WINDSOR BRIDGE REPLACEMENT PROJECT

PROJECT NUMBER: 140604-2

Detailed Salvage Strategy for Aboriginal and Historical Archaeological Heritage

AAJV
(an AUSTRAL & EXTENT Joint Venture)

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Detailed Salvage Strategy

November 2017

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Prepared by AAJV on behalf of NSW Roads and Maritime Services

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1 INTRODUCTION

1.1 Background and Context

The NSW Roads and Maritime Service (RMS) is proposing to replace Windsor Bridge, Windsor, NSW. The re-development includes replacement of the existing Windsor Bridge, with a new structure and various modifications to the approaches and surrounds of the river crossing. The project has been assessed under Part 5.1 of the Environmental Planning and Assessment Act 1979 (State Significant Infrastructure), and was approved in late 2013 (SSI_4951). Once all the necessary approvals are received from the Department of Planning and Environment, construction is estimated to begin in 2018. RMS has engaged AAJV (a joint venture of Austral Archaeology and Extent Heritage (formerly AHMS)) to undertake archaeological investigation and provide heritage management services to RMS during the Windsor Bridge Replacement Project (WBRP).

The Minister’s Conditions of Approval (MCoA) for the WBRP require a range of geomorphological, Aboriginal, historical and maritime archaeological investigations for the southern (condition B3) and northern (condition B4) banks of the Hawkesbury River; and a detailed study into the sand bodies of the Hawkesbury region (condition B3f).

The Detailed Salvage Strategy for Maritime Archaeology is contained in a separate report.

Specifically, conditions B3 and B4, and the location they are addressed in this report are outlined below:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Location of information</th>
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<tr>
<td>B3. The Applicant shall undertake an Archaeological Investigation Program comprising Aboriginal and non-Aboriginal Heritage in the project area on the southern side of the Hawkesbury River, prior to the commencement of preconstruction and construction activities in the southern area. The program shall be conducted to the satisfaction of the Director-General and in accordance with:</td>
<td>Contained in the Test Excavation Report – Aboriginal Heritage (AAJV May 2017), Excavation Report – Historical Archaeology (AAJV May 2017) and Underwater Surveys and Test Excavation Report (Cosmos Archaeology 2017)</td>
</tr>
<tr>
<td>a) the Heritage Council’s Archaeological Assessments Guideline (1996) using a methodology prepared, in consultation with the NSW Heritage Council for non-Aboriginal heritage; and</td>
<td></td>
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<tr>
<td>b) prepared in consultation with the OEH (Aboriginal heritage) and the Aboriginal stakeholders.</td>
<td>Contained in Historical and Maritime Archaeological Research Design (AAJV 2016)</td>
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The Archaeological Investigation Program is to be undertaken by an archaeological heritage consultant approved by the Director-General in consultation with the NSW Heritage Council and by the OEH (Aboriginal heritage) and by an Excavation Director who shall demonstrate an ability to comply with the Heritage Council’s Criteria for the Assessment of Excavation Directors (July 2011) and in particular must be able to demonstrate compliance with Criterion A.4 that: ‘work under any approvals previously granted by the Heritage Council has been completed in accordance with |

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<td>Test Excavation Report – Aboriginal Heritage Section 1.4</td>
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<td>Historical Archaeology (AAJV May 2017) Section 1.6</td>
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<tr>
<td>Condition</td>
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<td>the conditions of that consent and the final report has been submitted to the NSW Heritage Council.</td>
<td>Test Excavation Report – Aboriginal Heritage Section 4 &amp; 7 Historical Archaeology (AAJV May 2017) Sections 3, 5 and 8</td>
</tr>
<tr>
<td>The Archaeological Investigation Program shall include archaeological testing and geophysical investigation, as required for the significance assessment.</td>
<td>Consultation Section 1.7 – This report</td>
</tr>
<tr>
<td>The results of the Archaeological Investigation Program are to be detailed in a Historic Archaeological Report and a Detailed Salvage Strategy comprising the non-Aboriginal and Aboriginal heritage findings. These are to be prepared in consultation with the OEH (Heritage Branch and Aboriginal heritage) and to the satisfaction of the Director-General, and shall include, but not necessarily be limited to:</td>
<td>Test Excavation Report – Aboriginal Heritage Section 8.3 and Section 3 of the Detailed Salvage Strategy Excavation Report – Historical Archaeology (AAJV May 2017) Section 4.2 and 10 and Section 4 of the Detailed Salvage Strategy Underwater Surveys and Test Excavation Report (Cosmos Archaeology 2017) Section 8 and Section 5 of the Detailed Salvage Strategy</td>
</tr>
<tr>
<td>a) detailed recommendations for further archaeological work</td>
<td>This document, Sections 3, 4 and 5</td>
</tr>
<tr>
<td>b) consideration of measures to avoid or minimise disturbance to archaeology sites, where archaeology of historical and Aboriginal heritage archaeological significance are found to be present</td>
<td>Test Excavation Report – Aboriginal Heritage Section 8.3 and Section 3 of the Detailed Salvage Strategy</td>
</tr>
<tr>
<td>c) where impacts cannot be avoided by construction of the SSI, recommend actions to salvage and interpret salvaged sites, conduct further research and archival recording of the historic heritage and Aboriginal heritage value of each site, and to enhance and preserve the archaeology of historical non-Aboriginal and Aboriginal heritage significance</td>
<td>Excavation Report – Historical Archaeology (AAJV May 2017) Section 4.2 and 10 and Section 4 of the Detailed Salvage Strategy</td>
</tr>
</tbody>
</table>

Windsor Bridge Replacement Project | AAJV
### Condition | Location of information
--- | ---
| d) consideration of providing visual evidence of heritage sites within the final landscape design of the SSI to preserve and acknowledge the heritage value of the Thompson Square Conservation Area and the site | Underwater Surveys and Test Excavation Report (Cosmos Archaeology 2017) Section 8 and Section 5 of the Detailed Salvage Strategy
| | In the Urban Design and Landscape Plan, Strategic Conservation Management Plan, Interpretation Strategy and Interpretation Plan
| e) management and mitigation measures to minimise impacts due to preconstruction and construction activities | This document, Section 6
| f) preparation of a Hawkesbury Region Sand Bodies Study as detailed by Condition B3(f) | Hawkesbury Region Sand Bodies Study (AAJV November 2017)

**B.4.** The Applicant shall undertake an Archaeological Investigation Program comprising Aboriginal Heritage in the northern side of the Hawkesbury River project area, prior to the commencement of pre-construction and construction activities in the northern area. The program shall be conducted to the satisfaction of the Director-General and prepared in consultation with the OEH (Aboriginal heritage) and the Aboriginal stakeholders.

**B.8.** The project is to be revised to incorporate the following amendments. The new design of the SSI shall be provided to the Director-General for approval prior to the commencement of pre-construction and construction activities in the southern side of the Hawkesbury River:

(a) the raising of the southern approach road by approximately 1 metre is not approved. The height/clearance of the southern approach road shall be designed ensure consistency with the EIS;

(b) public access to the existing wharf is to be maintained and alternative coach access, arrangements for pedestrians/cyclists and consultation undertaken are to be detailed;

(c) access to numbers 4 and 6 Bridge Street is to be maintained at all times. Alternative access arrangements to those proposed shall be investigated to the satisfaction of the Director-General;

(d) the northern roundabout shall be designed to ensure consistency with the Austroads Guide to Road Design: Part 4B, particularly in relation to geometry and lane designations.

In the event that further design amendments are required as a consequence of compliance with conditions B1 to B7, and such revised designs must be approved by the Director-General.

In response to these conditions, AAJV has been engaged by RMS to undertake the Aboriginal and historical archaeological salvage excavations in advance of the bridge replacement or, where appropriate, during the construction phase. The previous archaeological test investigations were undertaken in advance of pre-construction, in accordance with the Aboriginal Archaeological Research
This document presents the findings of the archaeological testing program to provide information on the cultural deposits present within the project area, their significance, anticipated archaeological impacts of the WBRP and mitigation strategies. The findings of the Aboriginal archaeological test excavation, historical archaeological test excavation, maritime heritage investigations and Sand Body Study should be read collectively to understand the entirety of the archaeological heritage, its sensitivities and impacts of the study area and the project. Collectively, these documents seek to provide an integrated and holistic approach to the identification, assessment and management of the cultural values within the WBRP project area. The results of the assessments have been used to inform the recommendations for long-term strategic management of the area’s archaeological heritage through a policy framework contained within the Strategic Conservation Management Plan (SCMP).

1.2 Site Location and Identification

The WBRP project area is located at Windsor, within the Hawkesbury Local Government Area (LGA), approximately 57 kilometres north-west of Sydney. The town is situated on the southern bank of the Hawkesbury River, close to the foothills of the Blue Mountains.

The WBRP project area incorporates the existing and proposed replacement bridge sites and associated road and civil infrastructure works. It extends from the intersection of Freemans Reach Road and Wilberforce Road in the north to the intersection of Bridge Street and Macquarie Street in the south of the township (Figures 1 and 2, below).

1.3 Limitations

The report includes predictions regarding the potential for sub-surface archaeological materials to exist within certain landforms/landscapes in the subject area. The predictions are based on evidence from historical and archival research, surface indications, environmental contexts, and the archaeological test excavation undertaken in 2016. As such, it is noted that sub-surface archaeological material may survive in particular areas despite surface/sub-surface evidence suggesting that they do not. The converse also applies. The 2016 archaeological testing program was also confined to areas anticipated to be impacted by the WBRP.

The test excavation revealed that the soil profile across much of the southern project area was in excess of 2m in depth, with the upper 50-100cm composed of historical or modern deposits. This meant that the Aboriginal cultural deposits of interest frequently extended >1.5m in depth. Due to Health Safety and Environment (HSE) reasons, entry/exit of test pits >1.5m was not permitted, and this severely restricted the level of high resolution sampling and recording of test pits, especially at their lowest depths.

1.4 Approach and Methodology

The Archaeological Investigation Program was undertaken in accordance with the following documents:

- Aboriginal Archaeological Research Design and Excavation Methodology (AAJV, 2016)
- Historical and Maritime Archaeological Research Design and Excavation Methodology (AAJV, 2016)
These documents were endorsed by the NSW Office of Environment and Heritage in 2016 prior to the testing program commencing on site.

The Detailed Salvage Strategy builds on and, where necessary, updates the methodologies and research designs for the Archaeological Salvage Program, based on the findings of the Archaeological Investigation Program undertaken between August and December 2016.

1.5 Previous Reports

This document should be read in conjunction with the following documents:

- Strategic Conservation Management Plan Volume 1 (AAJV 2017) – for detailed site history
- Strategic Conservation Management Plan Volume 2 (AAJV 2017) – for policy framework
- Strategic Conservation Management Plan Volume 3 (AAJV 2017) – for project-specific implementation of the SCMP policies
- Aboriginal Archaeological Research Design and Excavation Methodology (AAJV 2016)
- Historical and Maritime Archaeological Research Design and Excavation Methodology (AAJV 2016)
- Test Excavation Report – Aboriginal Heritage (AAJV 2017)
- Test Excavation Report – Historical Archaeological Heritage (AAJV 2017)
- Test Excavation Report – Maritime Archaeological Heritage (Cosmos Archaeology 2017)

1.6 Authorship

Aboriginal Salvage Strategy:
Dr. Alan Williams, with assistance from Laressa Berehowyj, Dr. Tessa Bryant and Tom Sapienza.

Historical Archaeological Salvage Strategy:
Anita Yousif, with assistance from Justin McCarthy, David Marcus and Tom Sapienza.

Review:
The document was reviewed for quality assurance by Dr. MacLaren North, NSW Director of Extent Heritage Pty Ltd and Justin McCarthy, Director of Austral Archaeology Pty Ltd.

1.7 Consultation

This Detailed Salvage Strategy has been prepared based on the findings of the 2016 test excavation programs for Aboriginal, historical and maritime archaeology, the known and predicted impacts of the Windsor Bridge Replacement Project and relevant stakeholder feedback. The Archaeological Testing Reports were lodged with DPE on 31 May 2017. Comments from OEH were received on 24 July 2017. Issues raised were primarily related to the recommended heritage mitigation and proposed archaeological salvage works.

The Detailed Salvage Strategy was provided to DPE and OEH on 17 August 2017. A meeting in the lead up was held with OEH on 11 August 2017, attended by Dr Siobhan Lavelle (historical archaeology)
and Mr Brad Duncan (maritime archaeology). As there were no issues from the Aboriginal consent section of OEH, no representative from that unit attended the meeting. The DSS was presented to a RMS Aboriginal Focus Group on 15 June 2017. Written feedback was primarily related to a desire by the Registered Aboriginal Parties to participate in the salvage fieldwork.

Further comments were received from OEH on 10 October 2017 and DPE on 25 October 2017, with additional comments from DPE on 2 November 2017. Where appropriate, the document has been amended in line with those comments.
Figure 1 - Map of the WBRP test excavation project area
Figure 2 - Aerial image of the WBRP project area.
2 RESULTS OF 2016 ARCHAEOLOGICAL INVESTIGATION PROGRAM

2.1 Key Findings

The key findings of the three testing phases of the Archaeological Investigation Program are briefly summarised here. For full information on the testing program and results, please refer to the relevant individual test excavation report.

The Archaeological Investigation Program took place over the period of August to December 2016, and included excavation of archaeological test pits (for Aboriginal heritage) and test trenches (for historical archaeology) within the Windsor Bridge Replacement Program project area, both north and south of the Hawkesbury River. A program of maritime archaeological investigation was also undertaken within the Hawkesbury River itself, near the southern river embankment.

