

Attachment 1: Excavation Report

Cultural Resources Management

WINDSOR BRIDGE REPLACEMENT PROJECT

TEST EXCAVATION TO INFORM TRAFFIC SIGNALS AND CABLE TRENCHES INCLUDING EVIDENCE FROM GEOTECHNICAL CORES

March 2013



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1.0

PRECIS

This report describes a small program of archaeological testing at the intersection of Bridge Street and George Street, Windsor. The work was undertaken at the specific request of the Department of Planning and Infrastructure to provide additional information for the evaluation process concerning the construction of a new bridge across the Hawkesbury River, from Thompson Square to the northern riverbank.

The work was intended to provide information that would help to determine the impacts on archaeological resources of the construction of new traffic signals at this intersection on each corner, and the underground cabling in the road that would supply these new signals.

A specific assessment and research design was prepared for the work and an S60 application was made for approval to the Heritage Branch of NSW. Generally, the research questions posed for this program may be summarised as follows:

- Is it possible to determine the nature, chronological span, integrity and significance of any archaeological evidence within this area?
- Will the proposed work impact on archaeological evidence?

Specifically, the work was intended to determine if possible the presence or absence of physical evidence of the 1803 Commissariat building on the south-eastern side of the intersection as well as the more general profile of soils and deposits and what evidence they provided for the evolution of this area at the southern end of Thompson Square. It was intended to complement the evidence and conclusions made from an earlier program of testing undertaken within Thompson Square.

With a stated objective of minimising impacts to the profile while still meeting the project objective the work was confined to the southern side of the intersection. Evidence from test trenches excavated in the first program of investigation located close to the northern side of the intersection provided sufficient evidence for the purposes of the present objectives.

For the present program of work one trench was excavated in the footpath on the eastern side of Bridge Street, south of the George Street intersection (Trench 10). A second trench was excavated in the George Street footpath on the western side of the intersection

(Trench 11). A third trench was commenced in the garden area of this corner (Trench 12). This was immediately closed down, backfilled and the area made good when RMS was made aware that it had been leased by Hawkesbury Council to an adjacent property owner.

The information acquired from this test program has been supplemented by the results of several geo-technical cores that have been excavated into the road pavement of George Street and two in Bridge Street. These cores were made to provide information for the bridge design.

The conclusions that may be drawn from the evidence recorded in this program of work in conjunction with that from the earlier program of investigation are as follows:

- That the topography recorded in the earliest nineteenth century images of the Green Hills settlement is accurate in its depiction of a high exposed ridge line stepping down steeply to the river; it may have been more extreme than those images suggest with gullies cutting through the ridge line and uneven outcrops of rock;
- That the ancient sand body recorded in test trenches on the northern side of the road do not appear to have covered the peak of the ridge or extended further south than the northern side of George Street;
- That this peak or ridge, the later alignment of George Street, may have been exposed bedrock or only thinly covered with sand or soil. It may have been cut through by a gully at the line of present day Bridge Street;
- That this thin soil cover, if it existed, may have been removed in the earliest days of settlement to provide a hard and impervious surface for both pedestrian traffic and construction projects;
- That the exposed bedrock in this location may have been cut and shaped in places to be used in the construction of building foundations, drains or other structural works. If this is the case then evidence of this work could be found in the roads; the work would have been undertaken before the formalisation of those road corridors;
- That there is no clear evidence of the Commissariat building of 1803 and the impact of road works, paving and the introduction of services in the footpath on the eastern side of Bridge Street

make it unlikely that much or any remains here. However, if the technique of cutting and shaping bedrock was used in the construction of this building then some evidence of this work could survive at the face or the bedrock. It is unlikely that evidence of the building will be found in the road because of the impact of road widening and the formation of the most recent road surface;

