived in Sydney in 1832. Lennox was a Scottish born mason who had worked under the eighteenth century bridge builder David Telford. With a lack of skilled labour in the colony at that time, Lennox was forced to train the convict labour available to him. After taking responsibility for the design of a number of Colonial bridges including Lennox Bridge at Lapstone, Landsdowne Bridge at Liverpool, and Lennox Bridge at Parramatta, he was appointed Superintendent of Bridges for the Port Phillip district in October 1844, a position he filled for nine years. The entry for Lennox in the Australian Dictionary of Biography Online is included in this report as Appendix 6.

Mitchell's Pass is of state significance under this criterion.

5.2.3 Criterion (c)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

The technical achievements of Lennox Bridge in spanning the gully at the point of a 180 degree bend in the roadway have been acknowledged by engineers both contemporary with Lennox and to the present day. The success of the bridge led to Lennox designing numerous other bridges for the expanding colony of New South Wales.

Lennox Bridge is an excellent example of Colonial Georgian design applied to bridge building. The unusually tall proportions of the arch, resulting from the deep gully, are nevertheless an attractive element in the landscape.

Much of Mitchell's Pass retains the original setting of the Colonial road, allowing the traveler to experience something of the nineteenth century journey over the eastern escarpment of the Blue Mountains.

Mitchell's Pass is of state significance under this criterion.

5.2.4 Criterion (d)

An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

It is noted that the local community and various historical groups holds Lennox Bridge and Mitchell's Pass in high esteem. This esteem relates to the historical, aesthetic and technological significance of the place rather than for the social, cultural or spiritual significance of the place.

Mitchell's Pass is not of cultural significance under this criterion.

5.2.5 Criterion (e)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

It is known that there are at least six convict built culverts below the road surface. The full details of these are not available without physical intervention into the fabric of the road. It is possible that there is evidence of other culverts beneath the road surface and possibly in the area of other twentieth century culverts. Other details of the convict built road that might be concealed include retaining walls and macadamed road surfaces. The small quarry might also provide further information beneath the re-growth of vegetation.

Mitchell's Pass is of state significance under this criterion.

5.2.6 Criterion (f)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Lennox Bridge and Mitchell's Pass are rare examples of convict road construction in New South Wales that survive in their original setting. The survival of the 1832 bridle trail gives additional interest indicating the character of the road prior to asphalt and bituminous road surfaces.

The most notable other example of extant convict road building is the surviving sections of the Great North Road. While this is much larger and includes greater sections of retaining walls and early road surfaces, Lennox Bridge and Mitchell's Pass are still of high value for their rarity and accessibility.

The milestone is believed to be a unique example of a milestone cut into the rockcutting on the south side of Mitchell's Pass.

Mitchell's Pass is of state significance under this criterion.

5.2.7 Criterion (g)

An item is important in demonstrating the principal characteristics of a class of NSW's

- cultural or natural places; or
 - cultural or natural environments.
- (or a class of the local area's
- cultural or natural places; or
 - cultural or natural environments.)

Lennox Bridge is an excellent example of Colonial Georgian design applied to bridge building. It has a single well proportioned arch embellished with simple string courses and parapet walling.

Mitchell's Pass is an important example of Colonial road building. It includes extant elements of road building from the early eighteenth century including the remarkable Lennox Bridge, stone culverts, retaining walls, methods of cutting into the rock of the hillside and macadamed road.

In addition to the roadway, the precinct includes two quarries, at least one of which is believed to be used for stone needed in the construction of the roadway.

Mitchell's Pass are of state significance under this criterion.

5.2.8 Summary Statement of Significance

Constructed in 1832-33, Mitchell's Pass is the third European ascent of the east escarpment of the Blue Mountains and served as the main vehicular ascent of the eastern escarpment until 1926 when the road was diverted to the Knapsack railway viaduct. The pass is an important work of the Colonial Surveyor General Thomas Livingstone Mitchell (1792-1855) and the bridge that is a key installation in the pass is the first major work of Scottish mason David Lennox (1788-1873) in the colony of New South Wales and is the precursor to a series of significant bridges built in the colony under the direction of David Lennox.

Lennox Bridge, a key component of Mitchell's Pass, is New South Wales first arched bridge. The technical achievements of Lennox Bridge in spanning the gully at the point of a 180 degree bend in the roadway have been acknowledged by engineers both contemporary with Lennox and to the present day. Lennox's design is an excellent example of Colonial Georgian design applied to bridge building. The unusually tall proportions of the arch, resulting from the deep gully, are nevertheless an attractive element in the landscape.

Lennox Bridge and Mitchell's Pass are rare examples of convict road construction in New South Wales that survive in their original setting. It includes extant elements of road building from the early eighteenth century including the remarkable Lennox Bridge, stone culverts, retaining walls, methods of cutting into the rock of the hillside and macadamed road. The survival of the 1832 bridle trail gives additional interest indicating the character of the road prior to asphalt and bituminous road surfaces.

The site has great potential to provide further information about convict road building. It is known that there are at least six convict built culverts below the road surface. It is possible that there is evidence of other culverts beneath the road surface and possibly in the area of other twentieth century culverts. Other details of the convict built road that might be concealed include retaining walls and macadamed road surfaces. The small quarry might also provide further information beneath the re-growth of vegetation.

In addition to the roadway, the precinct includes two quarries; the smaller of the two is believed to be used for stone needed in the construction of the roadway. The large quarry near the south end of the 1832 bridle trail is of significance as a nineteenth and early twentieth century quarry used for stone in local construction.

5.3 Lennox Bridge

5.3.1 Criterion (a)

An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

Lennox Bridge is Australia's second arched bridge (the first being Richmond Bridge in Tasmania) and New South Wales first arched bridge. It is the precursor to other bridges built in the colony under the direction of David Lennox. Other extant examples include Landsdowne Bridge at Liverpool and Lennox Bridge at Parramatta. The bridge is a critical element of Mitchell's Pass, the main route up the Lapstone escarpment of the Blue Mountains from 1833 to 1926.

Lennox Bridge is of state significance under this criterion.

5.3.2 Criterion (b)

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

Lennox Bridge is the first major work of David Lennox (1788-1873) in the colony of New South Wales who arrived in Sydney in 1832. Lennox was a Scottish born mason who had worked under the eighteenth century bridge builder David Telford. With a lack of skilled labour in the colony at that time, Lennox was forced to train the convict labour available to him. After taking responsibility for the design of a number of Colonial bridges including Lennox Bridge at Lapstone, Landsdowne Bridge at Liverpool, and Lennox Bridge at Parramatta, he was appointed Superintendent of Bridges for the Port Phillip district in October 1844, a position he filled for nine years. The entry for Lennox in the Australian Dictionary of Biography Online is included in this report as Appendix 6.

Lennox Bridge is of state significance under this criterion.

5.3.3 Criterion (c)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

Lennox Bridge is an excellent example of Colonial Georgian design applied to bridge building. The unusually tall proportions of the arch, resulting from the deep gully, are nevertheless an attractive element in the landscape.

The technical achievements of Lennox Bridge in spanning the gully at the point of a 180 degree bend in the roadway have been acknowledged by engineers both contemporary with Lennox and to the present day. The success of the bridge led to Lennox designing numerous other bridges for the expanding colony of New South Wales.

Lennox Bridge is of state significance under this criterion.

5.3.4 Criterion (d)

An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

It is noted that the local community and various historical groups hold Lennox Bridge in high esteem. This esteem relates to the historical, aesthetic and technological significance of the place rather than for the social, cultural or spiritual significance of the place.

Lennox Bridge is not of cultural significance under this criterion.

5.3.5 Criterion (e)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

Lennox Bridge is not of cultural significance under this criterion.

5.3.6 Criterion (f)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Lennox Bridge is a rare and important example of a convict built Colonial Georgian style sandstone bridge in New South Wales.

Lennox Bridge is of state significance under this criterion.

5.3.7 Criterion (g)

An item is important in demonstrating the principal characteristics of a class of NSW's
• **cultural or natural places; or**

- **cultural or natural environments.**
(or a class of the local area's
- **cultural or natural places; or**
- **cultural or natural environments.)**

Lennox Bridge is an excellent example of Colonial Georgian design applied to bridge building. It has a single well proportioned arch embellished with simple string courses and parapet walling.

Lennox Bridge is of state significance under this criterion.

5.3.8 Summary Statement of Significance

Constructed in 1832-33, Lennox Bridge is New South Wales first arched bridge and is the first major work of Scottish mason David Lennox (1788-1873) in the colony of New South Wales and is the precursor to a series of significant bridges built in the colony under the direction of David Lennox. The technical achievements of Lennox Bridge in spanning the gully at the point of a 180 degree bend in the roadway have been acknowledged by engineers both contemporary with Lennox and to the present day. Lennox's design is an excellent example of Colonial Georgian design applied to bridge building. The unusually tall proportions of the arch, resulting from the deep gully, are nevertheless an attractive element in the landscape.

