POWERHOUSE PARRAMATTA
RESPONSE TO SUBMISSIONS REPORT

APPENDIX I
ADDENDUM ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

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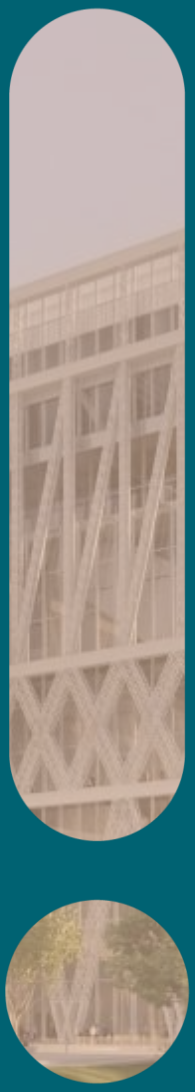

Addendum Aboriginal Cultural Heritage Assessment Report

Powerhouse Parramatta

Client: Infrastructure NSW

Final Report, 15 September 2020


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This report has been prepared based on research by Curio Projects specialists. Historical sources and reference material used in the preparation of this report are acknowledged and referenced at the end of each section and/or in figure captions.

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Contents

1. Summary

1.1. Introduction

Curio Project Pty Ltd has been commissioned by Infrastructure NSW (INSW) to prepare an Addendum Aboriginal Cultural Heritage Assessment Report (ACHAR) to support a State Significant Development (SSD) Development Application (DA) for the development of the Powerhouse Parramatta at 34-54 & 30B Philip Street and 338 Church Street, Parramatta (study area).

This Addendum ACHAR is in response to the revised impacts which include the relocation of the plant, additional piles across the footprint of each building, the under croft and service impacts within the study area. Therefore, an Addendum ACHAR has been prepared to assess any potential impacts these additional ground works may have on the Aboriginal archaeological potential and significance of the study area.

This report functions as an addendum to the earlier ACHAR prepared by Curio Projects for the Powerhouse Parramatta and does not reproduce all the details and context provided in that ACHAR report. Should additional detail be required, reference should be made to the following report as required:

- Aboriginal Cultural Heritage Assessment, Powerhouse Parramatta. Prepared for Infrastructure NSW by Curio Projects, 17 April 2020 (ACHAR)

1.2. Background for Revised Works

It is predicted that there will be a significant impact to the Parramatta Sand Body (PSB) which has been reduced as much as possible through this revised methodology. The revised impacts include a large portion of bulk excavation for an undercroft along the southern boundary of the current carpark, the addition of piles to both the eastern and western building footprints, and piles for structural support to the façade in the north-eastern corner of the site.

The piles are structurally necessary, and for the viability of the development this work is required. Impact will be reduced by avoiding opening the entire area with test trenches, and instead using a push tube excavation methodology, and reducing the number of piles where possible. The remaining pile impacts will be mitigated through investigation on site and Optically-Stimulated Luminescence (OSL) dating stations will be set up and readily available during any below groundwork. This methodology is used with reference to other excavations using similar strategies to minimise impact on site. The approach to excavate using push tubes instead of open test trenches reduces the impact on the PSB as well as the risk of instability when working in excavation with sand (according to WHS limit of 1-2m maximum depth). This method may also aid in the further understanding of the sand body and its potential geomorphology without completely destroying its integrity.

With the addition of the undercroft, there is now the requirement for bulk excavation in this section of the site. As this entire area will be significantly excavated, test trenches will be more effective in this area, as it will already be significantly impacted due to the proposed works.

1.3. Authorship

This addendum has been completed by Rebecca Agius, Graduate Archaeologist, and Mikhaila Chaplin, Graduate Archaeologist, Curio Projects. The diagrams and overlays have been completed by Andre Fleury, Archaeologist, Curio Projects. Matthew Kelly, Senior Archaeologist, Curio project, has reviewed the report.

1.4. Acknowledgements

Curio would like to acknowledge the assistance of Tom Kennedy, GTK Consulting, George Cunha, Terence Tang, Kimberley Blackburn and Euan Mitchell at ARUP.

2. Revised Impact Assessment of Revised Design

The proposed activity is the redevelopment of the study area for the construction of the Powerhouse Parramatta, and comprises:

- site preparation works, including the termination or relocation of site services and infrastructure, tree removal and the erection of site protection hoardings and fencing;
- demolition of existing buildings including the existing Riverbank Car Park and 'Willow Grove', with Willow Grove to be located to another site;
- construction of the Powerhouse Parramatta—two main buildings (west and east);
- operation and use of the Powerhouse Parramatta including use of the public domain provided on the site to support programs and functions;
- maintenance of the existing vehicular access easement via Dirrabarri Lane, the removal of Oyster Lane and termination of George Khattar Lane, and the provision of a new vehicular access point to Wilde Avenue for loading;
- public domain within the site including new public open space areas, landscaping and tree planting across the site; and
- building identification signage.

The project does not involve any alterations to the existing formed concrete edge of the Parramatta River or to the waterway itself.

Further detail is provided below about development activities that have potential to impact Aboriginal archaeological deposits and values. That is, activities that will disturb the ground surface (Figure 2.1).

2.1. Demolition Decommissioning and Decontamination

The structures currently on site include the Riverbank Car Park, 'Willow Grove' (1886), 'a small electricity substation, modern commercial structures at 36-40 Phillip St and hard surfaces such as pathways and roadways. All will be demolished (in the case of the substation it will also be decommissioned) and removed for construction. Willow Grove will be relocated to another site and a proposal for the relocation is outlined in the Addendum Statement of Heritage Impact included within the Response to Submissions. It is anticipated that the above ground elements will be demolished to ground level, slabs and floors removed and subsurface footings pulled out of the ground. It is also possible that existing conduits and cables may be removed. Large amounts of asbestos conduits are present in the Parramatta CBD. They are likely to be present in the area of the substation. The removal or existing cabling and asbestos conduits may necessitate extensive clearance and specialised handling.