- That by the mid-nineteenth century the alignment of George Street had been altered at least twice and soils had been imported to build up this area possibly higher at the southern end of Thompson Square than the street level immediately adjacent to the Macquarie Arms Hotel; this conclusion is based on archival evidence;
- That these accumulated soils were comprehensively removed in c. 1893 to allow for a major program of infrastructure that entailed laying service pipes in the street and possibly creating a new road surface comprised of a bedding deposit of locally sourced clay topped with a cobbled stone road. If this is not a road then it might be a linear drainage feature. If so a tar paved surface found in trench 12 might be evidence of an associated road surface. The evidence suggests that the latter is more likely to be later twentieth century in origin but there is insufficient physical evidence to make connections between the features in trenches 11 and 12;
- The same locally sourced clay found under the stone cobbling in trench 11 may have been used to create a pedestrian area along Bridge Street adjoining the School of Arts but there is no evidence for how it was finished or paved and the sample is too small to make a positive identification;
- By the 1920s the surface of George Street appears to have comprised silty soil that was laid or accumulated over the stone cobbling;
- Asphaltic concrete footpaths were laid in George Street from 1938 onwards and the physical evidence suggests that the work entailed cutting down the existing road, possibly removing much of the stone cobbling if it was a road surface and any later surfaces and introducing fill along the northern side of the road to help level it for the new concrete surface although this fill could have been introduced for an earlier program of works on the road in the nineteenth century; there is insufficient evidence to date it;

- Three separate resurfacings of this road are shown in the cores along George Street. Test trench 11 also records layers of asphalt concrete; until the c. 1990s this land was within the street;
- The paved footpath along Bridge Street might date from this same period of the 1930s or it is a later replacement;
- The bitumen paved surface in trench 12 could be a remnant road surface of the later nineteenth century but its form and evidence from archival sources suggests that it could be a very late pavement surface from the 1980s that immediately predated the development of the present alignment and garden at this south-western corner of the George and Bridge Street intersection;
- The 400mm of topsoil in trench 12 was introduced for the development of this pedestrian area in the c. 1990s;
- The introduction of services in the footpaths has made a substantial impact on the preservation of archaeological evidence.

With respect to the significance of the evidence revealed by test trenching and the impacts of the proposed works the following may be concluded:

- The depths of excavation required for the traffic signals and trenching will impact on archaeological resources. The depth of the archaeological profile on the ridge top is shallow, little more than half a metre in places and all the works required for this project extend beyond that depth including into the bedrock where it is possible that early nineteenth century works undertaken to modify the rock for building purposes could be preserved;
- The archaeological evidence that will be impacted by these works could include some works that predate c. 1810. This evidence would be of state significance based on the associations and rarity evaluated for evidence of a similar period in the statement of significance prepared for Thompson Square;
- The excavation did not provide any evidence for the presence of the Commissariat Store of 1803 but there is still a possibility of intact evidence outside the road and paths; modifications to the bedrock might provide clues to its location but this requires further investigation. It is also impossible to determine on this basis whether the proposed works will impact evidence of this

type. If evidence was found that could be directly attributed to this building it would be of state significance;

- What occurred in the period between c. 1810 and c.1870 can be inferred from a comparison of archival sources and the absence of physical evidence. It is possible to develop a reasonably consistent and feasible pattern of development for this area from a combination of evidence, lack of evidence and archival sources;
- The majority of the profile evidenced by the test excavation dates from c.1893 and onwards. This will be the subject of the principal impact of the proposed works. This component of the project area is of local significance;
- This impact will entail the fragmentation of large archaeological units such as road surfaces and bedding for them. It is unlikely to completely remove all evidence because these types of historic work encompass large areas and they will probably extend beyond the areas of impact;
- More difficult to assess is the potential for impacting modifications that may have been made to the bedrock to facilitate early buildings works. In the first instance this is a practice that is yet to be positively confirmed; the test result provides an indication but other examples would have to be found to make this a reliable identification. Further, because of the random and largely undocumented location of many of the early structures it is impossible to determine if the proposed works will impact any improvement of this type until it is uncovered;
- Generally, any features that can be positively attributed to the earliest settlement of Green Hills and of the Macquarie period town would be of state significance. Evidence of later nineteenth and early twentieth century infrastructure, the creation of roads and footpaths would be of local significance for what it can document about the growth of the town.