5.4 Milestone

5.4.1 Criterion (a)

An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

The milestone provides evidence of the development of the settlements in New South Wales in 1832-33 when Mitchell's Pass was constructed. The lack of an indication of the distance to a town west of the Pass indicates that while Bathurst had been proclaimed a town in 1815, it was not of sufficient importance in 1832-33 to warrant acknowledgement on the milestone.

The milestone is of state significance under this criterion.

5.4.2 Criterion (b)

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

The milestone is not of cultural significance under this criterion.

5.4.3 Criterion (c)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

Possibly the work of William Weston, the milestone is a good example of convict stonecutting and is well designed to be integrated with the rock cutting to which it is attached.

The milestone is of local significance under this criterion.

5.4.4 Criterion (d)

An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

The milestone is not of cultural significance under this criterion.

5.4.5 Criterion (e)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

The milestone is not of cultural significance under this criterion.

5.4.6 Criterion (f)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

While demonstrating the typical carving of the place names and roman numerals to indicate distance, the milestone in Mitchell's Pass is an atypical example of the type in being attached to the rock face.

The milestone is of state significance under this criterion.

5.4.7 Criterion (g)

An item is important in demonstrating the principal characteristics of a class of NSW's

- **cultural or natural places; or**
- **cultural or natural environments.**

(or a class of the local area's

- **cultural or natural places; or**
- **cultural or natural environments.)**

Sandstone milestones were reasonably common on main roads in New South Wales through the nineteenth century. The milestone on Mitchell's Pass demonstrating the typical carving of the place names and roman numerals to indicate distance.

The milestone is of local significance under this criterion.

5.4.8 Summary Statement of Significance

While demonstrating the typical carving of the place names and roman numerals to indicate distance, the milestone near the east end of Mitchell's Pass is an atypical example of the type in being attached to the rock face. Possibly the work of William Weston, the milestone is a good example of convict stonecutting.

The lack of an indication of the distance to a town west of the Pass provides evidence that while Bathurst had been proclaimed a town in 1815, it was not of sufficient importance in 1832-33 to warrant acknowledgement on the milestone.

5.5 1832 Bridle Trail (incorporating the Brookside Creek culvert and retaining wall)

5.5.1 Criterion (a)

An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

The 1832 bridle trail marks the original alignment of Mitchell's Pass, providing a trafficable route until the completion of Lennox Bridge. It survives as a rare example of extant convict built roadway with parts retaining their original macadam surface.

The 1832 bridle trail is of state significance under this criterion.

5.5.2 Criterion (b)

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

As part of Mitchell's Pass, the 1832 bridle trail is an integral component of an important work of the Colonial Surveyor General Thomas Livingstone Mitchell (1792-1855). Mitchell served as Surveyor General for New South Wales from 1828 until his death in 1855. Mitchell's ascents of the eastern and western escarpments of the Blue Mountains remained in use until the early twentieth century, the western pass at Mt Victoria having returned to use after World War II and being the pass used at the present day. The entry for Mitchell in the Australian Dictionary of Biography Online is included in this report as Appendix 5.

The 1832 bridle trail is of state significance under this criterion.

5.5.3 Criterion (c)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

The 1832 bridle trail retains some of the original setting of the Colonial road, allowing the present day walker to experience something of the nineteenth century journey over the eastern escarpment of the Blue Mountains.

The 1832 bridle trail is of local significance under this criterion.

5.5.4 Criterion (d)

An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

The 1832 bridle trail is not of cultural significance under this criterion.

5.5.5 Criterion (e)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

Retaining small sections of macadamised road, the 1832 bridle trail provides some evidence to better understand Colonial road construction.

The 1832 bridle trail is of state significance under this criterion.

5.5.6 Criterion (f)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

The 1832 bridle trail survives as a rare example of extant convict built roadway with parts retaining their original macadam surface.

The 1832 bridle trail is of state significance under this criterion.

5.5.7 Criterion (g)

An item is important in demonstrating the principal characteristics of a class of NSW's

- cultural or natural places; or
 - cultural or natural environments.
- (or a class of the local area's
- cultural or natural places; or
 - cultural or natural environments.)

The 1832 bridle trail marks the original alignment of Mitchell's Pass, providing a trafficable route until the completion of Lennox Bridge. It survives as a rare example of extant convict built roadway with parts retaining the original macadam surface of the road.

The 1832 bridle trail is of state significance under this criterion.

5.5.8 Summary Statement of Significance

The 1832 bridle trail retains rare and important elements of a convict built roadway including small section of macadamised road surface and a sandstone retaining wall. The small section of road retains some of the original setting of the Colonial road, allowing the present day walker to experience something of the nineteenth century journey over the eastern escarpment of the Blue Mountains.

As part of Mitchell's Pass, the 1832 bridle trail is an integral component of an important work of the Colonial Surveyor General Thomas Livingstone Mitchell (1792-1855).

5.6 Small Quarry

5.6.1 Criterion (a)

An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

Assumed to be associated with the construction of the nearby Lennox Bridge, the small quarry was an important source of stone for the construction of Lennox Bridge. The size of the quarry is not large enough to have been the only source of stone for the bridge and it is likely that stone was also taken from the rock cuttings on the south side of Mitchell's Pass.

The small quarry is of local significance under this criterion.

5.6.2 Criterion (b)

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

The small quarry is not of cultural significance under this criterion.

5.6.3 Criterion (c)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

The small quarry is not of cultural significance under this criterion.

5.6.4 Criterion (d)

An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

The small quarry is not of cultural significance under this criterion.

5.6.5 Criterion (e)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

The small quarry has some potential to provide information about nineteenth century quarrying techniques and the construction of Lennox Bridge.

The small quarry is of local significance under this criterion.

5.6.6 Criterion (f)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

The small quarry is not of cultural significance under this criterion.

5.6.7 Criterion (g)

An item is important in demonstrating the principal characteristics of a class of NSW's

- cultural or natural places; or
 - cultural or natural environments.
- (or a class of the local area's
- cultural or natural places; or
 - cultural or natural environments.)

The small quarry demonstrates typical Colonial period methods of quarrying stone for roadbuilding and construction purposes.

The small quarry is of local significance under this criterion.

5.6.8 Summary Statement of Significance

Assumed to be associated with the construction of the nearby Lennox Bridge, the small quarry was an important source of stone for the construction of Lennox Bridge. The small quarry has some

potential to provide information about nineteenth century quarrying techniques and the construction of Lennox Bridge.

5.7 Brookside Creek Quarry

5.7.1 Criterion (a)

An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

The origins of the large quarry near the south end of the 1832 bridle trail are unclear. It is probable that it was opened in the late nineteenth century to provide sandstone for local construction.

Brookside Creek Quarry is of local significance under this criterion.

5.7.2 Criterion (b)

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

Brookside Creek Quarry is not of significance under this criterion.

5.7.3 Criterion (c)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

Brookside Creek Quarry is not of significance under this criterion.

5.7.4 Criterion (d)

An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

Brookside Creek Quarry is not of significance under this criterion.

5.7.5 Criterion (e)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

There is potential for further research to establish where stone from Brookside Creek Quarry was used. This will assist with a better understanding of the original purpose of this quarry as well of the sources of stone for some important local buildings.

Brookside Creek Quarry is of local significance under this criterion.

5.7.6 Criterion (f)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Brookside Creek Quarry is not of significance under this criterion.

5.7.7 Criterion (g)

An item is important in demonstrating the principal characteristics of a class of NSW's

- cultural or natural places; or
- cultural or natural environments.

(or a class of the local area's

- cultural or natural places; or
- cultural or natural environments.)

Brookside Creek Quarry demonstrates typical nineteenth period methods of quarrying stone for roadbuilding and construction purposes.

Brookside Creek Quarry is of local significance under this criterion.

5.7.8 Summary Statement of Significance

The origins of Brookside Creek Quarry are unclear. There is potential for further research to establish where stone from Brookside Creek Quarry was used. This will assist with a better understanding of the original purpose of this quarry as well of the sources of stone for some important local buildings.

Brookside Creek Quarry demonstrates typical nineteenth period methods of quarrying stone for roadbuilding and construction purposes.

5.8 Surveyor's Mark

Note: This mark was identified by Archaeological & Heritage Management Solutions (AHMS) in their July 2006 *Heritage Assessment: Knapsack Reserve, Glenbrook NSW* for Blue Mountains City Council. It was not found during survey work for this study. The site was revisited specifically to try to locate the mark based on the description in the above report but the mark was not located. The following assessment is therefore based primarily on the information in the AHMS report and additional research of Parish Maps.

The description of the surveyor's mark in the above report locates it approximately 10 metres to the west of Lennox Bridge and the roadway. It has a typical broad arrow and the numbers 30 and 299.

5.8.1 Criterion (a)

An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

The surveyor's mark is located in the vicinity of the northwest corner of Lot 299 DP 751662, part of the 1897 reservation for a quarry. The reference to this being lot 299 first shows on the Strathdon Parish Map of 1929. The same Parish Map also shows a reference to the number 30 on the reservation. Both the numbers 30 and 299 are used on the surveyor's mark. Further research such as a survey of the northern boundary of Lot 299 DP 751662 is needed to determine whether this mark indicates the northwest corner of this reservation.