The demolition, decommission and removal processes, in the vicinity of areas of archaeological potential, may therefore have physical impacts upon subsurface areas of the site with the potential to disturb or remove archaeological features and deposits.

2.2. Bulk Excavation Works

Bulk excavation will be undertaken beneath the new western and eastern buildings to accommodate the construction of an undercroft, plant and required services including grease arrestor, sewer and stormwater pumps, lift pits, foundation piles (see below), and rainwater/waste tank. ARUP has advised that the majority of the site is "on grade" with some minor adjustments required according to computer modelling of the study area topography shown in dark yellow in Figure 2.1. More substantial excavations are shown as orange and red in the same figure. The red area reflecting the proposed undercroft to the Powerhouse.

2.3. Foundation Piling

The structural foundation concept for the new development has been designed as necessary to comply with requirement to support long spans (>35m) and high floor loading capacities, as specified by the project brief. The two new buildings will be supported on large diameter piles drilled into sandstone bedrock, connected to the superstructure via pile caps supporting the main building columns, overlaid with a c.150mm concrete slab on grade (RL7.5m). Piles will extend between 4-10m into the bedrock (subject to geotechnical advice) with the total pile lengths varying from 14-20m. The concept for the piling foundations is the installation of piles (for the western and eastern buildings respectively), spanned by horizontal perimeter ground beams. The exact number and placement of piles will be confirmed and finalised by structural engineers. Perimeter piles are aligned to underlie the buildings perimeter support columns, with use of both single piles to support heavily loaded columns. Each perimeter pile would typically be 1800mm in diameter with a 2000mm x 2400mm x 2000mm deep pile cap (single piles), or 2000mm x 5700mm x 2000mm deep pile cap (paired piles).

Additional piles across the footprints of the proposed east and west buildings to support architectural and design features that require additional sub-structural support (e.g. features such as educational floors and stairs in the eastern building, and support for concrete core walls and escalator in western building).

These piles will typically be 900mm in diameter with a 17m depth. There will also be additional piles along the north-eastern portion of the site supporting the façade of the building (Figure 2.1). The eastern building pile numbers have been reduced by 50%, but the piles will be connected by excavated band beams measuring 2400mm x 600mm deep. Excavations for these band beams are anticipated to require excavations larger than the finished dimensions to allow for formwork etc.

The concrete slab in both the western and eastern buildings will include subgrades which require the removal of all topsoil, grass roots etc and the additional depth for slabs and band beams with an additional 200mm worth of compressible layer and drainage layer. Piles across the study area would extend between 4-10m into the bedrock (subject to geotechnical advice) with the total pile lengths varying from 14-20m.

Other required structural support elements that will impact the ground surface are likely to include excavation of a trench along the northern wall of the western building to accommodate the movable door in this location (minimum 1m depth), and other smaller diameter piles (600mm-1200mm) for additional wall and door support, as well as foundational concrete pads.

Figure 2.2 presents the proposed plan for piling and support beams on the study area.

2.4. Service Trenching

Existing services lines have been identified and located. The larger service lines are shown in Figure 2.2. The locations and dimensions of proposed service and utility trenching on the study area are shown in Figure 2.4 (green), which shows indicative locations and trenches that are likely to require excavation in the range of 1-7m depth and 600mm-3000mm (for each service) in width.

2.5. Landscaping and Other Minor Activities

Landscaping works at lower ground level will be mainly focused on the northern side of the new buildings, fronting the river foreshore. The existing strip of lawn and river path along the river foreshore will both be retained, while new lawn areas will be established fronting the undercroft of the new buildings. A new 'rain garden' is proposed to the west of the western building, integrated with the emergency vehicular access ramp to the river (see Figure 6.13 in the ACHAR). Landscaping works will also include removal of some existing trees, and replacement with new native mature trees, as well as other native plantings.

Figure 2.1: Plan of proposed cut and fill depths. Note the dark red excavation for the undercroft (Source: ARUP 2020)

