Bill Jordan and Associates

GNR, PYES CREEK BRIDGE

ENGINEERING ASSESSMENT OF REMAINS

REPORT PREPARED FOR
HORNSBY SHIRE COUNCIL

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1 INTRODUCTION

1.1 The Brief

Following an enquiry from Mrs Robyn Cox of Hornsby Shire Council, the submission of a fees proposal and the receipt of Purchase order number 73271 from Hornsby Shire Council, Bill Jordan assessed the remains of the abutments at Pyes Creek, off Woodlark Place, Castle Hill, on 29 September 2011 in the company of Mrs Cox.

1.2 Background

The stone abutments which were once part of a bridge over Pyes Creek are thought to have been part of the "New Line" section of the Great North Road (GNR), constructed by convict labour from 1828. However, there has been conjecture as to whether the structure is part of that work or is of a later date. The precinct sheet from the Conservation Management Plan (CMP) for the GNR (see Appendix A) states "More research, particularly of historic plans for subdivision and road realignments, is required."

2 THE ASSESSMENT

2.1 Description

The CMP precinct sheet gives an adequate description of the remaining structure:

> A small masonry single span bridge. The span is about 3 m and in plan the bridge is skewed across the creek-line. The abutments are of dry-laid, split and roughly squared rubble, with intermittent, uneven, and unlevel coursing. In some cases smaller stones are packed into the interstices of the joints between the larger blocks.
>
> It conforms with Karskens' type 2a masonry. The abutments show gaps for the placement of timber piles which would have supported the sills and stringers for the bridge deck.

The southern abutment is seen on the front cover and again in Figure 1.

Figure 1: Southern abutment with arrows showing the post locations.

The smaller stones packed into the interstices reflect dry-stone walling techniques which have also been found elsewhere on the Road and possibly reflect the particular skills and experience of some of the members of the construction gang engaged on the work.

The quality of the stonework is of much lesser standard than that seen in bridges further north on the Road, such as Thomas James Bridge just north of the Hawkesbury River and Clares Bridge, north of that. This probably reflects the skills of the gangs engaged in the work, as a similar standard is found elsewhere, but it could also indicate another origin for the structure.

The northern abutment is not as intact, with many stones having collapsed into the creek, where some can be seen to have washed downstream as seen in Figure 2.

Figure 2: The base of the abutment is on the right of the photograph with some of the displaced stone seen lying in the water in the centre and left of the photograph.

2.2 Deterioration mechanisms

The principal cause of deterioration in both abutments is plant growth, with a tree in the northern abutment having displaced most of the stonework seen in the creek bed.

Figure 3: Tree in northern abutment has displaced a large amount of stone from the abutment. This tree is the highest priority for removal if the stonework is to be conserved.

There are also trees in the southern abutment area which, whilst they have not displaced a significant amount of stone to date, will be more damaging as they grow.

Shrubs and other smaller plants also are becoming large enough to have the potential for causing damage and some of these can be seen in Figure 1. There plants also make interpretation of the works difficult for both the public and conservators.

3 RECOMMENDED ACTION

3.1 Further investigation

As noted above, it is not certain that the bridge did form part of the Great North Road, although it is likely to have been part of it as no alternative crossing of Pyes Creek has been identified on the route of the New Line nearby. However, there is also the possibility of the bridge having formed part of a property access following subdivision later in the 19th century.

Further investigations are needed to establish the significance of the works. If they can be established as definitely being part of the Great North Road, then the road heritage listings at various levels may make more funding available for conservation.

An archaeologist working with a historian should be able to find more on the origins of the bridge. In this regard I understand that Council may have a historian/archivist working at the Hornsby library who may be able to obtain and collate the various historical documentation such as land titles and subdivision records. There documents would form the basis of an archaeological investigation and may be adequate without having to undertake significant field investigation.

3.2 Control of vegetation

The first priority for structural conservation is to remove the damaging vegetation. As well as the tree which has damaged the northern abutment, there are trees in the southern abutment embankment which have either started to cause damage or are likely to do so in the near future.

Figure 4: Trees indicated in southern abutment should be removed along with any other woody plants near the stonework.

3.3 Stonework conservation

Apart from plant growth removal to prevent further damage, it would be possible to recover displaced stones in preparation for their replacement in the structure. This should only be done, however, if their security can be guaranteed, as a pile of stone on dry land would be more vulnerable to theft; they seem to be reasonably safe in the creek bed because of their size and location.