2.0 SCOPE

2.1 The Site

The focus of the current investigation is the George Street and Bridge Street intersection at Windsor including the footpaths. This is the site proposed for new traffic lights that would be required for the construction of the Windsor replacement bridge. Excavation for works associated with the lights could also impact portions of Bridge Street from close to Macquarie Street to the commencement of the bridge. There would also be trenches placed in George Street close to the lights and some parts of footpaths in this area (Refer to Figure 1).

2.2 Project Initiation

This work has been undertaken to specifically address issues raised by the Department of Planning and Infrastructure. It is intended to provide additional information to inform the evaluation process of this project. This document is an addendum to the working paper *Windsor Bridge Replacement Project Historic Heritage Assessment & Statement of Heritage Impact* prepared by Biosis Research Pty Ltd and Cultural Resources Management in November 2012.

2.3 Description of Proposed Work

The proposed work for this infrastructure generally entails the construction of traffic lights at each of the four corners of the George Street and Bridge Street intersection, the introduction of cables that link these lights and the connection by cabling of this system to the sub-station in Bridge Street close to Macquarie Street. Specific works proposed are as follows:

- The construction of eight traffic light units, two at each corner of the intersection. Two different types of signals are required for this intersection: Type 9 and Type 2.
- Type 9 signals require the following works for installation: excavation of footings 1400 mm deep x 900 mm long x 760 mm wide. The pit would be connected to the conduit trenches on two sides
- Type 2 signals require the following works for installation: excavation of footings 750 mm deep x 900 mm long x 600 mm wide (the total footing depth may need to be increased for

posts installed in unpaved areas with unstable soil). The pit would be connected to the conduit trenches on two sides

- The traffic signals would be connected by cables that run in the road
- The installation of feeder cables from the existing traffic controller at the termination of Macquarie Street to the traffic signals on the south east corner of Bridge Street to connect the two signalised intersections (the conduits would be installed through open trenching within the existing pedestrian pathway; the exact location however is to be informed by the location of existing cabling)
- An additional action may be required dependant upon the final project approval but at this stage it is not confirmed: the existing 33 kV (overhead) electricity cable may also be buried underground within the Bridge Street alignment between the Macquarie Street and George Street intersection.

