Pitt Town Bypass

Archaeological Research Design

Report to Sustain Joint Venture

November 2024

artefact

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EXECUTIVE SUMMARY

Transport for NSW are proposing to build a bypass of Pitt Town, NSW (the project). The bypass would be approximately one kilometre long, extending between Pitt Town Road and Cattai Road, east of Pitt Town.

In 2018 Artefact Heritage and Environment, on behalf of Arcadis, prepared a Statement of Heritage Impact for inclusion in the Review of Environmental Factors for the Pitt Town Bypass in November 2018. The project Review of Environmental Factors was placed on public display between Monday 12 November and Monday 10 December 2018 for community and stakeholder comment. The Pitt Town Bypass Review of Environmental Factors submissions report (submissions report) dated 25 February 2019 was prepared to respond to issues raised. After consideration of the REF and submissions report, Transport determined the project on 27 February 2019.

The Statement of Heritage Impact concluded that portions of the study area had moderate potential to contain archaeological relics, as protected by the NSW *Heritage Act 1977*. The report concluded that an Archaeological Research Design must be prepared should impact to these areas be required. It is understood that the project requires impact across this area.

Artefact Heritage and Environment have therefore been engaged by Sustain Joint Venture to prepare this Non-Aboriginal (Historical) Archaeological Research Design for archaeological management of the identified area of moderate potential. This report provides a detailed assessment of the potential and significance of archaeological remains in the area of archaeological potential, outlines an archaeological research design and methodology for the archaeological excavation of potential remains.

Conclusions

This report concludes the following:

- The study area has the potential to contain local and state significant archaeological relics These relics have the potential to contribute to our understanding of the earliest phase of the development of Pitt Town post colonisation, as summarised below:

Phase	Date	Archaeological remains	Significance	Potential
1 – First land grants	c.1805 – c.1814	None	Nil	Nil
2 – First phase subdivision and occupation	c.1815 – 1843	Structural remains of residences, cesspits, cistern, well, artefact bearing deposits	State (if highly intact)	Low to moderate
3 – Modification of first phase occupation and consolidation	1843 – c.1900	Structural remains of dwellings and associated outbuildings, cistern, artefact bearing deposits.	Local	Moderate

Phase	Date	Archaeological remains	Significance	Potential
4 – 20th century occupation and farming	c.1900 – 1964	Structural remains of dwellings and associated outbuildings, cistern, artefact bearing deposits.	Unlikely to reach local significance threshold	Moderate
5 - Modern development	1964-present	Nil	Nil	Nil

Recommendations

Due to the sensitivity of the potential archaeological resource, this report recommends the following mitigation measures be implemented to reduce impact where possible, and to manage the archaeological resource effectively and appropriate to its significant.

This report recommends the following:

- This ARD should accompany an application for a section 140 excavation permit to Heritage NSW under section 141 of the *Heritage Act 1977*
- A program of archaeological test excavation and monitoring, under the approved section 140 permit, should be conducted where archaeological remains have been predicted, as discussed in this report
- Should significant archaeological remains be uncovered, open area salvage would be required to appropriately investigate and record archaeological remains prior to impact
- Protection measures must be implemented for those Areas of archaeological potential where excavation can be avoided
- Relics are protected under the *Heritage Act 1977* and the Heritage Council of NSW should be notified in accordance with section 146 of the Act if relics not anticipated by this ARD are identified. All human skeletal remains are statutorily protected.

Safeguards and management measures

The following non-Aboriginal archaeological safeguards and management measures are included in the project REF and should be implemented throughout the life of the project.

No.	Impact	Environmental safeguards and management measures	Responsibility
NA7	Non-Aboriginal Heritage	All staff involved in ground-disturbing works must receive a heritage induction as part of their general site induction. The heritage induction will make clear the responsibilities of Transport, the contractor, and workers under relevant heritage legislation. The heritage induction must provide workers with a basic understanding of the nature and appearance of Aboriginal and historical sites and artefacts and provide them with a clear understanding of the unexpected finds procedure.	Contractor

No.	Impact	Environmental safeguards and management measures	Responsibility
		Additional heritage briefings would be provided on site as needed to contractors who are working in conjunction with the site archaeologists during the archaeological investigations.	
NA8	Non-Aboriginal Heritage	A test excavation will be undertaken in Area 5 as described in the Archaeological Research Design Report, in order to determine the structure's heritage significance. The test excavation would be undertaken in compliance with the methodology described in section 4.6 of the Archaeological Research Design Report. The test excavation will need to occur prior to any pre-construction activities, site establishment, or construction activities for the project.	Transport
NA9	Non-Aboriginal Heritage	Archaeological monitoring is required for excavation works in Area 4 that is outside the area designated for protection (Figure 29 in the Archaeological Research Design Report). An onsite archaeologist is required to be present during any mechanical excavation. Should construction excavation endanger any potential archaeological deposits, the machine excavation contractor must cease excavation if advised by the monitoring archaeologist. Investigation works will continue by hand, if required, to expose, investigate and record the archaeological remains. Works would not recommence until the monitoring archaeologist has completed the recording and the Excavation Director is satisfied that further investigation is not required.	Contractor
NA10	Non-Aboriginal Heritage	Heritage salvage excavation works will occur in compliance with the methodology outlined in section 4.7 of the Archaeological Research Design Report in Area 5. Prior to moving to salvage in Area 5, if deemed required to be salvaged after test excavations, the project must follow the Hold Point with a short report of the testing results and receive confirmation to proceed to salvage as per the Archaeological Research Design. The heritage salvage excavation will need to occur prior to any construction activities for the project within the identified areas as per the Archeological Research Design Report.	Transport, Contractor
NA11	Non-Aboriginal Heritage	Significant archaeological remains will be recorded in accordance with the methodology described in section 4.9 of the Archaeological Research Design Report.	Transport
NA12	Non-Aboriginal Heritage	Protection measures within the proposed ancillary facility will be enacted by the contractor, including:	Contractor

No.	Impact	Environmental safeguards and management measures	Responsibility
		Where feasible, Area 2 as described within the Archaeological Research Design Report should be excluded from use as a no go area. If exclusion from use is not feasible: No levelling or ground surface impact should take place The area of hardstand should adequately cover the area required for the compound, with an appropriate buffer A layer of Heavy Duty Builders Black Plastic should be placed across the compound area to create a barrier, and minimise any inadvertent liquid/fluid seepage from the compound area into the existing top soil to minimise any inadvertent mixing between the existing topsoil and the fill to be introduced and facilitate easier removal of the hardstand post construction A suitable soil matrix (sand/gravel/crushed stone/crushed rock etc) should be introduced to dissipate the impact exerted by equipment and temporary structures. This fill should be placed at a depth of at least 250mm and create a level surface. Care should be taken to avoid impact to the ground surface during the introduction of the fill Erosion control measures should be implemented to prevent water run-off from the hardstand affecting the surrounding ground surface.	
NA13	Non-Aboriginal Heritage	The compound layout must be designed to avoid ongoing movement by heavy vehicles over Area 2 as described within the Archaeological Research Design Report. This area has the potential to contain state significant archaeological relics. Light-weight vehicles and equipment should be prioritised for areas with the potential to contain an archaeological resource.	Contractor
NA14	Non-Aboriginal Heritage	Area 2 as described in the Archaeological Research Design report should: Be excluded from landscaping works No planting or ground disturbance should occur If relics are located in this area, notification to Transport is required.	Contractor
NA15	Non-Aboriginal Heritage	Within area 4 high potential areas as described in the Archaeological Research Design (shown as pink area in Figure 29) report should: Be demarcated as a no go area for the entire duration of the project construction and post construction completion works. Demarcating to be clearly signposted and include either flagging fence, temporary fencing or hoarding.	Contractor

No.	Impact	Environmental safeguards and management measures	Responsibility
		Be excluded from landscaping works No planting or ground disturbance should occur If relics are located in this area, notification to Transport is required.	
NA16	Non-Aboriginal Heritage	After initial testing in Area 5 (Figure 27 in Archaeological Research Design Report) if no relics are identified, proceed to archaeological monitoring of the rest of Area 5, according to Section 4.5 of the Archaeological Research Design Report. During test excavations if relics are confirmed the project will notify Transport and following a hold point, complete a testing report and await confirmation from Transport toproceed to salvage of all relics within the area 5. If relics are located in this area, notification to Transport is required.	Contractor
NA17	Non-Aboriginal Heritage	At the completion of the archaeological test excavation program an excavation report will be prepared to document the findings of the historical archaeological excavations conducted. The report will include a clear, plain English summary explaining what was found, where it was located, and how the archaeological findings have answered the research questions and provided new information to understand the development of Pitt Town. The final report should state where the relics recovered from the project are stored including detailed location maps and descriptions of findings.	Contractor

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FIGURES

TABLES

ABBREVIATIONS AND GLOSSARY

Acronym	Description
Artefact	Artefact Heritage and Environment
DCP	Development Control Plan
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act* 1979
EPBC Act	*Environment Protection and Biodiversity Conservation Act* 1999
Heritage Act	NSW *Heritage Act 1977*
Heritage NSW	Heritage NSW, Department of Environment and Heritage
ICOMOS	International Council on Monuments and Sites
LEP	Local Environmental Plan
LGA	Local Government Area
NHL	National Heritage List
NSW	New South Wales
OEH	Office of Environment and Heritage
Relic	Any deposit, artefact, object or material evidence that relates to the settlement of the area that comprised New South Wales, not being Aboriginal settlement, and is of State or local significance
SHI	State Heritage Inventory
SHR	State Heritage Register
Transport for NSW	Transport for New South Wales
S139	Section 139 of the NSW *Heritage Act 1977*
S140	Section 140 of the NSW *Heritage Act 1977*
UNESCO	United Nations Educational, Scientific and Cultural Organisation
Works	Archaeological evidence of former infrastructure
WHL	World Heritage List

1.0 INTRODUCTION

1.1 Project background

Artefact Heritage and Environment (Artefact) have been engaged by Sustain Joint Venture (SJV) to prepare the Non-Aboriginal (Historical) Archaeological Research Design (ARD) for the Pitt Town Bypass project.

Roads and Maritime Services (Roads and Maritime) completed a review of environmental factors (REF) of the Pitt Town Bypass in November 2018.[1] Artefact had been engaged by Arcadis to prepare a Statement of Heritage Impact (SoHI) report for the project in September of 2018.[2]

The SoHI identified that portions of the study area have moderate potential to contain intact locally significant archaeological resources associated with former residential occupation and development of Pitt Town and concluded that should excavation within the area of potential be required, an ARD must be prepared to guide management of the potential archaeological resource.

The REF included management measure NA3 as follows:

Should excavation be required within the areas assessed as having moderate potential to contain archaeological relics, an Archaeological Research Design will be prepared.

Depending on the assessed level of impact in the Archaeological Research Design, this may necessitate application for an excavation permit, or Exception Notification under either Section 140 or Section 139(4) of the Heritage Act 1977 *respectively, to the Heritage Division of the Office of Environment and Heritage. An Archaeological Research Design and Methodology will be required to support any application.*

A Consistency Assessment prepared for the project in 2019 in response to minor design changes did not identify additional impact to non-Aboriginal heritage as assessed in the project REF.[3]

Ongoing design has identified that the area of moderate archaeological potential would be impacted by the proposed works. This ARD provides a revised assessment of the potential and significance of archaeological remains in the study area, outlines an archaeological research design for the excavation and provides an archaeological methodology for managing these remains under a Section (S)140 excavation permit application to Heritage NSW, Department of Environment and Heritage (Heritage NSW).

This ARD would accompany an Addendum REF being prepared to incorporate detailed design modification.

1.2 Study Area

Pitt Town is located within the Hawkesbury Local Government Area (LGA) in the Greater Sydney region approximately 45km north west of Sydney. The proposed bypass would extend between the intersection of Bathurst Street with Glebe Road in the south, through cleared land, across Old Pitt Town Road to Cattai Road in the north. The bypass would be approximately 1,060m long and located east of the main township of Pitt Town.

[1] Roads and Maritime Services, *Pitt Town Bypass Review of Environmental Factors*, November 2018
[2] Artefact Heritage, September 2018, *Pitt Town Bypass Statement of Heritage Impact*, prepared for Arcadis
[3] Roads and Maritime Services, *Pitt Town Bypass Review of environmental factors consistency review*, November 2019

The SoHI identified two areas of moderate archaeological potential, as identified in Figure 1. These areas form part of:

- Lot 2 DP 77487
- Lot 1 DP 107709
- Part of Lot 1 DP 560897.

During the preparation of this ARD, additional historical research was undertaken. This identified an further area of archaeological potential to the south:

- Lot 3 DP 565918

To provide targeted management recommendations, the areas of archaeological potential have been revised, as illustrated in Figure 2.

1.3 Report limitations

This report provides an historical (non-Aboriginal) archaeological assessment and an archaeological excavation methodology for the area of moderate archaeological potential only. An assessment of Aboriginal cultural and archaeological values is not provided.

1.4 Authorship

This report was prepared by Jenny Winnett and Josh Symons, both Technical Directors at Artefact.