The key findings of these testing programs were as follows:

- No archaeological evidence of moderate, high or very high significance was found in relation to either Aboriginal or historical materials in the project area north of the Hawkesbury River. No further archaeological works are recommended in this area, save for precautionary stop-work protocols during construction.
- Substantial Aboriginal archaeological deposits and evidence of a deep alluvial/wind-blown sand sheet were found throughout the southern part of the project area. This includes archaeological evidence of Aboriginal occupation and use of the area dating between 27-17ka, and the early- to mid-Holocene (~7-5ka). Such evidence is rare and highly significant.
- Some evidence was found of post European Contact period Aboriginal cultural material, including three pieces of modified glass, and likely dating to AD1784-1830s. This type of evidence is rare and helps present a picture of the ongoing interaction between Aboriginal people and European settlers in the earliest period of colonial occupation of the area.
- Historical archaeological evidence was found within the project area, in various states of disturbance, of colonial archaeological remains dating from the early 19th through to late 19th century, and into the early 20th century. These included postholes, drains and sections of footings.
- It is clear that all types of terrestrial archaeological materials have been impacted upon by the flooding of the Hawkesbury River, and that processes of scouring and deposition have resulted in the modification and disturbance of archaeological evidence throughout extensive parts of the project area.
- Aboriginal archaeological deposits in many areas have been affected by later historical and modern activities, with evidence of truncation to the upper soil profile, and re-working of older cultural material into younger deposits. However, lower parts of the archaeological deposits are often intact, and reveal limited post-depositional disturbance.
- The construction of the first Windsor Bridge and subsequent alterations to roadways and landforms have all had a degree of impact on the preservation of historical archaeological materials.
- Along the southern river embankment, archaeological evidence was found within the project area for the c1814 wharf and associated deposits.
- Previous work to rebuild the southern foreshore and to managing scouring has had an impact on the maritime archaeological materials, generally through burying them beneath layers of modern material.

A range of archaeological salvage recommendations have been made for all three types of archaeological heritage. Depending on the location of the archaeological materials in question, the salvage work has been recommended to take place prior to (pre-construction), or during the
construction program. The maritime archaeological salvage program can take place independently of the terrestrial archaeological works.

The results of the archaeological works to date have been fed into the proposals for interpretation for the project area, as set out in the *Interpretation Strategy* and *Interpretation Plan* for the project. The final results of the archaeological salvage works will need to inform the ultimate interpretation of the project area’s archaeological heritage.

The *Strategic Conservation Management Plan* contains policies and recommendations for the management of the area’s archaeological heritage in the longer term.
Figure 3 - Locations of the archaeological testing works undertaken by AAJV in 2016. Note the 'contingency' test pits were implemented following historical discoveries early in the Aboriginal field program of the northern project area.
ABORIGINAL ARCHAEOLOGICAL TESTING PROGRAM

Below is a summary of the key findings of the Aboriginal testing program. For full details of the testing work please see the Test Excavation Report – Aboriginal Heritage (AAJV 2017).

- Archaeological excavations consisted of 46 test pits across the northern (n=8, totalling 27.9m²) and southern (n=38, totalling 74.28m²) project areas (Figures 4 and 5). These test pits ranged in depth from <30cm and >4.9m below current surface (x̄ = 2.13m), and were excavated in 5-20cm spits depending on location. Some 774 spits were recovered, of which 440 (equivalent to ~220 tonnes) were in historical and/or natural deposits, and wet-sieved through a 3mm or 5mm mesh for cultural material.

- The excavations recovered 1,434 Aboriginal objects (stone artefacts). 23 were recovered from the northern project area (equivalent to 0.81 lithics/m² or 0.0005 lithics/kg) in depths ranging from 120-240cm below current surface. 1,330 were recovered from the southern project area (equivalent to 18.26 lithics/m² or 0.0325/kg) found throughout the soil profile, but predominantly between 70 and 210cm below current surface.

- The excavations identified ten geomorphological (or stratigraphic) units characterising the entire project area, which along with the cultural materials, could be divided into four archaeological landscapes (Figure 6). Of note are two sand units that were encompassed within Thompson Square (either side of Bridge Street), and which contained the majority of the cultural assemblage (n=995/75% equating to 56 lithics/m² or 0.05 lithics/kg). The lower unit was formed by fluvial processes (e.g. terrace, levee), and the upper layer through wind-blown processes, and likely the remnants of a source-bordering dune. OSL ages of these deposits indicate that they contain cultural materials dating to between 27-17ka in age. These deposits are visually and compositionally similar to the nearby Windsor Museum archaeological site, which contained cultural deposits dating to between 33 and 8ka. A later assemblage dating to the early- to mid-Holocene was also recovered.

- The remaining archaeological landscapes all appear younger, likely of mid- to late Holocene (7-0ka) age, and often disturbed and/or truncated by historical and/or modern activities. With the exception of SA12, also within Thompson Square, cultural deposits were generally sparse, and have either been reworked by natural (i.e. fluvial/alluvial) or human (i.e. reclamation/earthworks) processes.

- A number of glass artefacts (n=3) were found in the lower portion of Thompson Square (east of Bridge Street) and demonstrate post-contact interactions between Aboriginal people and early European settlers. Other historical material found in association, and past records of Windsor suggest that the artefacts likely date to between AD1794 and the 1830s.

The investigations ultimately divided the project area into four discrete archaeological landscapes. These are presented in Figure 6, and consist of:

- Ridgeline – a disparate shallow duplex soil profile, often beneath historical overburden, and containing discrete concentrations of Aboriginal objects up to 50/m². Much of this landscape has been heavily affected by modern and historical activities, with only pockets of soil profile (and any associated cultural material) being present across the landscape. The landscape encompasses the elevated areas in the vicinity of George and Bridge Streets, and extends into the upper part of Thompson Square – the latter area being where most of the cultural material was recovered from this landscape.

- Source-Bordering Dune – a fluvially and aeolian-derived sand body typically 1-1.5m in thickness, and extending across the upper and lower portion of Thompson Square, and
into parts of Old Bridge Street, and The Terrace. A thin lense of the deposit is also located on the ridgeline east of the George/Bridge Street junction. The landscape is more intact in the upper Thompson Square, and has been subject to varying levels of burial by historical overburden and/or truncation from past activities. The deposit likely formed discontinuously between >82ka through to the mid-Holocene (~5ka). Archaeological material within this deposit is extensive, and suggests two periods of visitation/occupation between 27-18ka (the onset and peak of the LGM), and the early-to mid-Holocene.

- River's Edge Alluvium – a thick clay and fine sand alluvium encompassing the entire northern project area, and the lower areas of the southern project area, including The Terrace, the wharf area and surrounding carpark. This landscape was likely formed through low-energy fluvial deposition probably in the last 6.5ka, if not much more recently. Cultural material is found throughout the deposit in low numbers (<5/m²), with many of them potentially re-worked either naturally or via human processes from other nearby archaeological landscapes.

- River's Edge – Reclaimed/Introduced Fill – disparate pockets of introduced and/or modified natural deposits used to in-fill and landscape areas primarily along the southern bank of the Hawkesbury River. Cultural material is found throughout the deposit in low numbers (<5/m²), with many of them potentially re-worked from other nearby archaeological landscapes.

Overall, the assessment found nine test pits of very high or high (regional/State) significance, three of moderate significance, and 34 of low or very low significance (Figure 7). All those identified as of high or very high value were situated within the source-bordering dune archaeological landscape (Figure 6). The identification of these areas as of high or very high value was based on the significant age and integrity of the cultural deposit, and its ability to provide information on the behaviour, mobility and populations of Aboriginal people during the earliest occupation and visitation of the southeast Australia, and through the Last Glacial Maximum (24-18ka) - a significant climatic period of drying and cooling. These deposits also contained glass artefacts, and demonstrate post-contact interactions between Aboriginal people and early European settlers, and thereby meeting historical significance thresholds.

A review of the proposed development design indicates that impacts would occur to all four archaeological landscapes present within the project area (Figures 8 and 9). Of the four archaeological landscapes, all will be subject to impact, varying from 24 to 38% of the deposits within the project area. Of these, the most significant (source-bordering dune) will be subject to some 1,417m² (or ~22.5% of the identified deposit within the project area) when considering the direct impact corridor of the road, and adding a 4m buffer to address ancillary activities. A management strategy and recommendations to address these impacts has been provided, which includes archaeological salvage of 149m² of the source-bordering dune (equivalent to ~10% of this deposit within the impact corridor) within the lower Thompson Square park. Archaeological salvage is proposed to be undertaken as two open area excavations in the vicinity of SA 8-10, and SA 29.
Figure 4 - Aboriginal testing locations south of the river. Note some test pits were slightly relocated for reasons of practicality, safety and/or due to the presence of services.
Figure 5 - Aboriginal testing locations north of the river.
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Figure 10 - Areas of Aboriginal archaeological sensitivity, based on 2016 test excavation results.
Figure 11 - Areas of Aboriginal archaeological sensitivity, based on 2016 test excavation results, southern project area only.
2.1.2 HISTORICAL ARCHAEOLOGICAL TESTING PROGRAM

Below is a summary of the key findings of the historical archaeological testing program. For full details of the testing work please see the Test Excavation Report – Historical Archaeological Heritage (AAJV 2017).

- Historical archaeological excavations consisted of investigation of 5 test trenches on the northern side of the Hawkesbury River and 10 test trenches on the southern side of the river (Figure 10). In addition, 16 of the Aboriginal test pits were found to contain historical archaeological remains.

- Despite the high level of disturbance of the subject area by various site formation processes, the historical archaeological test excavations identified significant relics dating from the early days of the site's occupation. These relics represent remnants of the early 19th century structures and include: a brick footing likely to be associated with the c.1815-1820 entry gate and compound wall of the Government Domain; a brick and stone surface associated with the c.1830 Government Stables; and a brick box drain possibly connecting the former Government Stables, or Andrew Thompson’s 1803 Store, with a c.1815 vaulted brick drain which is believed to run through Thompson Square to the river. This group of the early 19th century relics is considered to be significant at a State level.

- Various other archaeological evidence was also exposed including: yard deposits and features retrieved in the vicinity of the former Punt House; 19th century artefacts and modified topsoils within the north portion of Thompson Square; a late 19th century cobblestone path; an early 20th century Telford road base located along the west side of the current road reserve of Bridge Street (between George Street and Macquarie Street); a portion of the late 19th century asphalted road surface within the southern portion of Thompson Square; soil deposits and postholes dated to the late 19th and early 20th centuries; various alluvial fills documenting flood events; and scattered artefacts and isolated features across the entire test excavation area. This type of archaeological evidence is considered to be significant at a local level.

- The historical archaeological artefact assemblage comprised 3,147 artefacts, predominantly fragments of ceramic domestic vessels. The assemblage also included tobacco pipes, personal objects (buttons, pins), metal fasteners and artefacts related to architectural/structural activities such as bricks, fragments of roofing slate, fencing wire, etc. All retrieved artefacts have been washed, sorted, catalogued and analysed.

- European artefacts bearing signs of modification for use by the local Aborigines-representing direct contact between the settlers and local Aborigines are considered to be of State heritage significance.

- The test excavation and geophysical investigation did not result in the discovery of the main brick barrel drain that discharged into the river. It is possible that the drain is on a slightly different alignment to that originally assumed, or that some sections of the drain were removed to facilitate the construction of Windsor Bridge and the associated access road.

- North of the river, no historical archaeological remains of early structures were identified within the project area (the site of the Squatter’s Arms Inn is outside of the existing impact corridor). Small historical artefactual deposits were located within fill and may relate to the dumping of topsoil in this area for market gardens and, later, turf farming.

- The identified historical archaeological relics were preserved at various depths ranging from 20cm to 2m below the current ground levels. The relics found under the road near the traffic roundabout at the George and Bridge Streets intersection were located closest to the current ground levels (within 20cm).
All of the exposed structural remains were retained in situ and appropriately protected prior to backfilling, with the exception of small sections of the mid- to late 19th century cobblestone path and parts of the Telford road base on George Street, which were removed to allow the investigation of underlying deposits for Aboriginal materials.
Figure 12 - Location of all archaeological test pits containing historical archaeological material.
Figure 13 - Historical archaeological sensitivity, based on 2016 test excavation results.
2.1.3 MARITIME ARCHAEOLOGICAL TESTING PROGRAM

Below is a summary of the key findings of the maritime archaeological test excavation and survey undertaken in 2016. For full details of the maritime archaeological testing program, please refer to the Underwater Surveys and Test Excavation Report (Cosmos Archaeology 2017).