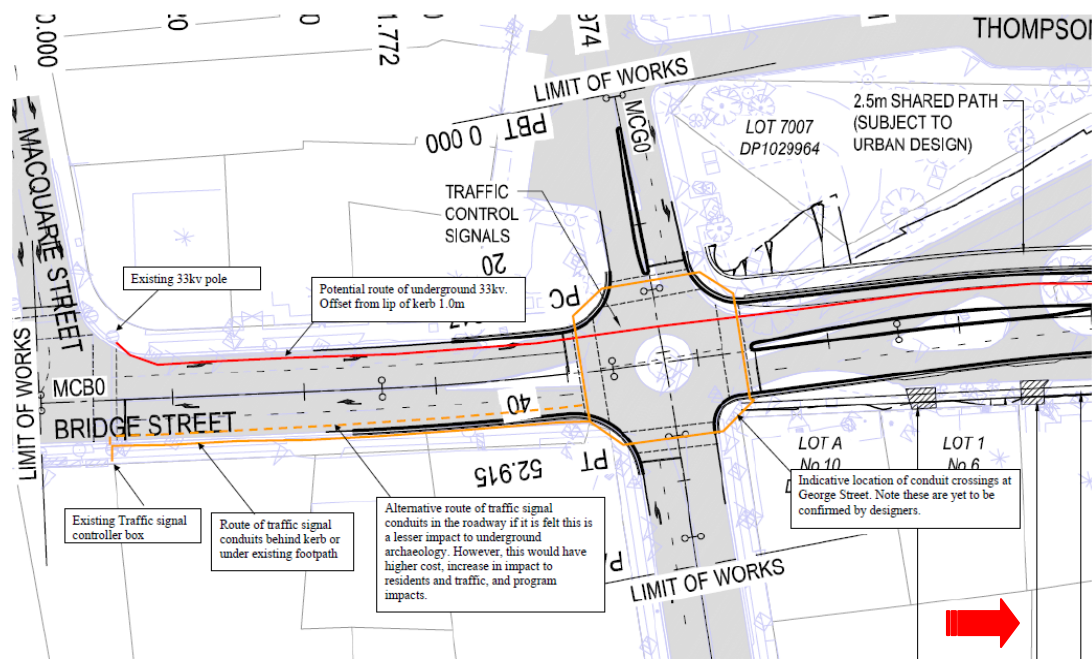


Plate 1: The proposed position of conduits and trenches. Source: RMS



Figure 1: Location of the Study Area in a Regional Context

Date: 31 August 2012 Matter: 14020
 Checked By: PBK Drawn By: JMS
 Location: P:\14000s\14020\Mapping\14020_SoHIF1_Locality.mxd



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0 75 150 225 300 375
 Metres
 Scale: 1:15,000 at A4



2.4 Objectives

The overall objectives of the archaeological work were as follows:

- To determine if an archaeological profile survives in this project area and, if it does, the composition and chronological range of that resource and its potential depth. The latter is relevant to the range of impact depths proposed for the construction work from approximately 600 mm to 1500 mm. This testing program is intended to provide a generic view of the scope of information that is likely to be found within this project area
- As well as assessing the integrity, scope and chronological range of the profile that is likely to characterise this ridge-top area this program will also focus on one specific site, that of the 1803 Commissariat Stores building. This is a site of potential state significance that can be identified from primary archival sources. The work will address the issue of its survival as well as the general archaeological profile that might survive above and below this level of occupation.

These objectives are designed to address issues with respect to the impact of the proposed construction work on archaeological evidence.

2.5 Research Design

Specific outcomes were established for this project; these are termed a research design. They were as follows:

- Will the depths of excavation required for the traffic signals and trenching impact on archaeological resources?
- Is it possible to determine the chronological span of information preserved within the project area and can this be related to the principal phases of development defined by the historical analysis?
- Is it possible to identify specific processes or features that survive within this profile; for example, road surfaces of a particular period, the 1803 stores building?
- Is it possible to determine the likely impact of twentieth century and later road works, footpath development and the installation of services over the entire project area?
- Is it possible to determine a level of cultural significance for the features and/or profile and its relationship to Thompson Square?

- What are the likely impacts of the specific works proposed for this project area on the archaeological resource and its significance?

2.6 Methodology

The project methodology outlined in the research design provided for a maximum of two trenches that were to be excavated to a maximum length of three metres to provide a reliable sample of the deposit. A shorter length was allowed for if it could be shown that it provided what was likely to be a representative sample of the profile. The trench or trenches were to be excavated to bedrock. The principal trench (trench 10) was to be located at the south-eastern corner of the George Street and Bridge Street intersection within the footpath. The location that was chosen was one that was most likely to intersect any remnant evidence of the 1803 Commissariat building.

The additional trench on the western side of the intersection (trench 11) was to be excavated if the results of the first trench were inconclusive. The proposed location of the trench was not specific to any particular site; it was located in an area that was formerly part of the road and it was anticipated that it could provide a more generic sample of the archaeological profile particularly of the road development.

2.6.1 Locating the Trenches

The methodology for this work was intended to minimise impacts to the profile while still meeting the project objectives. It was determined that no work could be undertaken in the road because of the disruptions that road closures would cause to the community. This left only the pedestrian areas for investigation.

It was known before work commenced that there were services within those footpaths that further narrowed the areas for investigation. The services identified prior to the work commencing are shown on the accompanying diagram. Figure 2 is a plan showing the location of the trenches.