5.8.2 Criterion (b)

An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

The surveyor's mark does not have a known association that would give it significance under this criterion.

5.8.3 Criterion (c)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

While the survey mark may be a well engraved mark of its time, it would not be considered to have sufficient aesthetic merit or indicate creative or technical achievement to have significance under this criterion.

5.8.4 Criterion (d)

An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

The surveyor's mark does not have significance under this criterion.

5.8.5 Criterion (e)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

There is potential for further research to the purpose of this survey mark. It does not appear to be likely that it is associated with the construction of Mitchell's Pass or Lennox Bridge. It is more likely to be associated with the subdivision of a portion of the 1897 reservation for the public quarry.

The surveyor's mark has local significance under this criterion.

5.8.6 Criterion (f)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

The surveyor's mark is a rare example of a known engraved survey mark.

The surveyor's mark has local significance under this criterion.

5.8.7 Criterion (g)

An item is important in demonstrating the principal characteristics of a class of NSW's

- **cultural or natural places; or**
- **cultural or natural environments.**

(or a class of the local area's

- **cultural or natural places; or**
- **cultural or natural environments.)**

The surveyor's mark is a good example of a surveyor's mark engraved into sandstone benches across difficult terrain.

The surveyor's mark has local significance under this criterion.

5.8.8 Summary Statement of Significance

The surveyor's mark is a rare known example of a surveyor's mark engraved into sandstone benches across difficult terrain. It appears to relate to a subdivision of the reservation for public quarry.

5.9 Themes

5.9.1 Mitchell's Pass

Mitchell's Pass (including Lennox Bridge, Milestone, 1832 Bridle Trail, Surveyor's Mark and the Small Quarry) provides evidence of the following Australian, New South Wales and Blue Mountains themes.

Australian Theme	New South Wales Theme	Blue Mountains Theme
2. Peopling Australia	Convict	Evidence of convicts' experiences and activities
3. Developing local, regional and national economies	Industry	Industry - quarrying
	Transport	Crossing the mountains
5. Working	Labour	Working on public infrastructure projects

5.9.2 Brookside Creek Quarry

Brookside Creek Quarry provides evidence of the following Australian, New South Wales and Blue Mountains themes.

Australian Theme	New South Wales Theme	Blue Mountains Theme
3. Developing local, regional and national economies	Industry	Industry - quarrying

5.9.3 Surveyor's Mark

The surveyor's mark provides evidence of the following Australian, New South Wales and Blue Mountains themes.

Australian Theme	New South Wales Theme	Blue Mountains Theme
4. Building Settlements, Towns and Cities	Land Tenure	

5.10 Ranking of Significance of Fabric

Considering the above analysis, a ranking of significance of the fabric of the historical precinct of Mitchell's Pass and the Brookside Creek Quarry is given below.

The ranking is hierarchical on a relative scale of 1 to 5 being:

Grading	Justification	Status
5. Exceptional significance	Rare or outstanding item of local or State significance High degree of intactness. Very high architectural quality (for built items) Item can be interpreted relatively easily.	Fulfil criteria for local or State heritage listing
4. High significance	High degree of original fabric. High architectural quality (for built items). Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfil criteria for local or State listing
3. Some significance	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item	Fulfil criteria for local or State listing
2. Little or no significance	Alterations detract from significance. Difficult to interpret	Does not fulfil criteria for local or State listing
1. Intrusive	Damaging to the item's heritage significance	Does not fulfil criteria for local or State listing

Item	Element	Ranking of Significance
Mitchell's Pass	Alignment of road	Exceptional
	Culvert 1	Exceptional
	Culvert 2	Exceptional
	Culvert 3	Exceptional
	Culvert 4	Little or no
	Culvert 5	Little or no
	Culvert 6	Exceptional
	Culvert 7	Exceptional
	Culvert 8	Exceptional
	Convict cut drain	Exceptional
	Rock face on south side of road	Exceptional
	Modern road surface	Little or no
	Views over Cumberland Plain	Some
	Views within Lapstone Creek catchment	Some
	Milestone	Exceptional
Lennox Bridge	Sandstone bridge structure	Exceptional
	Invert and sandstone flagging	Little or no
	Sandstone steps	Little or no

	Post and rail fencing	Little or no
	Modern road surface	Little or no
	1970s concrete sub-structure	Little or no
	Interpretive sign	Little or no
	Commemorative plaques (locations)	Little or no
1832 bridle trail	Alignment of road	Exceptional
	Retaining wall and culvert	Some
	Macadamed road surface	Exceptional
	Rock cutting on east side (near Lennox Bridge)	Exceptional
	Stone barriers at north entry to trail	Little or no
Small quarry	Rock cutting (evidence of quarrying)	Exceptional
Surveyor's Mark	Engraving in rock	High
Brookside Creek Quarry	Rock cutting	High
Walking paths to Glenbrook	Alignment and surface	Little or no
Tracks to lookouts and Knapsack Gully	Alignment and surface	Little or no
Brookside Creek	Alignment and ecology	High
Sedimentation pond	Location and fabric	Little or no
Energy dissipater	Location and fabric	Intrusive

6 Constraints And Opportunities

6.1 Significance

Mitchell's Pass, (including Lennox Bridge, Milestone, 1832 Bridle Trail, and the Small Quarry) has been identified as having cultural significance at a state level. Because of its high cultural significance, it should be conserved.

Brookside Creek Quarry has been identified as having cultural significance at a local level. Because of its cultural significance, it should be conserved.

The surveyor's mark has been identified as having cultural significance at a local level. Because of its cultural significance, it should be conserved.

In August 1979 Australia ICOMOS (the Australian National Committee of ICOMOS) adopted the Burra Charter to provide guidance for the conservation and management of places of cultural significance (cultural heritage places). This charter was revised in 1981, 1988 and most recently in 1999. It is reproduced in this report as Appendix 2.

The Burra Charter should be used to guide the conservation and management of the Lennox Bridge and Mitchell's Pass precinct.

6.2 Ownership

Mitchell's Pass (including Lennox Bridge, Milestone, 1832 Bridle Trail, and the Small Quarry), the surveyor's mark and Brookside Creek Quarry are in public ownership as Crown Land managed by the Blue Mountains City Council. This provides good opportunities for public access to the site. It also ensures that the manager of the site is able to regularly monitor the condition of the place.

The management of the places by Blue Mountains City Council means that funding for the regular maintenance and conservation of the place is provided primarily by the local government authority. This is not consistent with the significance of Mitchell's Pass (including Lennox Bridge, Milestone, 1832 Bridle Trail, and the Small Quarry) on a state level.

6.3 Statutory Issues

6.3.1 Blue Mountains Local Environmental Plan 1991

Knapsack Reserve, which includes Mitchell's Pass (including Lennox Bridge, Milestone, 1832 Bridle Trail, and the Small Quarry), the surveyor's mark and Brookside Creek Quarry, is zoned under Blue Mountains Local Environmental Plan 1991 as Recreation – Environmental Protection. The objectives of this zoning are:

- (a) To ensure protection of environmentally sensitive land and areas of high scenic value in the City.
- (b) To provide a buffer around areas of natural ecological significance.
- (c) To restrict development on land that is inappropriate by reason of physical characteristics or high bushfire hazard.
- (d) To encourage the restoration of disturbed bushland areas.
- (e) To provide for passive recreational activities that are compatible with the land's environmental characteristics.

Under Part 9.4 of Blue Mountains Local Environmental Plan 1991, the use of land within the Recreation – Environmental Protection zone for recreation is limited to passive recreation. With the consent of Council, the following activities are allowed within the Recreation – Environmental Protection zone:

- Bushfire hazard reduction
- Drainage works
- National Park

Parking
Recreation Area
Roads
Subdivision (see additional control below)
Utility Installation
Visitor Facilities
Walking Track

The Council shall not consent to subdivision of land within the Recreation - Environmental Protection zone unless the only purpose of the subdivision is to provide land for public purposes.

Knapsack Reserve is also designated as a Protected Area – Escarpment Area under Blue Mountains Local Environmental Plan 1991. The objectives of this protected area are:

- (a) To preserve and enhance the natural environmental and visual significance of the escarpment system of the Blue Mountains.
- (b) To limit the presence of buildings and works in the escarpment area and to limit the impact of buildings on the perception of the escarpment as a significant natural feature.
- (c) To limit the proportion of hard surfaces in the escarpment area and to provide for the restoration of all degraded areas and their return to a natural habitat.

Development Criteria for the Protected Area – Escarpment Area under Blue Mountains Local Environmental Plan 1991 are:

- (a) The Council shall not consent to any development involving the clearing of vegetation in an area designated as Protected Area - Escarpment Area, unless it is satisfied, by means of an assessment of the landscape and environmental impact of the proposed development, that the visual and ecological effects of the proposed clearing will not compromise the Protected Area - Escarpment Area objective.
- (b) No building, other than of single storey construction, shall be erected in a Protected Area - Escarpment Area if it protrudes above the vegetation canopy of the immediate locality, or the height of adjacent buildings.