Findings of the maritime archaeological testing program include:

- The field investigation took place over five days from the 29th August to 2nd September 2016. All diving was carried out from a dedicated dive platform using Surface Supplied Breathing Apparatus. Water visibility was less than 0.2 m.
- Nine underwater diver transects were swum over two days for the purpose of mapping the site and locating optimum positions for the three test trenches (Figure 14).
- Test trench 1 - The riverbed surface in the immediate vicinity of UWTT01 sloped down relatively gently towards the centre of the river and was composed of a thin (20 mm) layer of loose silt which overlaid loosely compacted cobbles ranging in size from 100 mm to 200 mm across (Figure 15). What appeared to be an engine block was located approximately one metre upstream of the test trench. 6 modern (late 20th century) artefacts were recovered from the trench.
- Test trench 2 - The riverbed surface in the immediate vicinity of UWTT02 sloped down relatively gently towards the centre of the river and was composed of a thin (20 mm) layer of loose silt which overlaid loosely compacted cobbles ranging in size of up to 300 mm across (Figure 15). On the riverward side of the trench was a partially buried timber log, approximately 400 mm in diameter, which lay approximately parallel with the river bank. Approximately 1.5 m of the log was exposed and this exposed section was greatly degraded from marine borer damage. Adjacent to, and lying alongside, was another log which was mostly buried and had an apparent smaller diameter of around 300 mm. Approximately 0.5 m of this smaller log was exposed and displayed little evidence of marine borer damage. 19 artefacts were recovered, dating from the late 18th to early 19th century.
- Test trench 3 - The riverbed surface in the immediate vicinity of UWTT03 sloped down relatively gently towards the centre of the river (Figure 15). Exposed on the surface were cobbles ranging in size from 100 mm to 300 mm with the occasional larger stone of up to 400 mm. There was no silt covering the cobbles. Eight artefacts were recovered dating from the late 18th to late 19th century.
- Artefacts from all trenches were recorded and reburied within the relevant trench.
- It was recommended that a more comprehensive archaeological excavation take place prior to construction works commencing that would mitigate the loss of archaeological information as a result of the implementation of the bridge design and associated erosion protection measures. The excavation would address the relevant research questions posed in Section 4.8.2.4 of the ARD, these being modified to specifically address the former Windsor Wharf ca.1814 to 1940.
- The excavation approach would focus on the exposed bed logs adjacent to UW Test Trench Two with the objective of exposing the whole of these bed logs and ascertaining whether they are fastened together, end on end. The excavation would determine whether there are any further bed logs shoreward and riverward of the aforementioned logs. In addition, further excavation would take place within the footprint of the four proposed bridge pylons. As part of the excavation, all artefacts exposed will be recovered to provide a better understanding of the activities that took place on and around the wharf.
Figure 14 - Maritime test trench and survey transect locations undertaken by Cosmos Archaeology 2016.
Figure 15 - Site plan of the maritime archaeological findings, 2016
2.2 Archaeological Impacts of the Windsor Bridge Replacement Program

The Windsor Bridge Replacement requires, in summary:

- The construction of a new 3 lane bridge east of the original Windsor Bridge;
- New approaches and abutments, including a new abutment structure along the east side of Thompson Square;
- Relocation of services, establishment of new services including road signalling and lighting;
- Resurfacing of Bridge Road south of George Street and partially into George Street on either side of the intersection with Bridge Street;
- Construction of a new roundabout and approach roads north of the Hawkesbury River;
- Construction of a new stormwater detention basin north of the Hawkesbury River;
- Construction of scour protection and erosion control works along the north and south river embankments, extending partially into the river;
- Modifications to roadways along the southern river edge to incorporate improved vehicle access to the existing wharf;
- Modifications to Thompson Square, including the infill of the existing road cutting, the re-joining of the bisected Thompson Square, minor alterations to ground surface levels within the park area, the provision of stairs along either side of the park and replanting;
- Soft and hard landscaping and heritage interpretation installations north and south of the river.

For full details and description of the project, please refer to the Environmental Impact Statement.

These works will have a range of archaeological impacts, as follows:

**North of Hawkesbury River**

RMS has advised that the bridge will be progressively constructed from the north side of the Hawkesbury River, to the south, with the main construction site compound to be located north of the river in the area of the former turf farm.

In relation to further archaeological works in this area:

- No Aboriginal or historical archaeological materials of moderate, high, or very high significance were located in these areas during the 2016 testing program.
- No maritime archaeological significance has been identified for the northern river embankment.
- No further on-site archaeological works are recommended in this area for either historical or Aboriginal heritage.
- No maritime archaeological works are recommended along the northern river embankment.
- Stop-work protocols in the event of unexpected discovery are to be incorporated into the Construction Environmental Management Plan for this area (detailed later in this document).

**Within the Hawkesbury River**

The new Windsor Bridge will require piers within the riverbed, as well as abutment works at the north and south end, and scour protection and erosion control works at each embankment. The majority of the river and the northern embankment have not been identified as archaeologically sensitive. The southernmost set of four piers within the river will however have an impact on maritime archaeological remains which appear to relate to the ~AD1814 wharf.

In relation to further archaeological works in this area:

- The southernmost set of bridge piers will directly impact upon the archaeological wharf remains identified during maritime archaeological testing;
• The scour protection and erosion control works will further bury this area underneath modern fill materials, which will protect, but conceal for the foreseeable future, any investigated maritime archaeological materials;  
• Relocation of the southernmost piers has been investigated by the engineering design team (Jacobs) and it is not technically feasible to relocate these piers to avoid archaeological impacts.

To mitigate these direct impacts from the piers, and the indirect impacts of sealing off of the remaining maritime archaeological deposits, mitigation is recommended. This entails maritime archaeological investigation and recovery in the location of the piers, and their anticipated zone of construction impact; and an adjacent area found to have early archaeological deposits to the east of the zone of direct impact. This is further detailed in the separate Detailed Salvage Strategy for Maritime Archaeology. This investigation is proposed to be undertaken prior to the pre-construction phase of bridge works.

There are no Aboriginal or historical heritage archaeological requirements within the Hawkesbury River.

South of the Hawkesbury River

The main Aboriginal and historical archaeological impacts of the WBRP will occur south of the Hawkesbury River. These impacts will include:

• Excavation works for piers and pile caps beneath the southern bridge approach;  
• Excavation works for the sides of the abutments;  
• Excavation to disconnect, cut into or relocate existing services;  
• Excavation to establish new services including water, sewer, stormwater, electrical, telecommunications and road signalling;  
• Excavation to resurface existing roadways south of the intersection of George Street and Bridge Street;  
• Excavation to reshape landforms within Thompson Square;  
• Excavation for staircases to be located along the east and west side of Thompson Square;  
• Excavation to lower the roadway along the river edge to provide bus access to the wharf;  
• Excavation to establish a bus turning bay including a retaining wall, to the east of the new abutment;  
• Excavations within Thompson Square for landscaping, interpretation and park infrastructure.

The majority of these impacts are within the alignment of the new bridge. In discussions with RMS, a 4m buffer has been further added on either side of the maximum designed bridge width to accommodate anticipated impacts plus construction-related indirect impacts, such as haulage roads, scaffolding, formwork, etc in the areas identified as most archaeologically sensitive. The buffer zone east of the new bridge will reach to the project boundary along the east side of Bridge Road and will cover the construction impacts as well as any reestablishment works required for access roads, kerbing and footpaths. It should be noted that the 11kV overhead electrical wires in this area will be relocated underground, however the existing 33kV cables will remain in place. The buffer zone to the west of the new bridge alignment will encompass the construction impacts for the western part of the abutment, as well as the construction of the new staircase in this location, which runs adjacent to the west side of the abutment.

These areas within the bridge and road corridor (plus the buffer zones) encompass several areas of moderate, high and/or very high archaeological significance (Figure 11), and which will likely be impacted by the WBRP. Some areas of land underneath the new abutment may remain unexcavated between the rows of piers and pile caps, but will still be likely to have indirect impacts from such works (Figure 16). Areas beyond the buffer zone are recommended for archaeological monitoring for historical archaeological materials in some areas, while other areas have either been identified as not containing
significant archaeological material, or which are anticipated to receive only minor impacts; and are recommended for stop-work protocols during construction only.

The main area identified for Aboriginal archaeological salvage excavation is within lower Thompson Square. This area has intact sand body deposits, which contain high to very high archaeological material dating to 27-17ka. Much of this area will be heavily impacted upon by excavations for piers, pile caps, abutment walls and ancillary infrastructure. This investigation would be undertaken following historical archaeological excavation in this area, and prior to the pre-construction phase of bridge works. Further details of the proposed Aboriginal archaeological salvage program are set out later in this document. While Aboriginal cultural material may be affected in other parts of the project area, here we propose to focus all archaeological mitigation in two areas, and exempt the requirement for any further archaeological work in other parts of the proposed impact zone (see Figures 16 and 17). This is a common approach in Aboriginal cultural resource management, where other mitigation methods such as ‘monitoring’ provide little beneficial information. Once the archaeological mitigation outlined in this document is undertaken, there are therefore no further Aboriginal heritage requirements – with the exception of stop-work procedures mainly focussing on the discovery of unidentified human remains.

The area of lower Thompson Square is also proposed to be fully investigated for historical archaeological remains, based on the results of the testing, the level of construction impact and the necessity to remove the upper layers prior to the Aboriginal salvage investigations. The full proposal for this area, referred to as Area 1, is set out below in Figure 35. The remaining areas of historical archaeological potential recommended for salvage are located within roadways, footpaths and other areas where it is logistically difficult to restrict access prior to pre-construction and construction formally commencing on site.

In order to remove the need to conduct two major excavation programs (archaeological salvage and construction) in quick succession, with the attendant disruption and community impact, it is proposed to stage portions of the historical archaeological salvage works during the construction program. Each of these areas would be fully archaeologically investigated prior to construction impacts occurring in the particular area.

The staged approach to the historical archaeological salvage work is proposed to minimise impacts to the community from noise, access and traffic issues and to minimise the expense of reinstating the roadways within the salvage areas on multiple occasions. It is therefore proposed that the remaining areas recommended for historical archaeological salvage, identified as Areas 2 to 5 in Figure 35 below, will be excavated during the construction program, but prior to any construction impacts in those areas. The full proposal for these areas is detailed later in this document.

There are no maritime heritage archaeological requirements south of the Hawkesbury River.
Figure 16 - General layout of new works within the southern project area (plus buffer zone).
Figure 17 - Overlay of general arrangement of new works in the whole project area over areas of historical archaeological sensitivity.
Figure 18 - Southern project area showing new works overlaid on areas of historical archaeological sensitivity.
Figure 19 - Level of existing ground cover over source-bordering dune archaeological landscape in the southern project area.
Figure 20 - Service relocations and new services within southern project area.
Figure 21 - Existing services within southern project area.
Figure 22 - Areas of historical archaeological sensitivity with new bridge, 4m buffer and new services indicated.
Figure 23 - Proposed new services plus .5m buffer.
Figure 24 - Estimated levels of proposed change in the ground levels in the southern project area, in relation to the Aboriginal test pits.
Figure 25 - Estimated levels of proposed change in the ground levels in the southern project area, in relation to the historic test trenches.
Figure 26 - Location of proposed bridge piers and scour protection layer relative to maritime archaeological remains.
2.2.1 COMPARISON OF ARCHAEOLOGICAL IMPACTS OF EIS DESIGN AND DETAILED DESIGN

A general arrangement of the bridge and associated roadworks was set out in the 2012 EIS for the Windsor Bridge Replacement Program. That design was concept design only and has now been superseded by the 2017 Detailed Design by Jacobs. The following figures below show the comparison between the impacts of the 2012 and 2017 designs, based on the understanding of the archaeological sensitivity and significance of the site following the 2016 testing program. The EIS Design did not incorporate detailed information regarding the bridge substructure, which is now available in the Detailed Design and has been considered in the development of the Detailed Salvage Strategy. Relevant extracts from the Detailed Design are contained in Appendix A.

The general alignment of the bridge in terms of its ground position has not significantly changed between the EIS Design and the Detailed Design. The terrestrial archaeological impacts are therefore essentially the same as those predicted at EIS stage. Modifications made to the bridge design are largely around height, finishes, lighting and other aboveground works that do not affect archaeological heritage. Where relevant to broader heritage issues and impacts, these are addressed in Volume 3 of the Strategic Conservation Management Plan.

With respect to maritime archaeological heritage, the southernmost set of bridge piers within the Hawkesbury River cannot be relocated without a complete redesign of the bridge (as advised by RMS and Jacobs). The impacts of these piers are therefore catered for in the Detailed Salvage Strategy for maritime archaeology. Similarly, the scour protection works are separately assessed in terms of their impacts to maritime archaeological heritage.

In summary, the archaeological impacts between the EIS Design and Detailed Design are not substantially different, and therefore the Detailed Salvage Strategy for all archaeological disciplines has been developed to cater for those impacts.

The following series of plans illustrates the difference between the EIS Design (black outline) and the Detailed Design (coloured areas) in relation to the archaeological heritage of the study area.
Figure 27 - Condition B8 comparison of EIS Design and Detailed Design, north of the river. Black contours denote the 2012 EIS design, coloured areas the 2017 detailed design.
Figure 28 - Condition B8 comparison of EIS Design and Detailed Design, south of the river. Black contours denote the 2012 EIS design, coloured areas the 2017 detailed design.
Figure 29 - Condition B8 review of EIS Design in relation to depth of Aboriginal archaeological deposits, south of the river. Black contours denote the 2012 EIS design.
Figure 30 - Condition B8 review of Detailed Design in relation to depth of Aboriginal archaeological deposits, south of the river. Black contours denote the 2017 detailed design.
Figure 31 - Condition B8 review of EIS Design in relation to depth of Aboriginal archaeological landscapes. Black contours denote the 2012 EIS design.
Figure 32 - Condition B8 review of Detailed Design in relation to depth of Aboriginal archaeological landscapes. Black contours denote the 2017 detailed design.
Figure 33 - Condition B8 review of EIS Design in relation to areas of historical archaeological sensitivity. Black contours indicate the 2012 EIS design.
Figure 34 - Condition B8 review of Detailed Design in relation to areas of historical archaeological sensitivity. Black contours indicate the 2017 detailed design.
2.3 Proposed Sequencing of Salvage Excavation

As discussed above, there are practical limitations on the undertaking of elements of the archaeological salvage works prior to the formal start of pre-construction and construction. It is not possible nor practical to close the intersection of George and Bridge Streets, as well as Old Bridge Street, in their entirety to undertake the archaeological investigation works. Where areas have been identified as able to be excavated without road closures or major community disruption, these areas will be archaeologically investigated prior to pre-construction. Other areas will be progressively investigated during pre-construction and construction phases, as these areas are able to be closed off to traffic.

