HISTORICAL ARCHAEOLOGICAL SURVEY OF LINDEN 

WATER PUMPING STATION 274 AND ACCESS ROUTES

by

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Report to The Metropolitan Water Sewerage and
Drainage Board of New South Wales

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1 SUMMARY OF REPORT

This report deals with the historical archaeological survey of Linden 'B' water pumping station 274 and access routes to it.

The area of the survey is on the eastern side of the Great Western Highway about halfway between Woodford and Linden. The water pumping station is located at grid reference 65275 67675 on CMA Katoomba 1:25,000 series.

During the survey remains of the Old Bathurst Road were found and planned.

Historical research shows that the road was built in 1814 and went out of use circa 1840.

The archaeological evidence includes remains of the original road and indications of changes made during the road's use. The condition of the remains is generally stable.

Assessment of the cultural significance of the remains shows that they are of considerable importance.

Recommendations are made in the light of these findings concerning three issues:

1. The location of the trench for the earthing cable required to earth the electricity supply to the pumping station (3 recommendations).

2. The immediate protection of the kerbs of the Old Bathurst Road where they cross the modern unmade road that is still in use (2 recommendations).

3. The siting of the new access road to the water pumping station (3 recommendations).

The report includes 6 photographs of the remains of the Old Bathurst Road within the survey area, and 4 maps.
2 INTRODUCTION

This report deals with the archaeological survey of, and historical research into, the environs of Linden 'B' Water Pumping Station 274 and access routes to it.

2.1 Location:
Linden 'B' WPS 274 is 100 metres east of the overhead bridge which carries the Great Western Highway over the main western railway approximately half way between Woodford and Linden. It is 126 metres north of Woodford trig station.

Two possible access routes to the pumping station were included in the survey. One is the modern unmade road which runs north from Taylor Road, Woodford, passes immediately to the east of the trig and the pumping station, and joins the Great Western Highway 320 metres north of the overhead bridge. The second is the area west of the pumping station between the station and Railway Parade, Woodford, which runs south off the highway at the overhead bridge.

2.2 Consultant's Brief:
The consultant was asked to address two issues:-

1. The effect that any upgrading of the unmade road, south from the highway to the pumping station site, would have on any historical remains present and what options were available to provide access to the pumping station.

2. To recommend the most suitable siting of the 500 metre long trench required for the earthing of the electricity supply to the pumping station.

Both these questions were also considered by the consultant pre-historic archaeologist, Anne Ross.*

2.3 Work undertaken:
An initial survey and assessment of the area was completed on 26 September 1983, in order to determine whether there were any historic remains; and if so, what they were. The area 20 to 30 metres either side of the
modern unmade road, from its junction with the Great Western Highway to the boundary of lots 2 & 7, was surveyed for historic remains. *Remains of the Old Bathurst Road were found along the whole length of the area surveyed.

During the following week research was begun aimed at determining when the road was built and when it went out of use. On 2 October 1983 an on-site meeting took place between the consultant, representatives of the MWS&DB and the Prospect County Council, and the Pre-historic Archaeological consultant to determine the most suitable site for the earthing trench. The proposal decided upon by the meeting was set out in a plan & specifications prepared by the consultant and delivered to the MWS&DB on 12 October 1983. On 4 October the consultant also mapped the remains of the Old Bathurst Road to facilitate further assessment and planning. An alternative access route from the pumping station west to Railway Parade was also surveyed. The historical research was then completed.

3 HISTORICAL EVIDENCE

The Old Bathurst Road is a central piece of evidence in understanding the White settlement of Australia. The building of the road marked a turning point in the development and expansion of the colony at Sydney. It provided access to new resources which enabled the colony to develop its potential more fully and establish a firm economic base.