Lennox Bridge and the Milestone are listed as heritage items on Schedule 2: Heritage Items of Blue Mountains Local Environmental Plan 1991. Under the heritage provisions of the Blue Mountains Local Environmental Plan 1991,

A person shall not, without the consent of the Council, in respect of a building, work, relic, place or tree that is a heritage item -

- (a) demolish or alter the building or work; or
- (b) damage or move the relic, or excavate for the purpose of exposing or moving the relic; or
- (c) damage or despoil the place or tree; or
- (d) damage or remove any tree or horticultural features on the land on which the building, work, or relic is situated or on the land which comprises the place.

The Council shall not grant consent to a development application in respect of -

- (a) a heritage item; or
- (b) development likely to affect a heritage item; or
- (c) development in a Heritage Conservation Area, unless it has assessed the effect that the development would have on the heritage significance of the heritage item or Heritage Conservation Area.

25.4 The Council shall refer any development application for the demolition of a heritage item or a building, work, relic or place in a Heritage Conservation Area to the Heritage Council and shall have regard to any written views of the Heritage Council received by the Council within 28 days of the referral.

25.5 Clause 25.4 does not apply to the partial demolition of a heritage item or a building, work, relic or place within a Heritage Conservation Area if, in the opinion of the Council, the partial demolition is of a minor nature.

5.6 The Council may grant consent to development, other than subdivision, for any purpose, of a building that is a heritage item or is within a Heritage Conservation Area, or of the land on which the building is erected, even though development for that purpose would otherwise be prohibited by this plan, if it is satisfied that -

- (a) the proposed development would not adversely affect:
 - ___the heritage significance of the building or any Heritage Conservation Area within which the building is situated; or
 - ___the amenity of any Heritage Conservation Area within which the building is situated; or
 - ___the heritage significance and amenity of the surrounding neighbourhood; and
- (b) when the building is a heritage item:
 - ___the heritage item will be most appropriately conserved if used for the proposed development; and
 - ___a conservation plan, prepared for the heritage item, supports the proposed development.

The zoning provisions under the Blue Mountains Local Environmental Plan 1991 are generally consistent with the heritage significance of the place.

Listing of Lennox Bridge and the milestone as heritage items on Schedule 2 of the Blue Mountains Local Environmental Plan 1991 is consistent with their heritage significance. However, Schedule 2: Heritage Items of Blue Mountains Local Environmental Plan 1991 does not include Mitchell's Pass, the surveyor's mark or the quarries. These places are of local or state significance and should be protected as heritage items.

6.3.2 State Heritage Register

Lennox Bridge is listed on the State Heritage Register. Mitchell's Pass, the milestone and the 1832 bridle trail are assessed as being of state significance but are not included on the State Heritage Register.

Listing on the State Heritage Register means that the heritage item:

- is of particular importance to the people of NSW and enriches our understanding of our history and identity;
- is legally protected as a heritage item under the NSW Heritage Act;
- requires approval from the Heritage Council of NSW for major changes; and
- is eligible for financial incentives from the NSW and Commonwealth governments.¹⁰¹

While listing on the State Heritage Register does require additional approvals for major changes to a place, it would reflect the high level of significance of Mitchell's Pass Historic precinct as a whole. It would also provide greater opportunities for financial assistance under state and federal assistance programs.

6.3.3 The National Heritage List

The Australian Heritage Commission (AHC) is a statutory body of the Commonwealth Government administered within the Australian and World Heritage Group of Environment Australia. One of the responsibilities of the AHC is to maintain the National Heritage List.

The implications of a place being listed on the National Heritage List are described by the Australian Heritage Commission as follows:

¹⁰¹ Heritage Office Website 6 Nov 2007 http://www.heritage.nsw.gov.au/07_subnav_04b.htm

It is the national heritage values of a place that will be recorded in the National Heritage list and it is these values, and not necessarily the entire place itself, that will be protected through listing. These values will be protected under new amendments to the *Environment Protection and Biodiversity Conservation Act 1999*.

This means that a person cannot take an action that has, will have or is likely to have, a significant impact on the national heritage values of a listed place without the approval of the Australian Government Minister for the Environment and Water Resources. It is a criminal offence not to comply with this legislation.

If the place is on state or private land, it can be protected by the Commonwealth where it has the appropriate Constitutional power to do so. In the case of Indigenous heritage places in the National Heritage List, the Commonwealth has the power to protect them irrespective of land tenure. In other cases, places may be protected under state legislation (through a bilateral agreement) or by private owners under a conservation agreement with the Commonwealth. Management plans are required for all places listed.

Lennox Bridge and Mitchell's Pass are not listed on the National Heritage List. Features similar to those of Lennox Bridge and Mitchell's Pass are found on The Great North Road which is included on the National Heritage List.

Lennox Bridge and Mitchell's Pass are listed on the Australian Heritage Database. The Register of the National Estate is a nation-wide heritage list for Australia that encompasses natural, Indigenous and historic places. The Register was compiled by the Australian Heritage Commission until 2006. New places can no longer be added to the Register.

Registered places can be protected under the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act), if they are also included in another Commonwealth statutory heritage list. For example, Registered places owned or leased by the Commonwealth are protected from any action likely to have a significant impact on the environment. Lennox Bridge and Mitchell's Pass and the surrounding precinct are not owned or leased by the Commonwealth.

6.4 Condition

The condition of Lennox Bridge and the roadway, sub-structure and associated rock cutting of Mitchell's Pass is described in the Structural Report by Hughes Trueman Pty Ltd (Appendix 4) and the Report on Geotechnical Inspection by Douglas & Partners Pty Ltd (Appendix 3). Specific issues that are raised in the report are:

6.4.1 Structural

- Cracking of stonework mainly at low level (below string course) probably due to irregular settlement
- Bulging on western face (noted since 1963 and possibly older)
- Need for re-pointing of stonework
- Scour of foundation material below concrete invert at north end
- Dislodgement of stone in southern parapet
- Cracking of lids to culvert intakes
- Dislodgement of stone to retaining walls

The structure of the bridge was rebuilt in the 1970s so that a concrete sub-structure is now carrying the traffic load. This sub-structure is, according to the Structural Report, sufficient for the 2 tonne load limit of the road.

6.4.2 Geotechnical

Unstable features on upper slopes of rock cutting above Mitchell's Pass

- Undercut blocks on upper areas of rock cutting due to weathering of rockface below
- Damage to rockface due to growth of trees
- Potentially unstable rock wedges

6.4.3 Other

Other matters relating to the condition of the place that require attention include:

- Erosion on south branch of 1832 bridle trail
- Stability of retaining wall near outlet of culvert under south branch of 1832 bridle trail

6.5 Maintenance Needs and Costs

Maintenance needs that need to be considered by Council in its management of Lennox Bridge and the roadway and substructure of Mitchell's Pass include:

- Regular cleaning of culvert intakes
- Regular cleaning of drains on side of road
- Repointing of stonework to bridge (i.e. pointing up joints where mortar has weathered with traditional lime mortar to match the original mortar)
- Regular removal of graffiti on face of bridge

6.6 Community Values and Desires

The local community (and people from well outside the local area) hold Mitchell's Pass (including Lennox Bridge, Milestone, 1832 Bridle Trail, and the Small Quarry) in high esteem for its historical, technological and aesthetic values. Evidence of this is in the construction of stone steps to the base of the bridge by the local Rotary Club and the fixing of historic plaques to the bridge and adjacent stone wall by organizations such as the Institute of Engineers. There is a general expectation that Council, as manager of the place, will continue to maintain the significant fabric of the place.

The community also values the place for activities other than its cultural heritage. The roadway of Mitchell's Pass is a popular alternative descent of the eastern escarpment of the Blue Mountains for cyclists. Mountain bike riders have constructed a dirt jump area adjoining the 1832 bridle trail. The 1832 bridle trail also connects to walking tracks to Marge's Lookout, Elizabeth Lookout and Glenbrook township. The natural bushland around the place is also valued by the community.

The Glenbrook and District Historical Society have provided comments on their concerns and suggestions regarding Lennox Bridge and Mitchell's Pass. Their letter of 22 October 2007 is included in this report as Appendix 7. Key issues noted in this letter include:

- The isolation of the site makes it subject to regular vandalism, particularly graffiti
- An increase in graffiti on the site, possibly due to improved access via the new sandstone stairs.
- Damage to the cliff face on the east side of the bridge including removal of plaques
- Access to the 1832 bridle trail by trail bikes and motor bikes.

6.7 Location & Neighbourhood

The location of Lennox Bridge and Mitchell's Pass Historic Precinct in an otherwise natural bushland setting adds considerably to the amenity of the place. This amenity attracts a variety of visitors including cyclists, walkers and other travelers preferring the more scenic descent of the eastern escarpment over the Great Western Highway. The links with a number of walks in the area provide additional opportunities for passive recreation.

The relatively isolated location also creates some problems. As noted above, the isolation and lack of visibility of the base of the bridge makes it an easy target for vandals, especially graffiti vandals.