The AAJV has developed the following approach to minimise community disruption from the archaeological salvage works. This complies with the intent of Conditions C13 to C21 regarding Noise and Vibration generally, as well as Conditions C44 to C46 regarding Transport and Access.

Staging of the SSI project is allowable under Condition A5 of the Minister’s Conditions of Approval, and the Detailed Salvage Strategy sets out a staged approach to the archaeological works, to minimise community disruption and align with the progress of construction works throughout the project zone. Given the complexity of the subject site (e.g.: high volume pedestrian and vehicular activity, restricted construction space, close proximity of heritage items, etc), some archaeological works are proposed to be undertaken prior to the pre-construction phase of the project. Other elements of archaeological work will need to be undertaken during both the pre-construction and construction phases, as various areas are identified for disturbance for works.

It is therefore proposed to undertake the archaeological salvage works in accordance with the following general sequence as shown in Figure 35 below (see also Figures 17 and 18 above):

- Prior to pre-construction:
  - Maritime archaeological salvage program
  - Historical archaeological salvage program, Area 1
  - Aboriginal archaeological salvage program, approximately 150 m²

- During pre-construction:
  - Historical archaeological monitoring as required for service relocations, surface works and minor excavation, as indicated within project area
  - Stop-work protocol to apply in all other areas of proposed impact
  - Area salvage excavation of any significant finds within monitoring or unexpected finds areas

- During construction:
  - Archaeological salvage excavation of Areas 2 to 5, as access is available during construction but prior to impact.
  - Historical archaeological monitoring as required in indicated areas.
  - Stop-work protocol to apply in all other areas of proposed impact
  - Area salvage excavation of any significant finds within monitoring or unexpected finds areas

As it is anticipated the construction program may take up to 2 years from commencement, reporting will be staged as follows:

- The maritime and Aboriginal salvage reports will be completed within 6-12 months of the completion of the salvage excavations.
- A first interim excavation report on Area 1 historical salvage will be completed within 6 months of completion of excavation in that area.
• Ongoing reporting of monitoring and unexpected finds will occur throughout pre-construction and construction.
• A second interim historical archaeological report will be completed within 6-12 months of the construction phase salvage works in Areas 2 to 5.
• A final historical archaeological report synthesising the results of both interim reports and any other progress reports will be completed within 6-12 months of the entire construction program.
Figure 35 - Proposed historical archaeological salvage excavation areas. Note the proposed compound is indicative only, and may be relocated. As of August 2017, it seems most likely the main site compound will be located north of the river in the site used for test excavation, which has now been confirmed to have no Aboriginal or historical archaeological potential.
3 ABORIGINAL HERITAGE – DETAILED SALVAGE STRATEGY

3.1 Rationale

Following the testing program findings, it is considered that additional archaeological mitigations are warranted within the source-bordering dune archaeological landscape that may be impacted by the proposed development (Figure 9). The proposed development would impact a substantial proportion of this deposit, a cultural deposit of high and very high significance. This deposit is of prodigious archaeological and cultural importance, since it contains evidence of some of the earliest visitation and occupation of Aboriginal populations to the Sydney Basin (and southeast Australia); demonstrates continuous occupation through the Last Glacial Maximum, and was likely a refuge for people during a time when Aboriginal populations crashed (Williams et al., 2015); and provides tangible evidence for interactions between Aboriginal people and early European settlers in the early 19th Century.

Given the importance and significance of this deposit, the mechanical excavation of some 15.8m$^2$ of the deposit (0.16%) to date is inadequate to provide a meaningful or statistically robust dataset to characterise the deposit, or for its long term curation (i.e. conservation ex situ). This small sample size must also be compared against the Windsor Museum site, the only other investigation in this deposit, which unfortunately did not undertake a detailed investigation, analysis or curation of that part of the cultural deposit (due to it being the first excavation in the sand deposit, and was not well-understood at the time of investigation). In addition, the cumulative impact of this activity to the wider deposit is unknown, since its extent is poorly studied to date. Following the same elevations along the southern bank of the river suggests that other portions of the deposit may be present, such as in undeveloped parkland and back gardens along The Terrace; this is, however, a prediction based on our understanding of the geomorphology of the place, rather than observations based on wider sampling and testing. Given the generally developed nature of Windsor, the cultural deposits within Thompson Square are likely to represent some of the best preserved portions of the cultural assemblage in this general region. Within Thompson Square, the impact corridor includes some of the more intact and deeper portions of the source-bordering dune deposits, as well as the two test pits (SA 8 and SA10) that contained post-contact cultural materials.

It is considered that the level of test excavation has been adequate to characterise and assess the development footprint in relation to cultural materials, but is insufficient to appropriately document the findings of source-bordering dune archaeological landscape if it were to be partially impacted or destroyed. (This is especially the case in these archaeological excavations, since the depth of the deposits made many of the test pits unsafe to enter for detailed sampling and recording, as the timing of the testing program did not allow of the installation of shoring within test pits). Given the nature of the development, it is unlikely that burial in situ, or conservation of these deposits is feasible, and as such archaeological salvage – conservation ex situ – is the only viable alternative. Such works would also provide an improved characterisation of the parts of the site remaining unaffected by the development.

Due to the relatively coarse nature of the test excavations (the main aim of which was to identify the presence or absence of Aboriginal objects, as well as their broad spatial patterning and extent), salvage excavations are proposed so as to undertake a more detailed recovery and recording of cultural deposits within the impact corridor; obtain a much larger sample of the archaeological assemblage for analysis and long-term curation for future generations; and to undertake additional environmental and chronological analysis to further understand the site’s formation and use in the past. The information gathered from a program of mitigation salvage would contribute to the sparse body of knowledge on past Aboriginal people’s activities and occupation of the area, contributing to the archaeological literature and providing an important source of information for the Aboriginal community to draw on. It would further resolve the research questions posed, many of which have only been partially answered through the test excavations. It would also result in greater interpretive and education outcomes for the local and regional community, and further empowerment of the local Aboriginal community. There is

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also a range of cultural reasons for undertaking the salvage, to ensure the Aboriginal communities have an awareness of, and association with, the deposits before their destruction.

### 3.2 Proposed Mitigation Measures

The proposed mitigation of the project impacts to Aboriginal archaeological heritage is focussed on the recovery of information from the deep Pleistocene (>$10$ka) and early Holocene (5-10ka) sand body within the project area, due to its very early age, concentrations of cultural material, and the degree of project impact. To reach the depth of the sand body, areas above will also be investigated for historical heritage, which would include a focus on Contact period material. This investigation is proposed to be completed prior to the commencement of the construction program for the Windsor Bridge Replacement Program.

The aims of the Aboriginal salvage works are:

- To answer and/or resolve the research questions outlined in the Aboriginal excavation report, notably in relation to the formative and stratigraphic nature of the deposits, and what they can tell us about Aboriginal populations during the initial colonisation and use of the Sydney Basin, and the post-contact interactions in the early 19th Century.

- To use fine resolution excavation and environmental analyses to further characterise the archaeological deposits relating to the past Aboriginal occupation of the source-bordering dune archaeological landscape. This includes a greater understanding of resource exploitation; technological attributes (e.g. heat treatment); identification of any change through time in spatial and chronological phases of activity; and site formation processes.

- To obtain the largest possible assemblage of Aboriginal objects, for detailed documentation and long-term curation, within the spatial limits of the impact corridor and the financial/time constraints of the project.

- To allow greater cultural association between the site and the Aboriginal stakeholders (i.e. a form of ‘cultural salvage’) through involvement in the excavation, and options for the interpretation of the results, in consultation with the Aboriginal stakeholders.

- To ensure that the development can proceed with a minimised risk of unknown or unexpected significant Aboriginal objects/features being harmed during construction.

- To compile the existing knowledge of past Aboriginal activities along this portion of the Hawkesbury River corridor, which is proving of high importance to our understanding of Aboriginal history.

- To inform future interpretation proposed for the project area.

- To integrate with the recommendations of the Hawkesbury Sand Body Regional Study to provide a holistic and comprehensive understanding of the sand body archaeological landscape and cultural materials within it.

Following completion of these works, the finds will be subject to a detailed analysis during the post-excavation program, including further scientific dating, palaeoenvironmental analysis and other scientific testing. The results of this work will be incorporated into a final *Archaeological Salvage Report – Aboriginal Heritage* and will also be used to inform final interpretation of the project area in the *Interpretation Plan*. 
Further Aboriginal archaeological works are not anticipated during the construction program, however standard stop-work protocols are proposed for the Construction Environmental Management Plan.

### 3.2.1 RESEARCH QUESTIONS

The following research questions were included in the approved Aboriginal archaeological research design, and will continue to form the basis of the Aboriginal salvage excavation:

- What is the spatial and stratigraphic extent of Aboriginal sites and/or material culture within the WBRP?
- What is the age, integrity and significance of Aboriginal sites and/or material culture within the WBRP?
- What are the environmental characteristics associated with the distribution of Aboriginal cultural heritage within the WBRP? Can the formative processes of the stratigraphic profile provide information on the nature and/or survivability of the archaeological resources? Are there other key factors in the distribution and extent of the material culture within the WBRP?
- How do the cultural materials compare with other Pleistocene sites nearby? What can the material culture tell us about the populations and behaviour of Aboriginal hunter-gatherers during the last 30,000 years?
- Is there any evidence for contact period archaeology between the local Aboriginal people and Europeans within the WBRP?
- What are the cultural, social and public values associated with the Aboriginal archaeological resource in the southern project area?
- How should the Aboriginal sites in the region be conserved and managed in future?
- Using fine resolution excavation and environmental analyses to further characterise the archaeological deposits relating to the past Aboriginal occupation of the source-bordering dune archaeological landscape. This includes a greater understanding of resource exploitation; technological attributes (e.g. heat treatment); identification of any change through time in spatial and chronological phases of activity; and site formation processes.

### 3.3 Extent of Salvage

Overall, it is proposed to undertake 149m² of open area excavation of the source-bordering deposit within the impact corridor (Figure 36). This number represents ~10% of the potential impact, and provides an equitable balance between the volume of archaeological material that may be recovered, compared with the costs and time to undertake such works. From an archaeological perspective, assuming average artefact densities of ~50/m² are present across the deposit (as appears to be the case), this would result in the recovery of ~7,500 artefacts. This value would form a substantial collection for analysis and long term curation, and be comparable with the assemblages at both Windsor Museum (~12,000) and Pitt Town (~10,000). Cumulatively, these three sites assemblages have the potential to represent one of the most substantial and significant artefact collections in the Sydney Basin, and across much of Australia for the LGM period.

In accordance with the approaches outlined in the Aboriginal excavation report, open area excavations are proposed, since these are usually the most successful for achieving the research objectives above,
most notably retrieving a large assemblage and gaining greater understanding of the use and occupation of the site; and is the simplest and most cost-effective approach to large-scale excavations (rather than multiple smaller excavations across a large area). Given excavations are likely to exceed 2m below surface, the health, safety and environmental (HSE) requirements (e.g. shoring) for larger excavations would also be more straightforward than excavation of multiple smaller areas.

The mitigation works are proposed to focus around four test pits within the impact corridor, and which have shown high artefact densities and/or other features of archaeological significance. These include SA 8, SA 9, SA 10 and SA 29. The excavations have also had to consider several logistical and HSE conditions in the vicinity of these test pits, specifically:

- The presence of a large, deep sewer main running broadly east-west through Lower Thompson Square (between SA 8 and SA 9) restricts the size of excavation in order to avoid it. This is especially the case in the northern (lower) part of the park, where the deposit begins to taper off. Avoidance of the pipe is preferable since it has likely compromised the integrity of any archaeological deposit present.
- The sand body deposit tapers off to the north (lower part) of the park in the vicinity of SA 8. This restricts any excavations too far north of SA 8, without the potential to miss the deposit. When combining this issue with the sewer main to the south, it provides a finite north-south distance within which a salvage area could be situated.
- There are several large trees in the vicinity of SA 29. These have likely affected the integrity of any under-lying cultural deposit, and cannot be removed at this stage of the project. The salvage areas are therefore proposed to maintain as much distance as possible from these features.
- The upper soil profile of the site is likely to contain asbestos due to the presence of a 20th Century structure in this area, and based on previous findings. These deposits would need to be managed carefully and removed from site by appropriately qualified waste contractors. It would be unfeasible and unsafe to have personnel undertake detailed investigation of these upper deposits (which have previously shown to contain minimal cultural deposits).
- Due to the substantial depths needing to be reached as part of the excavations (~2-2.5m below surface), a suitable distance needs to be included around the edge of the salvage areas to allow benching or shoring to be installed. Typically, this is about a metre beyond the excavation area, and accounts for why the salvage areas would not abut the very edge of the impact corridor (Figure 36).