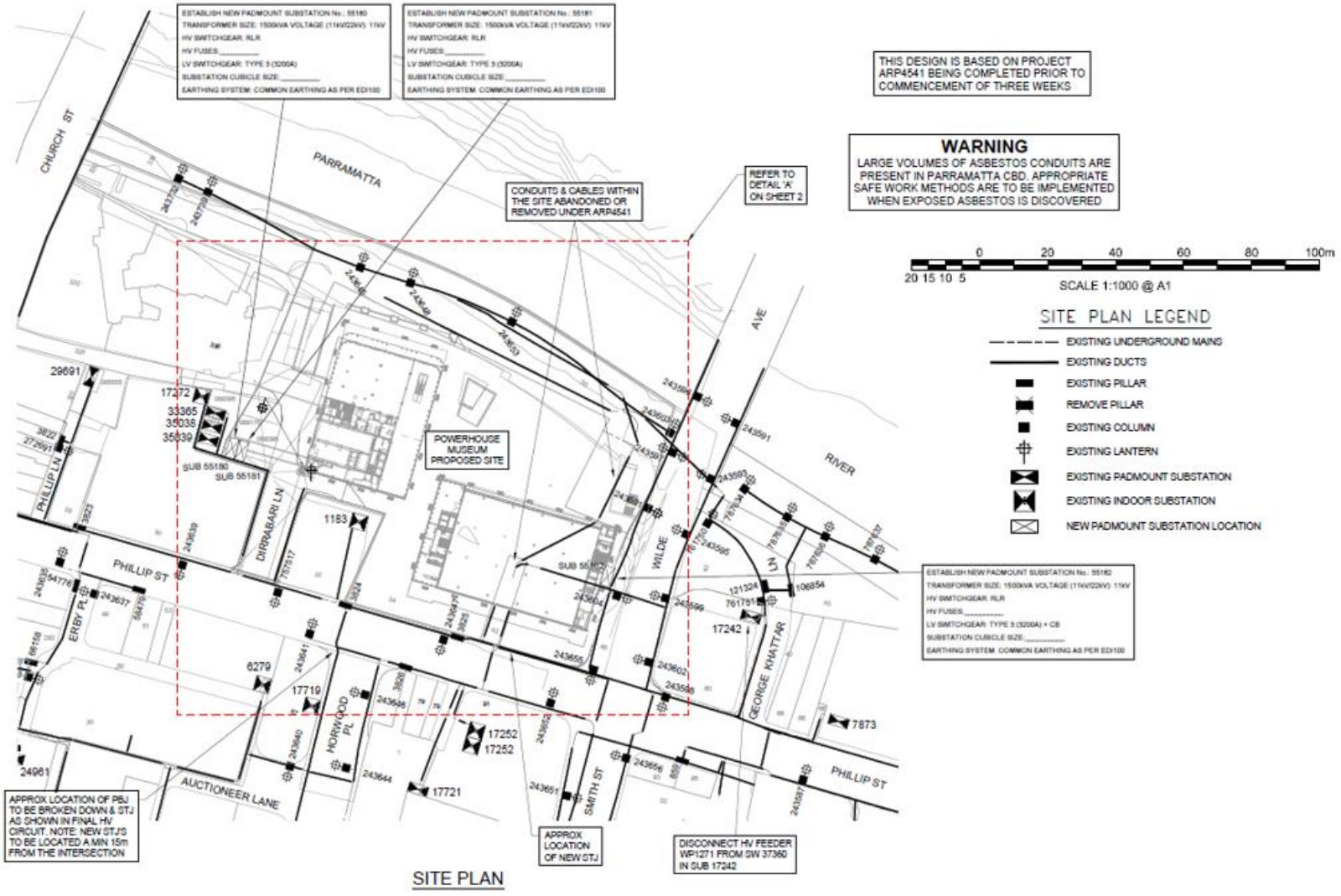

Figure 2.2: Plan of existing electrical services on the study area (Source: ARUP)

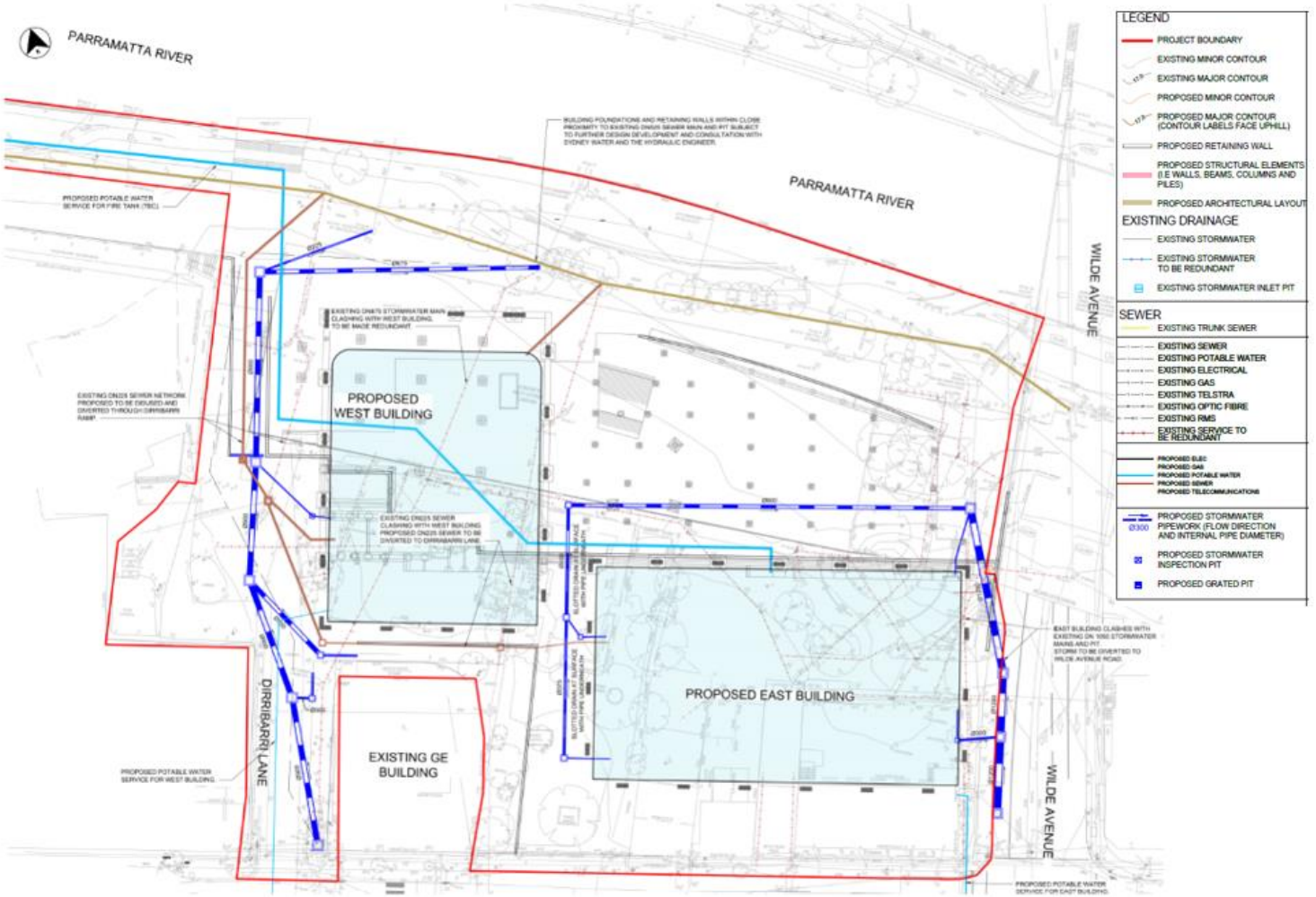

Figure 2.3: Stormwater, sewer, and portable water service strategy (Source: ARUP 2020)