3.1 Exploration:

The route of the road over the Blue Mountains was determined by the line of march of Blaxland, Lawson and Wentworth in May 1813. Having made their initial ascent to Springwood through dense bush they followed the crest of the ridge, keeping to where the scrub was thinnest and allowing them and their pack horses to make good progress.
When Assistant-Surveyor George Evans led the party that first crossed the Blue Mountains late in 1813, he followed the track blazed by the earlier party and surveyed the whole route on his return journey. *

3.2 The building of the road:

The original road over the mountains to Bathurst was made in the 6 months between July 1814 and January 1815. Governor Macquarie appointed Lieutenant William Cox as superintendent of the work with instructions to open a road 12 feet wide along the route surveyed by Evans.

Cox's party consisted of 40 men, 20 of whom were the convict labourers who actually built the road. Following the normal practice of the time, in which Cox had had considerable experience, he did not form a road in the modern sense but set out to clear, define and drain a trafficable route. The journal kept by Cox makes clear the method he adopted. His guide was sent ahead to check the route. The convict work party followed, clearing the track of vegetation, boulders and outcrops of stone. The road was then graded and any necessary gutters, culverts and bridges were built.

Cox followed the route surveyed by Evans fairly closely and marked his progress on a copy of Evans' survey. * The explorers had followed the top of the ridge exactly in order to find the easiest path. By scouting ahead and planning the route Cox was able to eliminate some unnecessary bends and steep gradients by clearing bush that had been too thick for the explorers to penetrate.

Part of Cox's gang made the road between Linden and Woodford early in September 1814, while the rest completed Bluff Bridge, near where Linden railway station now stands. Cox described this part of the road in his journal entry for 12 September:

> From the bridge it continues rocky over two or three small passes to Caley's pile; from thence at least two miles further, the mountain is nearly a solid rock. At places high broken rocks; at others, is very hanging and shelving, which makes

* See Map 9.3

Cox's notations are on the left
it impossible to make a level good road. The more the road is used the better it will be. *

3.3 Caley's Pile:

'Caley's pile' referred to by Cox was a pile of stones near the line of the road north of the survey area. It was first recorded by Blaxland on 18 May 1813. Evans also noted the existence of this pile of stones and marked its location on his survey. * Governor Macquarie named the pile 'Caley's Repulse' during his first journey along the road on 27 April 1815. Macquarie assumed it had been built by the botanist George Caley to mark the western extent of his explorations. There is, however, no direct evidence that Caley did construct the pile of stones, or that it was even built by Europeans.

There has been some debate about the location of the original pile of stones, and about whether the identification of the pile made by the Royal Australian Historical Society in 1912 is correct. * The survey by Evans in 1814 shows the pile north of the survey area. However, the tracing by Govett in 1832 shows it just south of Woodford trig station within the survey area. *

No evidence of the pile was found during the survey and it is assumed that the earlier location on an original survey is more reliable than the later tracing.

3.4 Later history:

Governor Macquarie and his party were the first to make official use of the road, in April 1815. The account of their journey, published in the Gazette, includes this description of the survey area:

Here the Country became altogether mountainous, and extremely rugged - near to the 18th Mile Mark, a pile of stones attracted attention; it is close to the line of road, on the top of a rugged and abrupt ascent, and is supposed to have been placed there by Mr Caley, as the extreme limit of his tour.... from hence, forward to the 26th Mile, is a succession of steep and rugged hills, some of which are almost so abrupt as to deny a passage altogether. *
On 9 April 1817 the botanist Allan Cunningham travelled along that part of the road within the survey area. In his journal he described the area as:

Open and extremely bleak and barren.... The country is now very rugged and mountainous, and the road difficult.... This is justly considered the most rugged and oppressive stage of the whole journey to Bathurst on account of the sandstone rocks on which the road is formed. The Government carters, who frequently travel to the settlement at the plains, generally pursue a small circuitous route in the bush to avoid the joltings of the increased descents, particularly at a spot called the "Twenty Mile Hollow".

This description makes it clear that within 2 years of the road being built secondary routes, minor deviations from the original route, were already in use. Minor changes of route like this are common for unmade roads, and occur at places where the primary route is particularly difficult, is worn or damaged, is affected by water or is congested.