Based on the findings of the archaeological program, and the practical constraints outlined above, we propose to undertake two large open area excavations in the vicinity of the four test pits (Figure 36). The southern salvage area would be 10 x 10m in size (equating to 100m²), while the northern salvage would be 7 x 7m in size (equating to 49m²). The southern salvage has been situated to be as close to SA 9 and SA 10 as feasible within the constraints, while the northern one is in close proximity to SA 8 and SA 29. The location and orientation of the salvage areas are indicative at this stage, and may require slight revision when established on the ground, and existing infrastructure, trees, fall of slope, etc, are all better mapped. It is considered that this approach is similar in extent and approach to other sites in the Cumberland Plain (that usually undertake open area excavations in 100m² (10 x 10m) increments (e.g. ENSR AECOM, 2008; Jo McDonald Cultural Heritage Management, 2005; Staib, 2002, Williams et al., 2014), while spaced widely enough to provide an opportunity to explore intra-site activities across the archaeological landscape (within the confines of the impact corridor). In over 15 years of consulting archaeology, we find this approach (outlined below) provides sound archaeological outcomes efficiently.
3.4 Methodology

The proposed methodology is consistent with the archaeological excavations at nearby Pitt Town (Williams et al., 2014), and broadly similar to those at the Windsor Museum site (Austral Archaeology, 2011); and in accordance with those indicated in the WBRP existing Aboriginal archaeological research design. The use of the results in the post-excavation analysis and reporting showed that the methodology provided meaningful information, which could allow for long term curation with the Australian Museum; data acceptable for international publication; and able to assist in wider education and interpretive outcomes.

A surveyor would be engaged to plan the locations of the salvage excavation areas, and establish a site datum, in order to record the level of deposits and features. All excavations would be started at the current land surface. While there is generally 50-100cm of overburden above the main cultural deposit, modified glass artefacts have been found throughout the soil profile. Therefore, the overburden must also be investigated to recover any further post-contact cultural material that may be present. These works would be undertaken concurrently, and with participation of historical archaeologists to ensure any historical deposits are appropriately recovered and recorded (see further detail in the Historical Archaeology Methodology below). Excavation would be undertaken to the base of stratigraphic units 3 and 4 where present. Based on the test excavations, this would likely result in excavations of 2-2.5m below current surface level. Given these depths, for HSE purposes, the following excavation process is proposed:

1. The Aboriginal salvage area locations plus a 1m margin would be excavated to the base of the historical deposits (~1m below surface) by the historical archaeological team as part of their mitigation program. Where early 19th Century deposits are encountered, these would be investigated by a combined Aboriginal and historical team, and include sieving of the sediment for cultural materials. This process would provide a suitable and safe working platform at ~1m below the current surface - larger than the salvage area, and resulting a benched excavation of ~1m around the final excavations.

2. The excavations of the salvage excavation would be undertaken by the Aboriginal archaeological team to the base of the stratigraphic units 3 and 4. These works would begin at the base of the excavations reached in (1), and be constrained to the salvage area (likely 1m less than the works in (1)). This overall depth of the salvage excavations would, therefore, be ~2-2.5, below current ground surface (based on the test excavation program), but would be ~1-1.5m below the working platform developed by (1).

Following the historical archaeological mitigation program (1 above), all excavation would be undertaken manually, using shovels, mattocks and trowels, etc, by a team of archaeologists and Aboriginal stakeholders. Excavations would be undertaken in contiguous 0.25m² (50x50cm) test pits and in 5 cm spits up to the total area permitted. Each test pit would be dug discretely with AHD heights being obtained every four spits to ensure vertical integrity. Each test pit would be given an alphanumeric label for identification purposes. A standard site recording form would be used for each spit of each excavation unit (50x50 cm). Details would include site name, date, site recorder, spit number and depth, square ID, description of finds, description of soil, sketch plan of excavation (if relevant to show feature) and a bucket tally.

Some of the targeted test pit locations contained historical relics and features (notably SA 29), and which are proposed for historical archaeological salvage. It is considered that these would generally be 0-1m in depth, and form part of the historical archaeological mitigation program (1 above). Where these

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1 At least one archaeologist experienced and skilled in the recognition of historic material will be nominated and included in the Aboriginal archaeological team to ensure that historic relics, features and deposits uncovered are appropriately identified and recorded.
deposits extend into the Aboriginal archaeological program and/or where early 19th Century deposits with potential to contain cultural materials are encountered, the Aboriginal archaeological team would work with the historical team to excavate these areas using their preferred approach (which may differ from above). We would ensure that all sediment (whether recovered by spit or context) is sieved in accordance with the approach for the rest of the Aboriginal salvage excavations. Once natural soil profiles beneath the historical deposits or overburden is identified, the methodology proposed here would be implemented.

Sediment from each 5cm spit would be collected separately, weighed, and wet sieved through a 3mm mesh. A series of filtration tanks will be used to remove sediment to allow the recirculation of the water for further sieving. Sediment will be periodically pumped out by sucker truck and disposed of off-site, or stockpiled for backfilling of the test pits. This will depend on the availability of space for stockpiling and the final project environmental requirements.

Any Aboriginal objects recovered from the sieved sediments will be retained in a plastic bag with the relevant pit alpha-numeric code written upon it. Within the overburden layers, historical materials would also be recovered to provide a chronology of any post-contact cultural material that may be present. Aboriginal objects will be removed from site each evening and stored in a secure off-site storage facility during excavation works, prior to transfer to the archaeologists’ offices for analysis.

If discrete high-density artefact concentrations or cultural features, such as hearths, are revealed during the excavation, these will be excavated and recorded (by photography and planning). The locations of in situ artefacts in such features may also be individually recorded.

During, or immediately following, completion of the excavation, a range of soil and chronological samples will be taken. Soil and environmental samples will be taken at regular intervals through the soil profile (probably in the order of 2-5cm) and retained in labelled plastic bags for subsequent analysis. Radiocarbon and/or OSL samples would be taken in areas where Aboriginal objects are found, and generally try to bracket the deposit (to provide a maximum and minimum age). Material for radiocarbon analysis may also be undertaken opportunistically if archaeological features containing charcoal or other dateable material are evident.

All test pits, and the final open area, would be documented using photographic records, written descriptions and scaled drawings.

At the conclusion of the excavation works, the pits will be backfilled using the stockpiled excavated material, or clean fill, and the site stabilised and reinstated.

Excavation procedures and protocols may be modified at the discretion of the Excavation Director in consultation with the Aboriginal stakeholders and RMS as the conditions in the field and nature of the excavations develop.
Figure 36. The proposed archaeological salvage program focussing on SA8-11 and SA 29 in the lower Thompson Square park. Note the salvage areas should be considered indicative, and are established to encompass (but not necessarily centred upon) SA 8-11 and SA 29 based on local conditions and to be within the impact corridor. Please note that these locations are indicative.
3.4.1 POST EXCAVATION ANALYSIS AND REPORTING

The post-exavation analysis would be designed to address the research objectives and specific research questions (Section 4.1.1 and 7.3.2), along with other relevant questions that may arise based on the results of the excavation. Results of analysis would be presented in relation to comparative site data where possible and where useful in addressing the research questions.

Post-excavation analysis would be similar to those outlined in detail in the AARD (Previously submitted – see Section 5.6), and include detailed stone artefact analysis (including usewear and residue analysis), shell/faunal, geomorphological, palaeoenvironmental, and chronological analysis. As a guide, these should include (but not be limited to):

- **Lithic Analysis**: cataloguing of all cultural material recovered, including measurements, weight, raw material, reduction and tool identification. A program of conjoin analysis, and investigation of usewear/residue analysis is also considered crucial to resolve some of the post-depositional questions associated with the site.

- **Shell/Midden Analysis**: cataloguing of all cultural material recovered, including measurements, weight, species type, MNI.

- **Geomorphology**: collection of soil samples excavation to assist in understanding the site formation and post-depositional disturbance. Samples should include bulk 5cm soil samples (i.e. 0-5cm, 5-10cm, 10-15cm, etc) and high-resolution soil/environmental samples at 2cm resolution (i.e. 2-3cm, 4-5cm, 6-7cm, etc) from a master sequence at each of the open area excavations. In addition, soil micromorphology samples should be collected from the main cultural layers, at stratigraphic interfaces, and from any areas of geomorphological and/or archaeological interest to further understand the site formation history.

- **Palaeoenvironmental**: this analysis can utilise the material from the geomorphological samples, and should include the investigation of pollen and phytoliths to understand the past vegetation and climate of the region prior to, and during periods of Aboriginal visitation and occupation.

- **Chronology**: OSL and/or radiocarbon samples should be collected from top and bottom of each stratigraphic unit, and bracketing any cultural materials recovered from each open area excavation to provide a strong chronology for the deposit. Based on the archaeological test excavation, this is likely to equate to ~5-8 samples per open area excavation (~20-24 in total).

The aim of this work is to both adequately document, analysis and record the cultural deposits and assemblages for future generations, and to build upon the findings of the archaeological test excavation analysis.

The reporting will be developed to fulfil the MCoA condition C5 in relation to the archaeological salvage, and to provide input into any interpretive outcomes from the project. The report would be developed in accordance with OEH’s guidelines (as current best practice), and include the following broad sections:

- A short summary.
- Describe Aboriginal consultation undertaken during the project.
- Provide details of the Aboriginal objects which were partially or completely harmed (i.e. recovered through the excavations) during the works.
- Provide a description of the methods and results of the any excavations.
- Comment on the effectiveness of the mitigation measures (i.e. salvage excavations).
- Comment on the effectiveness of any management plan if in place.
- The current and proposed location of any Aboriginal objects recovered.
- Details the results of any analysis of recovered Aboriginal objects.
- Ensure the necessary Site Impact Recording Forms are lodged with OEH at completion of the project.

3.4.2 ABORIGINAL OBJECT CURATION

All Aboriginal objects recovered will be securely stored at the archaeologists’ office for analysis.

Given the significance of the source-bordering dune deposits, we believe it meets the thresholds for lodgement with the Australian Museum, and therefore propose this repository for long term curation. This matter will however need to be resolved through consultation with the Aboriginal Focus Group to determine the final disposition of the artefacts.

The curation of the assemblage at the nominated repository would be undertaken following the post-excavation analysis and reporting.
4 HISTORICAL ARCHAEOLOGICAL HERITAGE – DETAILED SALVAGE STRATEGY

4.1 Proposed Mitigation Measures

The proposed mitigation of the project impacts to historical archaeological heritage is focussed on the recovery of information from within the project impact zone, due to the degree of project impact. In situ conservation of historical archaeological materials within the project zone is unfeasible due to the depth of impact and nature of construction.

Portions of this investigation are proposed to be completed during pre-construction, prior to the commencement of the construction program for the Windsor Bridge Replacement Program. Due to logistical issues, such as the difficulty of closing roadways prior to construction, and community impacts associated with road closures and excavation works, other elements of the historical archaeological salvage program are proposed to be undertaken during the construction program.

The aims of the historical salvage works are:

- Further investigate the ephemeral historical archaeological remains within the area of Lower Thompson Square, prior to the commencement of the Aboriginal salvage program.

- Investigate and record the historical structural remains of high significance located during the test excavation program, particularly the drainage structure identified to the east of the new bridge alignment and the footings identified within George Street to the east of the roundabout.

- Archaeologically monitor other areas of the site which are considered of low archaeological sensitivity as indicated below.

- To ensure that the development can proceed with a minimised risk of unknown or unexpected significant historical objects/features being harmed during construction.

- To inform future interpretation proposed for the project area.

Following completion of these works, the finds will be subject to a detailed analysis during the post-excavation program, the results of this work will be incorporated into a final Archaeological Salvage Report – Historical Archaeological Heritage and will also be used to inform final interpretation of the project area in the Interpretation Plan.

In addition to the defined areas of historical archaeological salvage proposed during the construction program, standard stop-work protocols are proposed for the Construction Environmental Management Plan.

For areas outside of the salvage zones, the construction contractor for the WBRP must plan for and mitigate any ancillary impacts which may be caused by construction, including the movement of plant and equipment, compression impacts, vibration impacts, etc. Specific mitigation measures must be detailed in the Construction Environmental Management Plan for the construction phase of the project.

RMS should ensure that there are appropriate contract conditions to ensure all archaeological works can be completed prior to construction impacts.

4.2 Extent of Salvage

The area included in the path of the main redevelopment works that is encroaching upon Thompson Square is proposed for open area salvage excavation (Figure 35 above). The salvage excavation will involve a controlled programme of archaeological investigations across the direct impact zone and the identified 4m buffer zone on either side of the construction impact zone. In general, it would extend the
areas of investigation from the initially excavated test trenches. The open area salvage excavation would be coordinated with, and occur prior to, the Aboriginal salvage programme. Where necessary, the salvage program would be extended into other areas identified for monitoring and unexpected finds, if significant in situ archaeological materials were identified in those areas.

Within the area identified as buffer zone, it is anticipated that this is an area used for construction staging, scaffolding, formwork, haulage and temporary storage. No significant excavation is proposed in these areas for construction. Any required excavation (e.g. resurfacing for a temporary haulage road) will be salvaged, monitored or subject to unexpected finds procedures as per the identified areas of sensitivity. As this work will be undertaken by the yet-to-be-appointed construction contractor under a separate construction methodology, the full nature and extent of those works within the buffer zones are not fully known.

Salvage would involve excavation of a larger area to identify spatial relationships between features or deposits that may be present, and to maximise the information and material that may be recovered from the site. Archaeological excavation (salvage) may also be required during the monitoring program of smaller areas where significant archaeological remains may be identified, but cannot be preserved due to construction.

This category may include the narrow strip of land located in The Terrace Road, close to the riverfront. This area yielded a significant artefact assemblage retrieved from yard deposits associated with the early days of the European settlement. However, given that this area is designated for localised excavation involving installation of services and construction of a parapet wall, the impacts of which are unavoidable, careful salvage excavation would be considered as an appropriate mitigation measure. The salvage would include only the areas within the direct development impact zone; any remains extending beyond the development impacts zone would be retained.