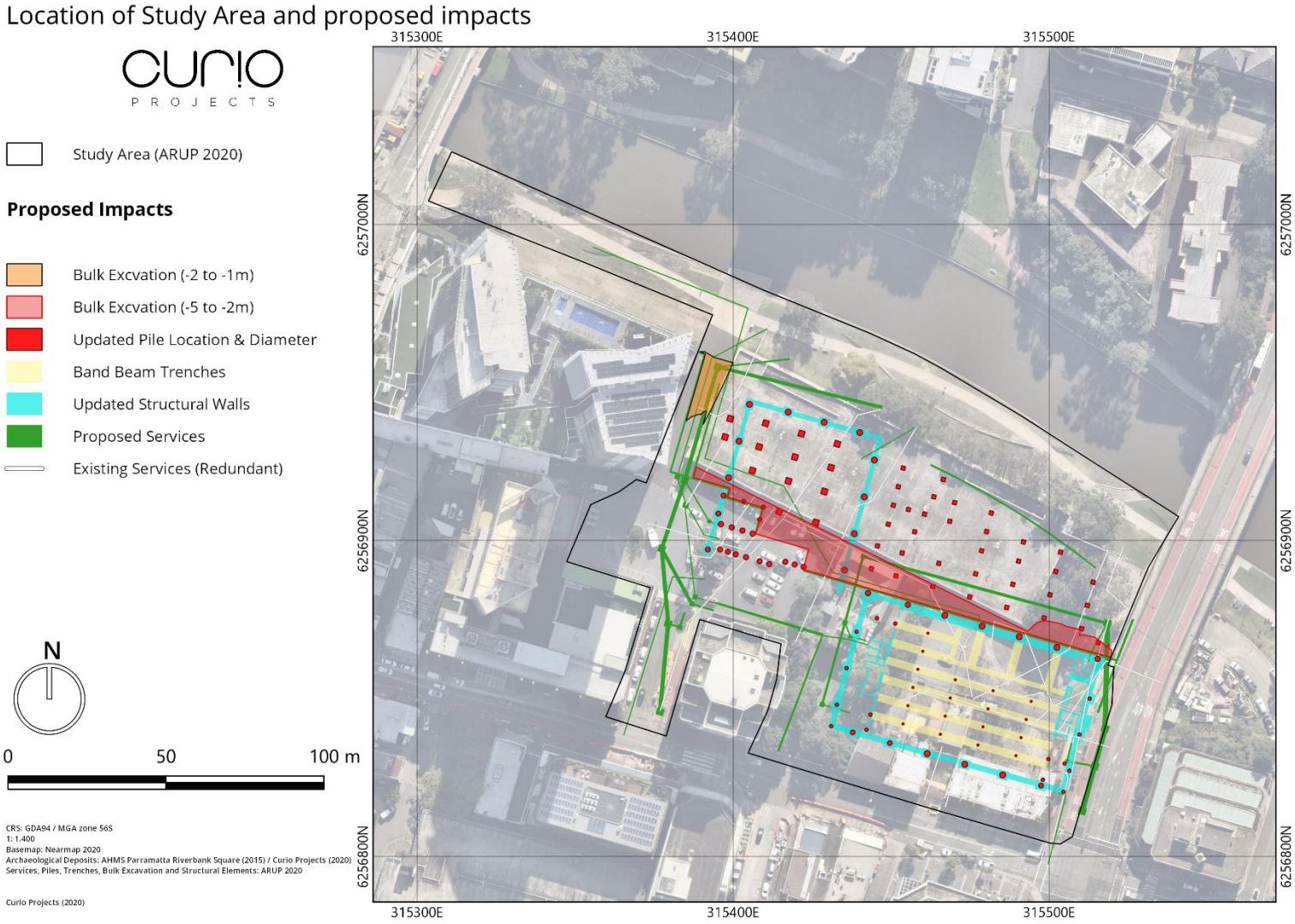

Figure 2.4: Proposed impacts to study area (Curio 2020)

3. Revised Sampling Strategy & Methodology

The following revised Aboriginal archaeological excavation methodology and research design has been developed to investigate the nature and extent of the Aboriginal archaeological potential within the impact zones of the proposed development.

3.1. Archaeological Sampling Strategy

Aboriginal archaeological investigation of the Powerhouse Parramatta study area is proposed to be undertaken in two phases:

1. Initial testing of the Aboriginal archaeological potential of the main impact zones of the study area (Phase 1) with an aim to identify the presence or absence of intact subsurface profiles of the PSB and any associated Aboriginal archaeological deposit that may be present; and
2. Guided by the results of the initial testing (Phase 1), Phase 2 (salvage excavation) is proposed to be undertaken within development impact zones in order to recover the entirety of any Aboriginal archaeological deposit within the study area that requires impact through the proposed development works.

Phase 1 investigation is to proceed as the excavation of a series of 0.5m x 0.5m test trenches to be positioned across the footprint of the proposed bulk excavation in the central area of the site along the southern boundary of the current carpark. These trenches have been placed in a staggered pattern at 10m x 5m intervals. Within the footprints of each building, push tube excavation (diameter to be determined by geotechnical advice) will be implemented at the location of each foundation pile across the site. Phase 1 test excavation and push tube excavation will focus on investigating the nature and extent of the PSB within the study area, including investigation of the mapped boundary between the PSB and Holocene soils.