6.8 Access

Access to Lennox Bridge and the roadway of Mitchell's Pass is available to vehicles travelling via Blaxland. The single direction roadway on the east side of Lennox Bridge restricts vehicular access direct from Emu Plains.

Lennox Bridge is also accessible to visitors from Glenbrook via a variety of walking tracks. Walking on the roadway of Mitchell's Pass has some risks due to the lack of shoulder on most parts of the road and the poor visibility on some bends.

7 Conservation Policies

7.1 General

These policies are general policies for the conservation of the Mitchell's Pass Historic Precinct, the surveyor's mark and Brookside Creek Quarry. For the purposes of these policies, Mitchell's Pass Historic Precinct includes the roadway and associated structure of Mitchell's Pass, Lennox Bridge, the 1832 bridle trail, and the small quarry. Specific policies are given in *italics*. Supplementary notes are given in normal type.

7.2 Definition of the Place

Mitchell's Pass Historic Precinct includes the roadway and associated structure of Mitchell's Pass, Lennox Bridge, the 1832 Bridle Trail and the small quarry. The extent of the place should be as indicated in the map at Figure 49.



Figure 49

Curtilage of Mitchell's Pass Historic Precinct shown with a heavy dotted black line.

The Mitchell's Pass Historic Precinct includes the historic fabric of Lennox Bridge, Mitchell's Pass and the 1832 bridle trail. The full length of the roadway of Mitchell's Pass between Blaxland and Emu Plains is included in the precinct because the historic alignment of the road is part of its significance. The landscape which contributes to the setting and interpretation of the road is not included in the curtilage of the precinct. Policies for management of the landscape as it contributes to the setting of the place and to views from and within the place are at 7.12 of this report.

The quarry on the east side of the 1832 bridle trail should be known as Brookside Creek Quarry. The extent of Brookside Creek Quarry should be as indicated on the map at Figure 50.



Figure 50
Curtilage of Brookside Creek Quarry (shown by dotted red line).

There is no clear evidence that the quarry on the east side of the 1832 bridle trail has a direct historical relationship to Lennox Bridge. It should be managed as a separate historic site. To differentiate it from the small quarry, it is recommended that it be called Brookside Creek Quarry. The curtilage shown for Brookside Creek Quarry includes the excavated rock face as well as an area of the clearing on the opposite side of the track. It is thought that the clearing might have been used for shaping and dressing the excavated stone.

7.3 Burra Charter

Mitchell's Pass Historic Precinct is a place of state significance and should be conserved in accordance with the Burra Charter.

Brookside Creek Quarry is a place of local significance and should be conserved in accordance with the Burra Charter.

The surveyor's mark is a place of local significance and should be conserved in accordance with the Burra Charter.

7.4 Ownership

7.4.1 Mitchell's Pass Historic Precinct

Ownership of the portion of Knapsack Reserve that includes the Mitchell's Pass Historic Precinct should remain as Crown Land.

7.4.2 Brookside Creek Quarry

Ownership of Brookside Creek Quarry should remain as Crown Land.

7.4.3 Surveyor's Mark

Ownership of the surveyor's mark should remain as Crown Land.

7.5 Management

7.5.1 Mitchell's Pass Historic Precinct

The management of Mitchell's Pass Historic Precinct should remain with Blue Mountains City Council.

7.5.2 Brookside Creek Quarry

The management of Brookside Creek Quarry should remain with Blue Mountains City Council.

7.5.3 Surveyor's Mark

The management of the surveyor's mark should remain with Blue Mountains City Council.

7.6 Uses

7.6.1 Mitchell's Pass Historic Precinct

Continue the use of Mitchell's Pass as a roadway for local traffic and emergency vehicles.

Continue use of the 1832 bridle trail as a walking track, for mountain bikes and as an off-leash area for dogs.

Prevent use of the 1832 bridle trail for motor bikes and trail bikes.

Continue use of the small quarry as a disused quarry within the otherwise natural landscape adjacent to the 1832 bridle trail.

The historic use of Mitchell's Pass for a public road contributes to its significance. Continuing this historic use is appropriate and, while the size of vehicles using the road is controlled should not cause undue damage to the fabric of the place.

Use of the 1832 bridle trail by vehicular traffic should be restricted. Vehicles such as trail bikes are likely to cause unnecessary erosion and damage to the 1832 bridle trail.

7.6.2 Brookside Creek Quarry

Brookside Creek Quarry should remain as an element in the landscape.

Do not reopen Brookside Creek Quarry as a working quarry.

Re-opening Brookside Creek Quarry would require the upgrading of roads to provide access to heavy vehicles to transport stone. This would probably lead to either damage to historic fabric of the 1832 bridle track or upgrading of the trail linking the quarry to the roads to Marge's Lookout and the zig zag. The earlier is undesirable due to the high significance of this track and that the track would become accessible to a wide range of vehicles. The later is undesirable due to the potential damage to the natural environment in the vicinity and that a wider range of vehicles would be able to access the 1832 bridle trail via an upgraded road.

7.6.3 Surveyor's Mark

The surveyor's mark should continue to be a survey mark.

7.7 Layout and Alignments

7.7.1 Mitchell's Pass

Retain the alignment of Mitchell's Pass between Blaxland and Emu Plains where it follows the original alignment laid out by Mitchell.

The original alignment of Mitchell's Pass between the Great Western Highway at Blaxland and at Emu Plains has been retained to the present day. The western end of the pass is now known as Layton Avenue. This alignment is significant and should be retained.

7.7.2 1832 Bridle Trail

Retain the alignment of the 1832 Bridle Trail.

The alignment of the 1832 bridle trail is significant as the route used for Mitchell's Pass until the construction of Lennox Bridge could be completed. It should be retained.

7.8 Conservation of Fabric

7.8.1 Fabric of Exceptional and High Significance

Fabric of exceptional and considerable significance as identified in section 5.11 of this report should be conserved using the principles of the Burra Charter.

Do not allow removal of fabric of exceptional or considerable significance unless essential for conservation works under the direction of a heritage consultant or archaeologist.

7.8.2 Fabric of Some Significance

Fabric of some significance as identified in section 5.11 of this report should be conserved using the principles of the Burra Charter.

Fabric of some significance may be removed as part of conservation works under the direction of a heritage consultant or archaeologist.

7.8.3 Fabric of Little or No Significance

Fabric of little or no significance as identified in section 5.11 of this report may be removed.

7.8.4 Intrusive Fabric

Intrusive fabric as identified in section 5.11 of this report should be removed.

7.9 Protection of Fabric

7.9.1 Fabric of Exceptional and High Significance

Protect features of exceptional and high significance according to the following guidelines:

- *Provide metal bollards with reflector markers near to culvert intakes to protect intakes from impact damage. Bollards should not be located where they will damage the fabric or interfere with the flow of drainage into the culvert.*
- *Either provide bollards to slow traffic at the island on the west side of Lennox Bridge and/or realign the island to prevent vehicles becoming airborne or otherwise being diverted into the southern parapet of the bridge.*
- *Provide metal bollards with reflector markers near the milestone to protect the milestone from impact damage. Bollards should not be located where they will damage the fabric or interfere with the flow of drainage into the culvert.*
- *Consider the installation of security cameras to monitor vandalism in the vicinity of Lennox Bridge (refer to policy)*

7.9.2 Fabric of Some Significance

Protect features of some significance according to the following guidelines

- *Allow rebuilding of the retaining wall at the culvert for Brookside Creek on the 1832 bridle trail using existing stone in its original configuration as much as this can be determined. New stone matching as best possible the colour, strength and quality of the original stone may be used as necessary to complete the rebuilding of the retaining wall.*

7.9.3 Fabric of Little or No Significance

Fabric of little or no significance may be removed.

7.9.4 Intrusive Fabric

Intrusive fabric should be removed.

7.10 New Elements

7.10.1 General

Do not allow new elements that intrude on the natural bushland setting of the Mitchell's Pass Historic Precinct between the eastern alignment of Mount Sion Park and the Great Western Highway Emu Plains.

Allow only residential development in land already zoned for that purpose west of the eastern alignment of Mount Sion Park.

From the eastern alignment of Mount Sion Park to the Great Western Highway, Mitchell's Pass retains a strong natural bushland setting that gives a good sense of what the road was like for the early travelers. This setting is important to the interpretation of the road and should be retained. At the western end of Mitchell's Pass, residential development has already had an impact on the setting of Mitchell's Pass Historic Precinct. Rezoning of land to allow further residential development or that would result in the loss of additional natural bushland near the road should be avoided.

Do not allow new elements that intrude on the bushland setting of the Brookside Creek Quarry.

7.10.2 Bollards and Barriers

Allow new bollards, gates and/or barriers to prevent motor bikes, trail bikes and motorized vehicles on the 1832 bridle trail.

Allow new bollards as set out in policy 7.9 (Protection of fabric)

New bollards, gates and barriers should be of a simple and unobtrusive design and should be coloured to avoid strong contrast with the surrounding vegetation, rockface or roadway as appropriate.

7.10.3 Services

New services such as security cameras should be discreetly located where they are not visible in important views within the Mitchell's Pass Historic Precinct.