The recording would be carried out in accordance with archaeological best practice involving detailed note taking, archival photographic recording and measured drawing, and GPS and cadastral surveying for future referencing, as outlined in the excavation methodology below. The information retrieved would be used to inform the interpretation of the heritage values of the site.

In terms of the anticipated findings and potential conservation outcomes within each of the historical archaeology areas of sensitivities, the following actions and activities will be undertaken:
<table>
<thead>
<tr>
<th>Area</th>
<th>Impacts</th>
<th>Approach</th>
<th>Anticipated finds</th>
<th>Conservation outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – lower area of Thompson Square</td>
<td>Substantial construction impact, including excavation, piers, footings and ground reshaping for bridge.</td>
<td>Main area of potential in situ archaeological remains, based on testing. Entire area proposed for historical salvage excavation, followed by limited Aboriginal excavation.</td>
<td>Post holes and occupation deposits associated with late 18th/early 19th century occupation. Already disturbed by sewer line and boat shed construction. No structural remains identified during testing.</td>
<td>Limited potential for in situ conservation. There may be some opportunistic locations where materials may be able to be retained in situ and encapsulated below the new bridge, but this is not considered likely given the aggregated impact of construction and service relocations.</td>
</tr>
<tr>
<td>2 – Old Bridge Street and adjacent footpath and road verge</td>
<td>Substantial construction impact, including excavation, piers, footings, service relocations</td>
<td>Full archaeological salvage. Area is already cut down for existing roadway and disturbed by services. Fragmentary remains only identified during testing.</td>
<td>Remains of 19th century brick drain, mid-19th century structural remains and occupation deposits.</td>
<td>Some limited potential for in situ conservation of structural remains along the western edge of the area, within current road verge and footpath. Will depend on final service locations.</td>
</tr>
<tr>
<td>3i – George St west, northern half</td>
<td>Road resurfacing, ~500mm of ground lowering</td>
<td>Full archaeological salvage. Only area with substantial in situ structural remains identified during testing. Area 3 to be progressively opened in sequence to allow ongoing road access,</td>
<td>Mid-19th century structural remains. Occupation deposits uncertain due to shallow depth of deposit.</td>
<td>Little opportunity for in situ conservation due to shallow depth to archaeological remains (~200mm below current ground surface). Roadworks anticipated to impact to ~500mm below current road surface.</td>
</tr>
<tr>
<td>Area</td>
<td>Description</td>
<td>Salvage and Conservation Measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3ii – George St west, southern half</td>
<td>Road resurfacing, ~500mm of ground lowering</td>
<td>Full archaeological salvage. Mid-19th century structural remains. Occupation deposits uncertain due to shallow depth of deposit. Little opportunity for in situ conservation due to shallow depth to archaeological remains (~200mm below current ground surface). Roadworks anticipated to impact to ~500mm below current road surface.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3iii – George and Bridge St intersection and roundabout</td>
<td>Road resurfacing, ~500mm of ground lowering</td>
<td>Full archaeological salvage. Mid-19th century structural remains. Occupation deposits uncertain due to shallow depth of deposit. Little opportunity for in situ conservation due to shallow depth to archaeological remains (~200mm below current ground surface). Roadworks anticipated to impact to ~500mm below current road surface.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 – Bridge Road north of George St</td>
<td>Northern area to be filled following service relocation. Some shallow groundwork near intersection (Area 3iii).</td>
<td>Archaeological monitoring and salvage if required. Area is largely cut down below level of archaeological sensitivity by past roadwork. Fragmentary remains of mid to late 19th century occupation at southern end of area only. Northern area completely disturbed. Little likelihood of in situ archaeological materials due to past disturbance.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 – The Terrace east of Bridge St</td>
<td>No construction impacts anticipated in this area.</td>
<td>Full archaeological salvage if area is to be disturbed. Area of the punt house. Potential for structural remains and occupation deposits associated with former punt house. To be conserved in situ as no construction impacts anticipated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Construction Impacts</td>
<td>Monitoring and Unexpected Finds Procedures</td>
<td>Archaeological Salvage</td>
<td>Conservation Status</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------------------</td>
<td>--------------------------------------------</td>
<td>------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Other areas of Thompson Square and roadways outside of the construction zone</td>
<td>No construction impacts anticipated other than service relocations. No archaeological remains identified in these areas during testing.</td>
<td>Monitoring and unexpected finds procedures. Full archaeological salvage of significant materials if located and impacts cannot be avoided.</td>
<td>General background scatter of 19th and 20th century uses. No structural remains anticipated. Potential location of the brick barrel drain within eastern portion of Thompson Square, but outside of impact zone.</td>
<td>To be conserved in situ as no construction impacts anticipated. As these areas are to be subject to minor service relocations only scope exists to re-route services around sensitive areas if identified.</td>
</tr>
<tr>
<td>Bridge Street south of George Street</td>
<td>Road resurfacing and service relocation</td>
<td>Fragments of Telford road base.</td>
<td></td>
<td>Sections of Telford road base may be able to be retained in situ.</td>
</tr>
<tr>
<td>The Terrace west of Bridge St</td>
<td>Excavation for roadway and service relocations</td>
<td>Unexpected finds procedures</td>
<td>No in situ archaeological materials located in this area. Heavily disturbed due to past flooding and largely made ground from mid to late 20th century.</td>
<td>Intact archaeological materials not anticipated within this area.</td>
</tr>
</tbody>
</table>
The sizes of the overall historical archaeological management zones in square meters (rounded to 2 decimal places) are as follows:

<table>
<thead>
<tr>
<th>Historic Archaeology Management Zone</th>
<th>Area (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area for archaeological salvage excavation</td>
<td>4024.71</td>
</tr>
<tr>
<td>Archaeological monitoring and recording</td>
<td>2711.04</td>
</tr>
<tr>
<td>Unexpected finds procedure (north)</td>
<td>22315.54</td>
</tr>
<tr>
<td>Unexpected finds procedure (south)</td>
<td>13625.54</td>
</tr>
</tbody>
</table>

The sizes of the historical archaeological salvage zones in square meters (rounded to 2 decimal places) are as follows:

<table>
<thead>
<tr>
<th>Salvage Zone</th>
<th>Area (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area 1</td>
<td>1425.17</td>
</tr>
<tr>
<td>Area 2</td>
<td>863.30</td>
</tr>
<tr>
<td>Area 3 (i)</td>
<td>187.11</td>
</tr>
<tr>
<td>Area 3 (ii)</td>
<td>252.69</td>
</tr>
<tr>
<td>Area 3 (iii)</td>
<td>503.14</td>
</tr>
<tr>
<td>Area 4</td>
<td>314.59</td>
</tr>
<tr>
<td>Area 5</td>
<td>478.71</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4024.71</strong></td>
</tr>
</tbody>
</table>

Refer to Figure 35 above for locations of the management zones.

### 4.3 Methodology

The following excavation methodology would apply to the investigation of historical archaeological remains identified on site:

- Removal of selected trees and tree stumps within the salvage areas, excluding those trees at the periphery of the salvage area (i.e. less than 2m from the edge of Area 1);
- Removal of picnic furniture and concrete slabs. Slab removal will be monitored by an historical archaeologist;
- Excavation will commence with a removal of identified fills by using mechanical excavator (7.5t or similar) in regular strokes so that the exposed layer in the trench is progressively reduced in
a controlled manner. This process will continue until the extent of archaeological remains (should there be any) in the trench have been identified.

- A mechanical excavator would be fitted with a flat bucket unless compacted modern fills or hard surfaces are encountered. A toothed bucket would be used to break up hard surfaces or loosen compacted modern fills. Mechanical excavation would be undertaken under the Excavation Director’s supervision. All of the exposed archaeological remains would be cleaned by hand.

- Concurrent with this, targeted manual excavation will occur where required by qualified archaeologists. Small hand tools such as pointing trowels, picks, shovels, brushes and pans will be used in manual excavation, either for cleaning up excavated areas or revealing exposed features or deposits.

- Where an in situ historic feature that is the target of the excavation is located, mechanical excavation will cease. The feature will then be cleaned up by hand and recorded. The archaeologist will endeavour to expose and identify all significant historic features and deposits. In the event that structural fabric is not located, excavation will stop when culturally sterile or natural deposits have been reached.

- In the area of the Aboriginal sand body salvage, once culturally sterile or natural deposits have been reached, the historical archaeological sign off will be provided so that Aboriginal excavation can follow.

- Subject to the requirements of the Construction Environmental Management Plan, spoil will be stockpiled during the archaeological works for use as backfill. If soil cannot be stockpiled, it will be classified and disposed of off-site by appropriately qualified contractors. In that instance, any backfilling would be undertaken using new clean fill.

- The Excavation Director would have the authority to direct site works throughout all phases of ground disturbance works, as required, in order to undertake all necessary investigation, detailed recording and/or preservation of the exposed relics.

- The need for detailed investigation and recording of specific deposits or features would be determined by the Excavation Director throughout the course of the investigation to ensure that important parts of the site are adequately investigated and recorded, and that resources are not employed in areas that do not warrant further investigation.

- In the event that intact soil deposits are identified associated with the State significant archaeology (e.g. underfloor or yard deposits and deposits accumulated over hard surfaces, etc.), they will be gridded and sieved. The nature and extent of a deposit will dictate the size of the grid squares, for example: 1m x 1m grid squares would be used for the yard areas, and 0.5m x 0.5m grid squares will be used for underfloor deposits and deposits accumulated over hard surfaces.

- Where significant in situ archaeological features are found to extend outside of the designated salvage zones and into other areas of the construction zone, or where such features are found during monitoring works, salvage excavation shall be undertaken of those features unless it can be conclusively demonstrated that construction impacts can be avoided.

4.3.1 SITE RECORDING

Once exposed, archaeological remains would be recorded in accordance with archaeological best practice as follows:

- All archaeological features and deposits will be allocated their unique context number and recorded in detail on pro-forma context sheets. The site documentation should include a context register, context sheets, photo and site plan logs.
• Significant soil deposits will be recorded with reference to the Munsell soil chart.

• Where any archaeological remains are exposed, measured drawings—including relative levels in accordance with Australian Height Datum (AHD), and GPS location—would be provided. These would be keyed into the master site plan.

• Photographic recording of all archaeological features and phases of on-site works would be undertaken, using a scale bar and north arrow.

• Archival type of photography would be used for the recording of the legible archaeological remains, so that the high quality visual records could be used for interpretation purposes.

4.3.2 ARTEFACT MANAGEMENT

Any artefacts retrieved during the on-site works will be collected, cleaned and catalogued in accordance with the investigation methodology recommended in this report and best archaeological practice.

• Any artefacts retrieved would be provenanced according to their contexts.

• Artefacts will be bagged in suitable polyethylene bags, tagged with labels and put in an agreed temporary secure storage location.

• All artefacts will be subjected to a detailed a statistical analysis during the post excavation phase of archaeological works in order to fully answer the research questions which guide the archaeological investigation. This may involve cutting of samples of timber and other materials for species identification and dating.

• Specialist conservation services would be sought for the stabilisation and conservation of significant archaeological finds.

• At the conclusion of the project they will be handed over to the client for retention and/or lodgement in an appropriate storage facility, including the neighbouring Windsor Museum.

4.3.3 ARCHAEOLOGICAL TEAM

Archaeological investigation works would be directed by an Excavation Director, who has been approved by the NSW Heritage Division to direct excavations associated with the WBRP. The archaeology team would include archaeologists with knowledge of both historical and Aboriginal archaeology.

4.3.4 POST EXCAVATION REPORTING

On completion of on-site works and artefact analysis, a report would be prepared by the Excavation Director that presents a detailed description of the works performed and their results, illustrated by photographs, survey plans and an artefact catalogue, as appropriate, to comply with MCoA Condition C5. The report would include a response to the relevant research questions raised in the 2016 HMARD. Any new significant information retrieved would require that a reassessment of archaeological significance be undertaken as part of the final reporting.

The report would also include advice on the future management of the remaining archaeological resources within the site.
The final excavation report should be prepared within 12 months of the completion of onsite archaeological works.

Copies of both the test excavation and final report would be lodged with the Department of Planning and Environment, the Heritage Council of NSW and the heritage library of the Hawkesbury Council.

4.3.5 PUBLIC INFORMATION AND INTERPRETATION

If significant and well preserved historical archaeological resource is found at the site it could be engaging enough to warrant public access to the excavation. An Open Day should be considered to provide the opportunity to the public to experience evidence of the early history of this iconic Windsor site.

General information about the archaeological works and finds should be made available via a website (e.g. RMS Project website, Hawkesbury Museum, Hawkesbury City Council or other location as deemed appropriate). The website should contain information regarding the history of the site, information about the archaeological works with periodic information about what interesting finds have been discovered.

The post-exavcation report will make recommendations for interpretation appropriate to the nature and significance of the historical archaeological remains investigated.

Opportunities to interpret any archaeological evidence discovered during salvage works should be considered as part of a holistic approach to interpreting the site. The historical archaeological values revealed by the historical archaeological investigation should be incorporated into an integrated approach to heritage interpretation within the site. This integrated approach should address Aboriginal cultural heritage, historical archaeology, built heritage and intangible heritage values.

The results of the historical archaeological salvage program will be used to further inform and, where necessary, amend the interpretation for the project area.
## 4.4 Research Questions

The following research questions were proposed in the *Historical and Maritime Archaeological Research Design* approved in 2016. The historical archaeological salvage works will continue to be guided by this research design, amended as required based on the archaeological findings.

The table below gives an indication as to the relevance of the historical archaeological findings to the various research questions, based on the testing program.