In November 1819 three members of the French expedition circumnavigating the world, led by Louis de Freycinet, visited Bathurst. They described this part of the road in their journal:

Soon we saw the ground change and the road, although still well kept, became rather less easy on account of the inequality of the ground. The masses of sandstone show bare here almost everywhere; the vegetation is poor; and at the bottom of great valleys right and left, tower these vertical and natural walls of rock.

In 1821, Macquarie, returning from Bathurst on his last tour of inspection, referred to improvements that had been recently made to small parts of the road in this area by Lt Lawson.

In January 1823 Assistant-surveyor James McBrien began the first survey of the line of the Old Bathurst Road. His survey shows the deviations made by Cox from the explorers' route surveyed by Evans. The line of road shown is the same as that shown on the trace made by Govett in 1832, which is at the same scale as the Evans survey; this allows direct comparison.
Within the survey area, a comparison of the two maps shows no variation in the route. Immediately to the north, Evans' map shows a very marked loop in the track (with the notation "hill"), whereas Govett's map shows the road eliminating this loop. To the south of the survey area, the steep hill south of Woodford trig station is shown on Evans' map with the track going up and over the it; on Govett's map the road is shown as skirting this hill to the west.

Early in 1824 members of another French expedition crossed the mountains. One of them, Pierre Lesson, described this part of the road in his account of their journey under the date of 1 February:

The road is no longer good. Four miles beyond Spring Wood especially, it becomes rough, rocky, and at times very difficult. It has been necessary to cut it through rocks, and sometimes to fill the hollow of the gullies. The mountains, covered thus far with vegetation growing with youth and vigour, grow bare, the rock juts out, and bare blocks predominate. ... The road is often made of the sandstone itself, and so it is slippery and difficult for horses and vehicles.... The road indeed makes many detours here, following the summit or crest of the branches of the first ridge or passing over the principal mountains, which are very high.

The trace of the Old Bathurst Road dated 23 August 1832 by William Govett has a Dept of Lands road map reference, and therefore may have been prepared to plan changes in the route of the road in this area. Convict road gangs worked improving parts of the road in this area throughout the late 1820s and the 1830s.

These changes in the road and the contrast between the old and the new sections were described by Louisa Meredith in late 1839:

The main portion of the road is bad beyond an English comprehension; sometimes it consists of natural step-like rocks protruding from the dust or stone, two or three feet above each other, in huge slabs the width of the track, and over these "jumpers", as they are pleasantly termed, we had to jolt and bump along as we best might.... The track we were now traversing usually winds terrace-wise along the side of a steep mountain, and is barely wide enough anywhere to allow of two vehicles passing each other.
The Old Bathurst Road within the survey area probably went out of use circa 1840. A more precise date could only be determined by more detailed research.

The descriptions above give a remarkably vivid and consistent impression of that part of the Old Bathurst Road included in the survey area and correspond remarkably with the archaeological evidence discussed below.

4 ARCHAEOLOGICAL EVIDENCE

The archaeological evidence for the Old Bathurst Road in the survey area is the kerb lines cut into the exposed sandstone bedrock. By plotting these on a map and referring to the topography it is possible to extrapolate the location of the Road.

4.1 The Road:

In all, 14 sections of curb were located during the survey. They vary considerably in length and depth of the cutting, depending on the terrain. The kerb lines are not continuous, and appear to normally mark one side of the road only. All the cuts appear to have been originally vertical and all have a uniform weathered appearance. The stone cutting which defines the road is completely consistent in form and appearance throughout the survey area, and is therefore considered to have been done at the same time. In the light of Cox's description and of that by Cunningham (written before any references to further work on the road) these cuttings probably date from 1814. In two places a shallow gutter approximately 300mm (1 foot) wide had also been cut into the bedrock at the base of the kerb. The fact that the road is actually formed from bedrock accords well with the historical descriptions, especially those of Cox, Cunningham and Lesson.