7.10.4 Structure

Allow new structural elements where recommended by the Structural Report of 15 October 2007 by Hughes Trueman Pty Ltd and where recommended by the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd.

7.11 Signs

7.11.1 Interpretive and Commemorative Signs

Renew the interpretive sign on the south side of the bridge with accurate information about the history of the bridge.

Renew missing commemorative plaques using fixing methods to ensure the plaques are not removed by vandals.

Repair and refix the commemorative plaque in the possession of Glenbrook and District Historical Society or an accurate facsimile of it using fixing methods to ensure the plaque is not removed by vandals.

Limit new commemorative signs at the place to those previously fixed.

7.11.2 Road Signs

New road signs should be carefully located to avoid damage to fabric of historic significance such as stone culverts, convict cut drains, retaining walls and the sandstone fabric of Lennox Bridge.

New road signs should be carefully located to ensure they do not intrude on significant views within and from the Mitchell's Pass Historic Precinct.

7.12 Landscape

7.12.1 General

Continue maintenance of the natural bushland within the Mitchell's Pass Historic Precinct and within the Brookside Creek Quarry by the Knapsack Creek Bushcare Group.

Carefully remove saplings and trees in the rock cuttings of Mitchell's Pass as recommended by the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd.

Carefully remove saplings and trees in the small quarry and the Brookside Creek Quarry.

Remove shrubs and saplings on the south side of Mitchell's Pass at the base of the rock cutting.

7.13 Maintenance and Repair

Establish a program for regular maintenance and repair for the Mitchell's Pass Historic Precinct.

Repair of stonework to Lennox Bridge and significant features of Mitchell's Pass and the retaining wall associated with the culvert at the 1832 bridle trail should be undertaken using traditional methods and under the supervision of an architect or engineer experienced in working with structures of historic significance.

Undertake the following remedial works as recommended in the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd

- 1. Scaling or rock bolting of potentially unstable blocks and slabs*
- 2. Removal of trees growing in rock fractures of the southern rock face of Mitchell's Pass*
- 3. Underpinning of perched boulders above Mitchell's Pass*

Undertake the following repair works as recommended in the Structural Report of October 2007 by Hughes Trueman Pty Ltd

- 1. Realigning the southern parapet of Lennox Bridge*
- 2. Removal of iron and steel embedments in the north and south faces of Lennox Bridge*
- 3. Repair the scour below the north end of the invert under Lennox Bridge*

Reconstruct the retaining wall associated with the culvert on the western arm of the 1832 bridle trail using salvaged stone as much as possible.

Establish a regime of monitoring the stability of the rock face on the south side of Mitchell's Pass as recommended in Schedule 1 of the in the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd

Establish a crack mapping database for Lennox Bridge and update the database every 5 years.

Repoint the stonework of Lennox Bridge using a traditional tools and a traditional lime mortar.

7.14 Fencing

Replace the existing post and rail fence to Lennox Bridge.

Maintain the existing guard rail on the north side of Mitchell's Pass. Ensure future posts for the guardrail are not located where they will interfere with fabric of original culverts or retaining walls.

Construct new rock catch fences as recommended in part 5.4 of the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd

New fencing in the Mitchell's Pass Historic Precinct should be designed to be as unobtrusive as possible.

7.15 Views

The following views are significant and should be conserved:

7.15.1 Views within Mitchell's Pass Historic Precinct

Views of Lennox Bridge from Mitchell's Pass (refer Figure 51)



Figure 51

Location of views of Lennox Bridge from Mitchell's Pass

7.15.2 Views from Mitchell's Pass

Views east over the Cumberland Plain from Mitchell's Pass (Refer Figure 52)



Figure 52

Location of views of the Cumberland Plain from Mitchell's Pass

Views north from Mitchell's Pass over Lapstone Creek into natural bushland (refer Figure 53).

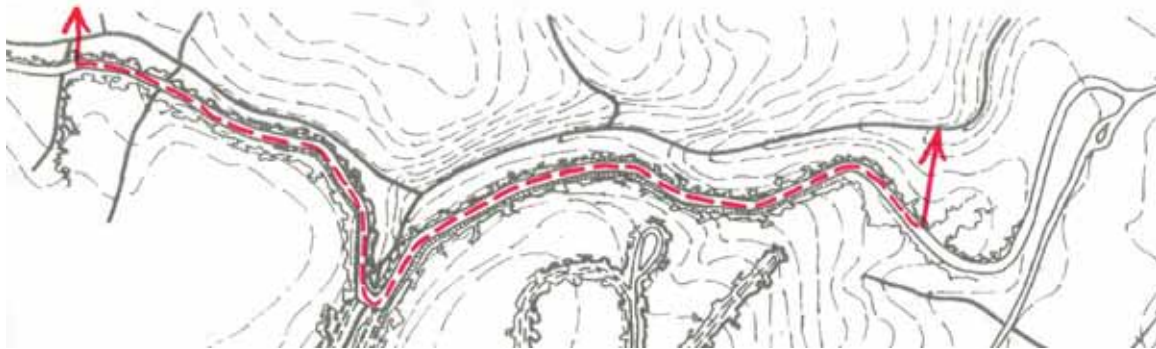


Figure 53

Location of views north from Mitchell's Pass over Lapstone Creek into natural bushland.

Views to Brookside Creek Quarry from the 1832 bridle trail (refer Figure 54)



Figure 54

Location of views of Brookside Creek Quarry from the 1832 bridle trail

7.15.3 Views to Brookside Creek Quarry

Views to Brookside Creek Quarry from the trail to Elizabeth Lookout (refer Figure 55).



Figure 55

Location of views to Brookside Creek Quarry from the trail to Elizabeth Lookout

7.16 Access

Retain public access to the roadway of Mitchell's Pass via Mitchell's Pass at Blaxland.

Retain the present limited parking area for visitors to Lennox Bridge at the north end of the 1832 bridle trail.

Restrict public access to the 1832 bridle trail to pedestrians via the parking area at the north end of the 1832 bridle trail or from the walking tracks near the south end of the 1832 bridle trail.

Retain access to the Brookside Creek Quarry via the walking trail from the east and from the 1832 bridle trail

The existing access to Mitchell's Pass Historic Precinct is adequate for visitors at most times. Restriction of vehicles to the 1832 bridle trail will help to conserve the remaining evidence of the early road. Visitation specifically to see Brookside Creek Quarry is not likely to be extensive. Access via the present system of walking trails is sufficient at this time.

7.17 Vandalism

7.17.1 Patrols

Include Lennox Bridge on regular security patrols in the area.

Regular security patrols by Council rangers should include the area around Lennox Bridge. This should not be the only method of patrolling the area as it is unlikely that it will greatly reduce the activities of vandals.

7.17.2 Security Cameras

Allow installation of discreetly located security cameras to monitor visitors to Lennox Bridge.

Security cameras at Lennox Bridge should be of a type that does not require a separate large structure for recording equipment.

Security cameras are probably the most effective means available of monitoring the area at the base of Lennox Bridge for activities of vandals.

Security camera systems are available that allow downloading of information to a laptop computer or similar device. This reduces the need for a new large structure that would intrude on the character of the place.

7.17.3 Removal of Graffiti

Check regularly for graffiti at the base of Lennox Bridge and remove it as quickly as possible.

Graffiti on sandstone should be removed by solvent based (non-caustic) poultice systems that are purpose made for removal of paint from stonework.

Do not use pressure sprays or abrasive methods to remove graffiti.

Avoid using caustic strippers to remove graffiti.

Removal of graffiti on Lennox Bridge should be done using methods that will minimize the damage to the sandstone. Non-caustic poultice systems are generally considered to have the least affect on the sandstone. The actual system to be used needs to be determined through trial and error and might differ according to the type of material that has been used to create the graffiti.

Abrasive methods of graffiti removal and caustic strippers can cause permanent damage to the surface and structure of the sandstone and should be avoided.

7.18 Traffic Management

Retain the existing 2 tonne load limit for Lennox Bridge

Retain the existing restriction of one-way traffic east of Lennox Bridge

Control access to the 1832 bridle trail by motorised vehicles.

Investigate methods of controlling traffic approaching Lennox Bridge from the east to reduce the potential for vehicles damage the southern bridge parapet by hitting the existing island and become airborne.

7.19 Additional Investigation

Undertake additional investigation of potential settlement below Lennox Bridge as recommended in part 7.0/9 of the Structural Report of October 2007 by Hughes Trueman Pty Ltd

Commission a geotechnical engineer to undertake a detailed inspection of the upper slopes to the south of Mitchell's Pass and prepare a schedule of remedial works for the upper slopes and undertake the works.

Following cleaning of culverts and culvert intakes, prepare a schedule of remedial works.

7.20 Resources & Funding

Funding for general maintenance of the road surface, cleaning of culverts and drains, cleaning and maintenance of stonework etc. should be made available from Blue Mountains City Council.

Funding should also be set aside for periodic maintenance and monitoring including re-pointing of stonework to the bridge, monitoring of structural cracks etc.

