HISTORICAL AND ARCHAEOLOGICAL ASSESSMENT OF THE BRICK CULVERT, LADY MACQUARIE'S ROAD, ROYAL BOTANIC GARDENS, SYDNEY, N.S.W.
HISTORICAL AND ARCHAEOLOGICAL ASSESSMENT
OF THE
BRICK CULVERT,
LADY MACQUARIE'S ROAD,
ROYAL BOTANIC GARDENS,
SYDNEY, N.S.W.

E Higginbotham
Consultant Archaeological Services
www.higginbotham.com.au

Dr. Edward Higginbotham.
Edward Higginbotham & Associates Pty Ltd.
Phone: +612 9716 5154.
Fax: +612 9716 8547.

For
The Royal Botanic Gardens, Sydney.

April 1992
Brick culvert, Lady Macquarie’s Road, Royal Botanic Gardens, Sydney, N.S.W.

CONTENTS.

ACKNOWLEDGMENTS ................................................................. iii

1. INTRODUCTION ...................................................................... 1

2. HISTORICAL BACKGROUND ................................................... 2

3. DESCRIPTION OF THE CULVERT ........................................... 3
   3.1. Related items in the Domain and Royal Botanic Gardens ........ 3
   3.2. Description of the culvert .................................................. 3
   3.3. Comparative examples of brickwork in culverts and drains ....... 5
   3.4. Photographic record of the culvert, 1992 .............................. 6

4. CULTURAL SIGNIFICANCE ..................................................... 8

5. RECOMMENDATIONS .......................................................... 10
ACKNOWLEDGMENTS.

The author would like to thank

**Project management**: Alan Tillsley, Supervisor Gardens, Services and Domain, Royal Botanic Gardens.

**Assistance in library and archival research**: Ms. Anna Hallett, Library, Royal Botanic Gardens. The staff of the Archives Office of New South Wales.
1. INTRODUCTION.

This report was commissioned by the Royal Botanic Gardens, Sydney, on 19 March 1992. Its purpose was to assess the cultural significance of the brick culvert carrying Lady Macquarie's Drive across the creek within the Gardens (Figure 1.1, below).

The report was prompted by the concern of the Royal Botanic Gardens for the condition of this historic structure, which is now in need of urgent repair.
2. HISTORICAL BACKGROUND.

The double brick culvert carries Lady Macquarie’s Road across the creek in the Royal Botanic Gardens. This road was commenced in 1813, and was completed three years later, on 13 June 1816. This date is generally accepted as the foundation day of the Gardens. It is most likely that this culvert was constructed at the same time, an interpretation supported by the dating of the building materials.

A brick culvert under a road is not likely to be the subject of historical documentation, but may occasionally receive a brief reference. The most likely source for references to Public Works, of which this is one, is the Blue Books or Statistical Registers of New South Wales, from 1822 onwards. These records are not early enough to mention the construction of Lady Macquarie’s Road, but they could refer to culverts or drains of a later date. Research of the Blue Books between 1822 and 1842 revealed no mention of drains or culverts in the Botanic Gardens.

References to earlier works may be found in the Historical Records of Australia. In the ‘Schedule of Public Buildings and Works.....from 1st of January, 1810 to the 30th November, 1821’, prepared on 27 July 1822 to defend his conduct during his former governorship, Major General Lachlan Macquarie stated that he had constructed:

'A Road round the inside of the Government Domain always open for the recreation of the inhabitants on foot.'

Again there is no mention of the culvert specifically.

Other documentation was researched for possible references, including one of the most thorough research documents now available on the Royal Botanic Gardens, but again no specific mention of the culvert was located.

---

3 HRA. Ser. 1. Vol. 10.: 687.
3. DESCRIPTION OF THE CULVERT.

3.1. Related items in the Domain and Royal Botanic Gardens.

The culvert is located on the creek running through the Royal Botanic Gardens. It carries Lady Macquarie's Road across this creek. This road ran from First Government House to Mrs Macquarie's Point, and was completed in 1816. While there is a rock cut inscription at Mrs. Macquarie's Chair, recording the completion of the road, there appears to be no other visible fabric of the road, other than this culvert.

The former surfacing materials of the road may survive as below ground archaeological deposits, but are not visible at present.

The only other structure related to the road is the Macquarie Wall, a section of which survives to the east of the creek. This wall was constructed in 1810, with the enclosure of the Domain being completed in 1813.\(^1\) Lady Macquarie’s Road followed the alignment of the wall on its northern side.

3.2. Description of the culvert.

The culvert is constructed using sandstock brick, without a frog, bonded with shell lime mud mortar. This brick type is now commonly called a ‘flat sandstock’, because of the absence of the frog, and is the most primitive form of brick found in New South Wales. It was manufactured in Sydney from 1788 to approximately 1830, when better production methods would have displaced it from the market. Outside Sydney, in more remote parts of the then Colony, it may have been manufactured until a later date. Likewise the shell lime and mud mortar indicate a similar date range.

The culvert is formed by two parallel channels, and could be termed a double culvert. The base of the channels is dished and is now cement rendered. From this base, several courses of brickwork form a vertical face before the springing of the rounded arches. The side walls are in alternate courses of headers and stretchers, but there is also a random arrangement in the headers and stretchers in some courses. The centre of the two arches is supported on brickwork similar in arrangement to the side walls.