Natural soil profiles within the study area have potential to be unstable and of considerable depth, meaning that WHS conditions may prove excavation of 0.5m x 0.5m test trenches to be impractical in some areas of the site. Therefore, this sample strategy also makes an allowance for test pit sizes to be increased if necessary, to ensure that deeper deposits (if encountered) could be logistically and safely investigated. Additional test trenches may be added to the Phase 1 excavation program in locations nominated by the Excavation Director if determined to be warranted based upon the results of the excavation noted during the program.

Figure 3.1 below presents the proposed development impacts as located within high and moderate areas of Aboriginal archaeological sensitivity, with indicative locations of the test trenches and push tubes. As shown in this figure, Phase 1 test trench excavation works are focused in the centre of the study area along the southern boundary of the current carpark (i.e. the bulk excavation for the undercroft), with additional test trenches to the north-western boundary of the current carpark. Phase 1 will also include the push tube excavation works focused on the foundation piles located in the eastern and western building footprints and the north-eastern portion of the current carpark area.

The location of test trenches in the undercroft and north-western portion as shown in Figure 3.1 are *indicative only,* the exact trench locations and number of test pits would be finalised in the field, subject to some flexibility at the time of excavation as necessary in order to respond to local landscape features (i.e. stability of the soil profiles encountered, presence of previous disturbance within the study area such as existing services, location in combination with historical archaeological investigations etc). The location of push tubes will follow the locations of foundation piles as shown in Figure 3.1. Unlike the flexibility of the trenches, the push tubes are subject to staying within the locations of the foundation piles as these will be the areas of significant impact within the site.

Phase 1 excavation aims to excavate approximately 28 x 0.5m x 0.5m test trenches and 105 x push tubes. However, should a lesser number of test trenches and push tubes be sufficient to adequately answer the research questions, Phase 1 investigative works would be considered complete without reaching the numbers proposed. Should excavation works find the number of test trenches and push tubes to be insufficient to meet research aims, additional test pits could be undertaken, relevant to the location of impact works, to be discussed and agreed upon in the field by the Excavation Director, project RAP representatives, and client/construction contractor.

3.2. Consideration of Historical Archaeology

The study area also has potential for historical archaeological deposits to be present (Curio Projects 2020, Historical Archaeology and Impact Assessment (HAIA) Addendum). The impacts on that archaeology are proposed to be mitigated via the excavation of historical archaeological test trenches, as depicted in Figure 3.2. As both historical and Aboriginal archaeological potential occurs in combination within the study area—particularly across the southern areas of the study area—any Aboriginal archaeological investigation should be undertaken in tandem and/or coordinated with the historical archaeological investigation.

Historical archaeological trenches located in areas of nil to low Aboriginal archaeological potential (Figure 3.2) can proceed without direct Aboriginal archaeological monitoring or coordination, only requiring Aboriginal archaeological advice/supervision, should a suspected natural soil profile be encountered within these trenches. Excavation of historical archaeological trenches located in areas of high Aboriginal sensitivity (Figure 3.3) should be monitored by an Aboriginal archaeologist and project RAP representative, with the opportunity to initiate an Aboriginal archaeological test pit through the base of the historical test trench, particularly in the case that natural soil profiles are encountered in the location.

Should historical archaeological excavation, as guided by the HAIA Addendum, encounter any displaced Aboriginal objects within historical archaeological deposits, the Aboriginal archaeology Excavation Director, and project RAPs would be informed. Any displaced Aboriginal objects within historical contexts would be recorded in their location, and removed, to be catalogued and analysed in accordance with the Aboriginal archaeological methodology outlined below.