In one section of the road a kerb is visible on both sides, and the original road surface is exposed. This
section is approximately 25 metres long and is west of the trig station, near the southern end of the survey area.* At this point the road is 6.6 metres (20 feet) wide. The bedrock road surface is convex to assist drainage and there is a gutter cut to direct water away from the road surface at the northern end of the western kerb.* At this point the road runs across the edge of a bedrock outcrop, this is the type of uneven-ness, and the cause of the bumping and jolting referred to in all the descriptions quoted above. At its narrowest point the road is approximately 4 metres (12 feet) wide.

The line of Old Bathurst Road located within the survey area follows as nearly as can be determined the maps of the road made in 1823 and 1832.* This section of the road also corresponds with the route shown on Evans' survey of 1814.* The archaeological evidence, when considered in conjunction with the consistent historical evidence, leaves no doubt that the remains found are of the road constructed in 1814.

4.2 Condition:

The remains of the Old Bathurst Road in the survey area are generally stable, with the exception of a small area immediately north-west of the trig station, which is badly weathered.* Most of the kerbs and gutters are cut into bedrock and do not appear to be weathering quickly. However, there have been a number of specific actions which have irreparably damaged the remains.

1. The installation of the water main in its 2 metre wide trench cuts across the line of the road in four places within the survey area. All evidence of the road in these four areas has been destroyed.*

2. An electricity pole installed in September 1983 in the southern part of the survey area was placed right on the line of the kerb cutting. The kerb has been destroyed at this point and the line of kerb interrupted.*

3. The recent use of the modern unmade road, which is close to, and in places crosses the line of, the Old Bathurst Road, has caused a part of the kerb to be broken
off.* While use of the road continues, sections of kerb which cross the modern road should be protected.

4.3 Secondary Routes:

There is a large flat area of exposed bedrock in the south-western part of the survey area. This area has been used at some time as a secondary road route. The western kerb of the road has been worn down at this point by traffic crossing it.* This secondary route clearly represents a modification of the Old Bathurst Road during the period of its use, and is therefore of similar significance to the primary route.

The two modern unmade roads, and the present Great Western Highway, may have originated as secondary routes to the Old Bathurst Road. This is certainly true of the unmade road which is close to the line of the Old Bathurst Road, on the top of the ridge, and which deviates around the eastern side of the trig station.* The other unmade road (which is incorrectly labelled 'Old Bathurst Road' on CMA maps) runs parallel to the old road on the eastern side of the route. The present highway parallels the old road on the western side of the ridge.* Only a more detailed study, largely outside the area of the survey, would determine if these routes were contemporary with the Old Bathurst Road.

That part of the modern unmade road which runs straight over the hill on which the trig station is located, and passes immediately east of the trig, follows the line of the water main and is probably directly related to its installation. It is definitely not a secondary route.*

4.4 Other Evidence:

During the course of the survey two pieces of archaeological evidence were found which probably do not relate to the Old Bathurst Road.

1. A cutting 2 metres long in a rock face near the northern end of the survey area.* The cutting was made with drills and their marks are still visible. There are no visible drill marks on the kerb lines of the old road,
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and this cutting does not line up with the kerbs and is not directly connected to the road.

2. A group of metal hooks set into bedrock east of the overhead bridge.* They are not directly connected with the old road and may well relate to construction of the bridge or the railway.

* See Map 9.1
5 STATEMENT OF SIGNIFICANCE

In accordance with the provisions and definitions of the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter) the following statement of the cultural significance of the remains of the Old Bathurst Road within the survey area has been prepared, in the light of the evidence discussed above.

5.1 Technical or creative achievement:

The Old Bathurst Road represents a major physical, technological and engineering achievement, considering the conditions under which it was built.*

* 3.2

The remains exhibit some fine details of workmanship, considering the nature and method of construction.*

* 8.2 & 8.5

5.2 Contribution to understanding:

The remains illustrate the difficulties and limitations under which the early white colonists worked.

They contribute to an understanding of the process of exploration and development, and of early colonial road building and road use.*

* 3.1, 3.2 & 3.4

5.3 Historic associations:

The road is tangible evidence of a crucial point in the development of the colony at Sydney.