<table>
<thead>
<tr>
<th>Research Questions (As per approved HMARD)</th>
<th>Was evidence for the question found during test excavation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What features or deposits are present on the site?</td>
<td>A variety of historical archaeological features both structural and depositional (including artefacts) were found in a number of test trenches/pits spanning between the Macquarie period or earlier and the first quarter of the twentieth century. The most notable features include: an early 19th century wall footing and associated deposit (SA25); an early 19th century brick box drain. (SA26); a thin stony layer corresponding with the pre-1897 level of the approach road to the bridge (SA30); cobbled surface likely to date from the late 19th century, and evidence of associated planting (SA32); a Telford sandstone roadbase likely to have been laid during reconstruction of the main road in 1926 (SA16, 17, 18); evidence of flooding (SA29); occupation deposits from the early 19th century (SA3).</td>
</tr>
</tbody>
</table>
| What is the nature and extent of these features and deposits? | Given the limited nature of test excavations, the full extent of identified features and deposits could not be determined. In general, the great majority extends beyond the boundaries of the excavated test trenches and pits. The nature of the excavated remains is by and large associate with:  
  - the development and occupation of the township of Windsor as demonstrated by evidence of burning as part of land clearing, structural remains of road surfaces and a brick wall footing and drain attributed to the Macquarie phase of historical development;  
  - the flooding as evident in accumulated alluvial soils and its management via backfilling, which is identified in the stratigraphy of a number of test |
trenches across the site, particularly those located closer to the river bank.

- food consumption and refuse discard demonstrated by a number of artefacts retrieved from fills and several sealed deposits.

<p>| How intact are they? | Most of the exposed features and deposits were found to be disturbed by various site formation processes, leaving very few intact. The remains of the early twentieth century Telford road surface found on George and Bridge Streets are considered to be best preserved. The convict built brick drain and the brick footing likely to be the entry gate wall of the Government Cottage and Domain complex are fairly fragmentary, as the identified remains were located close to the current road surfaces. However, any extension of these features below more substantial fills may still be in a better state of preservation. |
| What is their significance? | The 2016 test excavation programme identified historical archaeological features and deposits assessed to be of both State and local significance. Of particular significance is the group of related structural remains comprising the brick wall footing of the Government Cottage and Domain entry gate; the brick and stone surface associated with the stables of the Government compound and the brick drain, both located in Old Bridge Street. These archaeological features and the retrieved artefact assemblage provide an important resource for further research of a site that formed part of the early colonial establishment which exploited convicts to build a new nation, and as such would be considered to be significant at a state level. In particular, artefacts providing evidence of contact between the new settlers and local Aborigines (such as knapped/modified European objects) would be of State significance. Equally, pollen evidence of introduced species associated who early land cultivation would be also significant at a State level. Archaeological evidence of the original landscape and how it has been modified by clearing involving burning and stumping; flooding and remediation; and cutting and filling associated with |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>the introduction of different infrastructure, such as the bridge and associated roadway would contribute to an understanding of the continuous settlement impact on the natural environment of Windsor, and as such would be significant at a local level. Archaeological evidence such as the Telford road base, various connecting paths, fence lines and other infrastructure elements from the later 19th and early 20th century development phases would be significant at a local level.</td>
<td>The introduction of different infrastructure, such as the bridge and associated roadway would contribute to an understanding of the continuous settlement impact on the natural environment of Windsor, and as such would be significant at a local level. Archaeological evidence such as the Telford road base, various connecting paths, fence lines and other infrastructure elements from the later 19th and early 20th century development phases would be significant at a local level.</td>
</tr>
<tr>
<td>What are their depths below the current surface?</td>
<td>The 2016 test excavation program confirmed that the historical archaeological remains are located at a depth varying between 0.14m (SA26) and 2.3m (SA 3).</td>
</tr>
<tr>
<td>What date or occupation phase can be assigned to them?</td>
<td>The identified archaeological remains cover a broad date range: from the early days of the establishment to Green Hills (C1790) to the more recent developments evident in road surfaces within Thompson Square and in George and Bridge Streets (early 20th century), and remnant of the mid twentieth century Boat Club.</td>
</tr>
<tr>
<td>How does this information compare to available historical information relating to the site?</td>
<td>The archaeological evidence obtained from the test excavation by and large supports the historical information. Various construction techniques and material identified on some structural elements such as the type of brick and/or bonding mortar identified in the drain remain or the Domain wall footing, the use of Telford roadbase for the upgrade of Bridge Street road surface, as well as datable artefacts correspond with the historical written and photographic records.</td>
</tr>
<tr>
<td>Is there evidence for flooding or other erosional effects from the site's proximity to the river?</td>
<td>Yes, there is abundant evidence of colluvial soils and remedial fills identified in both vertical and horizontal stratigraphy of the test trenches excavated in the vicinity of the south river bank and Thompson Square north. The following test trenches contained such evidence: SH8, SH9, SA8-SA11; SA29, SA30, SA32; NH1 - NH 5.</td>
</tr>
<tr>
<td>Can historically attested floods be discerned?</td>
<td>Further research is required to provide answer to this question.</td>
</tr>
<tr>
<td>What palynological evidence is there for the changes to the local flora from pre- to post- colonisation?</td>
<td>This data is yet to be obtained from the soil sample analysis (SA24).</td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
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<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Is the first clearance of the site evident and what effects did it have on the site?</td>
<td>Some evidence of clearance by burning is indicated in the charcoal and scorched clay remains in SA1.</td>
</tr>
<tr>
<td>Was the area of the square stabilised, cut, filled or otherwise altered to serve its purpose as a landing place and then public space?</td>
<td>Thompson Square south provided evidence of backfilling required for the construction of a road, which was subsequently backfilled in SH2 - SA4; SA8 - SA11, SA29.</td>
</tr>
<tr>
<td>Is there evidence for the initial period of contact between the local Aboriginal people and Europeans?</td>
<td>Evidence of flaked European glass object has been found in SA6, SA8 and SA 10.</td>
</tr>
<tr>
<td>What is the earliest evidence for the European presence on the site?</td>
<td>The earliest evidence for the European presence on the site could be contained in pollen samples, which once confirmed by paleobotanical analysis, may confirm the first attempts of land cultivation in the area (SA3, SA24)</td>
</tr>
<tr>
<td>Is this evidence related to the river or other activities?</td>
<td>This evidence would be related to the land use rather than river transport.</td>
</tr>
<tr>
<td>Is there any evidence of the first settlers of Green Hills/Mulgrave Place?</td>
<td>The artefact assemblages retrieved from several locations of the site (SA 3; SA 9-SA 10; SA 24 – soils samples) include objects datable to the late and early nineteenth centuries, suggesting they may be associated with the first settlers of the area.</td>
</tr>
<tr>
<td>What evidence is there for Baker’s and Thompson’s occupations on the south side of the river?</td>
<td>The teste excavation did not provide any evidence that could be associated with the allotments occupied by these individuals.</td>
</tr>
<tr>
<td>What materials were they constructed from?</td>
<td>No evidence of these structures was found.</td>
</tr>
<tr>
<td>Is there any evidence for early paths and tracks to access areas on both the north and south sides of the river?</td>
<td>No, the only evidence of paths would be a thin stony layer corresponding with the pre-1897 level of the approach road to the bridge (SA30) and a cobbled surface likely to date from the late 19th century (SA32).</td>
</tr>
<tr>
<td>Is there evidence for an early alignment (pre-1810) of George Street?</td>
<td>No evidence of pre-1810 alignment of George St was found.</td>
</tr>
<tr>
<td>Is there evidence for Howe’s brick barrel drain(s) in the square?</td>
<td>No, however the section of the brick drain identified in SA26 may suggest its location as it was likely that this drain emptied into the main drain.</td>
</tr>
<tr>
<td>Is there evidence for the heavy military presence at Windsor on the south side of the river?</td>
<td>No, there was a single metal, government uniform tunic button identified in SA3.</td>
</tr>
</tbody>
</table>
**Are any other structures or occupation evidence remaining at the intersection of the Wilberforce and Freemans Reach Roads?**

The discovery of a timber post and alluvial deposits containing sporadic artefacts (NH2) in the vicinity of the former inn indicate they could be associated with this dwelling, which potentially survives in some form below the current homestead at the northwest corner of Wilberforce and Freemans Reach Roads.

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**What evidence is there for modifications and development to Thompson Square and adjacent areas?**

This evidence is presented in substantial cuts and fills that resulted from the construction of the bridge and its access (SH 2; SA 9, SA 10).

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**What is the evidence of the late 19th/early 20th century modifications across the site? How have these later modifications affected the survivability of the historical archaeological resource?**

Substantial fills for the construction of the bridge and associated access road, structural element associated with the Boat Club that was located in Thompson Square north, as well as Telford road base are tangible evidence of the late 19th and early 20th century modifications. (SH 2, SH 7, SA 9, SA 10, SA 28, SA 29)

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**What did vacant space mean in the context of Windsor over 200 years and how is this manifested at Thompson Square? Was it a place to dump refuse or was it treated as a civic space?**

The scarce information obtained from the testing program confirms that the vacant space at Thompson Square was used for accessing the riverfront and dumping refuse. (SH 2-SH 4; SA 6-SA 11; SA 28-SA 30)

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While the 2016 test excavation provided answers to some research questions, the retrieved data could not be considered exhaustive. Therefore, the site’s research potential has not been realised in full and the majority of established research questions are still considered relevant for providing general contexts for further historical and archaeological research. In light of the results of the 2016 test excavations the existing research question outlined in the 2016 ARD and tabled above can be supplemented by the following more specific question raised:

- Can the retrieved archaeological evidence provide additional information to that already contained in the written and pictorial resources?
- Do deeper subsurface features (eg wells and cess-pits) dating from the late 18th and early 19th centuries exist within the boundaries of the site? If not, how their absence can be explained?
- Can the full extent and nature of the brick footing associated with the entry gate of the Government Cottage compound be determined? How accurately do the historical resources compare with the actual location and fabric of the former gate?
- Can the artefact assemblage provide any insight into the lives of the first settlers of Green Hills/Mulgrave Place?
- Can the artefact assemblage provide any more specific information about the military presence and activities at the site?
- Can the archaeological resource provide any additional information about the site not available from other resources?
5 METHODOLOGY FOR PRE-CONSTRUCTION AND CONSTRUCTION

Approval to proceed with salvage works in Area 1 only was received from the Department of Planning and Environment on 22 September 2017. See a copy of the letter below.

Salvage works in Areas 2 to 5, if required, are pending the appointment of the construction contractor for the bridge replacement works and a final review of construction-related impacts.

The following general measures for protection of archaeological heritage should be integrated into the Construction Environmental Management Plan for the project:

- All archaeologically sensitive areas to be noted on project plans, with copies of plans held on site and distributed to all relevant personnel and subcontractors;
- Heritage and archaeological management should be incorporated into the site induction for all staff and subcontractors;
- Until archaeologically sensitive areas have been cleared for construction impacts, such areas should be barricaded or fenced off when construction works are being undertaken within close proximity (10 metres or less) to those areas;
- Incorporate measures for managing compression, vibration and other ancillary construction impacts to archaeological heritage.
Graham Standen  
Senior Project Manager  
Windsor Bridge Replacement Project  
Roads and Maritime Services  
Locked Bag 928  
North Sydney NSW 2059

Dear Mr Standen

Windsor Bridge Replacement Project (SSI-4951) – Salvage works in Area 1

I refer to your correspondence of 17 August 2017, and further information of 6 and 8 September 2017, seeking the Secretary’s endorsement that the salvage works in Area 1 do not comprise ‘construction’ or ‘pre-construction’ activities under the project approval, and that salvage works can be staged.

I understand the proposed works comprise salvage of items from Area 1 (shown in Figure 1 of your letter) and the use of two compound sites for the storage, sieving and sorting of salvaged items, plant parking, site office and small lighting tower for security purposes.

I have reviewed the information provided and agree that the proposed salvage works and establishment of the supporting facilities are not pre-construction or construction activities. These works may appropriately be classified as heritage mitigation measures to preserve heritage items within the ground of Thompson Square prior to pre-construction and construction activities commencing. I also consider it appropriate to stage these works, as described in your correspondence of 17 August 2017. I note that the Office of Environment and Heritage has also been consulted on these activities and has not raised any concerns about the salvage activities, methodology and staging.

Although the salvage works are not pre-construction or construction activities, it is essential that these works be undertaken in accordance with strict heritage management measures and environmental controls, as set out below.

The Department is currently reviewing the Detailed Salvage Strategy (prepared by a joint venture of Austral Archaeology and Extent Heritage, August 2017) (the strategy) under Condition B3. Although the review is yet to be completed for all salvage areas, the Department is satisfied that the strategy is appropriate for the works in Area 1 (only). It is noted that the Office of Environment and Heritage accepts the draft strategy for Area 1. Please ensure you carefully implement the strategy for all the salvage work in this area.

I also note the salvage works require you to establish site compounds at two locations, shown in the figures attached to your email dated 6 September 2017. As these compounds will not support ‘construction activities’, they are not considered ‘ancillary facilities’ under the approval. Notwithstanding, under Condition A3, I ask that you implement the requirements and management measures in Attachment 1 during salvage works in Area 1 and for the establishment and use of the supporting compounds.

Department of Planning and Environment
320 Pitt Street Sydney 2000 | GPO Box 59 Sydney 2001 | planning.nsw.gov.au
If you have any queries regarding this matter, please contact Carl Dumpleton on 9274 6283 or carl.dumpleton@planning.nsw.gov.au.