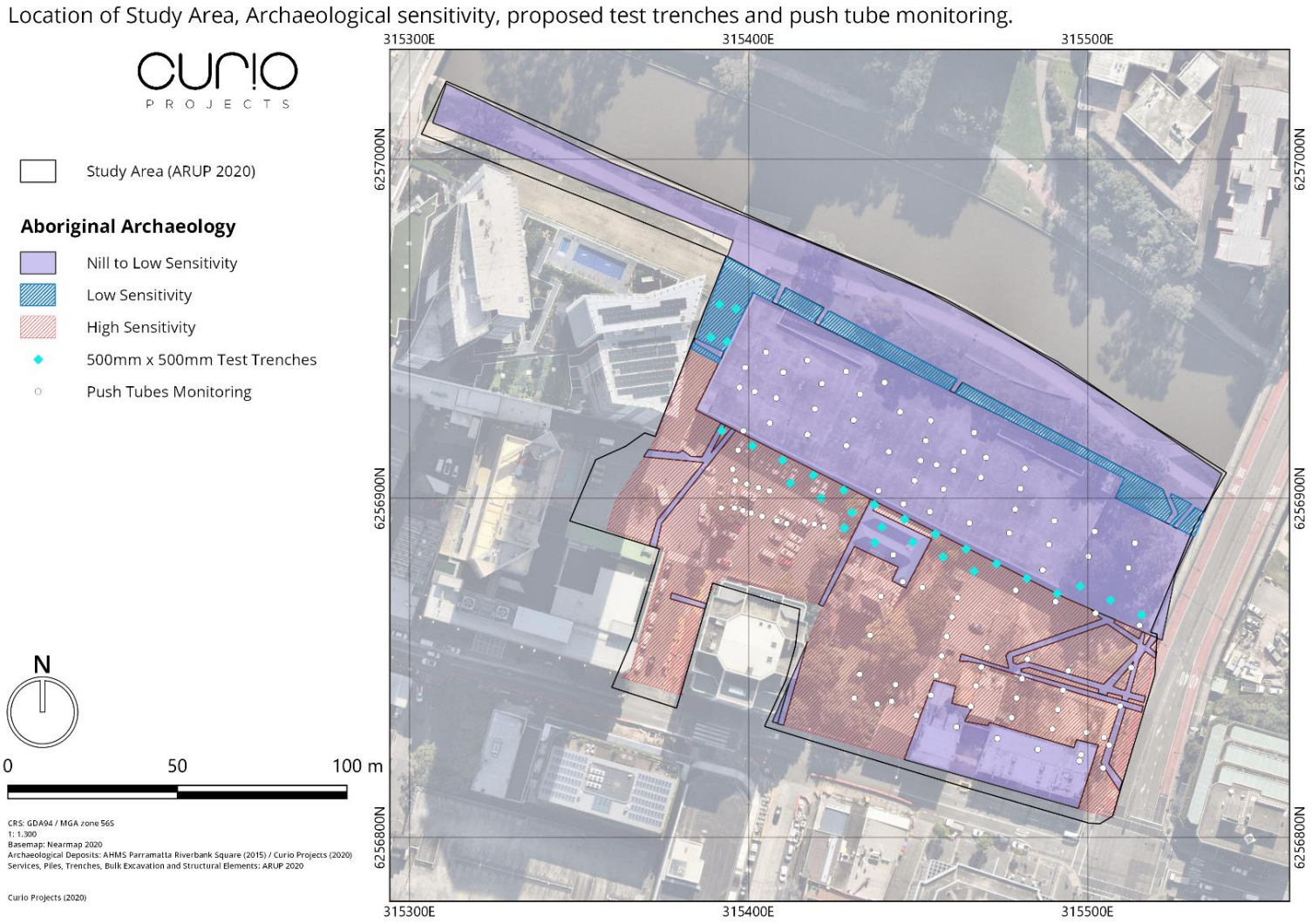

Figure 3.1:Revised development impact areas requiring Aboriginal archaeological investigation (Source: Curio 2020)

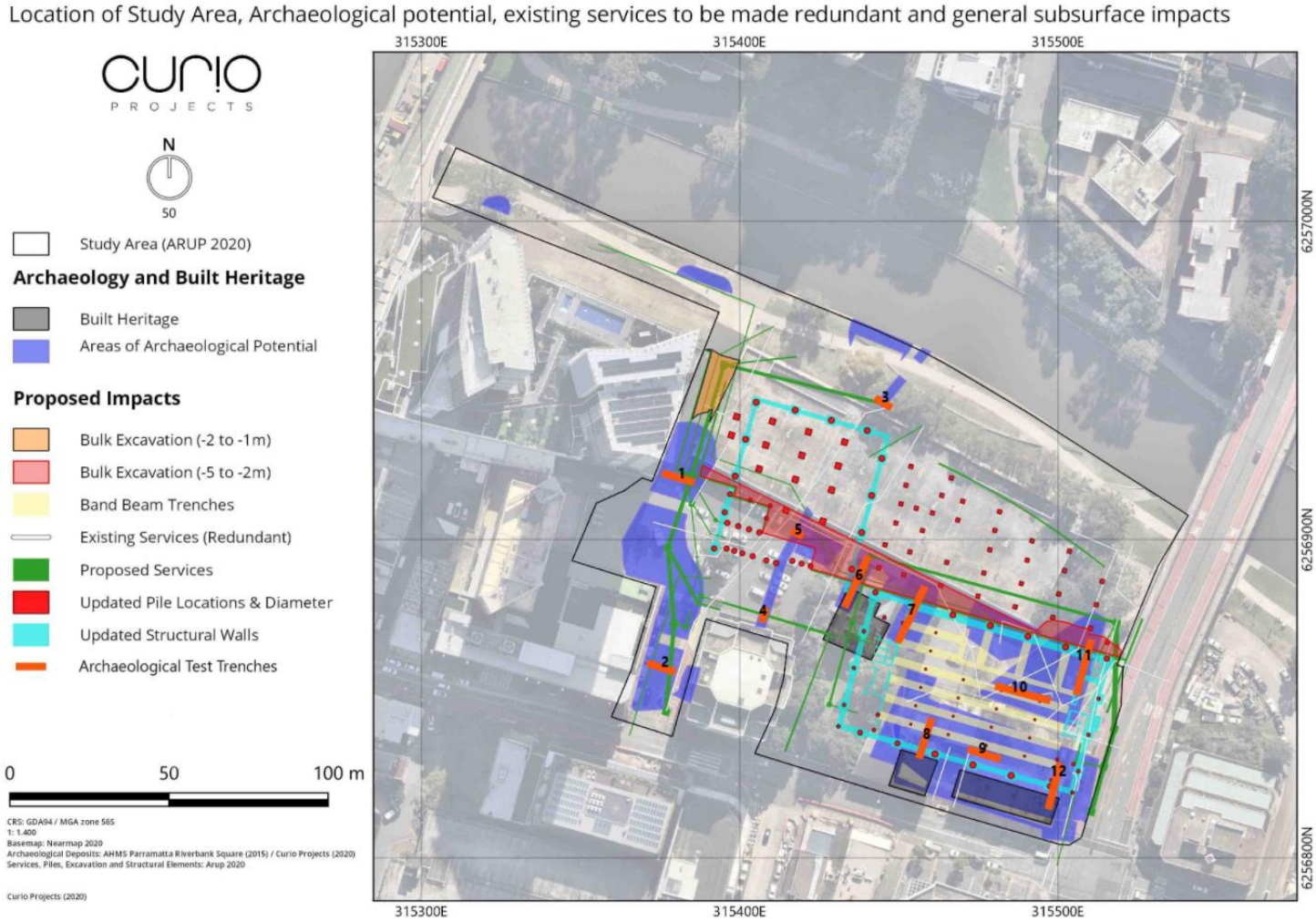

Figure 3.2: Proposed Historical Archaeological Test Trenches and Significance (Source: Curio 2020)