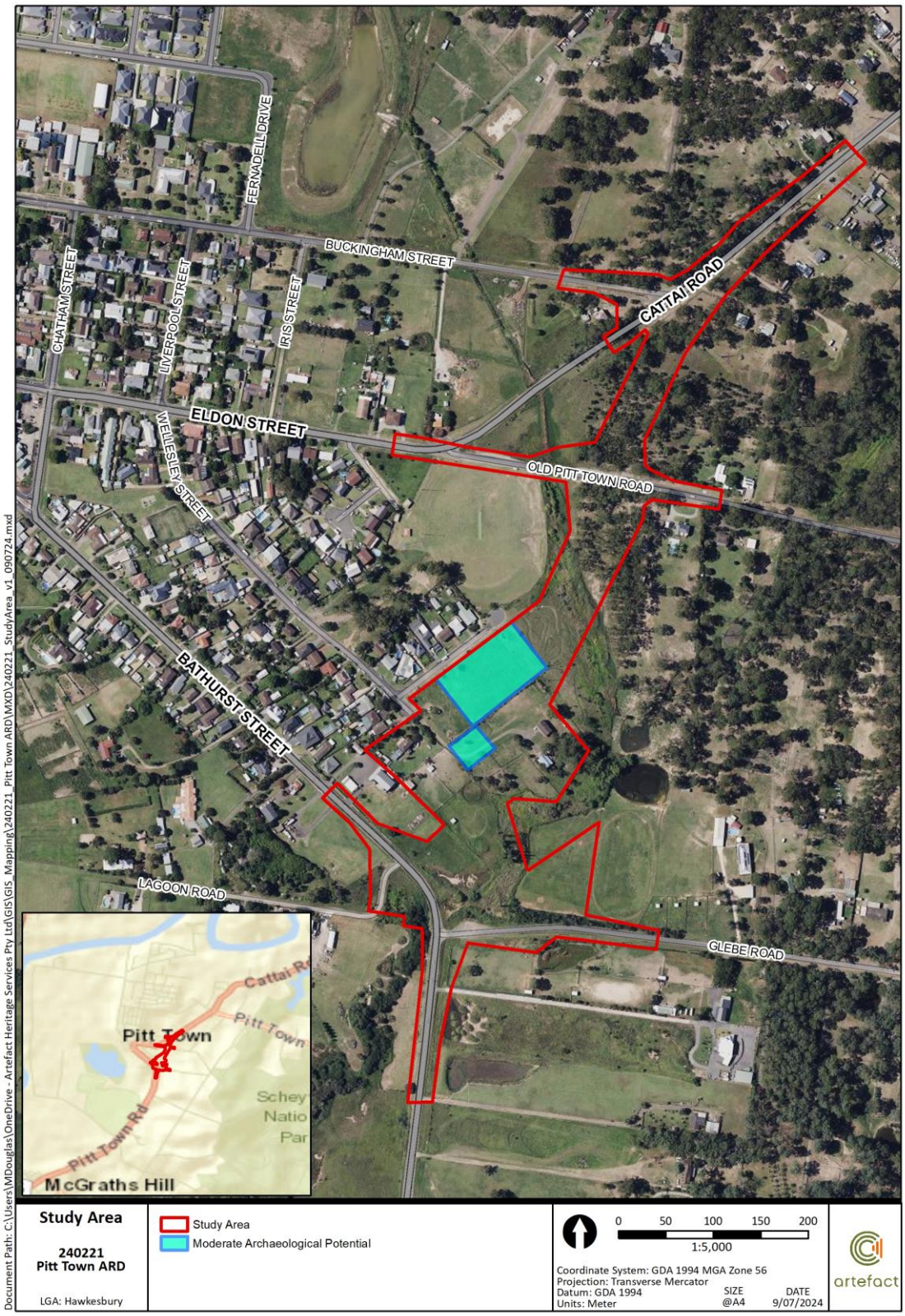


Figure 1. Location of the study area

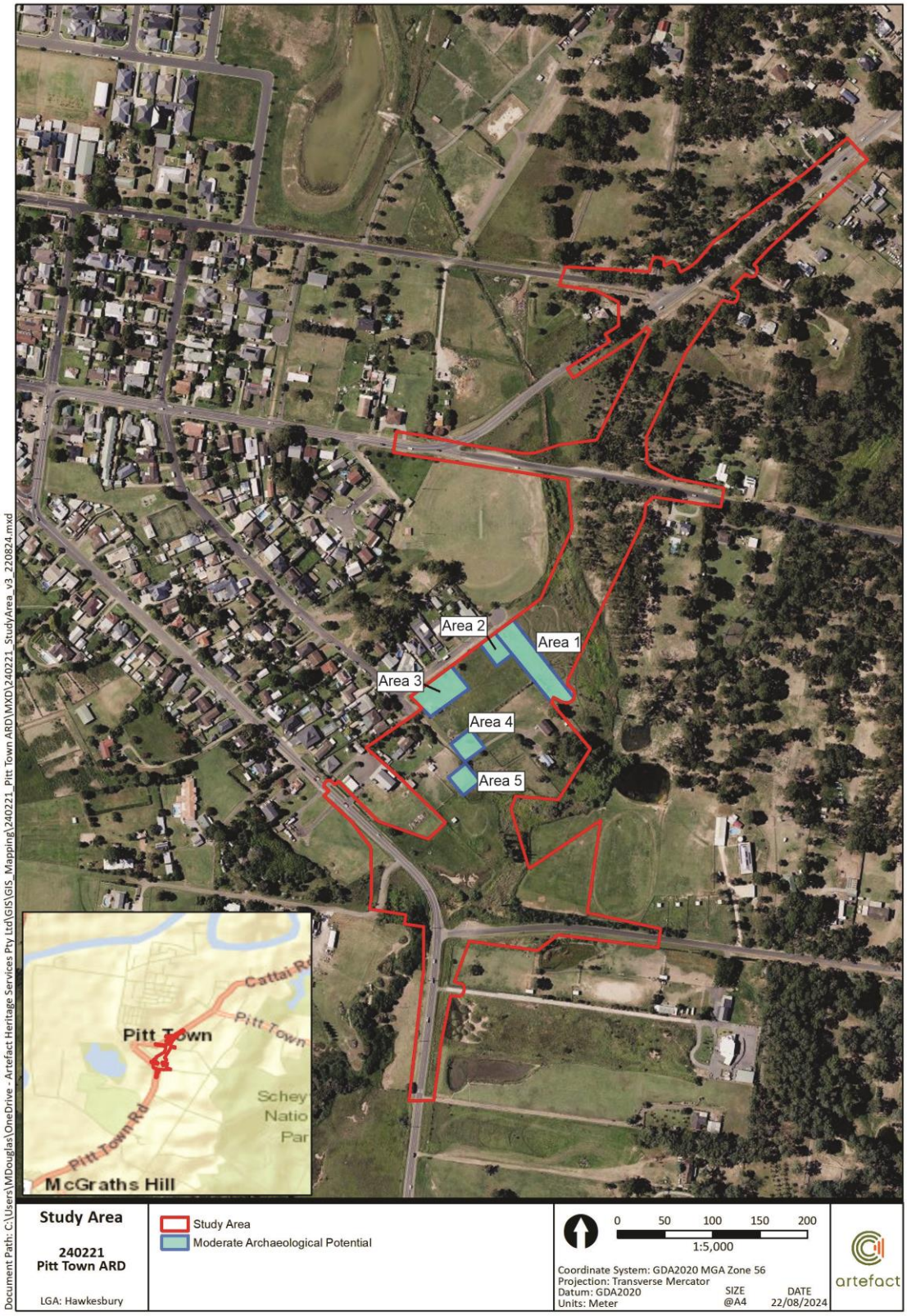


Figure 2: Revised areas of archaeological potential

1.5 Statutory Context

1.5.1 NSW Heritage Act 1977

The Heritage Act is the primary piece of State legislation affording protection to historical archaeological remains items (natural and cultural) in NSW. Under the Heritage Act, 'items of environmental heritage' include places, buildings, works, relics, moveable objects and precincts identified as significant. Significance is based on historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values.

1.5.1.1 Relics Provisions

The Heritage Act also provides protection for 'relics', which includes archaeological material or deposits. According to Section 139 (Division 9: Section 139, 140 – 146):

> *(1) A person must not disturb or excavate any land knowingly or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, damaged or destroyed unless the disturbance is carried out in accordance with an excavation permit.*
>
> *(2) A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.*
>
> *(3) This section does not apply to a relic that is subject to an interim heritage order made by the Minister or a listing on the State Heritage Register.*
>
> *(4) The Heritage Council may by order published in the Gazette create exceptions to this section, either unconditionally or subject to conditions, in respect of any of the following:*
>
> *a. Any relic of a specified kind or description,*
> *b. Any disturbance of excavation of a specified kind or description,*
> *c. Any disturbance or excavation of land in a specified location or having specified features or attributes,*
> *d. Any disturbance or excavation of land in respect of which an archaeological assessment approved by the Heritage Council indicates that there is little likelihood of there being any relics in the land.*

Section 4 (1) of the Heritage Act (as amended in 2009) defines a relic as:

> *...any deposit, artefact, object or material evidence that:*
>
> *relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and is of State or local heritage significance*

A relic has been further defined as:

> *Relevant case law and the general principles of statutory interpretation strongly indicate that a 'relic' is properly regarded as an object or chattel. A relic can, in*

some circumstances, become part of the land be regarded as a fixture (a chattel that becomes permanently affixed to land).[4]

Excavation permits are issued by the Heritage Council of NSW, or its Delegate Heritage NSW, under Section 140 of the Heritage Act. An application for an excavation permit must be supported by an Archaeological Research Design and Archaeological Assessment prepared in accordance with Heritage Council archaeological guidelines.

Minor works, such as those below, that will have a minimal impact on locally significant archaeological relics may be exempt from the need to obtain an excavation permit under subsections 139(1) or (2) of the Heritage Act:

- minor works or activities that have minimal impact on archaeological relics of local heritage significance
- archaeological testing of relics of local heritage significance
- monitoring of relics of local heritage significance.

Should further ground disturbing works be required in an area where excavated relics have been identified, a detailed archaeological salvage methodology would be prepared and submitted in support of a Section 140 Excavation Permit of the Heritage Act (S140).

1.5.1.2 Works

The Heritage Act places 'works' in a separate category to archaeological 'relics'. 'Works' are evidence of former infrastructure. 'Works' may be buried, and therefore archaeological in nature, however, exposure of a 'work' does not trigger reporting obligations under the Heritage Act. 'Works', as items of environmental heritage, have the potential to provide information that contributes to our knowledge of past practices.

The following examples of remnant structures have been considered to be 'works' by Heritage NSW:

- Remains of former infrastructure i.e. road surfacing, rail track and ballast, drains
- Structural remains i.e. footings, cisterns, wells

Note this definition does not apply to archaeological remains located within SHR listed items.

[4] *Assessing Significance for Archaeological Sites and 'Relics'*, Heritage Branch, Department of Planning, 2009:7.

2.0 SITE CONTEXT

2.1 Historical overview

An historical overview of the development of Pitt Town, and the overall study area for the Pitt Town Bypass project, was included in the SoHI prepared by Artefact in 2018.[5] The following focuses on the area of moderate archaeological potential identified in the 2018 report:

2.2 Aboriginal histories of the locality

Before the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. It seems that territorial boundaries were fairly fluid, although details are not known. The study area is located within the Darug language group area. The Darug language group is thought to have covered the area south from Port Jackson, north from Botany Bay, and west from Parramatta.[6]

The arrival of British settlers in NSW and subsequent expansion along the Hawkesbury and Georges Rivers had damaging repercussions for the Darug peoples (Attenbrow 2010, p. 14). The Hawkesbury River and surrounding areas were important hunting and fishing grounds for the local groups residing there. The acquisition of these lands by settlers resulted in conflict lasting from 1789 to 1805.[7]

The Darug people continue to live in the region and as such they have contemporary cultural, social and spiritual meanings for this area.

2.3 Colonisation of the Hawkesbury region

In the first years of settlement the most pressing need for the colony was a stable food source to alleviate the potential famine and reduce the reliance on ships bringing supplies from England. The soil in Sydney Cove was of poor quality, and although the Rose Hill / Parramatta based Government Farms were obtaining better results, the estimates of production were still too small to support the growing colony.[8] The need for fertile agricultural land was pressing.

In 1789, Governor Phillip explored the area. By 1794, the first 22 land grants were made by Lieutenant-Governor Major Francis Grose in the area of Clarendon (formerly known Mulgrave Place), between present-day Richmond and Windsor.[9] In spite of the frequent flooding the area was put to agricultural use and yielded wheat crops that were shipped to Sydney via the Hawkesbury River.[10] Originally known as the Green Hills, the area was renamed Hawkesbury after the Baron Hawkesbury in 1789.[11]

By 1794, settlers were granted farms in Windsor along South Creek. When instruction came through from England regarding the alienation of land to settlers in the form of grants, it was found that two of the recipients, James Ruse and Charles Williams, along with 20 other families, were already established in the area.

The land was formally granted by Lieutenant-Governor Francis Grose, who reported to England that he had permitted settlement on the banks of the Hawkesbury River, and described the soil as being

[5] Artefact Heritage 2018
[6] Attenbrow 2010, p. 34
[7] Attenbrow 2010, p. 15
[8] Karskens 2009 p. 117.
[9] Barkley, Jan & Nichols, Michelle, 1960, *Hawkesbury 1794-1994: The first two hundred years of the second colonisation.*
[10] Barkley & Nichols, 1960.
[11] 'Hobartville, Including Outbuildings'.

"particularly rich."[12] Grose names the locality 'Mulgrave Place', in honour of his friend and patron, Lord Mulgrave (Figure 3).[13] It has been suggested that the distance from Sydney and its bureaucracy influenced the character of the Hawkesbury River settlements. Many of the original colonists were ex-convicts, encouraged to settle in the region by reductions in their sentences. It is also possible this encouragement was an attempt to confine those lower on the socio-economic scale geographically. The locality was put to use producing maize, wheat and barley. Cattle, sheep, goats, pigs and horses were also raised in the area.[14]

Unfortunately, within the first years of settlement, a number of destructive floods devastated the region, destroying crops and livestock, drowning settlers and their families and destroying buildings. Between 1799 and 1819 there were ten major floods. As a consequence, the government rations were reduced, the price of produce and livestock increased, and the colony relied on imports from Bengal and Rio de Janeiro to support the population.[15]

2.4 The Macquarie Towns

Governor Lachlan Macquarie arrived in the colony in 1809. The Hawkesbury farms were not flourishing at this time, although the population of the region had increased.

Macquarie selected a number of new sites for the establishment of market towns which would serve the local population. Macquarie travelled throughout the region selecting sites on the ridge-line on which the new towns of Windsor, Richmond, Castlereagh, Wilberforce and Pitt Town were developed.

The establishment of the Macquarie Towns was an early act of social organisation carried out by Macquarie, although he was acting on instruction originally issued to Governor Phillip from London. These instructions were the town was to be located near a navigable river and to contain town and pasture lots. The aim of the townships was to provide the settlers with ways to assist each other, provide security and easy access to trade routes for farm produce.

The town land contained granted land (ie private land) and land set aside for defence, civic and cultural purposes. Macquarie's town allotments were intended to form an "inseparable part" of the farms, and were not to be sold separately. On selection of the town sites, the Acting Surveyor marked out several allotments, so that the settlers could commence "with the least possible delay the business of erecting houses and removing thither".[16]

Of the five Macquarie Towns only Windsor (Green Hills) was initially successful. The remainder grew slowly, due to a general reluctance from the Hawkesbury settlers to leave the fertile soils of the Nepean and Hawkesbury Rivers and move into them.[17] Macquarie's building standards may also have dissuaded potential settlers, requiring buildings to be constructed of brick or weatherboard, to have brick chimneys and shingled roofs, two rooms, glazed windows and no dwelling house was to be less than 2.7m (9ft) high.[18] Most settlers preferred easily constructed and lightweight slab huts for affordability, and ease of re-building, should a flood or other disaster require it.[19]

With the development of links with Bathurst, and the opening of agricultural land further west, the importance of the Hawkesbury agricultural region diminished. The character of the area also shifted

[12] Barkley et al 1994 p. 9.
[13] EMM August 2015 p.12.
[14] EMM August 2015 p.12.
[15] EMM August 2015 p.13.
[16] Proudfoot, H. and Hawkesbury City Council, *The Hawkesbury A Thematic History* 2017 p.20.
[17] Karskens, 2020 p. 270
[18] Karskens, 2020 p. 273
[19] Ibid

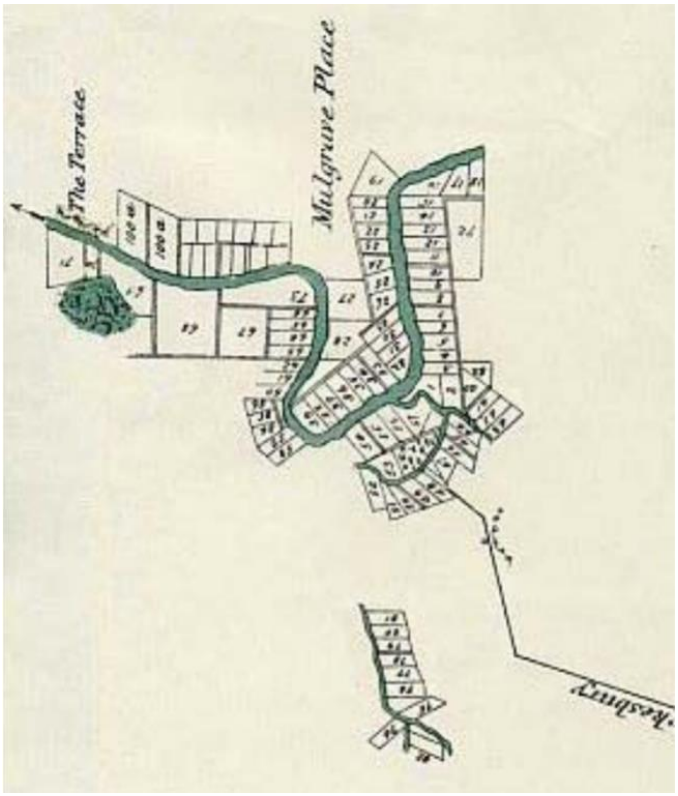
as the new road to Parramatta was constructed, making the area more attractive to settlers other than those who had little choice but to take up government incentives.

Drought followed by wheat leaf rust in the 1870s necessitated a change in crop types and by the 1890s the area was a major producer of citrus. The regions dairy industry was also established at this time, although it declined through the early decades of the 20th century. In 1965 the Hawkesbury region was described as follows:

> *The grain crops and pigs of early days are now largely replaced by fruits and vegetables whilst dairying has become of prime importance. The inexhaustible fertility of the soil allows almost continuous cropping and the prosperity of the district is broadly based on dairying, orcharding, vegetable growing, sweet corn, mushroom and poultry raising.*
>
> *The secondary industries of the area have been mainly associated with primary production. Thus milling, brewing, tanning and butter-making in turn have risen and declined. Vegetable canning and fresh milk treatment have now been of prime importance for a generation.*[20]

The last dairy in the area was sold in 1972.[21]

Figure 3: Detail from Surveyor C. Grimes 1796 *Plan of the Settlements in New South Wales* showing the Mulgrave Place Farms.



[20]Gill, J. C. H. The Macquarie Towns, 25 March 1965.
[21] EMM August 2015 p.14.

2.5 The Development of Pitt Town

The first Pitt Town site was surveyed by Governor Macquarie in January 1811.[22] Macquarie noted in his journal:

> *I proceeded… to explore the ground marked out for the township of Pitt-Town in the Nelson District. This ground is not so good or so conveniently situated for the settlers in general as might be wished, it being not less than 3 ½ miles from some few of the front farms; but no better is to be had and therefore there is no alternative left but to place the town on these heights, and which I have accordingly determine on.*

Macquarie named the town for the British Prime Minister William Pitt.[23] The original location of the town was found to be too distant from the lowland farms and in October of 1815 the town reserve was relocated on previously unoccupied land near the western edge of the high land[24].

The newtown site was surveyed in an unusual triangular configuration due to the topography and the route of the roads northwards and to the river. Land was set aside for a school, a village reserve and a burial ground. A cattle and passenger punt was provided at Pitt Town in 1828. The same year, the first irrigation pump in the colony was placed on the river near the town by Lawrence May. In 1828 Surveyor E. Knapp prepared a plan of the town, including the footprints for all the buildings present in 1815.[25]

A number of inns were established in the 1820s, including the Johnston family's Macquarie Arms Inn, and Daniel Birdwood's Bird in Hand Inn. In 1828 a combined brick Church of England school house and chapel was erected in Bathurst Street. St James' Church was completed on the site in 1857. Before the completion of Scots' Church in 1862, the Presbyterians worshipped in Ebenezer. There was no provision for Roman Catholics.[26]

New development was generally sited to the south of the village and progressed along the alignment of Bathurst and Wellesley Streets, as shown in Knapp's survey of 1828 (Figure 7).[27] Survey of the town in 1843 indicates that development continued along the same alignment (Figure 8).[28]

Pitt Town industry was related to primary production and was dominated by the processing of grain, hides and wool. May had established his horse-power driven flour mill in Pitt Town in 1815. John Hall was operating a mill in Pitt Town by the late 1820s and in 1831 George Hall had also erected a mill on his farm outside of Pitt Town. In addition, John McDonald and John Dwight operated Threshing Machines.