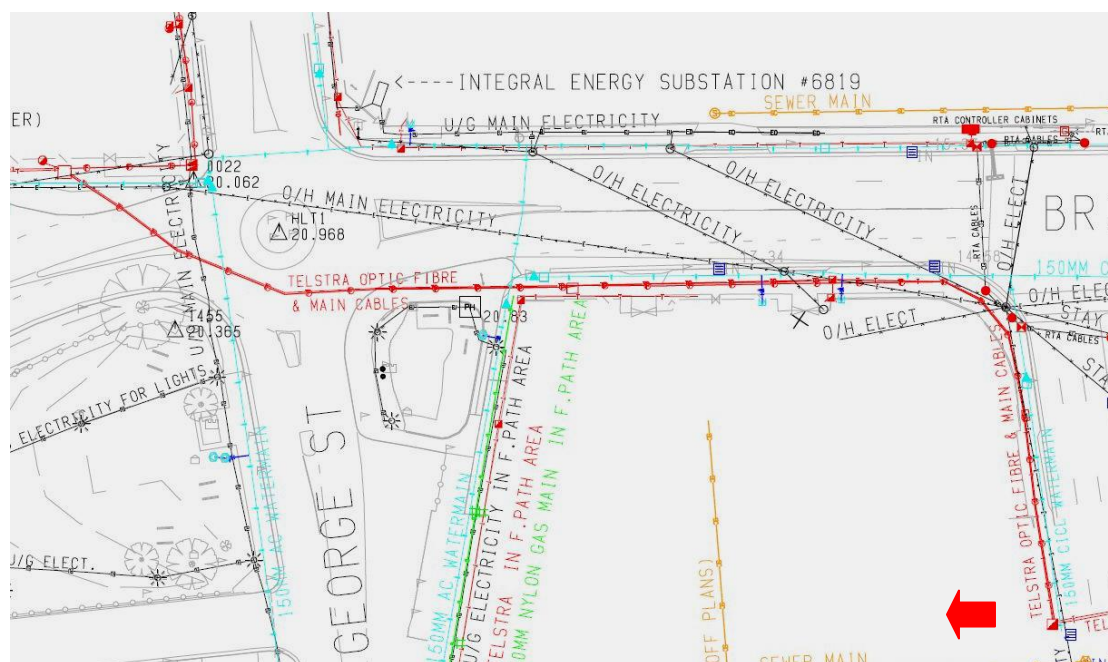


Plate 2: Utilities within the area of investigation (Source: Roads and Traffic 3 December 2005; sheet 2 of 2.)

Trench 10

At the commencement of work a specific services survey was carried out on the eastern side of Bridge Street along the footpath. This work confirmed the presence of services in the grass verges either side of the path and services that cross the path in several places. As well, in the week preceding this investigation an existing service pit within the proposed excavation area had been enlarged further disturbing the ground surface.

The combination of live services and recent disturbance reduced the only safe and practical area of investigation with respect to the site of the Commissariat Store and that of the proposed construction works to a one-metre square in the footpath. It was at the southernmost extent of the trench proposed in the research design; the latter was placed to intersect the possible site of a wall of the 1803 stores building. The disturbance at the northern end of the proposed trench meant that the specific site of the wall, as far as that could be determined by overlaying historic surveys on the present site configuration was likely to have been disturbed by those services and works. The test trench that could be excavated was anticipated to lie within the internal space of the building; evidence for the Commissariat Stores, if present, was likely to take the form of a foundation trench or construction or demolition debris from that building.

While the project methodology provided for a smaller test trench if the results were adequate the small size of this sample area and the probability that it could have been disturbed to some degree by the excavations carried out for the service trenches around it made it necessary to open the second trench on the western side of Bridge Street.

Trench 11

This second trench was to be located in the footpath adjoining George Street. The trench proposed in the research design was not sited for a specific target but to capture evidence of the generic archaeological profile particularly with respect to road development. The large pedestrian area at the south-western corner of the intersection had been until the later part of the twentieth century part of the road. The necessity for establishing temporary kerbs around the work area for the safety of the public and those working on the site narrowed the footpath along George Street to a little over one metre width that was further reduced at the corner in the proposed trench location by the curve of the temporary barrier as it rounded the corner. The proposed trench location lay partly under this barrier.