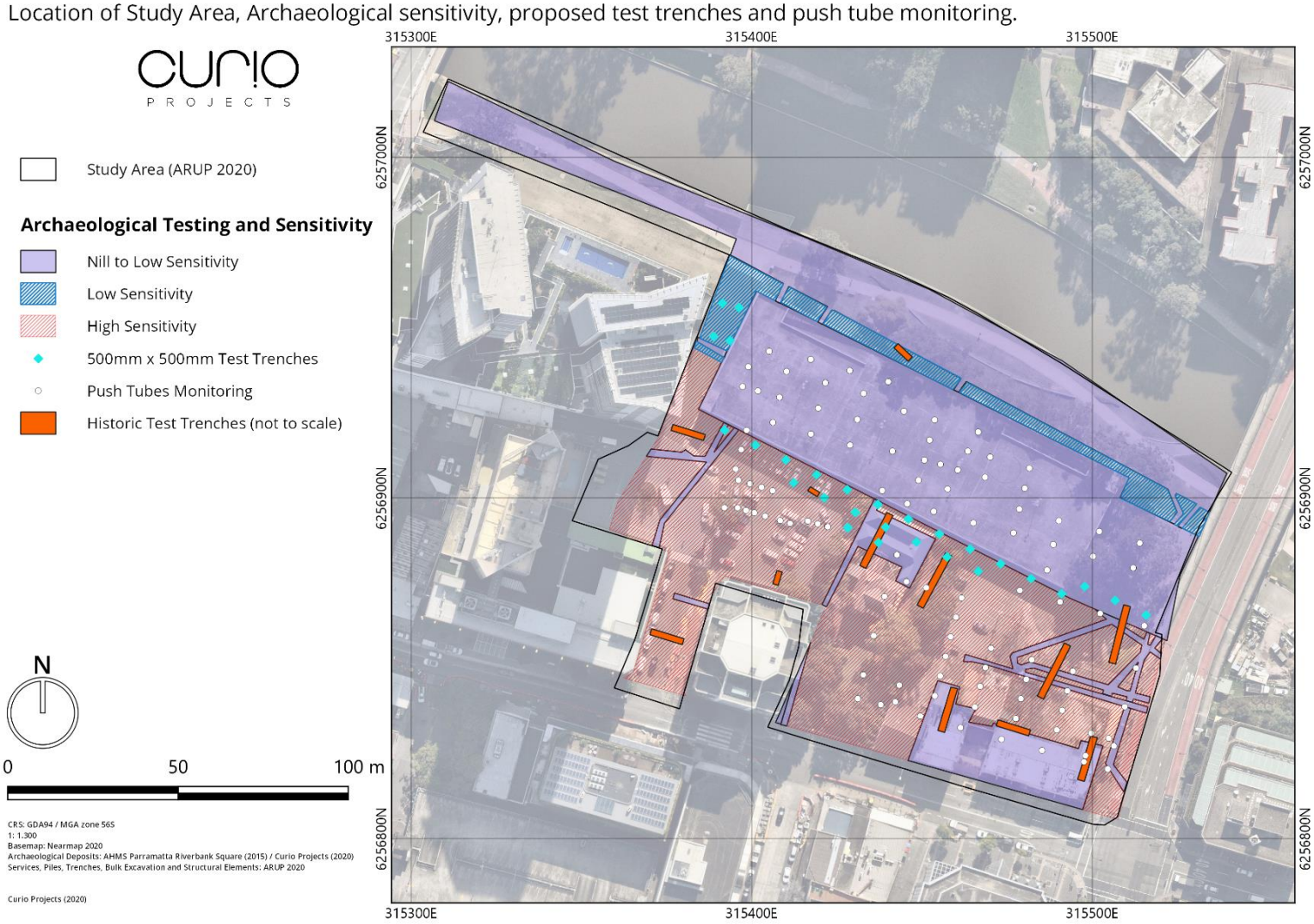

Figure 3.3: Proposed Historical Archaeological Test Trenches over Aboriginal archaeological sensitivity (Source: Curio 2020)

3.3. Excavation Methodology

All Aboriginal archaeological works would be undertaken by a suitably qualified and experienced archaeologist as Excavation Director, to be assisted in the field by archaeologists and representatives from the project RAPs.

Phase 1 archaeological investigation will be split into two separate methodologies, one to accommodate the bulk excavation, and the other to accommodate for foundation piling. Each archaeological investigation will be undertaken as per the following methodologies:

3.3.1. Phase 1: Bulk Excavation Methodology

- Careful removal of any imported materials (e.g. gravel road base, concrete slabs) or historical fill on top of the natural soil/sand deposits from the area of bulk excavation in the east-west of the site along the southern boundary of the car park without disturbing the surface of the underlying natural deposits prior to the start of the excavation works. Removal of historical fill could be undertaken with the assistance of a small mechanical excavator, to be supervised by a suitably qualified archaeologist to avoid mechanical impact below the layer of historical fill.
- Following the removal of imported materials/fill, archaeological excavation of natural soil profiles within the parameters of each identified test trench would proceed using hand excavation techniques (hand tools only).
- Excavation of test trenches would proceed in 0.5m x 0.5m quadrants in 100mm spits along the entire area, unless a shallower depth is defined by natural soil profiles or other stratigraphic/features identified.
- There necessary to meet WHS conditions, excavation of contiguous test trenches would be undertaken, with maximum continuous surface area to be no greater than $3m^2$.
- Undertake shoring of pits as necessary to support trench walls and ensure safe conditions for archaeological team.
- Excavation of each test trench will continue until it is determined that the soil profile in the location is archaeologically sterile.

3.3.2. Phase 1: Foundation Piling Methodology

The methodology for the foundation piling was created with reference to other archaeological reports (GML Parramatta Leagues Club 2016 and D&C ALTRAC Light Rail 2015) that utilise push tube excavation to minimise archaeological impact to the significant sand body on site.