Opportunities for funding assistance from external sources such as the Heritage Office, Department of Planning and the Australian Heritage Commission should be monitored. Where appropriate, applications should be made for funding under these programs for major conservation projects relating to the Mitchell's Pass Historic Precinct.

There are some other limited opportunities for funding assistance. These include:

N.S.W. Heritage Office

The NSW Heritage Office Incentives Program supports the community's identification, assessment, management, and interpretation of NSW heritage.

Funding is available for:

Site works and presentation projects.

Projects involving physical conservation works and the interpretation and presentation of individual heritage items.

Funding is only available for items which are protected by a statutory heritage listing such as a local council LEP or the State Heritage Register. This program usually operates in two-year cycles.

Commonwealth National Heritage Investment Initiative

The National Heritage Investment Initiative (NHII) is an Australian Government, \$10.5 million grants program that provides assistance to restore and conserve Australia's most important historic heritage places.

To be eligible for funding, a place must be entered on either the Australian Government's National Heritage List, or on a state or territory government statutory heritage register, at the time at which an application for funding is submitted.

Because the Mitchell's Pass Historic Precinct is of state significance, it might qualify for projects under this scheme.

7.21 Interpretation

7.21.1 Mitchell's Pass Historical Precinct

Interpretation of Mitchell's Pass Historical Precinct should include the following:

1. *Continued conservation of the significant fabric of the place*
2. *Continued use of the pass as a roadway between Blaxland and Emu Plains*
3. *Changing the name of Layton Avenue to Mitchell's Pass*
4. *Renewal of interpretive sign southwest of Lennox Bridge to provide accurate historical information and information about the 1832 bridle trail*
5. *Protection of the natural setting of Mitchell's Pass by restricting further development adjacent to the pass*
6. *Continued historic walks of the precinct highlighting significant site features*
7. *Information about the place on the Local History page of the Blue Mountains City Council website*
8. *Refix commemorative signs acknowledging the significance of the bridge*
9. *Maintain an archive of historical material relating to Lennox Bridge and Mitchell's Pass*
10. *Ensure local historical societies such as the Glenbrook and District Historical Society have access to the archive of historical material*
11. *Recognition of the precinct (as indicated in figure 49) by listing on the State Heritage Register*

Conservation of the significant fabric of a place is a key aspect of any interpretation. Other approaches to interpretation recommended relate to the continued use of roadway and bridge for its historic use and extending the name of Mitchell's Pass to the entire length of the original roadway.

The existing interpretive sign to the southwest of Lennox Bridge is not accurate in its information about the rebuilding of the bridge. A new sign with accurate information is recommended. The sign could also include additional information about the 1832 bridle trail and its importance as the original route of Mitchell's Pass prior to the completion of Lennox Bridge.

Historic walks allow the public to better appreciate the significance of the place. The attractive setting of the Mitchell's Pass Historic Precinct and the aesthetic qualities of Lennox Bridge provide good opportunities to develop a themed historic walk for the precinct.

Sufficient interpretive plaques have been erected in the past to allow for public interpretation of the significance of Lennox Bridge and Mitchell's Pass. Most of these have been removed and should be replaced to allow for future interpretation.

Maintaining an archive of material on the Mitchell's Pass Historic Precinct recognizes the significance of the place and allows for accurate material to be used in any new or future interpretive material. Retaining the material where it is publicly accessible is essential. This material can be used as a basis of information that could be published on Council's website or other appropriate places to the general public is aware of this important precinct.

7.21.2 Brookside Creek Quarry

Interpretation of Brookside Creek Quarry should include the following:

1. *Additional research to establish when this quarry was used and where the material from this quarry was used*
2. *Inclusion of the quarry in historic walks in the area*
3. *Maintaining an archive of information about this quarry in the Local Studies Collection of Blue Mountains Library.*
4. *Ensure local historical societies such as the Glenbrook and District Historical Society have access to the archive of historical material*

More research into the establishment of the Brookside Creek Quarry is desirable before developing interpretive material about the place.

The location of the quarry adjacent to the 1832 Bridle Trail provides a good opportunity to include the place in historic walks based on the Mitchell's Pass Historic Precinct.

Maintaining an archive of material on Brookside Creek Quarry recognizes the significance of the place and allows for accurate material to be used in any new or future interpretive material. Retaining the material where it is publicly accessible is essential. This material can be used as a basis of information that could be published on Council's website or other appropriate places to the general public is aware of this important precinct.

7.21.3 Surveyor's Mark

Interpretation of the surveyor's mark should include the following:

1. *Conservation of the surveyor's mark*
2. *Location and recording of the surveyor's mark using GPS coordinates*
3. *Further research of the original purpose of the surveyor's mark.*

Interpretation of the surveyor's mark should at a minimum include conservation of the mark. This should not any substantial intervention. The location of the mark should be recorded. Research on the original purpose of the mark should include investigation of the Crown Plan 2795.1507 which identifies Lot 299, Deposited Plan 751662 to determine whether the surveyor's mark is referenced on the plan. It could also include having a surveyor check the location of the mark against the northwestern corner of Lot 299, Deposited Plan 751662.

Because the surveyor's mark is in an area not easily accessed, it is not recommended that it be included in historical walks.

7.22 Statutory Protection

7.22.1 Zoning

Retain the zoning of Knapsack Reserve (that includes the Mitchell's Pass Historic Precinct, Brookside Creek Quarry and the surveyor's mark) as Recreation – Environment Protection under the Local Environmental Plan.

Future Local Environmental Plans should have a zoning that provides similar protection to that provided by the existing Recreation – Environment Protection

The current zoning of Knapsack Reserve where the Mitchell's Pass Historic Precinct, Brookside Creek Quarry and the surveyor's mark are located appropriate to its management. Future Local Environmental Plans are likely to be based on the Model Template provided by the Department of Planning and, as a result, will have other zonings. A zoning that is as close as possible to the existing Recreation – Environment Protection should be applied to Knapsack Reserve.

7.22.2 Statutory Heritage Listing

The Mitchell's Pass Historical Precinct, including the 1832 bridle trail, should be listed as a heritage item on the Heritage Schedule of the Local Environmental Plan.

The listing of Mitchell's Pass Historic Precinct, including the 1832 bridle trail on the Heritage Schedule of the Local Environmental Plan would reflect the significance of the precinct as a whole. The current listing recognizes only Lennox Bridge and the milestone without acknowledging the significance of the pass as a whole or the 1832 Bridle Trail.

The 1832 bridle trail, the Brookside Creek Quarry and the Surveyor's Mark should be listed as a heritage items on the Heritage Schedule of the Local Environmental Plan.

As well as listing the Mitchell's Pass Historic Precinct, the 1832 bridle trail should be individually listed on the Heritage Schedule of the Local Environmental Plan as recognition of its individual significance. The Brookside Creek Quarry and the Surveyor's Mark both warrant statutory listing as individual heritage items.

Nominate the Mitchell's Pass Historical Precinct for listing on the State Heritage Register.

The state significance of Mitchell's Pass Historic Precinct, as an historic precinct should be recognized by listing on the State Heritage Register. This does not need to replace the listing of Lennox Bridge which it is in itself of state significance.

Nominate the 1832 bridle trail for listing on the State Heritage Register.

As well as nominating the Mitchell's Pass Historic Precinct for listing on the State Heritage Register, the 1832 bridle trail should be individually listed on the State Heritage Register as recognition of its individual significance.

7.23 Documentation

Establish an archive of all historical documents relating to the Mitchell's Pass Historic Precinct. The archive should include:

- 1. Copies of all documents relating to the construction of the bridge*
- 2. Subsequent documentation relating to the condition of the bridge*
- 3. Copies of all drawing relating to the rebuilding of the bridge in the 1970s.*
- 4. Any other primary and secondary historical material relating to the Mitchell's Pass Historical Precinct.*

7.24 Policy for Adoption and Review of Conservation Policy.

7.24.1 Adoption of Conservation Policy

Adopt this Conservation Management Plan for the place to guide the operation and management of the place. Should this Conservation Management Plan not be adopted, revise this policy and adopt the revised policy before further works or activities are carried out at the place.

7.24.2 Review of Conservation Policy

The conservation policy should be reviewed after the first major works at the place and, in any event, at regular intervals of no more than ten years.

Ad hoc changes to the Conservation Management Plan are to be avoided. Any changes to policy are to be consistent with a complete revision of the Conservation Management Plan.

7.24.3 Distribution of Conservation Management Plan

This conservation management plan should be distributed to the following:

- *Council*
- *Library Local Studies Collection*
- *Glenbrook and District Historical Society*
- *Springwood Historical Society*
- *Blue Mountains Historical Society*
- *National Trust of Australia (N.S.W.)*
- *Any persons involved in the future management or maintenance of the Mitchell's Pass Historic Precinct, the Brookside Creek Quarry, the surveyor's mark and of Knapsack Reserve.*

8 Implementation Strategy

8.1 Mapping of Site Features

Accurately locate significant site features including culverts, retaining walls and drains using GPS coordinates.

8.2 Funding

Allocate funding for the following:

1. Establishment of a crack management database
2. Five yearly updating of cracks for the crack management database
3. Priority works as set out in 8.4 below

8.3 Crack Management Database

Establish a crack management database as recommended in the Structural Report by Hughes Trueman Pty Ltd. Ensure that the database is updated every five years.