3.4 Future work

Whether the abutments form part of the GNR, or not, they would have significant heritage significance within Hornsby Shire and probably at a State level in being representative of 19th century development. Their conservation and interpretation are therefore warranted and could give benefits to the community,.

There is some road formation remaining for a reasonable distance on the northern side which could be utilised for a walking track through the bushland. It would be possible to partially incorporate the abutments in a new

pedestrian bridge, without any detrimental effect, and such a bridge could give access to a bush track and to a bridge interpretation facility.

Whatever is done needs to be carried out in accordance with an approved Conservation Management Plan. The existing GNR CMP is very general and the update presently being written is not likely to be any more specific for this site. A specific CMP needs to be written for the structure: this document would incorporate any historical and archaeological research carried out, together with any plans to develop bushland tracks and a suitable crossing of the creek.

4 RECOMMENDATIONS

I recommend as follows:

i. historical and archaeological research be commissioned to establish the origins and significance of the bridge;

ii. all plant growth that poses a structural threat be removed;

iii. a Conservation Management Plan be commissioned for the structure and its surrounding area which could incorporate any proposals for bushland access and interpretation.

Please let me know if I can be of further assistance.

J.W. Jordan FIEAust CPEng
NPER Structural & Conservation

APPENDIX A

Extract from Great North Road Conservation Management Plan

PRECINCT DESCRIPTION **SHEET**

NAME Pye's Creek , Bridge , Quarry , Road Formation

PRECINCT NO. **2.6.0**

Location Woodlark Place , Cherrybrook

AMG Co Ord 56 E 317500 N 6266500

Topo Map 9130 - 4 - S Hornsby

Section No. **2**

Section Abbotsford to Dural

Item Type (SHI) Built Sub Type Road Bridge Current Use Reserve / Open Space

Owner / Manager Public (Hornsby) LGA Hornsby Existing Heritage Listings National Trust Hornsby

HISTORICAL NOTES Construction Date 1831 ? Level of Documentation More research desirable

This section of the Great North Road was part of the "New Line" Road planned and marked out by Surveyor-General T L Mitchell in 1828. The Road Gang reports indicate that two gangs were stationed on the 'new road' to Dural in 1830. They were No.34 Road Party (March 1830) and a Bridge Party (January to March 1830). Most of the work to build the road was completed by 1831.

The 1832 NSW Calendar and Directory mentions a bridge at 17 miles from Sydney which might refer to this location. An additional section of early road (Precinct 2.7.0) was located at Dural in 1996.

As a result, anecdotal evidence was provided to this consultant team that the Pye's Creek relics may be of a later date, however, no substantive evidence has been provided in support of this conclusion.

More research, particularly of historic plans for subdivision and road realignments, is required.

PRECINT DESCRIPTION Associated Items

A small masonry single span bridge. The span is about 3m and in plan the bridge is skewed across the creek-line. The abutments are of dry-laid, split and roughly squared rubble, with intermittent, uneven, and unlevel coursing. In some cases smaller stones are packed into the interstices of the joints between the larger blocks.

It conforms with Karskens' type 2a masonry. The abutments show gaps for the placement of timber piles which would have supported the sills and stringers for the bridge deck. The bridge approaches appear to have had a pavement of ironstone gravel such as is found on other early road precincts.

North of the bridge there is an intact section of road formation about 6.4 m wide which extends for nearly 40 m. 15 m north of the bridge there is also a small quarry, cut at two levels, which has evidence of round jumper-bar marks and some unused cut stone blocks present above the quarried face.

STATEMENT OF SIGNIFICANCE

The three components present at this Precinct provide interesting evidence of interrelated aspects of road construction. It appears likely that these relics relate to the New Line road, as they are similar in form and scale to other early Colonial roadworks. One of only a handful of precincts of the new north road line identified within the metropolitan area.

Level of Significance
High

Nature of Significance
Historic
Associative / Interpretative
Archaeological

Condition and Integrity

Substantially intact.
But overgrown with construction features obscured.

Threats

Interpretation Absent

Comments Interpretation Desirable.

Recommended Action for Conservation/Management

There has been a significant deterioration in this structure since it was first viewed by Lavelle in 1985. This appears to relate to inadequate measures to control peak stormwater flow which has scoured away sections of the bridge abutments.

References

National Trust Listing Card, 1985.

W Thorp personal communication to Dr G Karskens.