Shipbuilding was another important local enterprise. The Hawkesbury River provided an important link with Sydney in the early years of the settlement. Shipbuilding was therefore a lucrative trade. By 1802 ships were being constructed in the colony, both in Sydney and the colony. Ships sailed between the Windsor region and Sydney, to Newcastle for coal and the Bass Straight and New Zealand for seal skins. The most prominent shipbuilder in the region was John Grono who constructed 12 vessels between 1804 and 1833. Grono purchased John Benn's property on the river

[22] Austral Archaeology *Built Heritage & Archaeological Landscape Investigation Windsor Bridge Options* Report for Roads & Traffic Authority NSW, August 2011.
[23] Nichols, M. Pictorial History of the Hawkesbury p. 79.
[24] Jack, I. Macquarie's Towns 2010 p. 70
[25] Ibid, p. 73
[26] Austral Archaeology August 2011.
[27] Surveyor Knapp's survey of the township of Pitt Town (State Records MAP SZ405).
[28] Surveyor James Galloway's survey of the township of Pitt Town (State Records MAP 4746).

at Canning Reach where he constructed his boats. Two of the early land grantees in the current study area were briefly a part of this trade: John Benn with his cutter 'Unity' and John Palmer.[29] Timber for the local boat building trade was obtained from the Pitt Town Common, located to the east of the study area.

The areas of archaeological potential, the current study area. is located on what was originally the eastern fringe of Macquarie's township, and spanned portions of three early land grants; John Benn's 60 acres, John Palmers 380 acres and James Wilbow's 35 acres (Figure 4).

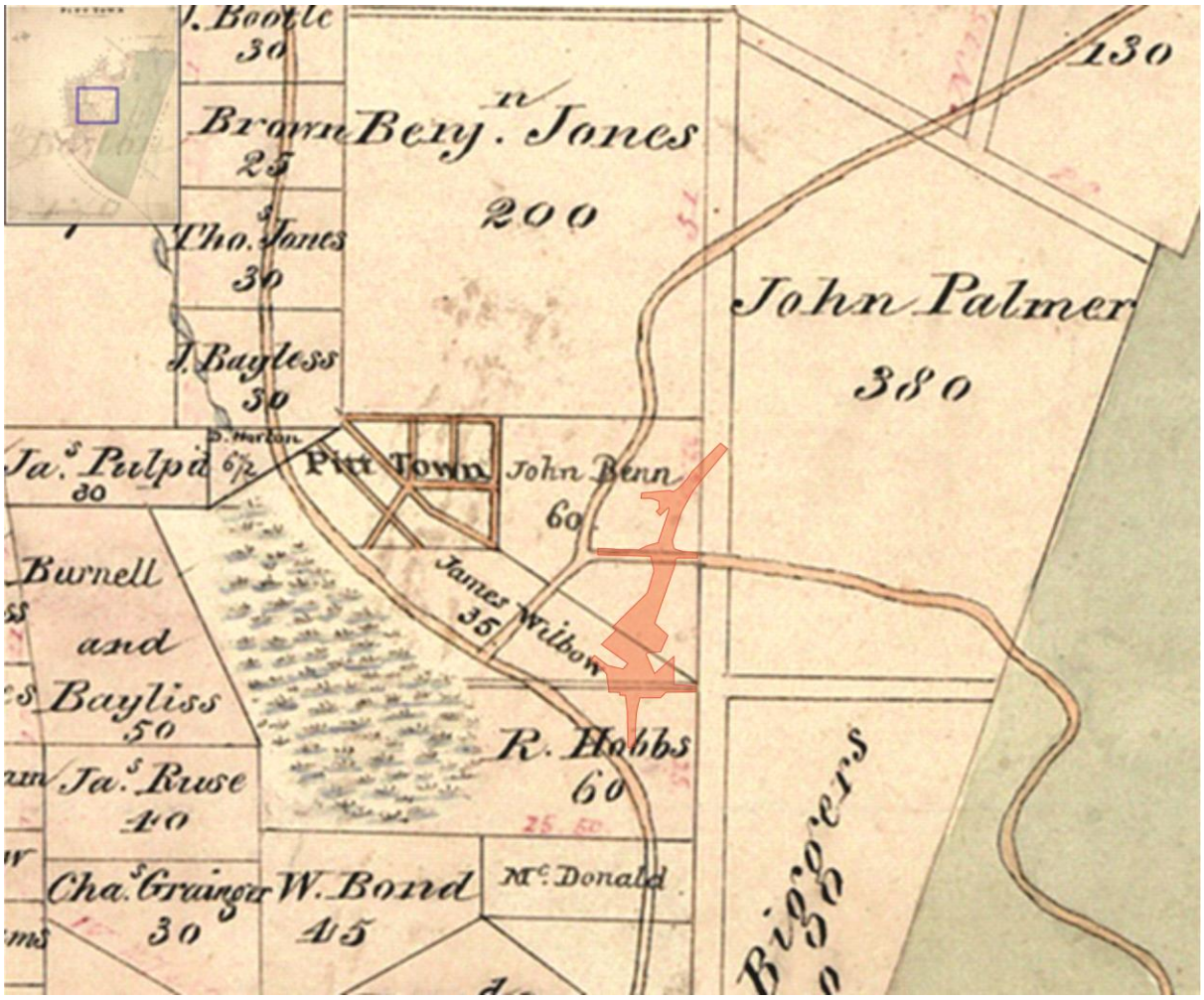


Figure 4: c.1826 plan of the parish of Pitt Town with the study area shaded in red. Source: SLNSW.

[29]Proudfoot, H. and Hawkesbury City Council 2017 p.15.

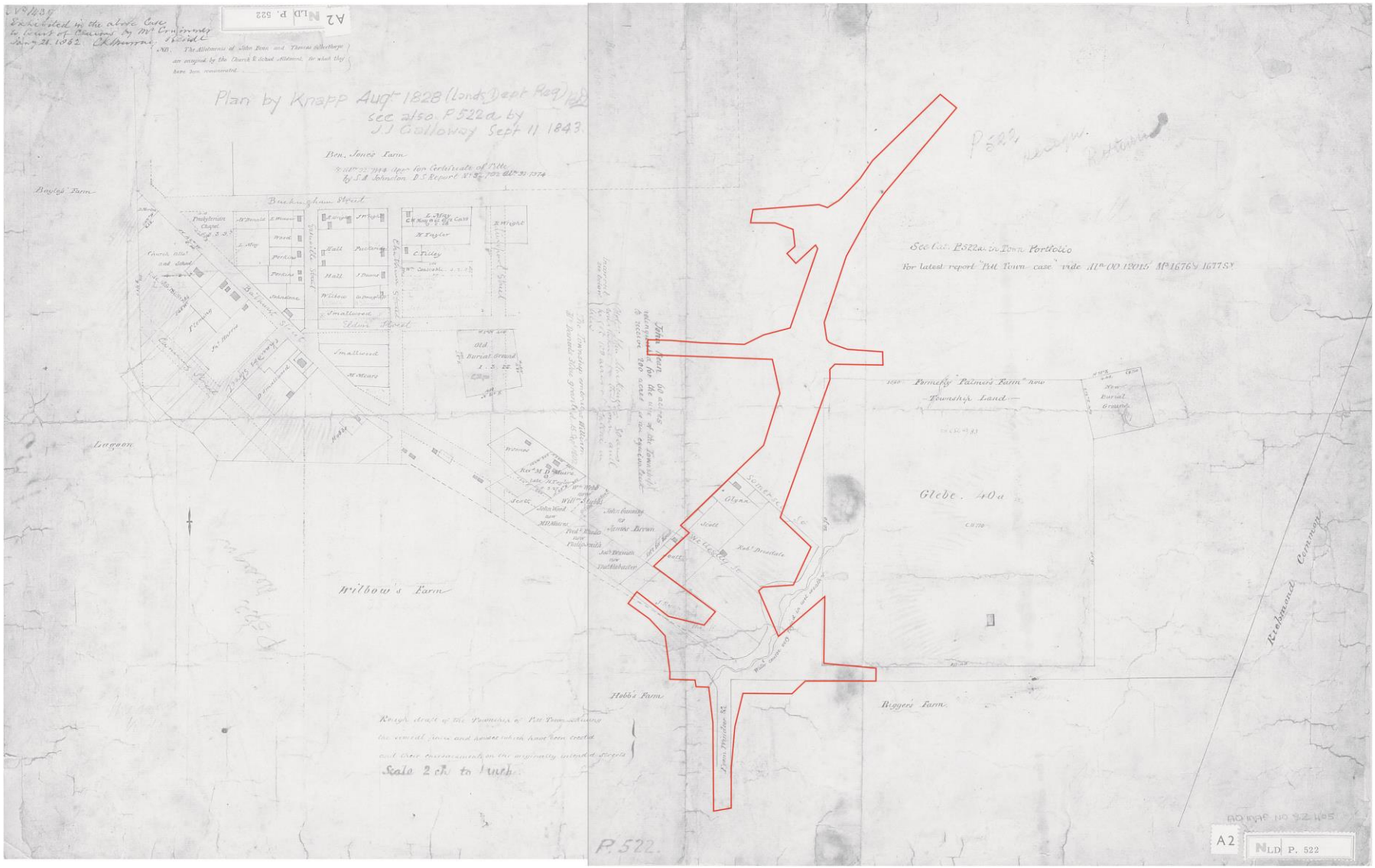


Figure 5: Knapp's 1828 plan of Pitt Town. The portion of the study area covered by the plan is outlined in red. Source: State Records MAP SZ405.

Figure 6: Galloway's 1843 survey of the township of Pitt Town. The portion of the study area covered by the plan is outlined in red. Source: State Records NSW- MAP 4746.

2.5.1.1 John Benn

Benn arrived on the 'Gorgon' in 1791 after being sentenced to seven years' transportation. Commonly known as 'Big Ben', Benn was granted 30 acres at Portland Head. In 1803, presumably due to the positive results obtained at his Portland Head property, Benn was granted a further 60 acres at Pitt Town. By 1806, Benn owned 150 acres and employed six convict servants.[30]

In 1808 Benn, along with fellow Pitt Town resident James Webb, launched their jointly-owned cutter 'Unity'. The fisheries trade was profitable, and Benn was able to insulate his overall wealth from the disastrous floods that affected other land owners during this period.

John Benn is known primarily for his association with the development of horse racing in the Hawkesbury region. Races between Benn's horse 'Scratch' and 'Tickle Toby', owned by fellow emancipist and Hawkesbury settler Lawrence May, are among the earliest recorded account in the colony.

Benn married colonial-born Eliza Griffin (also known as Lydia Griffin) in 1814. In 1815, when riding home from Sydney, Benn was thrown from his horse and killed.[31] His biography stated the following:

> *…The deceased left Parramatta for his farm, which is two miles from Windsor, between four and five in the evening of Sunday, and passed through the gate at Rouse Hill about an hour after, saying he had rode very quick. It did not appear that he was afterwards seen alive by any person – The same evening his horse was found in a corn field near his house, and a search was in consequence made for the rider, who was unhappily found dead upon the road leading to the farm, about a mile and a half distant. The deceased always bore the character of a very respectable settler, and had accumulated by his industry property, a part of which he latterly employed in maritime speculations, in which he was also fortunate.*

2.5.1.2 James Wilbow

James Wilbow was born in 1768. Wilbow was sentenced with seven years transportation after being indicted for a burglary where four waistcoats were stolen from a John Edwards. After spending four years on board the convict hulks at Portsmouth, Wilbow was transported to the colony to serve the final three years of his sentence and arrived with the 3rd fleet on the 'Salamander' on the 21 August 1791.

Wilbow married Mary Margaret Martin in Sydney in 1807. Mary was one of 1063 convicts transported on the 'Neptune' in December 1789. Martin had previously been married to Thomas Smith of Parramatta, and had two children from that relationship, Catherine and James.

Wilbow was granted 35 acres of land in the vicinity of Pitt Town in the period between 1800 and 1804.

The 1825 census shows Mary was living in Pitt Town, although by this time Wilbow had entered into a common law marriage with Elizabeth Ship c.1817. Elizabeth Ship had been transported to the colony on the 'Northampton' in December of 1814. Ship and Wilbow had two sons, William, who died as an infant in 1817 and James born 1823, and two daughters, Margaret, born in 1819 and Jane, who also died in infancy c.1823.The 1825 census indicates that Elizabeth, James and Margaret were living in Sydney, where Elizabeth was working as a laundress and Wilbow as a constable. James is not mentioned in the census.

The 1828 census indicates that Wilbow was now residing at Pitt Town. It is unclear whether he had reconciled with Mary, but Elizabeth remained in Sydney and the census does not mention her

[30] Binney K. R. Horsemen of the First Frontier (1788-1900) p. 143.
[31] Binney K. R. Horsemen of the First Frontier (1788-1900) p. 143.

children. Elizabeth died in Sydney on the 5 June 1831, at the age of 49, following an accident where she fell into the fire and was severely injured.

James Wilbow died at Wilberforce on the 18 March 1840. Mary Martin died at Pitt Town on the 17 September 1847, at the age of 72.

2.5.1.3 John Palmer

Palmer was born in England in 1760. In 1786 he joined the 'Sirius' as purser and voyaged to NSW with the First Fleet. Palmer was appointed Commissary-General of the colony by Governor Phillip in 1790 and subsequently returned to England to collect his family, returning to the colony in 1800.[32]

Palmer was granted 100 acres on the shores of what is now Woolloomooloo Bay by Governor Francis Grose in 1801 and constructed a luxurious house. He also engaged in milling, on a site close to Government House, and coastal trading, contributing his smallest vessel to the burgeoning river trade on the Hawkesbury.[33] Palmer acquired substantial amount of land and bred cattle and sheep and also grew wheat. Palmer was granted 380 acres near Pitt Town in the period between 1800 and 1804. In 1818 the grant was resumed by Macquarie for the formation of the township. To compensate Palmer, he was granted 1500 acres at Rouse Hill.[34]

Palmer was demoted after siding with Governor Bligh following the mutiny in 1810, and was retired by Governor Macquarie on half-pay. He then settled on his farm at Parramatta, where he died in 1833, the last surviving officer of the first fleet.[35] His death notice states the following:

> *Palmer's death certificate gives his quality of profession as a Gentleman, with no indication of the many offices he held and the part he played in the very early days of the colony. He now rests in a family crypt next to his wife, who had predeceased him by one year and to whom he had married for half a century.* [36]

2.5.2 The study area

The major land grants were alienated from 1815. The earliest cartographic evidence of occupation of the study area comes from Edward Knapp's 1828 survey of Pitt Town (Figure 7).

The plan shows that the study area contains two residences at this time, one oriented towards Somerset Street (note that this extension of Somerset Street no longer exists) and associated with 'Glynn' and another oriented towards Wellesley Street and associated with 'Rob't Drisdale.' By the 1843 Galloway survey (Figure 8) the residences were associated with George Brown (Somerset Street) and Dennis Morrow (Wellesley Street). This residence is present in 1896 but has been removed by 1930.

By 1955 an additional residence has been constructed further west and Buckridge Street has been formalised (Figure 13). The residence on Wellesley Street has been demolished. The houses on Buckridge Street were demolished in 1964 (see Figure 12). By 1970, the remaining two houses on Buckridge Street have been removed.

A search of relevant land title and transfers information for the study area is included in Table 1.

[32] Foster, J. 'John Palmer' *Journal of the Royal Australian Historical Society* Vol11, 1925.
[33] Proudfoot, H. and Hawkesbury City Council 2017 p. 15.
[34] Foster, J. 'John Palmer' *Journal of the Royal Australian Historical Society* Vol11, 1925.
[35] Death Notice *The Sydney Herald*, 30 September 1833, p. 4.
[36] Death Notice *The Sydney Herald*, 30 September 1833, p. 4.