It is central to an understanding of the expansion of white settlement into western NSW. It preceded and made possible all the settlement on the mountains and beyond.*

* 3.1 & 3.2

The road has strong associations with William Cox and Governor Macquarie. It is an important expression of Macquarie’s visionary policies.*

* 3.1, 3.2 & 3.4

5.4 Landscape and setting:

The remains of the road document the minimal impact of early road-building on the environment.*

* 8.4
They are the central feature of the ridge-top landscape. They relate historically, physically and visually to the undisturbed landscape to the east, and the various later transport and settlement developments to the west.*

These remains are one of a series that survive across the mountains. The significance of each is enhanced by the others and the significance of all would be diminished if any were destroyed.

6 RECOMMENDATIONS

It is clear from the foregoing that the remains of the Old Bathurst Road within the survey area are of considerable cultural significance, and should therefore be conserved. All efforts should be made to preserve the existing fabric and all uses to which the place is put should be compatible with the remains and designed to have the minimum impact on the existing fabric. The following recommendations are made with these considerations in mind.

6.1 Prospect County Council earthing cable trench:

The recommendations concerning the location of the trench required for the 500 metre long earthing cable are in accordance with the decisions of the on-site meeting of 4 October 1983 and the plan and specifications already prepared.*

1. The earthing cable should be insulated and buried within the trench previously dug for the water main, until it reaches a point 50 metres north of the north-eastern corner of the water pumping station. At this point it will have passed across the line of the Old Bathurst Road through the area previously destroyed by digging the trench for the water main.

2. A new trench may then be dug in an easterly direction, approximately at right angles to the line of the water main.

3. The trench may continue anywhere in the area east of the old road provided it does not return to within 10
metres of the modern unmade road.

6.2 Immediate protection of kerbs:

While the modern unmade road that runs close to the line of the Old Bathurst Road continues to be used any kerb lines that cross the line of the modern road* will need to be protected to prevent further damage. Therefore, the following recommendations are made:

1. A line of sandbags should be placed along the line of these kerbs and then other bags should be placed over these and the kerb, at right angles to the line of the kerb to distribute the weight of vehicles passing across the kerb.

2. The area of spoil from the excavations made to connect the water main with the pumping station, which was spread over the area east of the station, should not be removed. It was spread there by the workmen to protect the kerb line and it will continue to do so before slowly weathering away.

6.3 Access road for water pumping station:

It is clear that the modern unmade road currently being used to provide access to the station cannot continue to be used. It is unsuitable and its use has caused damage to the remains. The remains must be protected and adequate access provided to the pumping station.

One possible option would be to form the new road by burying both the existing unmade road and the Old Bathurst Road, with the new road going over them. While protecting the old road, this solution is not compatible with its significance because it would cease to be visible. This would also be expensive.

Another solution would be to build a new road parallel to the unmade road and the Old Bathurst Road. This would have a considerable negative impact on the place and an indirect impact on the remains. It might also destroy historically important secondary routes of the old road. This solution would also be expensive.
A third option would be to build an access road to the pumping station from Railway Parade. There are no historic remains along this route.* It would minimise the impact of the new road on the place and the remains of the old road. It would also be the cheapest and most direct route (approximately 40 metres as against 340 metres for the other options). This is the only solution compatible with the significance of the place. Therefore the following recommendations are made:
1. The new access road be constructed between Railway Parade and the water pumping station.
2. This road must not extend further east than the eastern wall of the pumping station. Any turning or parking areas required should be on the northern or western sides of the pumping station.
3. When detailed plans for this road are prepared an historical archaeologist should be consulted.