Yours sincerely

Stacy Warren
Director Infrastructure Management

As Delegate of the Secretary
Attachment 1

The following requirements and management measures must be implemented during salvage works in Area 1 and for the establishment and use of the supporting compounds:

- The salvage contractor must prepare a detailed Environmental Management Plan for these works, which must be endorsed by the Environmental Representative prior to salvage works commencing. All works must be undertaken strictly in accordance with the endorsed Environmental Management Plan.

- A maximum of eight truck movements per day are permitted across the existing Windsor Bridge to transport salvaged material from Area 1 to the northern compound site for processing.

- All works and activities must be undertaken in accordance with the Interim Construction Noise Guideline (DECC, 2009).

- All works and activities must only be undertaken in accordance with the standard construction hours in Condition C13.
5.1 Archaeological Salvage Works During Pre-Construction

No open-area archaeological salvage works are proposed to commence in the pre-construction phase of works.

During pre-construction, historical archaeological monitoring will be undertaken in identified sensitive areas as required, for minor works such as service relocations.

Stop-work protocols in the event of unexpected archaeological discovery will apply throughout the project area during the pre-construction phase.

No additional Aboriginal archaeological salvage works are anticipated during this phase unless additional, currently unknown excavation works are proposed outside of the construction buffer zone.

5.2 Archaeological Salvage Works During Construction

During construction phase, historical archaeological Areas 2 to 4 (Figure 35 above) will be excavated progressively during the construction program, but prior to impacts in these areas. These areas may not necessarily be excavated in numerical sequence.

As there are no construction impacts anticipated for Area 5, there are no plans to conduct archaeological salvage works in this location as it will not be disturbed. In the event there is a change in relation to the construction methodology which may affect this area, those impacts will be reviewed and, if necessary, archaeological salvage may need to be undertaken depending on the nature and extent of impacts.

**Update:** In July 2020, a letter was produced outlining a minor amendment to the methodology for managing archaeological values within Area 4 and Area 5. This letter can be found in Appendix B.

During construction, historical archaeological monitoring will be undertaken in identified sensitive areas as required, under the supervision of the nominated heritage and archaeological contractor for the construction phase, to be appointed in accordance with Condition C4.

Stop-work protocols in the event of unexpected archaeological discovery will apply throughout the project area during the construction phase.

No additional Aboriginal archaeological salvage works are anticipated during this phase unless additional, currently unknown excavation works are proposed outside of the construction buffer zone.

In order to implement relevant heritage/archaeological controls the Heritage Manager should be regularly included in the project team communication about the progress of construction works on site. This will ensure timely decision making and timely delivery of advice in the event of any changes to the project, unexpected archaeological discoveries, etc.

All archaeological works will be supervised by the appointed Excavation Director/Heritage Manager, who will have an overarching role in implementation the appropriate methodology and procedures as identified in this document.

Archaeological works will include a combination of monitoring and recording, open area (salvage) excavation, site inspections, stop work protocols and protection and in situ conservation of significant archaeological relics where possible. The exact technique used will be dependent on the nature and extent of the discovery. For example:

- Isolated artefact finds will be located via GPS, recorded, photographed and removed for study and incorporation into the final archaeological report;
- Ephemeral features such as postholes and occupation deposits will be located via survey, photographed and drawn. If outside of areas of direct construction impacts, such features will be backfilled and retained in situ. If within the area of construction impact, they will be subject to salvage excavation;

- Structural archaeological remains will be located via survey, drawn, recorded and samples of materials may be taken. If outside of areas of direct construction impacts, such features will be backfilled and retained in situ. If within the area of construction impact, they will be subject to salvage excavation;

The Heritage Manager/Excavation Director will notify the NSW Heritage Division, OEH, if unexpected or intact historical archaeological relics of State heritage significance are discovered.

Subsurface disturbance should be limited to those areas identified in the project documents so as to avoid disturbance of other potential archaeological remains at the site.

State significant archaeological remains should be retained in situ, wherever possible. In situations where removal is required, they will be thoroughly recorded, carefully removed and their fabric (should integrity allow) retained for future interpretation.

Opportunities to inform and engage the public in the archaeological works should be explored including posting of general information about the archaeology program on the official website, public open days, etc. as appropriate.

5.3 Protocols for Managing Archaeological Heritage Outside of the Salvage Zones

Given the unpredictable nature of archaeology where the presence/absence, and/or the extent and nature of archaeological remains are not known until fully exposed, procedures will be put in place in the event of the discovery of unexpected finds. These protocols will form part of the Construction Environmental Management Plan.

In general, upon the discovery of unexpected finds, works would stop immediately and the exposed remains be protected and reported to the Heritage Manager for further inspection, assessment and management procedures. In the event that human remains are discovered, the New South Wales Police and Coroner’s Office would be contacted and, if skeletal remains were suspected to be of Aboriginal descent, OEH and Aboriginal stakeholders would be informed and further management determined in consultation with these organisations and individuals. Work in an area where human remains have been discovered may not proceed until permission is given by the NSW Police.

The unexpected finds procedure would apply to the areas of the site that have been assessed to be of low to nil archaeological potential or where the redevelopment works would not require deep excavation with potential of causing disturbance to archaeological relics/objects. These areas include: the northern side of the Hawkesbury River, where the potential for archaeological remains is low to nil; the eastern portion of Bridge Street (between Macquarie Street and George Street), where the archaeological evidence has been removed by the construction of the current road and town services, the lower section cutting through Bridge Street; the area of the current car park located at lower Thompson Square; and the waterfront areas along The Terrace, where potential for archaeological remains is assessed to be low or of low research potential.

The types of materials which will not trigger the unexpected finds procedure include:

- Known or unknown active utility services;
- Previously unrecorded inactive services which post-date 1900;
• Unstratified fill containing post-1788 artefacts;
• Road surfaces post-dating 1900;
• Other materials which, in the professional opinion of the Heritage Manager, do not meet the criteria for State or local heritage significance.

5.3.1 UNEXPECTED DISCOVERY OF ARCHAEOLOGICAL REMAINS

This procedure details the actions to be taken when a previously unidentified and/or potential historical heritage item/object/site is found during construction activities.

In the event that a potential heritage artefact/item/object/site is encountered during construction the following steps shall be taken.

• **STOP ALL WORK** in the vicinity of the find and immediately notify the relevant Site Supervisor. The Supervisor will then notify the Heritage Manager and demark the area to protect the artefact/item/object/site.

• The Heritage Manager is to record the details, take photos of the find and ensure that the area is adequately protected from additional disturbance.

• The Heritage Manager contacts the Archaeological Excavation Director to notify them of the location of the find.

• If the Heritage Manager advises that the find is not a significant historical relic, work will recommence in consultation with the Project Manager and/or Environmental Manager.

• If the Archaeological Excavation Director advises that the find is a relic, implementation of the appropriate heritage mitigations dependent on the significance of the site as outlined in this Detailed Excavation Strategy.

5.3.2 DISCOVERY OF HUMAN REMAINS

In the event that human remains are discovered in the course of the proposed work the following protocols should be implemented. The procedure for handling human remains in accordance with the *Skeletal Remains – Guidelines for the Management of Human Skeletal Remains* under the *Heritage Act 1977* (NSW Heritage Office 1998) and the *Aboriginal Cultural Heritage Standards and Guidelines Kit* (NPWS 1997).

In the event that possible human skeletal material (remains) is encountered during construction the following steps shall be taken.

• **STOP ALL WORK** in the vicinity of the find and immediately notify the relevant Site Supervisor. The Supervisor will then notify the Environment Manager and/or the Project Manager, and demark the area to protect the possible human skeletal material (remains).

• The Heritage Manager/Project Manager is to record the details, take photos of the find and ensure that the area is adequately protected from additional disturbance.

(Please note: each step of the procedure will advise if the following step is required to be implemented)
• The Heritage Manager/Project Manager on site must notify the Project Archaeologist/Excavation Director.

• The Heritage Manager/Project Manager on site must notify the NSW Police (Windsor Office) by calling ‘02 4587 4099’ and the Office of the NSW State Coroner by calling ‘(02) 8584 7777’.

• Should the NSW Police determine the remains to not be of a criminal nature, the Heritage Manager/Project Manager should notify OEH through the Environment hotline on 131 555.

• Should OEH determine the remains to be of Aboriginal ancestry, OEH and/or the Archaeological Excavation Director in liaison with the Registered Aboriginal Parties would determine the most appropriate course of action, which may include deviation of the construction works, or the careful removal of the remains and reburial elsewhere.

• Should OEH determine the remains to be of historic ancestry, the Heritage Manager in liaison with the Archaeological Excavation Director should contact the NSW Heritage Branch and determine the most appropriate course of action, which may include deviation of the construction works, or the careful removal of the remains and reburial elsewhere.

5.4 Post-Construction Archaeological Management

• Following completion of archaeological works an archaeological excavation report will be prepared to present the results of the entire program of onsite archaeological works. The report will also provide recommendations for future management of the site’s archaeological resources. The report will be prepared in accordance with the requirements outlined in Condition C5 of the MCoA.

• Site compound and other temporary works areas should be demobilised prior to the pre-construction and construction works commencing.

• Dissemination of the results of the archaeological program to wider public.


APPENDIX B – NOTIFICATION OF ALTERATION OF REQUIREMENT FOR ARCHAEOLOGICAL SALVAGE IN AREA 4 AND AREA 5 OF THE DSS (AAJV, 2020)
9 July 2020

Graham Standen
Senior Project Manager
Technical and Project Services, Greater Sydney Project Office
Infrastructure and Place
Transport for NSW
Level 9, 27-31 Argyle Street
Parramatta NSW 2150

AAJV Ref: SYD16081

Dear Graham,

RE: Windsor Bridge Replacement Project; Notification of Alteration of Requirement for Archaeological Salvage in Area 4 and Area 5 of the Detailed Salvage Strategy

This letter has been prepared by the Austral & AHMS Joint Venture (AAJV) on behalf of Transport for New South Wales (TfNSW) in order to notify the Department of Planning, Infrastructure and Environment of a minor amendment to be made to the previously approved methodology for managing historical archaeological values present within the footprint of the Windsor Bridge Replacement Project (WBRP).

1. Project Background

The AAJV have assisted TfNSW with heritage requirements on this project from prior to the commencement of pre-construction in 2016. In terms of historical archaeology, the AAJV prepared a Historical Archaeological Research Design (HARD) which detailed a methodology for undertaking historical archaeological test excavations within the project area (AAJV 2016). As part of the archaeological testing program, 61 historical and Aboriginal test trenches and test pits were investigated within the project area. The AAJV subsequently prepared a Detailed Salvage Strategy (DSS) to manage impacts to historical archaeological features within the study area (AAJV 2017). The DSS documents which parts of the project area are to be subject to historical archaeological salvage excavations, parts which require an archaeologist to monitor any below ground impacts, and parts of the site which are subject to an unexpected finds procedure (see Figure 1 below). In order to easier manage the historical archaeological excavation works, the project footprint was subdivided in smaller management areas (see Figure 2 below).
Figure 1  Historical archaeological sensitivity within the study area (Figure 13 of the DSS)
Figure 2  Proposed historical archaeological excavation areas (Figure 27 of the DSS). Note that the proposed compound locations were later relocated.
In accordance with the project’s Conditions of Approval, the DSS was submitted to the DPIE and was approved by both DPIE and Heritage NSW. This document has served to guide the management of the historical archaeological resource within the project area.

It is noted that while it is was known at the time of the preparation of the DSS that the cutting of the present Bridge Street road alignment would have impacted on archaeological material, on the basis of the results of archaeological testing in the Upper Thompson Square area it was considered that the first 40 metres of the road alignment still contained potential historical archaeological deposits. As such, this was zoned as Area 4 and was to be subject to archaeological salvage excavations following the closure of Bridge Street once the new bridge alignment was opened.

2. Works to Date

Since completion of the DSS in 2016, the AAJV has subsequently completed historical salvage excavations in Area 1, Area 2, and in all parts of Area 3 (Figure 2).

As a result of the archaeological works undertaken in parts of Area 1 and Area 2 which lie below Old Bridge Street, it has since been identified that construction of the Bridge Street cutting resulted in a greater degree of impact than had been expected (Figure 3).

Figure 3  East facing view showing the section below the current alignment of Bridge Street.
2. Proposed Amendment to Areas of Archaeological Salvage

Area 4

On the basis of the results from the archaeological investigations undertaken to date, it is proposed that the extent of area marked for archaeological salvage in the DSS be amended. As such, rather than requiring archaeological salvage in Area 4, the area will be reassigned to a combination of monitoring of impacts by an archaeologist and operating under the unexpected finds procedure. There is considered to be a degree of potential for archaeological material to still be present within 10 metres of where Bridge Street intersects with George Street, and this area is to be subject to monitoring. The remainder of Area 4 is to be subject to the standard UFP for the project.

The proposed changes to Area 4 are shown on Figure 4.

Area 5

Area 5 was included in the DSS for salvage as a precaution in case there was an unanticipated requirement to excavate within an area that was identified as containing archaeological remains associated with the punt house. However, as there has been no requirement to undertake any works in this area as part of the construction process, it will not be excavated as part of the project.

Should you have any questions regard the above information, please contact me on 02 9555 4000.

Yours sincerely,

David Marcus
Heritage Manager
Austral Archaeology Pty Ltd
On behalf of the AAJV
Figure 4  Location of parts of the site proposed to be changed from salvage to monitoring or UFP.
REFERENCES


AAJV 2017, *Windsor Bridge Replacement Project; Detailed Salvage Strategy*. 