Table 1: Land title search

Date	Land ownership/occupation	Ref/Note
Lot 1 DP 107709		
1804	John Palmer	Appn 9035 Appn 30928 Vol 4333 fol 75-77 Appn 27569
1828	(Somerset Street)	
1848	(Somerset Street)	
1896	(Somerset Street)	
1924	John Brown	Bk 1341 No. 705 (brought under provisions of Real Property Act in 1940
1943	Eliza Lilywhite Brown	Vol 5230 Fol 122
	Maud Elizabeth Gillespie	Bk 1986 No. 758
1946	Frederick Henry Ansell	Bk 1986 No. 758 – note incorrect original land grant
Lot 2 DP 77487		
1804	John Palmer	Appn 9035 Appn 30928 Vol 4333 fol 75-77 Appn 27569
1803	John Benn	Appn 45521
1828	Jas McGlenn	PA search book 27487 Bk 580 No. 69
1828	Scott	
1843	George Brown	Appn 27487
1863	Edward Brown	PA search book 27487
1890	George and Ann Brown	Bk 580 No. 69
1896	Ann Brown	PA search book 27487
1914	Ernest William Brown	Bk 1040 No. 246
1924	John Brown	Bk 1341 No. 705
1943	Eliza Lilywhite Brown	Vol 5230 Fol 122
Lot 1 DP 560897		
1804	John Benn	

Date	Land ownership/occupation	Ref/Note
1828	Robert Drisdale/Drisdell	PA search book 27487
1843	Dennis Morrow	Appn 27487
c.1896	Thomas Brown	SS 27487 Bk 580 No. 69
19__?	Ann Brown	Bk 1341 No. 705
1922	Sarah Brown	Book 2144 no. 143
1950	Harry Bobcroft	Book 2144 no. 143
1972	Pierce Bell Sales Pty Ltd	Vol 5380 Fol 142
1973	Municipality of Windsor (road easement)	Vol 5380 Fol 142
Lot 3 DP 565918		
1803	James Wilbow 35 acres	Serial 3 page 114
1843	George Brown	Appn 27487
1843	Leased to William Herredge/Herridge	Appn 27487 (565918)
c.1896	Thomas Brown	SS 27487 Bk 580 No. 69
1924	John Brown	Bk 1341 No. 705
1943	Eliza Lilywhite Brown	Vol 5230 Fol 122
1943	Harry Bobcroft	Vol 5380 Fol 142

The position of the buildings identified through examination of the cartographic evidence is show in Figure 14 below. It is noted that these positions are not absolute, and variations in early surveying methods often resulted in inaccuracies. It is likely that the structures illustrated on the 1828 and 1843 surveys are the same structure, with an addition on the northern side of the dwelling facing Somerset Street.

It is likely that many early residents were leasing the land or were ex-convicts, and limited information on their day to day lives is identifiable in the historical record. Although colonists and families with names outlined in the table above can be found on early registers, such as immigration records or ships logs, assuming that these individuals are those on the early Pitt Town survey's is problematic.

George Brown is a rare example where additional records linking him to the study area were identified. This is likely because he married into the McGlinn family and consolidated many of the land grants in the study area. His family retained ownership of portions of the study area into the first quarter of the 20th century, allowing additional family details to be pulled from early records.

George Brown was likely born around 1788 in Northern Ireland before immigrating to Australia in 1818. He married his Sydney born wife, Ann/Anne McGlinn, in 1829. An application by the couple for

the Publication of Banns in 1829 indicates that George was in the service of 'Farmer Scott' at the time and considered to be of good character. It is possible that the 'Farmer Scott' referenced owned the property to the west of the 'Glynn/McGlinn/McGlenn' property (Figure 7).

Anns obituary indicates they had eight children.[37] In the marriage records of his daughter Alice in March of 1906 son George in 1898 and his son John in September 1905, George is described as being an 'agricultural labourer.'[38] George died in 1861 in Pitt Town.[39]

During his lifetime, George consolidated the surrounding lots and likely modified the original 'Glynn/McGlinn/McGlenn' residence for his growing family. The 1841 census lists his residence as being constructed of wood, finished and inhabited by five family members. George had obtained several of the properties around the Buckridge Street residence, and it is likely he worked these properties.

Frederick Ansell is another individual about which little is known. He obtained Area 1 by 1946, and developed the property before it was demolished in 196. Figure 12 indicates that he was a poultry farmer, which is also verified through recollections posted on a Pitt Town historical group on social media. Figure 11 also notes that the residence is occupied by a B. L Cott, suggesting that Ansell leased the house in Area 1. Newspaper articles suggest that the Ansell's were a well-known local family, with 170 guests attending a party at the Pitt Town School of Arts Hall to celebrate the birthday of their youngest son in 1955.[40]

[37] 'The Sydney Morning Herald 9 March 1863 'Windsor' p. 2
[38] St James Marriage Register 1905 – 1915
[39] Windsor and Richmond Gazette 8 July 1911 'Obituary' p. 4
[40] Windsor and Richmond Gazette 27 July 1955 'Happy Party Celebrations at Pitt Town' p.2

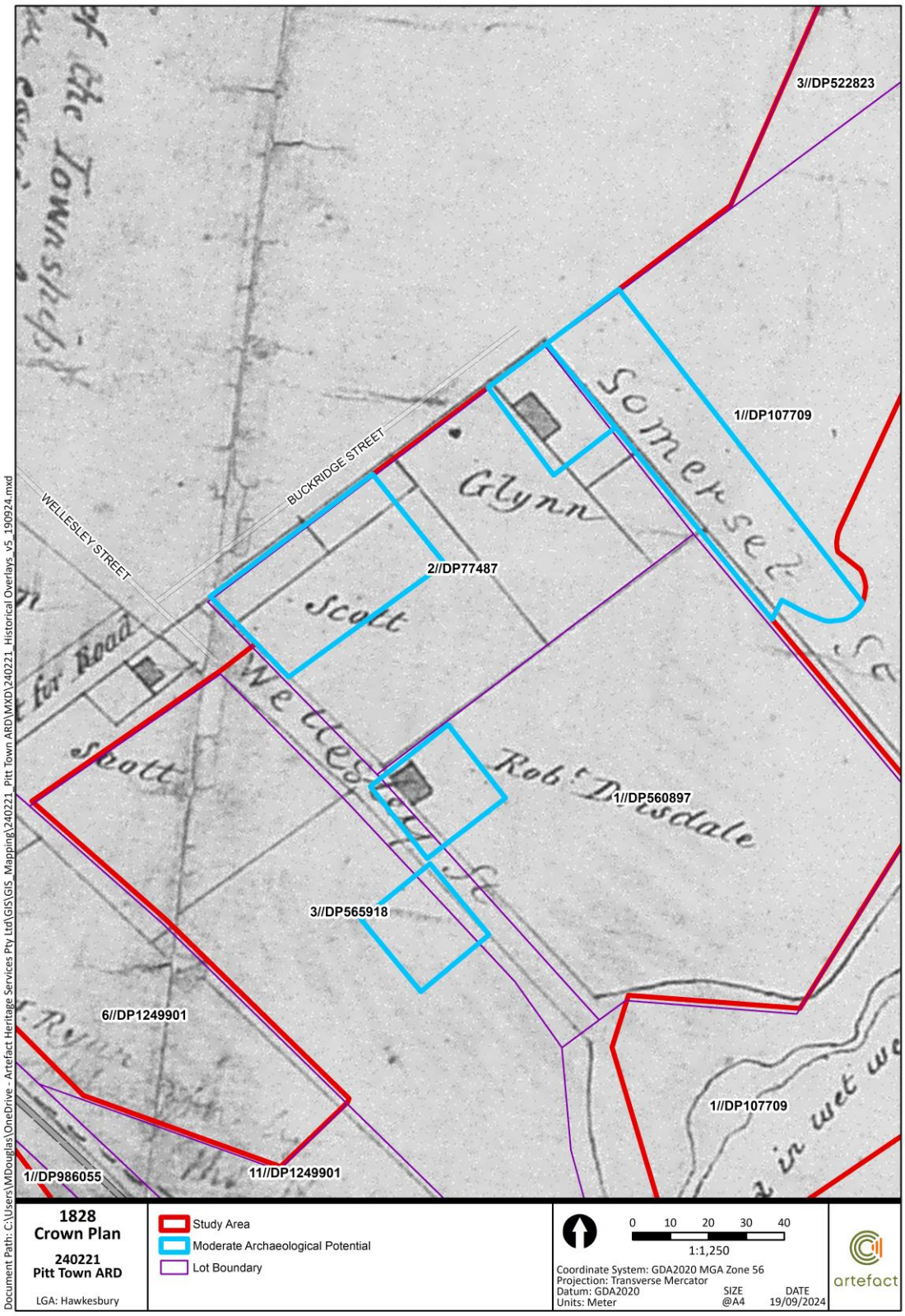


Figure 7: Detail of Knapp's 1828 plan of Pitt Town. The portion of the study area covered by the plan is shaded in red. Source: State Records MAP SZ405.

Figure 8: Detail of Galloway's 1843 survey of the township of Pitt Town. The portion of the study area covered by the plan is shaded in red. Source: State Records NSW- MAP 4746.

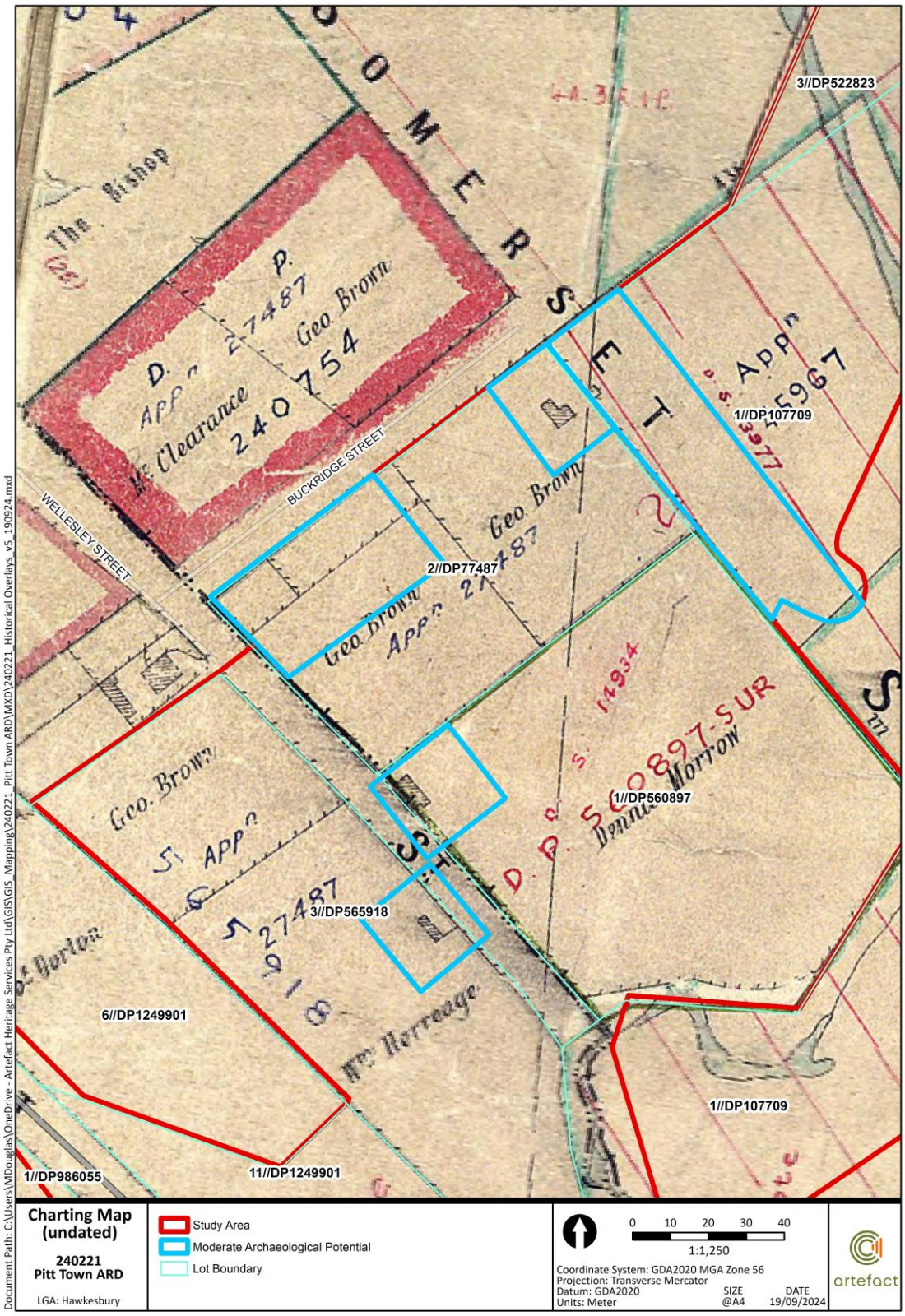


Figure 9: Detail from undated charting plan. Source: Historical Lands Records Viewer, NSW Lands Registry Services

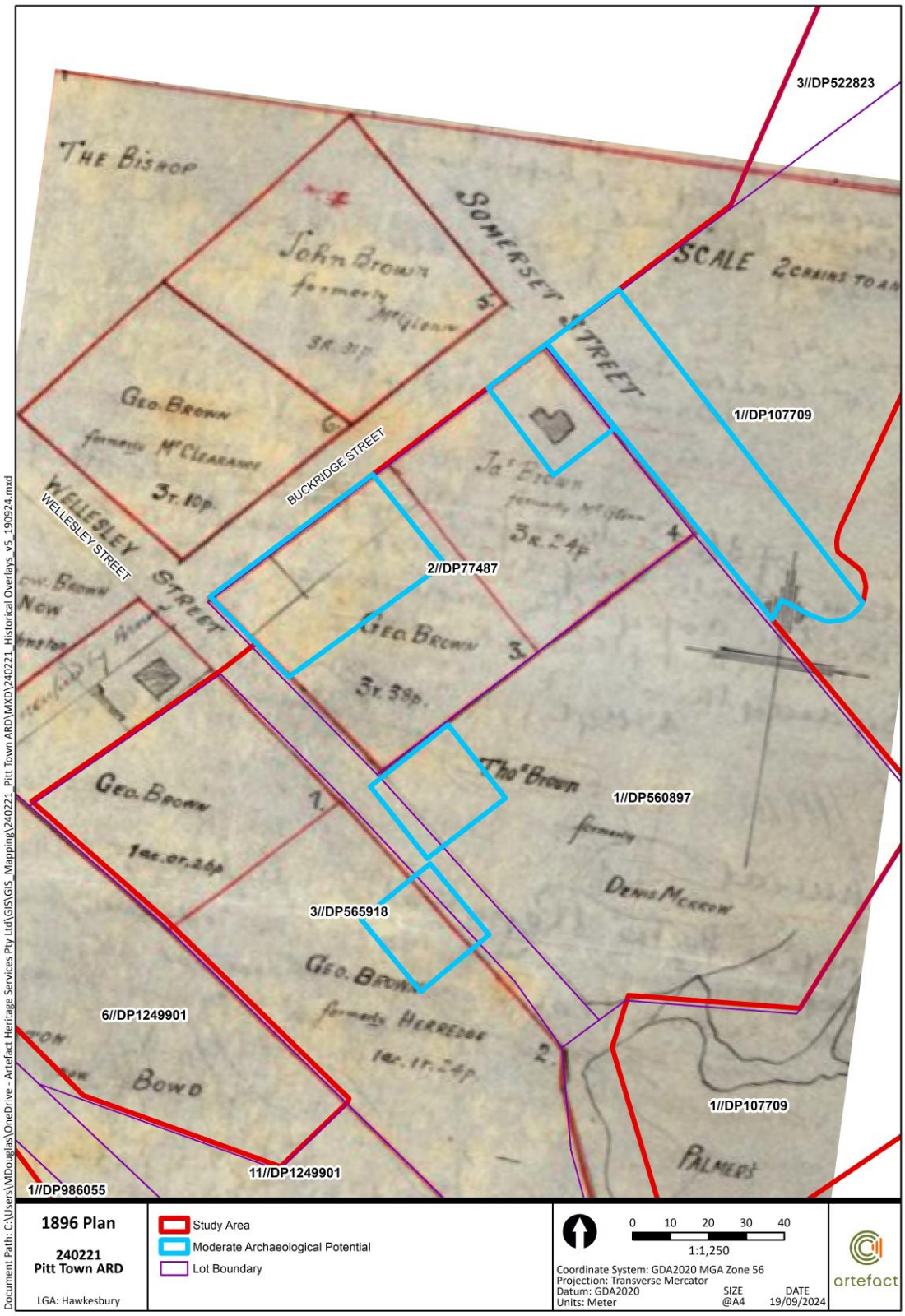


Figure 10: 1896 (Bk 580 No. 69)