The narrow section of open space left between the kerb and the garden bed on the southern side of the path meant that at best the excavation was likely to achieve less than a metre square area. This limited sample size combined with the same limited size of the excavation on the eastern side of the street influenced the decision to consider a site as close to the indicative trench as possible to enable the excavation of a larger sample size better suited to meeting the program objectives of establishing the type and integrity of the profile on the ridge top.

A second choice was considered in the paved footpath along Bridge Street close to the eastern end of the indicative trench location. Even with the presence of the jersey kerb for safety reasons this was wider and offered a more practical excavation area with the same archaeological potential. However, the services survey confirmed the presence of a fibre optic cable in the centre of the potential excavation area. The risk of damage to this service as well as the likely damage caused by it to the archaeological profile ruled this out as a viable alternative location.

The third choice was Trench 12, described below; for the reasons outlined there this was abandoned almost immediately.

A site for Trench 11 was selected as close to the original location proposed in the research design but of necessity a little further west than the nominated area to enable the width of the excavator bucket

to be accommodated. This trench was located within the George Street footpath; this site had exactly the same archaeological potential as the proposed site selection and was separated from it by approximately two metres. The trench could not be extended further west to enable a larger sample because this was the only location on which the excavator could be placed and it was further constrained by the presence of car parking spaces at the end of the footpath. The test trench measured approximately 1000 x 1200 mm.

Trench 12

Trench 12 was located within the open ground behind the hedge that defines the edge of the footpath. There were no services and the trench was angled along the north-eastern corner on what was thought to be the indicative line of the proposed conduit shown in plan in Section 2.3. The site was nominated because it was as close to the proposed trench site as possible, allowing space so that no damage was caused to the hedge, in ground that was anticipated to have the same archaeological profile and, thus, more adequately meet the project objectives because of the bigger sample size. A 3 x 1 metre trench was located on this alignment.

400 mm of sterile garden soil was removed to reveal a paved surface. At this point advice was received that although the trench was within the George Street road reserve, this section had been leased by Hawkesbury Council to an adjoining landowner. When this became known the trench was immediately back-filled and the site restored before commencing on the only remaining option; the small sample close to the original Trench 11 location at its western extent. The results of the limited work acquired from the excavation in trench 12 are included in this report.

2.6.2

Excavation

The pavement slab on Test Trench 10 was manually removed and placed to one side to allow it to be restored at the conclusion of the excavation. This one metre test square was entirely excavated by hand.

The pavers in Test Trench 11 were removed by hand. Each of the deposits described in this report were initially cleared to the surface by the mud-bucket of a 5-tonne excavator. Precise cleaning and identification of features within each deposit was carried out by manual excavation.

Test Trench 12 was excavated in a similar way to Test Trench 11, mechanical excavation to the top of each unique deposit and manual cleaning for definition and recording and identification of any feature.

This trench, as well as Trenches 10 and 11, was backfilled with the material removed from it.

When the trenches were backfilled RMS made good each site, replacing the cement paved surface slab, the pavers and compacting the loose soil in Trench 12 and spreading mulch over the open ground to restore its appearance.

2.6.3

Recording

Each unique deposit, structure or feature was assigned a unique inventory or context number and these contexts were described in the site inventory with respect to the nature of the context, integrity, matrix and component elements and relationship to those contexts around it. Every context was photographed with a scale usually in multiple views. The inventory numbers are used in this report; they are written in Bold Italic in parentheses, for example, **[001]**.

2.6.4

Artefacts

There were no artefacts of any kind found in any of the trenches.

2.7

Approvals

This work was carried out under the approval of a S60 application made to the Heritage Council of NSW (No 2013/S60/06) approved on 12 February 2013.

2.8

Authorship and Applicant

The author of this report and the excavation director is Wendy Thorp (Cultural Resources Management) acting on behalf of RMS and in association with Biosis Pty Ltd. The report was reviewed by Pamela Kottaras (Biosis Pty Ltd) and Denis Gojak (RMS).