Brick culvert, Lady Macquarie’s Road, Royal Botanic Gardens, Sydney, N.S.W.

Arches themselves are almost exclusively formed using a header arrangement, as visible on the north elevation.

The original brickwork survives on the northern elevation up to one course above the archway courses. It has then been repaired recently using several courses of dry pressed brick, bonded with cement mortar. A few of the original bricks just below this repair have also been set in cement mortar. The arched culverts survive intact until near the southern face, where the causeway has been widened or the culvert refaced using dry pressed brick arches.

On the northern side of the culvert, flat sandstone brickwork continues for a short distance on either side of the creek. It is now capped with coursed sandstone rubble walling. This brickwork is continuous with the culvert on the west side, but has been butt jointed to the culvert on the east. In the centre of the creek and butting the central wall of the culvert are a number of sandstone blocks, which may form part of a former structure. Ashlar walling in sandstone joins the side walls at both the northern and southern ends of the culvert and related brickwork.

The brick side walls on the northern side of the culvert may simply be revetment walling, but could also be part of a former tank or reservoir type structure. The presence of such a structure is suggested by some historical plans, one of which dates to 1871 (Figure 3.1).

The northern face of the culvert is showing distinct signs of imminent collapse. The brickwork over the arches on the northern face has lost a proportion of its bonding material, and has also detached itself from the brickwork forming the remaining length of the arched culverts. This is not surprising given the header bond predominantly used in the arches, which may have contributed to some longitudinal weaknesses in the overall structure. Other examples of similar construction are predominantly stretcher bond in two skins of brickwork, thereby overcoming this problem. The poor awareness of bonding suggested by the original brickwork may indicate the nature of labour in the early Colony, between 1813 and 1816, when only bricklayers with limited skill may have been available.

---

2 For example, the brick barrel drain at Parramatta.
3.3. Comparative examples of brickwork in culverts and drains.

The rounded arches of the double culvert are similar to the construction of drains elsewhere in the former colony of New South Wales. The dating and description of this and some other examples is tabulated below:

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1814 - 1820</td>
<td>Brick Barrel Drain</td>
<td>Thompson Square, Windsor.</td>
</tr>
<tr>
<td>1822 - 1828</td>
<td>Brick Barrel Drain</td>
<td>Parramatta.</td>
</tr>
</tbody>
</table>

Brick culvert, Lady Macquarie’s Road, Royal Botanic Gardens, Sydney, N.S.W.

<table>
<thead>
<tr>
<th>Date</th>
<th>Drain Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830s</td>
<td>Brick Barrel Drain</td>
<td>Port Macquarie</td>
</tr>
<tr>
<td>1842</td>
<td>Brick Barrel Drain</td>
<td>Cowpastures Road</td>
</tr>
</tbody>
</table>

The brick arched construction of drains and culverts, whether it was for a barrel drain or a culvert, involved similar techniques. The date range for their usage can be extended to the 1840s by the reference for the Cowpastures Road. The example in the Royal Botanic Gardens is one of the earliest known examples of this type of construction, while its flat base sets it apart from all the other examples.


The following photographs were taken on 1 April 1992 as a record of the appearance of the northern elevation of the culvert.

---


7 Blue Book, 1842: 106. 4/274. AONSW.
Brick culvert, Lady Macquarie’s Road, Royal Botanic Gardens, Sydney, N.S.W.
4. CULTURAL SIGNIFICANCE.

The importance of the double brick culvert will be assessed in general terms according to its cultural significance. Cultural significance means aesthetic, historic, scientific or social value for past, present or future generations, as defined by the Burra Charter of Australia ICOMOS.¹

The double brick culvert in the Royal Botanic Gardens is significant because:

1. it is the only fabric of Lady Macquarie’s Road still visible.

2. the completion of the culvert as part of Lady Macquarie’s Road is associated with the Foundation Day of the Royal Botanic Gardens, on 13 June 1816.

3. the arched brickwork construction of the culvert is very unusual, and is one of the earliest examples surviving in New South Wales.

4. it is the only example of this type of construction to have a flat or dished base and rounded arch.

5. it is one of only two examples of this type of construction, which are easily accessible for inspection and observation by the general public in New South Wales.

6. the poor quality of the brickwork is an indication of the low level of skills available in New South Wales during the period 1813 to 1816.

7. it is directly associated with the designs of Governor and Lady Macquarie for the improvement of the Government Domain and the establishment of a botanical garden.

8. it has the archaeological potential to reveal evidence relating to road, culvert and drain construction techniques, the way of life in the early

Brick culvert, Lady Macquarie’s Road, Royal Botanic Gardens, Sydney, N.S.W.

colony, to confirm its dating and construction sequence and to reveal the total extent of the early features and structures associated with it. This evidence will add substantially to the body of available knowledge, since the historical documentation is so scarce.
5. RECOMMENDATIONS.

Given the cultural significance of the double culvert in the Royal Botanic Gardens, it is appropriate to make the following recommendations.

It is recommended that:

1. the double culvert should be conserved.

2. any disturbance of the fabric to stabilise and maintain the northern face of the culvert should be accompanied by archaeological investigation, which should specifically seek evidence for the date of the structure, the techniques and sequence of construction.

3. the culvert and its associated side walls should be recorded prior to disturbance with plans, section, profile and elevation drawings, photographs and written notes.

4. An excavation permit, under the Heritage Act of 1977, should be obtained before the commencement of conservation works.