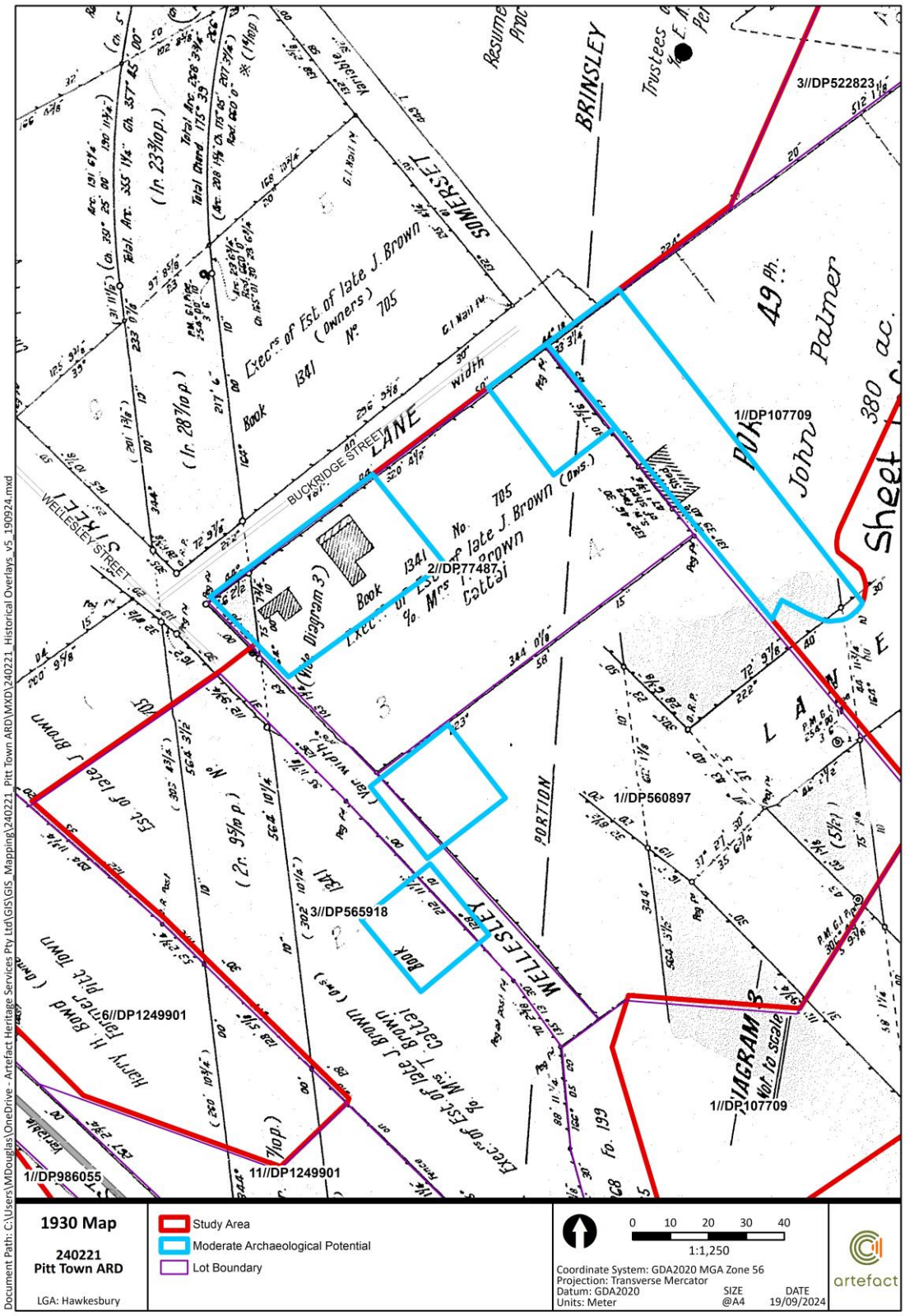


Figure 11: Detail from c.1930s charting plan reference 0181_492_SS_0101. Source: TfNSW

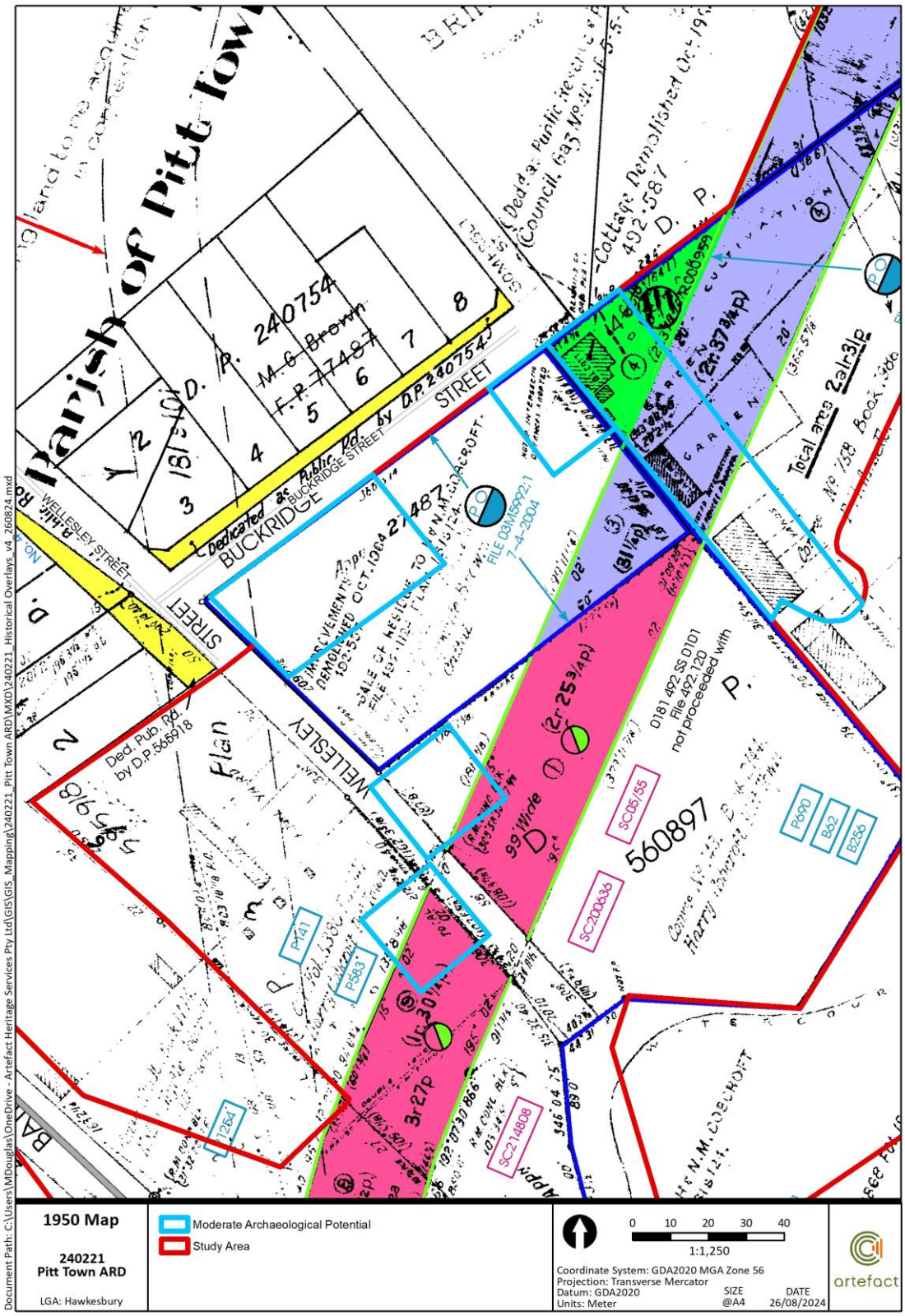


Figure 12: Detail from c1951 DMR plan F0532. Source: TfNSW

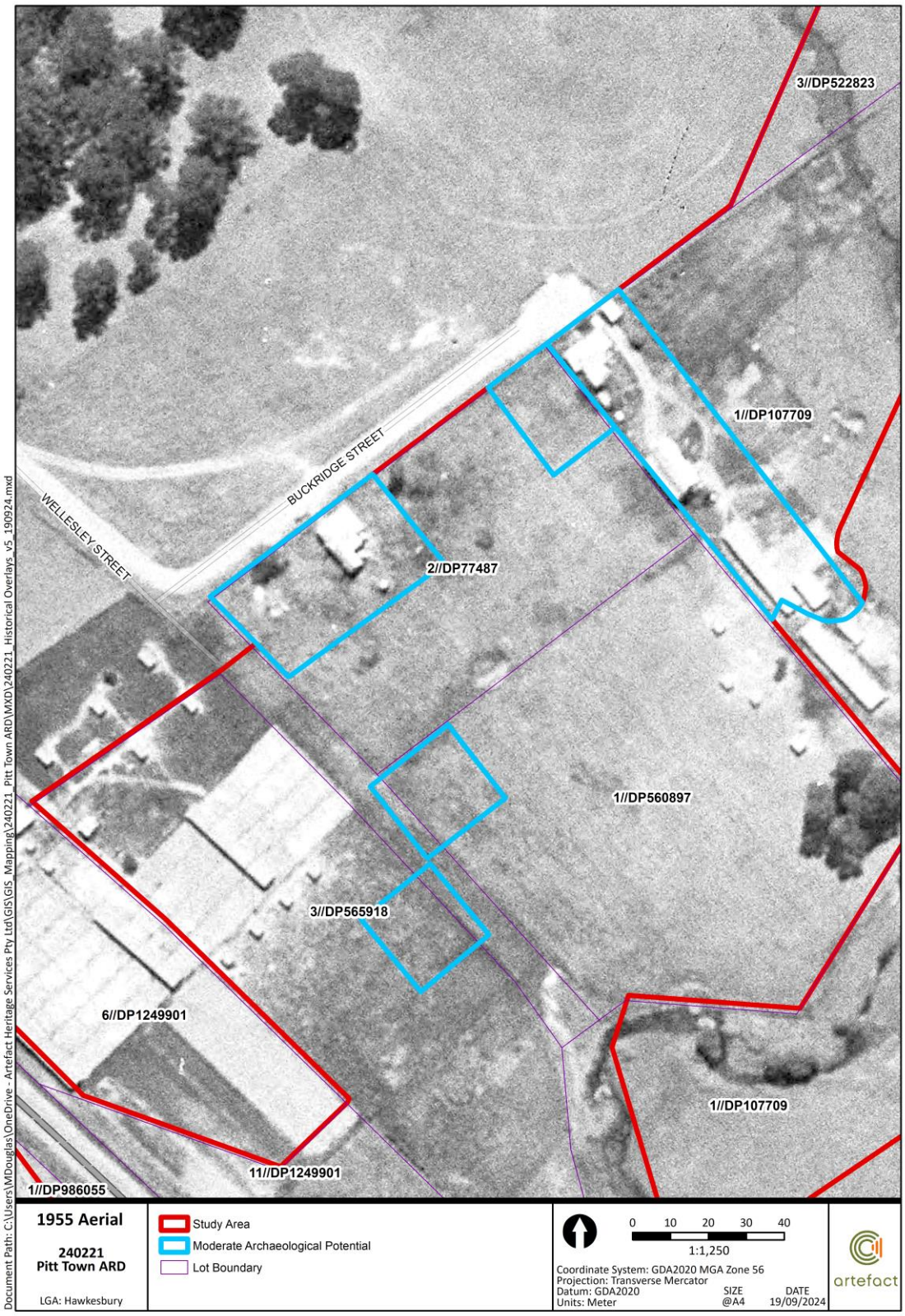


Figure 13: 1955 aerial photograph (with study area in red).

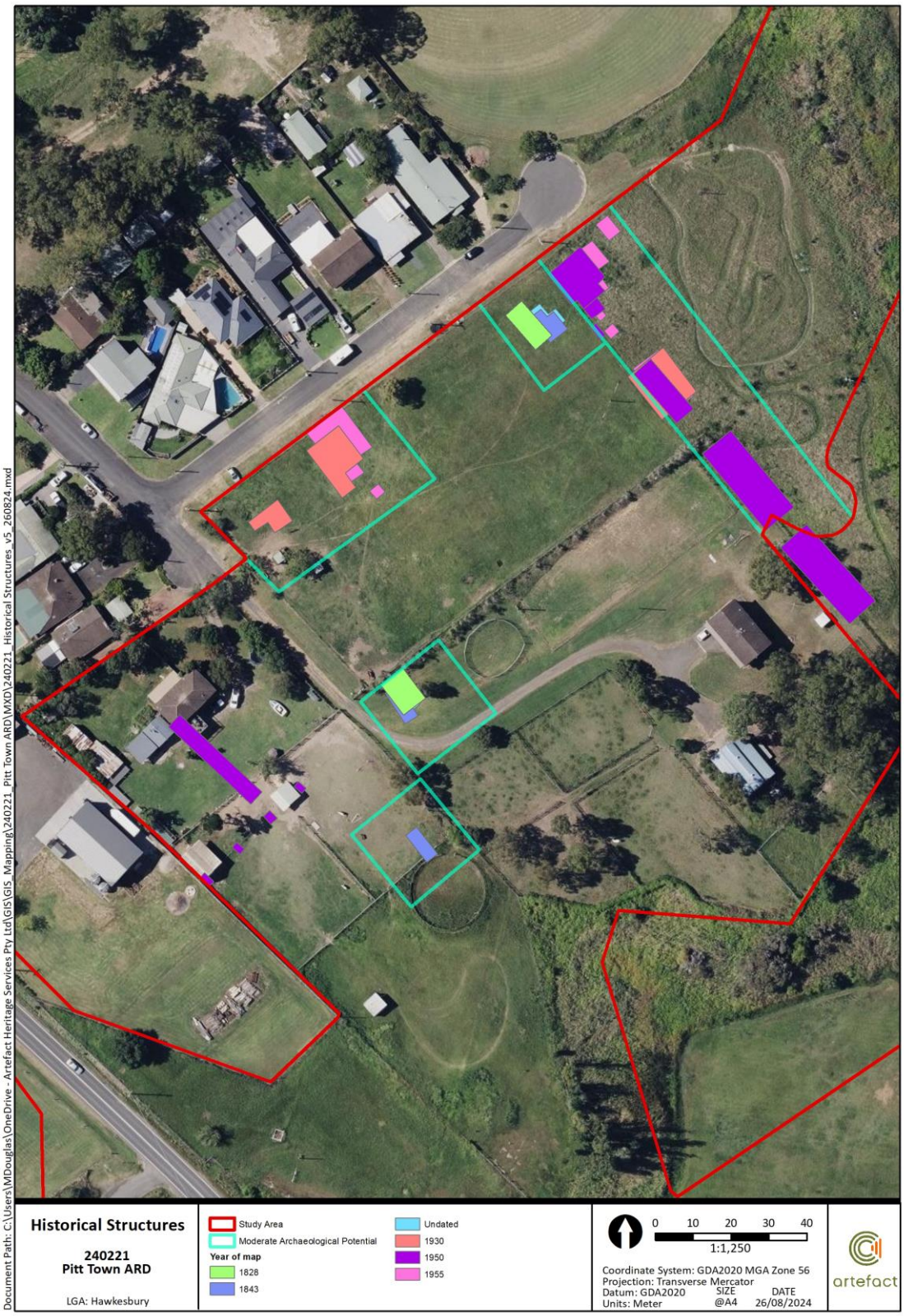


Figure 14: Historical development of the area of moderate archaeological potential.

2.6 Archaeological Context

This section presents a summarised assessment of the potential of the study area to contain historical archaeological resources. The archaeological potential for the study area and surrounds was initially assessed in the SoHI prepared by Artefact in 2018.[41]

The potential for the survival of an archaeological resource in a particular place is affected by activities which may have caused ground disturbance. These processes include the physical development of the site (for example, phases of building construction) and the activities that occurred there. The study area has undergone little alteration since the demolition of residential structures in the 1960s. The paddocks are currently used for grazing and have not been developed (see Figure 15 to Figure 18).

Figure 15: View south from end of Buckridge Street towards adjoining paddocks.

Figure 16: View south west from end of Buckridge Street towards adjoining paddocks.

Figure 17: View north east across paddock adjoining Wellesley Street and Buckridge Street.

Figure 18: View south east along Wellesley Street towards adjoining properties and paddocks.

[41] Artefact Heritage, 2018, Section 6.0

2.6.1 Comparative investigations

Pitt Town has been subject to relatively few historical archaeological investigations. Some comparative examples have been included in the following sections to assist understanding of the likelihood for the historical archaeological resource which (or may not) be present.

2.6.1.1 Blighton Farm[42]

Archaeological & Heritage Management Solution Pty Ltd were engaged by Johnson Property Group in 2005 to prepare an ARD for land north of Hall Street n Pitt Town, identified as being part of Governor Bligh's early 19th century estate, known as 'Blighton.' Based on background research and analysis of the site, it was determined that any future work should be proceeded by archaeological testing to determine, via excavation, the nature, extent and condition of relics within the surface deposits at the site. Three areas above the river flat were identified as being appropriate for testing (see Figure 19).

It is understood that this work identified the archaeological remains of an outbuilding dating to the early 1800s (dated through the discovery of several coins and other diagnostic artefacts) consisting of brick flooring and remnant artefact bearing deposits.[43]

Figure 19: Management zones. Source: AHMS 2005.