Legend

- Test Trench 10 - 1m x 1m
- Test Trench 11 - 1m x 1.2m
- Test Trench 12 - 1m x 3m
- Construction Work Zone

Figure 2: Location of test trenches during the current archaeological program

0 15
Metres
Scale: 1:400 @ A3
Coordinate System: GDA 1994 MGA Zone 56

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Date: 07 March 2013, File number: 14020
Checked by: PBK, Drawn by: JMS
Location: P:\14000s\14020\Mapping\14020_SoH1_AddF2_TestTrench.mxd

Acknowledgements: Aerial - (c) SKM 2011

3.0 TRENCH 10

3.1 Location and Dimensions

This trench was located on the eastern side of Bridge Street, within the footpath; one paving slab was removed for this work. It adjoined the north-western corner of the School of Arts building. The trench measured approximately 1000 x 1000 mm. This was the maximum size that could be achieved between identified services trenches and in a place that had a close relationship to the site of the former Commissariat building (refer Section 2.6.1) as well as being close to the site of the proposed works in the footpath.

Overlays of historic period surveys from the first half of the nineteenth century in relation to the present roads and buildings demonstrate that the site of the former Commissariat building of 1803 is likely to lie under the School of Arts building. The older building appears to have projected beyond the western façade of the School of Arts into the present footpath and Bridge Street.



Plate 3: Overlay of 1831 survey onto contemporary aerial image showing the relationship of the Commissariat Store of 1803 to the present School of Arts building and Bridge Street

The proposed trench in the research design was intended, in a three-metre length to include the site of the northern wall of the 1803 building and a sample of the internal space. The southern wall was in an area of services and the western wall was in the road. The reduction of the trench size due to the need to avoid live services meant that the trench was likely to sample only the internal space of the building or, perhaps, allowing for a degree of variation in the 1831 survey and modern townscape, a foundation trench for that wall as well as evidence of the construction associated with the building or its demolition in the form of debris.



Plate 4: View east showing Bridge Street and the School of Arts building; the position of the test trench is indicated by the arrow



Plate 5: View north showing the slab to be removed (indicated by the arrow) for the test trench with the recent disturbance just to the north of this site caused by enlarging a service pit also visible

3.2

Excavation Evidence

The surface slab from the footpath **[001]** was lifted in one piece. It is made from cement with bluestone inclusions poured into formwork. It is approximately 60 mm thick and was laid directly over the underlying deposit **[002]**.



Plate 6: View north showing the footpath slab [001] removed from the trench revealing the surface of the underlying deposit [002]

The deposit **[002]** below the footpath comprised red clay with minor lenses of sandy soil and some lighter coloured clay distributed unevenly throughout the matrix. The top 100-200 mm was more disturbed and less regular in composition than the lower portion but it was a consistent matrix for the full depth. The mixed red clay **[002]** was excavated to its full depth of 400 mm. This deposit filled the entire trench and extended beyond it.

Immediately below the red clay was the upper surface of naturally occurring sandstone bedrock **[003]**. There were no deposits between the two and no evidence of change to the bedrock.

These were the only deposits in this trench. There were no artefacts.



Plate 7: View south of Trench 10 showing the clay with sand lenses underlying the footpath on the eastern side of Bridge Street; scale 500mm



Plate 8: View north of Trench 10 showing sandstone bedrock at the base of the trench and its immediate relationship to the clay above it. This image also highlights the more disturbed nature of the upper part of the clay visible here in the shadow as a darker and slightly more textured material; scale 500 mm

4.0

TRENCH 11

4.1

Location and Dimensions

The location of this test trench on George Street has been discussed in Section 2.6.1; it was the only viable location free of services, which could accommodate the width of the excavator bucket between the safety barrier and the garden bed, very close to the proposed test trench site and with the same archaeological potential in the project area. The sample provided from this area was expected to provide evidence of road development and possibly accumulated deposits that would characterise the use of this area as a public thoroughfare from early in the nineteenth century. The excavated trench measured 1000 x 1200 mm.



Plate 9: View south at the intersection of George and Bridge Streets showing the investigation area along George Street indicated by the arrow

The evidence from the principal nineteenth century surveys shows that this area, now a pedestrian area, has been within a road or open space until the later part of the twentieth century.