8.4 Further Investigation

Clean out culverts and culvert inlets. Undertake further investigation of the condition of the culverts and prepare a schedule of remedial works for the culverts.

8.5 Priority Works

The following works should be given priority:

1. As recommended in the Report on Geotechnical Investigation of November 2007 by Douglas Partners Pty Ltd
 - a) Scaling or rock bolting of potentially unstable blocks and slabs
 - b) Removal of trees growing in rock fractures of the southern rock face of Mitchell's Pass
 - c) Underpinning of perched boulders above Mitchell's Pass
2. As recommended in the Structural Report of 15 October 2007 by Hughes Trueman Pty Ltd
 - a) Realigning the southern parapet of Lennox Bridge
 - b) Removal of iron and steel embedments in the north and south faces of Lennox Bridge
 - c) Repair the scour below the north end of the invert under Lennox Bridge
3. Other
 - a) Repair of post and rail fence on Lennox Bridge
 - b) Remedial works to the culverts identified as being priority works.

8.6 Future Works

Undertake the following works within five years:

- Re-point the stonework of Lennox Bridge using a traditional tools and a lime mortar.
- Subject to the results of crack monitoring, consider remedial bed reinforcement as recommended in part 9.0/13 of the Structural Report by Hughes Trueman Pty Ltd

Undertake the following works within ten years:

- Subject to results of crack monitoring, consider further stabilisation of the bearing rock beneath the site (eg by pressure injection) or tying back of the abutment walls (eg with remedial rock anchors).

8.7 Maintenance

Adopt the maintenance strategy in part 9.3 of this report.

8.8 Future Monitoring

Establish a program for future monitoring of cracks to Lennox Bridge and of the stability of the rockface

8.9 Action Plan and Costings

The following table sets out the actions recommended above and in the maintenance strategy at 9.3 of this report and provides an Opinion of Probable Costs for the recommended action. The Opinion of Probable Costs provided in this table should be treated as an opinion only. Actual costs can vary due to many factors such as the availability and standard of builder, final scope and specification of work, whether work is done in small packages, safety requirements, whether the roadway is to be kept open during works etc.

For maintenance and ongoing inspections, it will be necessary to factor inflation into the cyclical costs. Because the rate of future inflation is not known, the Opinion of Probable Costs for these items are opinions of current day costs.

Item	Priority	Opinion of Probable Costs (excl. GST)
Structural/Geotechnical		
Establish a cracking map database incorporating existing crack records and an accurate survey of the bulge in the west wall of the bridge	Six months	\$2,500
New barrier to traffic island on north side of western approach to bridge	Six months (and before repairs to south parapet)	\$5,000
Carefully lift and remove parapet stones on south parapet wall and re-bed in original alignment.	Six months	\$15,000
Remove iron and steel embedments in north and south face walls and point up where embedments have been removed.	Six months	\$5,000
Repair of scour below the north end of the invert under Lennox Bridge	One year	\$3,000
Stabilise southern rock face as recommended by Geotechnical Engineer including:	One year	\$40,000
• Remove unstable stone blocks and slabs • Rockbolt potentially unstable stone blocks and slabs • Carefully remove and poison trees growing in rock fractures • Underpin perched boulders • Construct rock catch fences at top of slope		
Preparation of schedule of remedial works for upper slopes by Geotechnical Engineer	One year	\$10,000

Item	Priority	Opinion of Probable Costs (excl. GST)
Undertake remedial works for upper slopes in accordance with Geotechnical Engineer's schedule	One to two years	Costs to be determined after preparation of schedule of works
General culvert repairs including: - Removal of tree roots and vegetation - Locate and salvage dislodged stones from embankments - Scour protection - Reconstruct head walls on new concrete footings	One year	\$100,000
Reconstruct retaining wall to Brookside Creek culvert	One year	\$50,000
Reconstruct inlet pits to original culverts where capping is missing.	Two years	\$20,000
Geotechnical investigation of foundation instability below north face on the western side of bridge.	Five years	\$7,000
Repoint stonework with lime mortar.	Five years	\$20,000
Prepare a schedule of repair works to sandstone culverts to address dislodged slabs, localised rockfall, erosion of joints, separation of joints, weathering of stone, settlement of stone.	When major roadworks such as resurfacing are undertaken.	Actual scope and costs of works cannot be determined until roadway is opened up.
Construct reinforced concrete protection slab over stone culverts, and separated from them, to alleviate wheel loads	When major roadworks such as resurfacing are undertaken.	\$100,000
Further stabilisation of bearing rock beneath Lennox Bridge or tying back of abutment walls	Ten years and dependent on results of crack monitoring.	Actual scope and costs of work cannot be determined at this stage.
Remedial bed reinforcement of bridge walls	10-20 years and dependent on results of crack monitoring.	Actual scope and costs of work cannot be determined at this stage.
Council Maintenance Works		
Accurately locate significant site features including culverts, retaining walls and drains on topographic map with GPS co-ordinates	Six months	Use Council staff
Reflective markers near culverts	Six months	Use Council staff
Remove saplings and small trees at base of rock cutting on south side of Mitchell's Pass	One year	\$10,000
Remove saplings and small trees in quarries	One year	\$5,000
Refix commemorative signs	Six months	\$2,000 (fix only)

Item	Priority	Opinion of Probable Costs (excl. GST)
Other Works		
Replace post and rail fence to Lennox Bridge	One year	\$10,000
Security cameras and monitoring system	One year	\$45,000 plus ongoing monitoring costs
New interpretive sign at Lennox Bridge	One year	\$2,500 to \$20,000 depending on level of input from interpretation consultant, graphic designer etc.
Alterations to traffic control on western approach to bridge	Two years	Costs depend on type of control method
Interpretive material on Council website including walking trail with historic information	One year	Use Council staff
Ongoing Maintenance		
Clean hand cut drains on south side of pass and culvert intakes	Three monthly	Use Council staff
Carefully remove vegetation from stonework to bridge by cut and poison methods.	Annually	\$1,000 per year
Update bridge crack database.	Five yearly	\$2,500 per inspection
Inspect sandstone culverts for damage.	Five yearly	\$3,000 per inspection

9 Management Guidelines

9.1 Management

Management of the Mitchell's Pass Historical Precinct and of the Brookside Creek Quarry should remain with Blue Mountains City Council. Management decisions should be made in consultation with the Glenbrook and District Historical Society, Springwood Historical Society, Blue Mountains Historical Society and the Blue Mountains Branch of the National Trust of Australia (N.S.W.)

9.2 Statutory Approvals

9.2.1 Blue Mountains City Council

Blue Mountains City Council is the consent authority for development at the Mitchell's Pass Historic Precinct, the Brookside Creek Quarry and the surveyor's mark. Development consent is not required for maintenance work such as cleaning of drains and culverts and monitoring of cracks. Under the present planning controls, the consent of Blue Mountains City Council is required for any alterations to Lennox Bridge and Mitchell's Pass. This includes structural rectification works. If the Brookside Creek Quarry and the surveyor's mark become statutory heritage items under a current or future planning instrument, the consent of Blue Mountains City Council will also be required for any alterations to these places.

9.2.2 Heritage Office

Listing of Mitchell's Pass Historic Precinct and the 1832 Bridle Trail on the State Heritage Register will create some additional controls on development at the place. Development such as structural and rectification work and geotechnical stabilisation would require approval of the Heritage Office under Section 60 of the Heritage Act.

The Heritage Act allows a number of standard exemptions to Section 57(1) of the Act. These are set out in the Heritage Office publication *Standard Exemptions for Works Requiring Heritage Office Approval*. This publication is available on-line at http://www.heritage.nsw.gov.au/docs/info_standardexemptions2006.pdf

It should be noted that to gain this exemption, the party proposing to carry out the work must write to the Director-General and describe the development proposed. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 1, the Director-General shall notify the applicant.

9.3 Maintenance Strategy

In addition to existing road and bushcare maintenance undertaken by Council and/or local bushcare groups, the following maintenance strategy should be adopted:

Fortnightly

Check for graffiti and remove immediately

Three Monthly

Hand clean table drain and culvert intakes on the south side of Mitchell's Pass

Five Yearly

Update records of cracks in crack management database. Analyse database to determine whether any changes have occurred that need attention.

Inspect culverts and associated retaining walls to ascertain whether remedial works are necessary.

Arrange geotechnical inspection of rock face to monitor condition of stone.

9.4 Exemptions

In addition to standard exemptions allowed under the Heritage Act the following exemptions should also be included:

4. Removal of graffiti by methods allowed in this plan.
5. Re-pointing of stonework with lime mortar
6. Stabilisation of rock faces as recommended in the Report on Geotechnical Investigation by Douglas Partners Pty Ltd
7. Rebuilding of retaining walls on the north side of Mitchell's Pass on new footings providing that existing stonework is rebuilt in its original location and configuration.
8. Rebuilding of the retaining wall adjacent to the western arm of the 1832 bridle trail.