2.6.1.2 Pitt Town Bypass Aboriginal Cultural Heritage Assessment (KNC 2020)[44]

Kelleher Nightingale Consulting Pty Ltd (KNC) completed archaeological testing in five areas of as part of the Pitt Town Bypass

[42] Archaeological & Heritage Management Solution Pty Ltd, *Historical Archaeological Assessment, Research Design and Test Excavation Methodology of Lots 11-18 in DP 1021340, land East of Punt Rd & North of Hall Street, Pitt Town, NSW*, report to Johnson Property Group, June 2005
[43] Stuart, I. *Pers. Comm*. 2024
[44] Kelleher Nightingale Consulting Pty Ltd, *Pitt Town Bypass Aboriginal Cultural Heritage Assessment*, report to NSW Road and maritime Services, January 2020

The current study area is located within two areas identified as having the potential to contain Aboriginal archaeological deposits:

- PTBP PAD 1 (Figure 20
- PTBP PAD 2 (Figure 21).

The ACHA included the following soil descriptions relevant to the areas of historical archaeological potential discussed in this report.

PTBP PAD 1

Sediment profiles in the northern portion of the test excavation area were characterised by a shallow deposit of sandy loam overlying basal clay which increased in depth within the test squares closer to Hortons Creek. A similar deposit with an overlying layer of clay fill was found in the southern portion of the test area. The layer of modern clay fill was identified in test squares from TS 48 to TS 53 with modern inclusions of blue metal, concrete, brick and ceramic. While the fill deposit generally overlay natural soil profiles, a further fill deposit of charcoal and modern contaminants was found beneath the fill layer in TS 48. Modern inclusions of glass, ceramic and metal were also noted in in the top 10 centimetres of the natural deposit within TS 16 and TS 44.

The test excavation program demonstrated that while subsurface deposits existed at the site, subsurface archaeological deposits had been disturbed by natural processes and/or modern land use practices which had caused a dispersed and fragmentary distribution of Aboriginal objects. The low density, limited range of artefact types, deflated soil profile and subsurface disturbance at the site indicated a low potential to retrieve additional archaeological information.

PTBP AFT 2

Sediment profiles varied across the test excavation area. The sediment profile was generally characterised by moderately deep compact sandy loam overlying basal clay with one test square (TS 30) containing a slightly deeper deposit. Test squares excavated immediately south of the paddock fence line (TS 31 and TS 34) were characterised by a deposit with a friable sandy loam overlying compact sandy loam and basal clay. The test squares (TS 25 and TS 28) excavated within the area of surface exposure in southern portion of the test area were characterised by a shallow deposit of introduced clay fill with modern contaminants (glass) overlying basal clays. Several surface artefacts were documented in this area during the test excavation (Section 4.5.2). The sediment profile within TS 27 was characterised by a stripped deposit of basal clay underlying a very thin humic layer.

Modern inclusions of glass, ceramic and metal were noted in in the top 10 centimetres of the natural deposit within TS 22, TS 29, TS 33 and TS 35 while modern inclusions were found between 10 and 20 centimetres in TS 32 and between 20 and 30 centimetres in TS 24. Bioturbation was evident within the test excavation squares with fine root systems present throughout the area. Small fragmented pieces of charcoal were dispersed throughout the test excavation squares with no obvious burning event.

The distribution of artefacts and depth of the deposit indicates that horizontal movement of artefacts downslope had occurred at PTBP AFT 2 while the presence of a fill layer within test squares in the southern portion of the site demonstrated that this area had been heavily disturbed by modern land use practices. The test excavation program demonstrated that while subsurface deposits existed at the site, subsurface archaeological deposits had been disturbed by natural processes and/or modern land use practices which had caused a dispersed and fragmentary distribution of Aboriginal objects. The low density, limited range of artefact types and subsurface disturbance at the site indicated a low potential to retrieve additional archaeological information.

Overall, Sites PTBP 1 and PTBP AFT 2 were considered to display low significance based on their scientific value and potential to inform on Aboriginal landscape use along Hortons Creek.

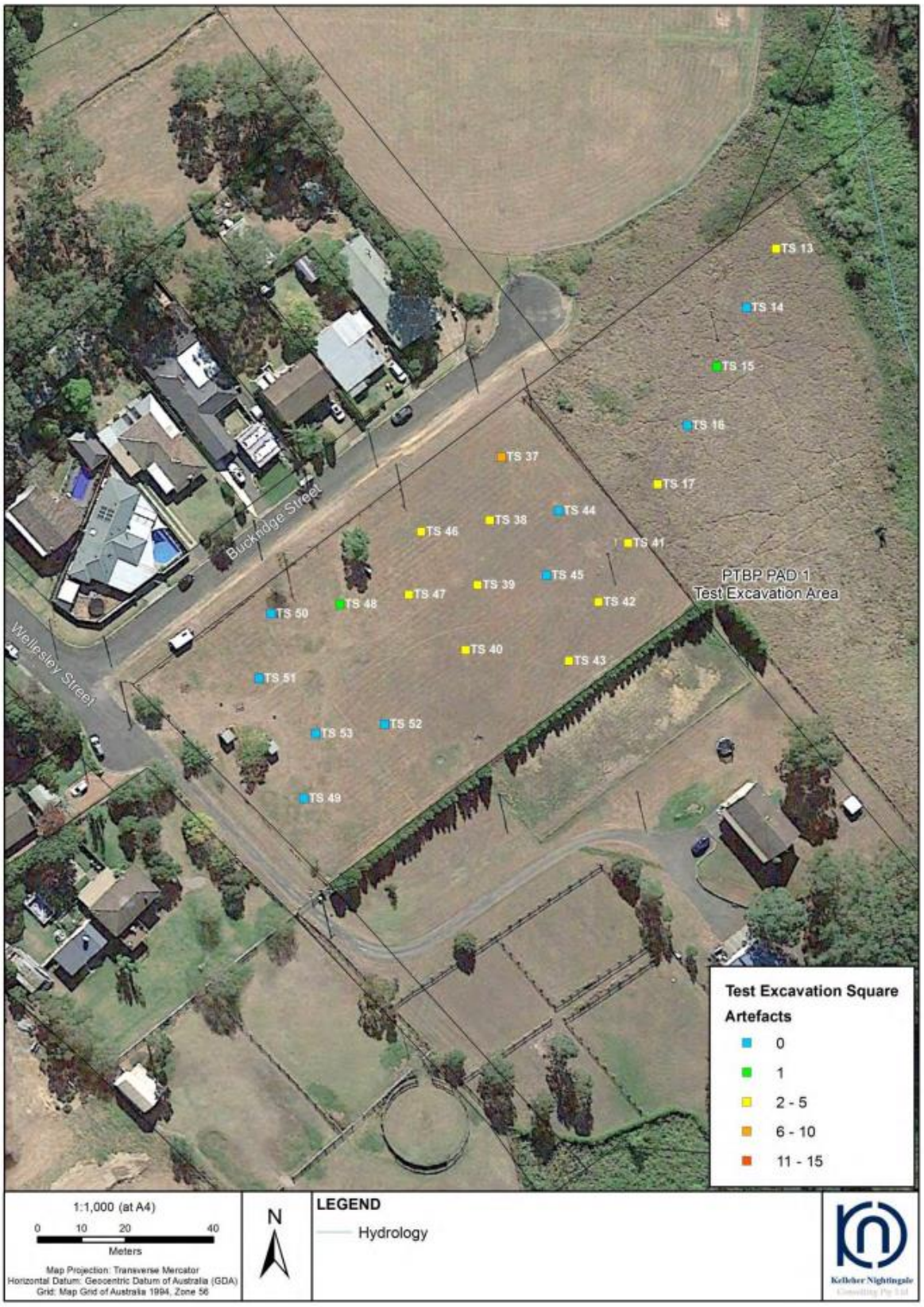


Figure 20: Archaeological test square locations and artefact density at PTBP PAD 1. Source: KNC 2020

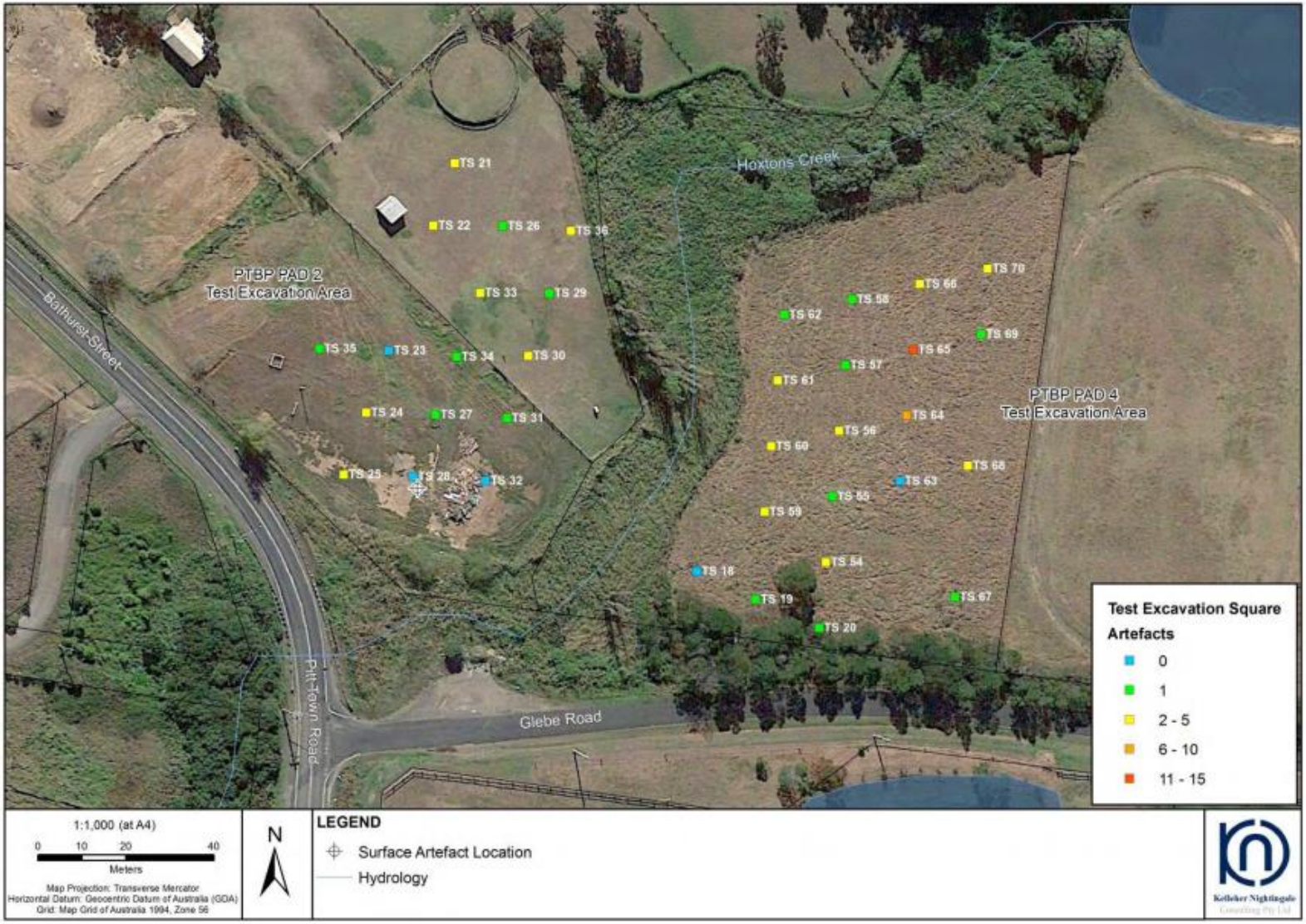


Figure 21: Archaeological test square locations and artefact density at PTBP PAD 2. Source: KNC 2020

2.6.1.3 Conclusions

Results from Aboriginal testing undertaken by KNC identified the presence of remnant top and subsoils (sandy loams) across the study area, with some test pits also containing fragment of glass and ceramic. This evidence, combined with our knowledge of the preservation of the Brighton Farm outbuilding excavation, support the conclusion that the study has the potential to contain an archaeological resource associated with the earliest phase of the development of Pitt Town i.e. c. 1815.

2.6.2 Land use phasing

Based on the historical development of the study area and the SoHI prepared by Artefact in January 2018, the use of the study area and surrounds has been divided into the following land use phases outlined in Table 2.

Table 2. Historical phases of land use in the study area and surrounds

Phase	Date	Historical activities
1 – First land grants	c.1805 – c.1814	The study area is originally part of large land grants to Benn, Plamer and Wilbow. Study area unlikely to have been occupied or subject to significant development.
2 – First phase subdivision and occupation	c.1815 – 1843	Area 2 Prior to 1828 (likely c.1815), a residence were constructed in Area 2, oriented to the north towards an extension of Somerset Street that is no longer present. The residence is associated with a 'Glynn/McGlenn' at this time. Area 4 Prior to 1828 (likely c.1815), a residence were constructed in Area 4, oriented to the south towards Wellesley Street and associated with 'Rob't Drisdale/Drisdell.' In additional to structural remains, the yards of both areas 2 and 4 may contain evidence of a cesspits, wells or a cistern, due to the later introduction of municipal water and sewerage. These types of structures may contain artefact rich deposits with potential to provide data on the former inhabitants of the property.
3 – Modification of first phase occupation and consolidation	1843 – c.1900	Areas 2 The early residence in Area 2 is now associated with George Brown (Somerset Street). George Brown has consolidated Area 2 and 3 (which remains vacant) and is likely using it for farming. Brown's residence is demolished between 1896 and 1930. Area 4 The early residence in Area 4 is now associated with Dennis Morrow (Wellesley Street). This structure has been demolished by 1896. Area 5 The study area contains an additional structure, construted between 1828 and 1843. This structure is fronting Wellesley Street and leased

Phase	Date	Historical activities
		to a William Herredge/Herridge. This structure has been demolished by 1896. In additional to structural remains, the yards of areas 2, 4 and 5 may contain evidence of a cesspits, wells or a cistern, due to the later introduction of municipal water and sewerage. These types of structures may contain artefact rich deposits with potential to provide data on the former inhabitants of the property.
4 – 20th century occupation and farming	c.1900 – 1964	Area 1 Area 1 contains a slab shed by 1930, and a larger residence with outbuildings has been constructed on the Buckridge Street frontage by 1950. Note that the earliest formal evidence of Buckridge Street is a dashed line on a parish plan dating to 1942, although it is likely that an informal road corridor was in this location at an earlier date. By c.1951 at least two additional animal sheds and yards were present. These are associated with Frederick Ansell, a local chicken farmer. Area 3 Area 3 contains a residence and likely shed/outbuilding by 1930. These structures are present on the 1955 aerial but are not noted on a c.1951 DMR plan, suggesting they were largely derelict or [partly demolished at this time. The introduction of municipal services to the area was slow , residents were likely burning or burying refuse on their properties into the 20th century. There is the potential for rubbish pits/ bottle dumps to be present in yard areas.
5 - Modern development	1964-present	All structures removed c. 1964 Open paddock

2.6.3 Assessment of archaeological potential

The study area has been subject to relatively low levels of development, which have preserved a landscape that is characteristic of an early rural settlement. Some of the historical features identified in this report span multiple land phases, and archaeological evidence can be attributed to more than one particular phase or ownership.

The following assessment has revised and divided the area designated as having moderate archaeological potential in the SoHI into portions for clarity, as shown in Figure 22. The presence of historical artefacts within the topsoil, as identified during Aboriginal test excavation undertaken by KNC, indicates that the study area has the potential to contain historical archaeological remains. The potential for the study area to contain these remains has been revised following additional historical research.

Table 3 below provides a summary of the potential for identifying intact, legible archaeological remains related to former structures and historical land use described above.

2.6.3.1 Evidence of residential development

The development of the five areas of archaeological potential has been summarised below:

- Area 1: Shed c.1930 and later residence and animal sheds and yards c.1951 – all demolished c.1964

- Area 2: Residence c.1815 – demolished between c.1896 and 1930
- Area 3: Residence and shed/outbuilding c.1930 – demolished c.1950
- Area 4: Residence c.1815 – demolished prior to c.1896
- Area 5: Residence post c.1828 - demolished prior to c.1896.

Early residences associated with ex-convicts and free settler farmers are unlikely to have been substantial, particularly in the early years of settlement. Two structures are showing on the 1828 (Figure 7) and 1843 (Figure 8) surveys of Pitt Town. It is likely that these residents lived in slab huts, with packed earth floors and timber shingles on the roof. Kitchens were external, as were cesspits or privies.

As families expanded and became settled, residences were modified or re-built. This is likely to be the case for Brown's residence in Area 2. It is less likely that the residences in Areas 4 and 5 were substantial or long-lived.

Areas 2, 4 and 5 have the potential to contain deposits associated with the residents occupying the structure to be preserved below flooring and verandas.

Areas 1 and 3 are unlikely to contain occupation deposits of this type, due to the introduction of tongue-and-groove flooring in the 18802, which has been found to significantly reduce the amount of accumulated refuse under floorboards and therefore limit the potential for occupation deposits.

Although a council was active in the Hawkesbury region from a relatively early date, the introduction of municipal services was slow, possibly due to the rural nature of the area and low population in comparison with neighbouring towns of Windsor and Richmond. This suggests that residents were burning or burying refuse on their properties into the 20th century. This increases the likelihood that archaeological remains including rubbish pits may survive in the rear yard of the property. It is also possible the yard may contain evidence of a privy, wells or a cistern, due to the later introduction of municipal water and sewerage. These types of structures may contain artefact rich deposits with potential to provide data on the former inhabitants of the property.