If work in the area changes in any way from that currently proposed a Prehistoric Archaeologist and an Historical Archaeologist should be consulted. This report, and that by Anne Ross, should be taken into consideration before any further work is planned.
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Survey of route over the Blue Mountains
Scale 40 chains - 1 inch

1814
Untitled
Survey of route over the Blue Mountains with notations by William Cox
Scale 40 chains - 1 inch

W R Govett
1832
Trace of Blue Mountains Road and Range from Springwood to Pembroke's Hut
Scale 40 chains - 1 inch

J McBrien
1823
Line of road from Government Wharf at Emu Plains towards Bathurst
Scale 1 mile - 1 inch
8.1 Kerb line of Old Bathurst Road
Looking north 26.9.1983

* See Map 9.1

This photograph shows the longest single section of kerb, located in the northern part of the survey area.* The kerb line can be seen in the bottom left-hand corner and followed until it is covered by soil at centre right and re-emerges (curving to the left) to disappear into the scrub at centre top. At bottom left there is a section of gutter.* The bedrock surface of the road is on the right and track marks from a bulldozer are visible in the lower right hand corner. The kerb line is crossed here by the modern unmade road (curving to the right) and the wearing down of the kerb is clearly visible in the centre of the photo. The broken piece of kerb is at centre top but is indistinguishable in this photo.*

* See Photo 8.2

* See Photo 8.3
8.2 Gutter of Old Bathurst Road

Looking south scale 1 metre long 26.9.83

The photo shows a section of the gutter cut into bedrock at the base of the kerb line. This section is at the southern end of the longest kerb line visible in the survey area.* The kerb line is clearly visible running from the top to the bottom through the centre of the photo, with the gutter cut on its left, and the bedrock road surface further to the left. The gutter is approximately 300 mm (12 inches) wide.*

*See Map 9.1

* See also Photo 8.5
8.3 Broken section of kerb

Looking south   scale 1 metre long   26.9.83

The photo shows the piece of kerb that has been broken by vehicles using the modern unmade road to gain access to the water pumping site during September 1983.* This break is about halfway along the longest visible piece of kerb in the survey area.* The kerb line runs top to bottom and the broken piece is clearly visible in the centre of the photo. Tyre impressions are visible in the upper half of the photo, as is an area of kerb broken previously.

* See 4.2

* see Map 9.1
8.4 Section of the Old Bathurst Road with kerb on both sides
Looking south  Scale 1 metre long  4.10.83

The photograph shows the section of the road with kerb on both sides and the bedrock road surface exposed, near the southern end of the survey area.* On the right the kerb is clearly visible running from the edge of the photo towards the centre. On the left the kerb is marked by the scale, and runs from the edge towards the centre. The unevenness of the bedrock road surface referred to in the historical descriptions is evident.*

* See Map 9.1

* See 3.2 & 3.4
8.5 Gutter of Old Bathurst Road

Looking south  Scale 1 metre long  4.10.83

This photograph shows a gutter cut through the kerb line to direct water away from the road surface. This gutter is at the northern end of the western kerb of the section of the road with a kerb on both sides, in the southern part of the survey area. The gutter is approximately 300 mm (12 inches) wide and is cut at a section where the bedrock slopes considerably. The kerb line runs top to bottom, and the gutter is cut through it and runs off to the right. At the top of the photo the kerb can be seen to be worn down, indicating the secondary route of the road.*

* See Map 9.1

* See 4.3
8.6 Weathered and damaged kerb of the Old Bathurst Road

Looking south  Scale 1 metre long  4.10.83

The photograph shows the electricity pole installed in September 1983 which destroyed part of the kerb line, in the southern part of the survey area.* The kerb line can be seen as a shallow impression on the left side at the bottom of the photo, and it runs to the electricity pole. The scale stands against the part of the kerb that is weathering dramatically. This is the only unstable part of the remains found within the survey area.*

* See Map 9.1

* See 4.2
PLAN of remains of old Bathurst road

HISTORICAL ARCHAEOLOGICAL SURVEY OF LINDEN 'B'
W.P.S. 274 & ACCESS, FOR M.W.S.&D.B.
PLAN of location of proposed P.C.C. earthing trench

HISTORICAL ARCHAEOLOGICAL SURVEY OF LINDEN 'B' W.P.S. 274 & ACCESS, FOR M.W.S.&D.B.

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