- Careful removal of any imported materials (e.g. gravel road base, concrete slab) or historical fill on top of the natural soil/sand deposits from the area of the excavation without disturbing the surface of the underlying natural deposits prior to the start of the excavation works. Removal of historical fill could be undertaken with the assistance of a small mechanical excavator, to be supervised by a suitably qualified archaeologist to avoid mechanical impact below the layer of historical fill.
- Following the removal of imported materials/fill, archaeological excavation using drill rigs to gather push tubes of natural soil profiles will commence prior to the creation of the

foundation piles marked up in the excavation plan along grid A1-A8 in the western portion of the site and grid B1-B13 in the south-eastern portion of the site. The size of the push tube will be determined with geotechnical advice. This will be undertaken by geotechnical engineers with archaeological monitoring each push tube hole.

- On the removal of a push tube, the excavated sediment extracted will be inspected for archaeological potential. The deposits will be photographed with a scale to record the nature of the deposits.
- Each push tube will be subject to archaeological sampling. Inspections will determine whether any visible evidence is present within the deposits. Should there be any obvious stratigraphical layers or sequences present, they shall be recorded before preparing the deposits for stratigraphic separation and wet sieving. Due to the significance of the PBS within the study area, push tube samples may be subject to OSL dating, with OSL dating stations positioned so that on-site dating can be available.
- Geomorphological sampling and analysis can be conducted on at least one push tube to assist in describing and interpreting the site stratigraphy and formation if deemed necessary.

3.3.3. Phase 2: Salvage Methodology

Should Phase 1 excavation encounter a significant Aboriginal archaeological deposit in any location that suffers impact through the proposed development, archaeological works would progress to Phase 2 salvage excavation within the development impact footprint. A significant Aboriginal archaeological deposit is defined for these purposes as:

- Higher relative number of Aboriginal artefacts;
- Evidence of the Parramatta Sand Body;
- Potential hearths or heat treatment pits;
- Presence of significant, rare or unusual artefact types (e.g. backed blades, axe heads);
- Material potentially appropriate for scientific dating; or
- Any other unusual or unique archaeological, cultural, and/or geomorphological features, as identified by the Excavation Director.

Phase 2 archaeological works would include the expansion of the Phase 1 test trenches via the excavation of one adjoining 1m x 1m excavation pit in order to investigate and salvage the full extent of the feature encountered, to the extent of the footprint of the development impact zone. Phase 2 will also include the expansion of push tube excavations to 0.5 x 0.5m test trenches to further investigate and salvage any potential archaeology. If a significant level of archaeology is found within this initial test trench, it may be subject to further open into 1m x 1m excavation pits.

All archaeological deposits recovered from either phase of the Aboriginal archaeological investigation would be subject to the following procedures:

- All deposits excavated will be individually sieved through a 5mm aperture wire-mesh sieve, and any archaeological material recovered, retained by provenance.

- The location of each test trench (or salvage area) will be recorded by GPS, and recorded in detail including stratigraphic/soil profile description and drawings, description of any relevant features, artefacts etc, and photographed using a DSLR camera and appropriate photo scale.
- If carbon or other features suitable for scientific dating are identified, these would be sampled for possible further analysis (e.g. C-14 dating or OSL dating).
- Sampling of representative soil horizons from each archaeological excavation location.
- Stone artefact analysis will be undertaken in accordance with OEH Code of Practice requirements, and current accepted academic texts for stone artefact analysis and recording in southeast Australia, i.e. Holdaway and Stern 2004.
- A post-excavation report detailing the results of the Aboriginal archaeological investigation works within the study area would be prepared and submitted to the Aboriginal Heritage Section of the NSW DPIE, consistent with best practice for preparation of post-excavation reporting. The report would be provided to all project RAPs for their information.
- Following completion of Aboriginal archaeological excavation within the Powerhouse Parramatta study area, an Aboriginal Site Impact Recording Form with the results of the excavation would be completed and submitted to the AHIMS Registrar for AHIMS 45-6-3192- 'Riverbank Square'.

3.3.4. Aboriginal Artefact Analysis

Any Aboriginal artefactual material recovered from the excavation works would be subject to a descriptive and functional recording and analysis by appropriately qualified and experienced specialists (lithic and/or shell specialist, depending on the nature of any archaeological deposit encountered). Recorded attributes and features of all archaeological material would consider analysis methodologies from previous archaeological investigations on the PSB to allow comparative analysis of deposits (as much as possible).

3.3.5. Geomorphology

A suitably qualified geomorphologist and/or geo-archaeologist may be engaged as a specialist if necessary in order to examine and analyse the nature of the PSB soils (if encountered) and to report on site formation processes and any implications for potential age and integrity of archaeological deposits encountered.

4. Conclusion

This report relates specifically to the revised proposed development impacts of the Powerhouse Parramatta in relation to potential Aboriginal archaeological impacts and provides recommendations for management and mitigation of development impacts (i.e. ground disturbing works).

To further stabilise the east and west buildings, the relocation of the plant, undercroft and additional piles were necessary. We have advised to reduce piling as much as possible. The structural engineers have identified that these piles and the excavation are essential for the structural viability of the building. Therefore, this Addendum ACHAR was required to review impacts to the PSB and mitigate these impacts through further investigation onsite.

- Push tube samples of each pile are required prior to construction activities using a similar methodology to previous excavations that were completed in the same environmental and archaeological context.
- After removing push tube samples, excavated sediment extracted will be inspected for archaeological potential, recorded and photographed before wet sieved.
- OSL dating stations prepared for testing during excavations
- Aboriginal archaeological test excavation across bulk excavation area will occur (0.5m x 0.5m test trenches at 10m x 5m apart)
- Areas that coincide with historical archaeology will be monitored in tandem to ensure that the excavation and recording of any potential finds are completed accordingly

An archaeological induction should be prepared for all on site contractors involved in the below-ground works to familiarise them with the contents and recommendations of this Addendum ACHAR, and the process should they encounter an unexpected archaeological resource.

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