- Structural remains (postholes, footings, hearths, beaten earth, brick or cobbled surfaces, or evidence of timber flooring joists)
- Wells, cesspits or privies, cisterns
- Yard scatters, occupation deposits
- Outbuildings / external kitchen (postholes, hearths)
- Rubbish pits.

In summary, **Areas 1, 2 and 3 have moderate potential** to contain archaeological remains. **Areas 4 and 5 have low potential.**

2.6.3.2 Evidence of agricultural practices

The removal of vegetation, and preparation of the land for agricultural use, would have been the earliest land-use within the study area. Evidence for these activities is typically ephemeral, consisting of plough marks in underlaying intact subsoils, tree boles and plantings pits. Archaeological remains are likely to have been disturbed by ongoing modification of the landscape through ploughing and plantings. There is **nil to low potential** that archaeological evidence of land clearance, and modification for agricultural or pasturing purposes, would be located within the study area.

Structures for the shelter of livestock, sheds, outbuildings or informal huts may have been located throughout the study area. These structures are rarely documented in contemporary plans or accounts. Rural structures were typically light-weight and constructed of locally sourced materials, timber or stone. Archaeological remains of these types of structures seldom survive intact in the archaeological record, as they were not intended to be permanent. Building materials were often re-used and removed to other locations. Agricultural buildings were not intensely inhabited and are therefore rarely associated with an artefactual resource. Therefore, there is **low potential** that archaeological remains associated with undocumented outbuildings and shelters would be located within the study area. Overall, the study area has **low potential** to contain an archaeological resource associated with early agricultural activities, the remains may include the following:

- Evidence of tree clearance (tree boles, etc)
- Evidence of cultivation (postholes, plough marks in subsoils, etc)
- Environmental data/ecological samples
- Rubbish dumps
- Evidence of the formalisation of agricultural precinct boundaries, such as postholes associated with early fence lines
- Postholes for lightweight structures for agricultural purposes, such as timber shelters
- Evidence of outbuildings/shelters/huts (postholes, packed earth flooring, etc).

Networks of water management and storage systems may exist throughout the study area, taking the form of former dams, drains or culverts. The study area contains a number of minor watercourses and natural drainage lines and is in close proximity to dams and the Pitt Town Lagoon. It is possible that early drainage lines pass through the study area, discharging into watercourses. In-ground drainage systems tend to be modified through time, and it is unlikely they would retain evidence of early construction or use. Similarly, former open drainage channels tend to be in-filled, or formalised through the introduction of ceramic and metal pipes. There is therefore **low potential** that water management systems within the study area would represent early occupation. Remains may include the following:

- Evidence of former dam construction
- Evidence of watercourse modification (such as earthen ditches with battered sides excavated into underlying soils; tanks; swales)
- Ceramic or brick drains.

The 1955 aerial indicates that a number of structures were located within the study area at this time (Figure 13). These structures are likely to have been associated with agricultural use, such as animal shelters, poultry sheds, garages and other outbuildings. As structures of this type were typically of timber and iron construction, they are often archaeologically ephemeral. There is **low-moderate potential** that archaeological remains associated with these 20th century agricultural structures still exist in the study area. Archaeological remains may include the following:

- Postholes
- Evidence of flooring treatments (packed earth or flagging)
- Rubbish dumps.

2.6.4 Road corridors

Somerset Road originally extended to the south-east and is located within Area 1 prior to the construction of a residence and sheds in the 1930s and 1950s. It is unlikely that any of the roads through Pitt Town were sealed until the mid-twentieth century. Archaeological remains may include:

- Earlier road surface treatments (packed gravel, Telford road base, cobblestones, stone flagging).

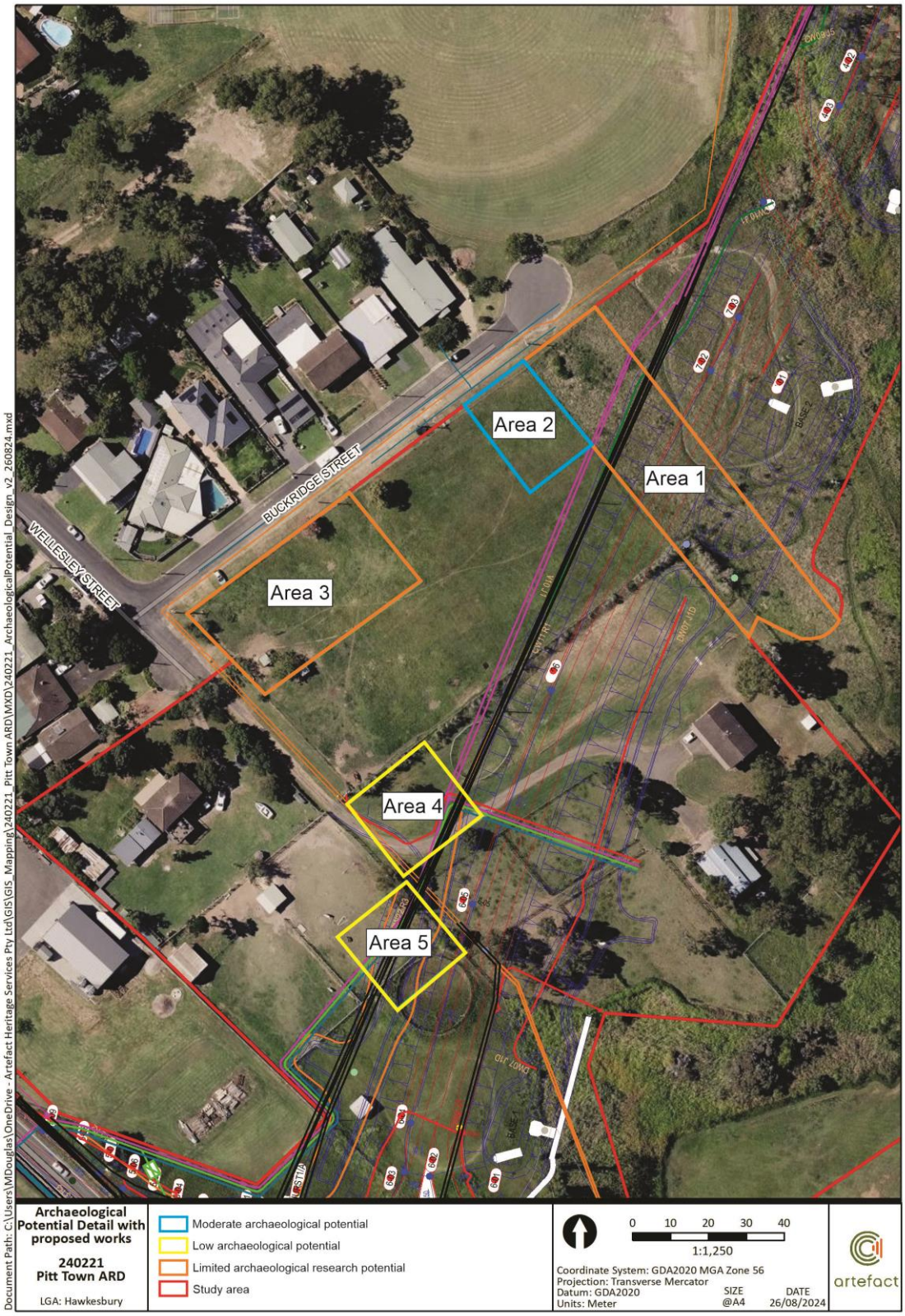


Figure 22: Revised areas of archaeological potential

Table 3. Summary of potential archaeological remains within the study area

Area	Known structure/ activity	Historical phase	Potential archaeological remains	Archaeological potential
1-5	Land clearance/first land grants	Phase 1	The study area is unlikely to contain an archaeological resource associated with this phase. If a resource survives, it may include: • Tree boles • Postholes.	**Nil-low**
1- 5	Division of land grants for agricultural use	All phases	Archaeological evidence may include: • Postholes demonstrating the location of former fencelines • Former topsoils, potentially containing artefacts within plough zone • Rubbish pits and/or bottle dumps • Water management systems in the form of field drains.	**Low**
1	Early road corridor	Phase 2 and 3	Archaeological evidence of the original alignment of Somerset Street may include • Former road surfaces.	**Low**
2 and 4	First phase subdivision and occupation	Phase 2 c. 1815/1828	The first phase of subdivision at Pitt Town is represented by smaller landholdings, likely associated with small farms and occupied by free settlers or ticket of leave holders. Little information from the historical record can be definitively associated with the individuals with whom the properties in the study area are associated. James/Jas McGlenn/Glynn and Robert Drisdale were likely early immigrants (although the name McGlynn is associated with several convicts transported at the turn of the 1800s). Early 19th century dwellings of the period were typically small buildings with shingled roofs and potentially brick fireplaces. Archaeological evidence may consist of: • Postholes • Brick pads showing the location of posts • Evidence of 'vertical slab' construction in the form of slit trenches • Areas of beaten earth, remnant tile, stone or brick paved flooring, evidence of timber flooring in the form of remnant joists and/or bearer impressions • Brick chimney bases and hearths	**Low (Area 4) to Moderate (Area 2)**

Area	Known structure/ activity	Historical phase	Potential archaeological remains	Archaeological potential
			• Paved areas showing the location of former verandahs • Artefact bearing underfloor soil deposits and/or accumulated artefact bearing deposits within and around remnant brick/tiles floor • Cesspits associated with postholes and artefact bearing deposits • A well or cistern • Rubbish pits • Artefact bearing yard scatters.	
2, 4, and 5	Modification of first phase occupation and consolidation	Phase 2 c. 1843	By the 1843 Galloway survey Area 5 is occupied by William Herreage. The 1843 plan depicts a fenced rectangular building in this location, fronting what would come to be known as Wellesley Street. Little information exists about this property. It is also likely that the residence was associated with an outbuilding/s. Early 19th century dwellings of the period were typically small buildings with shingled roofs and potentially brick fireplaces. The 1843 survey also provides more detail on the structure within Area 2, now owned by George Brown. The residence is now shown as an L-shape, indicating the possibility of a verandah, or the construction of an additional room. The structure in Area 4 associated with Dennis Morrow has been little altered since the 1829 survey. Archaeological evidence may consist of: • Postholes • Brick pads showing the location of posts • Evidence of 'vertical slab' construction in the form of slit trenches • Areas of beaten earth, remnant tile, stone or brick paved flooring, evidence of timber flooring in the form of remnant joists and/or bearer impressions • Brick chimney bases and hearths • Paved areas showing the location of former verandahs • Artefact bearing underfloor soil deposits and/or accumulated artefact bearing deposits within and around remnant brick/tiles floor • Cesspits associated with postholes and artefact bearing deposits	**Low (Areas 4 and 5) to Moderate (Area 2)**

Area	Known structure/ activity	Historical phase	Potential archaeological remains	Archaeological potential
			• A well or cistern.	
1 and 3	20th century occupation and farming	Phase 3 c.1930	By 1930 the early to mid 19th century structures had been demolished and Areas 2, 4 and 5 are now vacant. Area 1 - A slab shed is present in 1930, a residence fronting Buckridge Street and several sheds have been constructed by 1950 (likely associated with Ansell). Additional outbuildings to the north of the residence are present in 1955. All buildings were demolished in 1964. Area 3 - A residence and a shed had been constructed in Area 3 by 1930. Only the residence is still present by 1950. All structures were demolished in 1964. Archaeological remains may include: • Brick and/or stone footings/postholes • Artefact bearing deposits in association with the kitchen and working areas • Brick and/or stone chimney bases/hearth stones • Paving associated with external paths, verandahs and/or landscaping • Evidence of landscaping (such as stone or brick retaining walls, edging, hard surfaces indicating former pathways, stone flagging) • Cesspit or privy (stone or brick lined pit, potentially containing artefactual remains) • Rubbish pits and/or bottle dumps • Sheds are likely to have been a simple timber structures. Archaeological evidence may include packed earth flooring, concrete slabs and/or postholes.	**Moderate (Areas 1 and 3)**

2.7 Archaeological significance

This section assesses the heritage significance of the known or potential archaeological remains outlined above. Similar to other types of heritage items, archaeological remains should be managed in accordance with their significance. Assessing the heritage value of archaeological remains is complicated by the fact that their extent and nature is often unknown. Judgement must therefore be based on expected or potential attributes.

The *NSW Heritage Manual* provides the framework for the following significance assessment of the study area. These guidelines incorporate the aspects of cultural heritage value identified in the *Burra Charter* (Australia ICOMOS 2013). The Heritage Branch (now Heritage NSW) has also issued the 2009 *Assessing Significance for Historical Archaeological Sites and 'Relics.*[45] and the 1996 *Archaeological Assessment Guidelines*.[46] The assessment of historical archaeological sites requires a specialised framework in order to consider the range of values of an archaeological site.

The most widely used framework is that developed by Bickford and Sullivan and comprises three key questions which can be used as a guide for assessing the significance of an archaeological site:

- *Can the site contribute knowledge that no other resource can?*
- *Can the site contribute knowledge that no other site can?*
- *Is this knowledge relevant to general question about human history or other substantive questions relating to Australian history, or does it contribute to other major research questions?*

The emphasis in these three questions is on the need for archaeological research to add to the knowledge of the past in an important way, rather than merely duplicating known information or information that might be more readily available from other sources such as documentary records or oral history. As a result, archaeological significance has usually been addressed in terms of Criterion (e) of the NSW Heritage assessment criteria that is '*the potential to yield information*…'.

The following assessment of archaeological significance for the study area responds to both the Heritage Council of NSW guidelines and the Bickford and Sullivan questions.

2.7.1 Assessment against the NSW heritage assessment guidelines

The significance of the potential archaeological resource, defined as being all potential archaeological remains within a site as identified above, has been assessed using the NSW heritage assessment criteria and outlined in Table 4.

[45] Heritage Branch, 2009.
[46] NSW Heritage Office 1996, 25 – 27.

Table 4: Consideration against NSW heritage assessment criteria

Criteria	Discussion
A - Historical Significance *An item is important in the course or pattern of the local area's cultural or natural history*	The study area has the potential to yield archaeological remains which may provide information regarding the evolving agricultural and pastoral activities of an early settlement on the Hawkesbury which is significant for its contribution to the survival of the early colony. Archaeological remains associated with the earliest phase of occupation of the study area may yield information relating to early 19th century construction techniques, and contain an artefactual resource associated with former residents. In particular, intact artefact-bearing structures or deposits, such as wells, rubbish pits and occupation deposits, may provide an archive of information that may not be able to be ascertained through other historical sources. Archaeological evidence of residences, outbuildings and artefact bearing deposits associated with the early to mid-19th century development of Pitt Town would have contributory value to this criterion at a **state** level.
B - Associative Significance *An item has strong or special associations with the life or works of a person, or group of persons, of importance in the local area's cultural or natural history*	Pitt Town is associated with the administration policies of the early governors, especially Macquarie. However, physical archaeological remains within the study area are unlikely to have direct associations. George Brown was an early landholder who consolidated the surrounding agricultural land and likely extended the early residence for use by himself and his family. There is some potential connection between himself and the 'Glynn/McGlinn/McGlenn' and Scott families through marriage to his wife Ann. The Brown family continued to be present in the Pitt Town area. The potential archaeological resource in Area 2 may be associated with the Brown family, a fairly prominent family who resided within the study area into the 1920s. The potential archaeological resource may also be associated with several early leaseholders and land grantees – the Gillespie's, Drisdale/Drisdell's, Morrow's and Herredge/Herridge's. A we know little about these individuals from the historical record, an archaeological resource that provides some indication of the day to day lives of these early settlers would be significant. The potential archaeological resource may reach the local significance threshold under this criterion.
C – Aesthetic Significance *An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in the local area*	It is acknowledged that whilst exposed archaeological remains do have some aesthetic qualities, these are primarily due to a connection to the history of a place, or artefactual remains, and are not considered aesthetically significant in and of themselves. Remains are likely to be typical of early structures and deposits, and unlikely to demonstrate technical significance. The potential archaeological resource is unlikely to reach the significance threshold under this criterion.
D – Social Significance *An item has strong or special association with a particular community or cultural group in the local area for social, cultural or spiritual reasons*	The archaeological resource would be directly associated with early residents of Pitt Town, of which little is currently known. The study area is likely to have associations with current and former residents of Pitt Town, which has an active history group. There is likely to be local interest in the history and archaeology of the study area. The potential archaeological resource may reach the local significance threshold under this criterion.

Criteria	Discussion
E – Research Potential *An item has potential to yield information that will contribute to an understanding of the local area's cultural or natural history*	An intact archaeological resource associated with the earliest phase of the development of the study area, i.e. pre-the 1828 survey, has the potential to provide rare insight into the first occupants of Pitt Town. Should artefact bearing deposits be identified (i.e. discarded within cesspits / wells, rubbish pits or occupation deposits) these remains have the potential to provide information unavailable elsewhere, particularly as little is known about the nature of the occupation of the study area in the early nineteenth century. Artefact-rich deposits can provide data related to the preferences (ie food and drink), occupations, domestic activities and cultural practises (ie smoking, drinking, cottage industry, games) and socio-economic standing of the former inhabitants of the study area. The archaeological recording, analysis and interpretation of the potential archaeological resource could be expected to contribute to research questions in Australian history, such as the development of agriculture, the development of local economies, the building of settlements and the development of domestic and cultural life. Research potential would Should intact occupation and artefact bearing deposits associated with the pre-1828 (Areas 2 and 4) survey be encountered, they would have state significance under this criterion. Should intact occupation and artefact bearing deposits associated with the pre-1843 (Area 5) survey be encountered, they would have local significance under this criterion.
F – Rarity *An item possesses uncommon, rare or endangered aspects of the local area's cultural or natural history*	Few examples of early 19th century residences from Pitt Town and the surrounding Hawkesbury towns have been archaeologically investigated. An intact and substantial archaeological resource associated with this early phase would have state significance under this criterion. The potential archaeological resource may reach the state significance threshold under this criterion.
G – Representative *An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places of cultural or natural environments (or the cultural or natural history of the local area)*	If intact archaeological remains associated with the earliest occupation of the study area were identified, they would represent physical evidence of the first decades of European settlement in NSW. Should an intact archaeological resource survive, it may reach the state significance threshold under this criterion.

2.7.2 Overview of archaeological resource

The study area has the potential to contain an archaeological resource associated with early residents of Pitt Town and the development of Macquarie's Hawkesbury Towns in general. Little is known about these residents and/or their families. The potential archaeological resource may demonstrate early vernacular rural architecture and domestic artefact deposits have the potential to inform on early colonial lifeways and living practices.

An intact archaeological resource associated with historical Phase 2 would reach the state significance threshold under criteria A, E, F and G. It would reach the local significance threshold under criteria B and D.

An intact archaeological resource associated with Phase 3 would reach the local significance threshold under criterion B, D, E. and G.

Archaeological remains associated with historical phase 4 are unlikely to reach the local significance threshold.

Overall, the study area has moderate potential to contain archaeological 'relics' as categorised by *Heritage Act* 1977 (amended 2009).

An overview of the significance and potential of the archaeological resource within the study area is summarised in Table 5.

Table 5. Summary of archaeological potential and significance

Phase	Date	Archaeological remains	Potential	Significance
1 – First land grants	c.1805 – c.1814	None	Nil	Nil
2 – First phase subdivision and occupation	c.1815 – 1843	Structural remains of two residences, cesspits, cistern, well, artefact bearing deposits	Low to moderate	State (if highly intact)
3 – Modification of first phase occupation and consolidation	1843 – c.1900	Structural remains of two dwellings and associated outbuildings, cistern, artefact bearing deposits.	Moderate	Local
4 – 20th century occupation and farming	c.1900 – 1964	Structural remains of two dwellings and associated outbuildings, cistern, artefact bearing deposits.	Moderate	Unlikely to reach local significance threshold
5 - Modern development	1964-present	Open paddock	Nil	Nil

2.8 Assessment of archaeological impact

The areas identified as having the potential to contain significant remains would be subject to varying impacts. These have been summarised in Table 6 and illustrated in Figure 24. The landscape plan is shown in Figure 23.

Note that's Areas 1 and 3 have limited potential to contain archaeological relics. Detailed assessment of potential impacts is therefore not included.

2.8.1 Area 2

Area 2 is within the proposed ancillary laydown. The easternmost corner is slightly within an area proposed for infilling for road construction and a location proposed for tree planting.

No excavation works are proposed for Area 2.

Recommended protection measures would ensure that impact to below ground remains is minimised during construction works.

The proposed works would not impact archaeozoological relics in Area 2.

2.8.2 Area 4

The footprint of the c.1815 residence is outside the footprint of the design, however, proposed excavation works would occur in close proximity to the footprint, and within the portion of potential designated as Area 4.

Excavation would be associated with utilities installation and the proposed modification of Wellesley Street and tree planting.

2.8.3 Area 5

The entire footprint of Area 5 would be impacted by excavation works including:

- The installation of utilities
- The installation of drainage
- Landscape modification and infilling for construction of the bypass and Wellesley Street modification
- Tree planting.

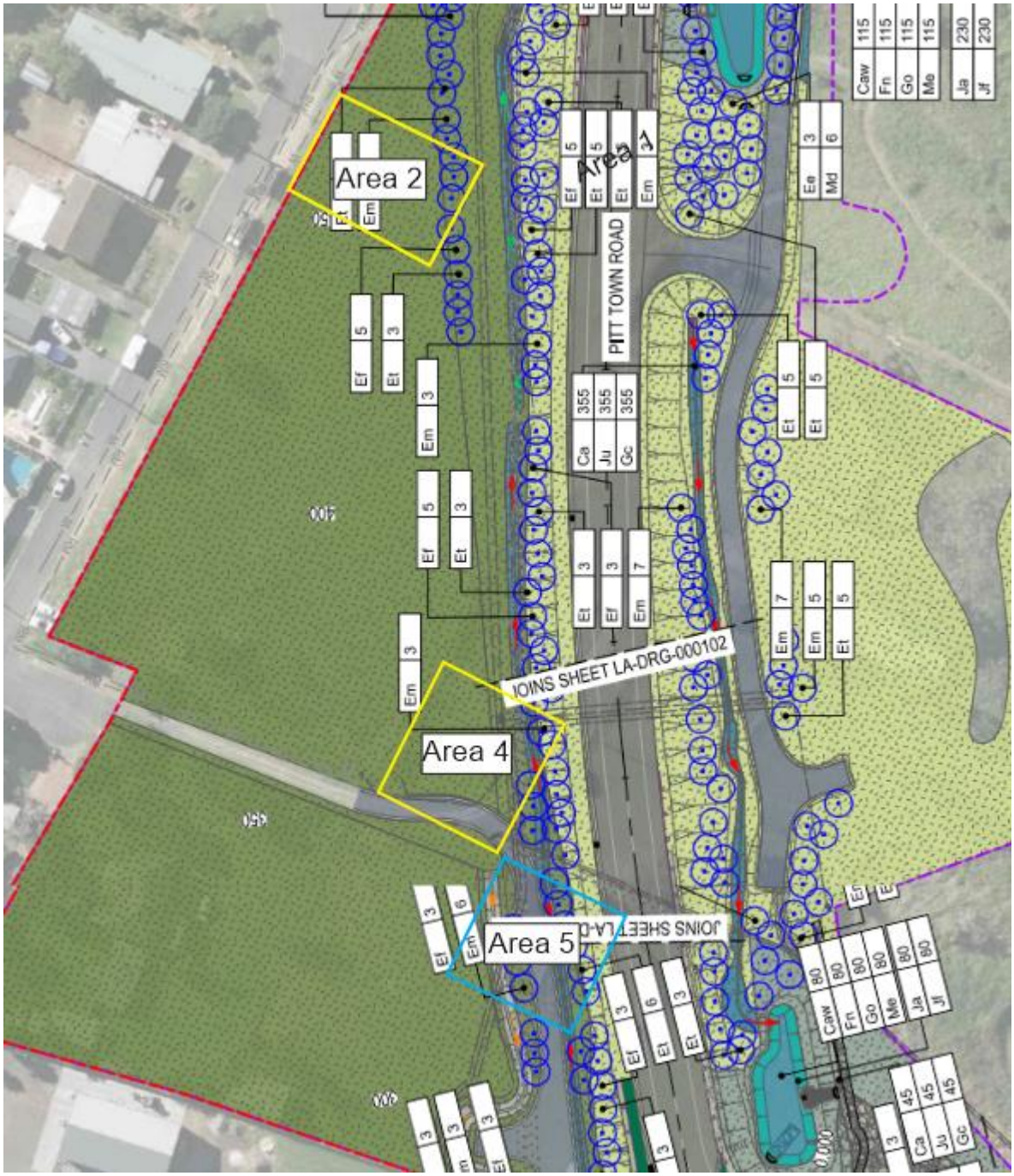


Figure 23: Proposed landscape plan

Figure 24: Proposed works in relation to historical structures.

Table 6: Proposed works

Area	Significance Potential		Proposed works	Impact	Management
1	Nil	Moderate	Ancillary laydown Installation of utilities Infilling for road construction	n/a	n/a
2	State (if highly intact)	Moderate	Ancillary laydown Installation of utilities and road construction outside the footprint of the residence	No impact (mitigation measures to be implemented)	Protection measures See Section 4.14.1.
3	Nil	Moderate	No proposed works	n/a	n/a
4	State (if highly intact)	Low	Installation of utilities	Minor – proposed excavation works avoid footprint o the former building, but are in close proximity	Monitoring of all excavation within Area 4, and salvage of archaeology if identified. Protection measures See Section 4.5 and Section 4.14.1.
5	Local	Low	Installation of utilities and road works	Major – utilities, construction, landscaping	Test excavation progressing to monitoring or open area salvage if required See Section 4.6

3.0 ARCHAEOLOGICAL RESEARCH DESIGN

3.1 Introduction

This section of the report provides a theoretical framework that is specifically developed to achieve the main objective of any archaeological investigation, and that is realisation of the site's research potential. The theoretical, research-based framework is to ensure that the information retrieved from physical archaeological investigations is appropriately gathered and utilised in a meaningful way, so that our knowledge about the site or area can be enhanced.

The Statement of Significance above, in combination with the NSW Historic Themes below,[47] provide the basis for this research design framework. The development of a robust research design is fundamental to the practice of historical archaeology. As valuable archaeological resources become increasingly scarce, the results of fieldwork should contribute insight into the processes that have shaped an area.

3.2 Research themes

The Heritage Council of NSW has published a list of historical themes to provide direction and guidance for heritage assessment and management. The archaeological investigations of the site should consider material evidence associated with the development and occupation of the study area as well as the establishment of Pitt Town. The historical themes relevant to the documented occupation of the subject area are listed below. Details of the phases of occupation associated with each theme are also included.

Table 7: NSW historical themes relevant to the study area

Australian Theme	NSW Theme
Peopling Australia	Aboriginal cultures and interactions with other cultures
Peopling Australia	Convict
Developing local, regional and national economies	Agriculture
Building settlements, towns and cities	Land tenure
Building settlements, towns and cities	Accommodation
Developing Australia's cultural life	Labour
Developing Australia's cultural life	Domestic life
Marking the phases of life	Persons

[47] Heritage Council of NSW 2001

3.3 Research questions

The significance of a potential archaeological resource lies in its ability to respond to research agendas in a meaningful way, rather than duplicating known information, or information that might be more readily available from other sources such as documentary records or oral history. Therefore, the aim of the following questions is to ensure that the proposed archaeological investigation is focused on genuine research needs.

The archaeological resource within the study area has the potential to contribute to research areas such as:

- Consumer behaviour and the household
- Rural construction methods
- Comparative analysis of results with similar archaeological sites.

Additional research questions may be posed (and existing questions modified) as the archaeological excavation progresses and the extant and condition of the archaeological resource is revealed.

The overarching research aim of the proposed archaeological program is to be able to interpret the archaeological results in terms of broader research themes. The intention is to compare the results of the program, wherever possible, to results from other relevant sites, projects and current research agendas, and therefore into broader research frameworks.

General research questions regarding the integrity of the potential archaeological resource include:

- What physical evidence of former structures, landscape modifications and features survive in the area?
- If present, where do these lie within the stratigraphic context and at what depth below the current ground level do these remains exist?
- What is the integrity of these remains? Have they been truncated by later development or agricultural practises and if so, to what extent?
- What contexts, phases and imported/redeposited fill layers are evident? Do these support evidence obtained from cartographic resources or does the archaeological record indicate that the early surveys focused on a certain type of structure? Are the early surveys showing simplified footprints for these structures?
- Does the site contain in situ artefact bearing deposits that may be considered to be ‘relics’?
- Is there evidence for land use or occupation other than that identified within the historical record?

3.3.1 Early development of Pitt Town

Area 2, 4 and 5 (to a lesser extent) have the potential to provide insight into the early European settlement of Macquarie’s Hawkesbury Towns, and Mulgrave Place in particular. Relatively few excavations associated with this historical phase have been undertaken in Pitt Town. Remains may provide insight into the following:

- Nature of early agricultural practises and household sustenance through gardening

- Is there evidence of the re-use of adaptation of materials and/or items that provide evidence of the ways in which early settlers adapted to the area or made do due to distance from larger centres
- Is there evidence of the modification of the landscape during the early period in order to improve its use for farming
- How do patterns of consumption further our understanding of how early residents used material culture in the construction of personal and group identity?

3.3.2 Consumer behaviour and the household

The historical record indicates that the study area has the potential to contain four residences, likely originally occupied by working-class individuals and families, in an area typically associated with low-socio economic conditions. Evidence of the residences is likely to consist of footings or postholes associated with timber structures and outhouses, and deposits containing evidence of occupation including underfloor deposits and yard scatters. The site may contain evidence of cottage gardens, the layout and use of yard areas, and artefact scatters and refuse pits associated with former residents.

The assessment has identified that the study area has the potential to contain artefacts in several contexts:

- Underfloor deposits
- Garden soils/sweepings
- Refuse in decommissioned wells/cistern/cesspits
- Refuse in rubbish/bottle pits

Our knowledge of the day-to-day life of lower and working-class individuals is typically lacking in the historic written record. Archaeological investigation has the ability to identify the ‘lifeways’ of these individuals in a meaningful way. Artefacts recovered have the potential to provide insight into discard practises, and determine the ways in which the household was disposing of its waste.

Evidence of domestic occupation and identity would relate to the NSW Historic Theme of ‘Domestic life’, ‘Accommodation’ and ‘Utilities’.

Potential research questions relating to the lifeways of these individuals include the following:

- Do any intact under floor deposits provide useful spatial information, identify discrete activity areas or provide spatial data on the range of tasks undertaken within the cottages over time? Is there evidence of ‘working’ versus ‘living’ areas of residences? What evidence is there of gardens, and the layout and use of the yard areas?
- Is there evidence that the residents were engaged in recreational activities? (gaming, smoking, sewing, etc)
- What food were the residents of the cottages consuming? Is there evidence of the cooking methods, brand or food preferences?
- Does the archaeological resource provide insight into activities split along gender or age lines? Is there evidence for the presence of women and children?

- Does the archaeological resource provide evidence of social standing and status? Is there evidence that former inhabitants of the site displayed their social standing or ethnicity through items of personal adornment or preferences for certain consumables?
- Can artefactual evidence be directly associated with any former residents?

3.3.3 Construction methods

The archaeological resource has the potential to provide insight into the types of materials and construction methods were used in the early 19th century and may identify the extent to which earlier buildings been re-used or modified.

- Were the materials used in the construction of the buildings on the site locally manufactured and sourced, or were they imported from elsewhere? Do the construction materials provide some insight into the ways in which local materials were adapted to suit local conditions?
- Does fabric survive that could provide information on the layout of the residences?
- Is there evidence of modification or extension of earlier residences?
- If evidence of outbuildings is identified, have they been constructed of different materials that may help differentiate archaeological remains of these buildings from the main residence?

3.3.4 Comparative studies

Should an intact archaeological resources pre-dating 1843 be identified, these could be compared to the results from excavation of convict and early colonial sites in Parramatta, at Blighton Farm and in central Sydney (i.e. Cumberland Gloucester Streets). Opportunities for detailed comparative analysis would explored should the program progress to salvage excavation.

4.0 ARCHAEOLOGICAL MANAGEMENT

4.1 Introduction

The proposed works have the potential to impact on archaeological resources of local significance associated with two pre-1828 residences. The potential resource may include 'works' in addition to possible 'relics.'

It is recommended that the potential archaeological resource is managed through a program of archaeological testing, moving into open area archaeological salvage if required.

The archaeological testing and salvage methodologies outlined in this document aims to support the following guiding precepts:

- To manage archaeological resources in accordance with the relics provisions of the Heritage Act, adhering to any conditions of a s140 Excavation Permit approved by Heritage NSW
- Investigate and record archaeological resources in accordance with archaeological best practice and Heritage Council of NSW guidelines
- Retrieve a level of information relative to the significance and integrity pf the archaeological resource
- Investigate and record archaeological remains to answer the research questions developed for the site, further knowledge of the early development of Pitt Town, and contribute to interpretation strategies and communication engagement if possible.

It is proposed that management of the potential archaeological resource include the following processes.

- Site induction (Section 4.4)
- Site protection for Area 2 (Section 4.14)
- Archaeological monitoring in Area 4 (Section 4.5) and protection measures (Section 4.14)
- Test excavation in Area 5 (Section 4.5)
- Salvage excavation if triggered by the results of monitoring in Area 4 or testing in Area 5 (Section 4.7)
- Reporting of the program, re-assessment of significance and production of updated management and design recommendations as required (Section 4.9).

A summary of proposed archaeological management is illustrated in Figure 25.

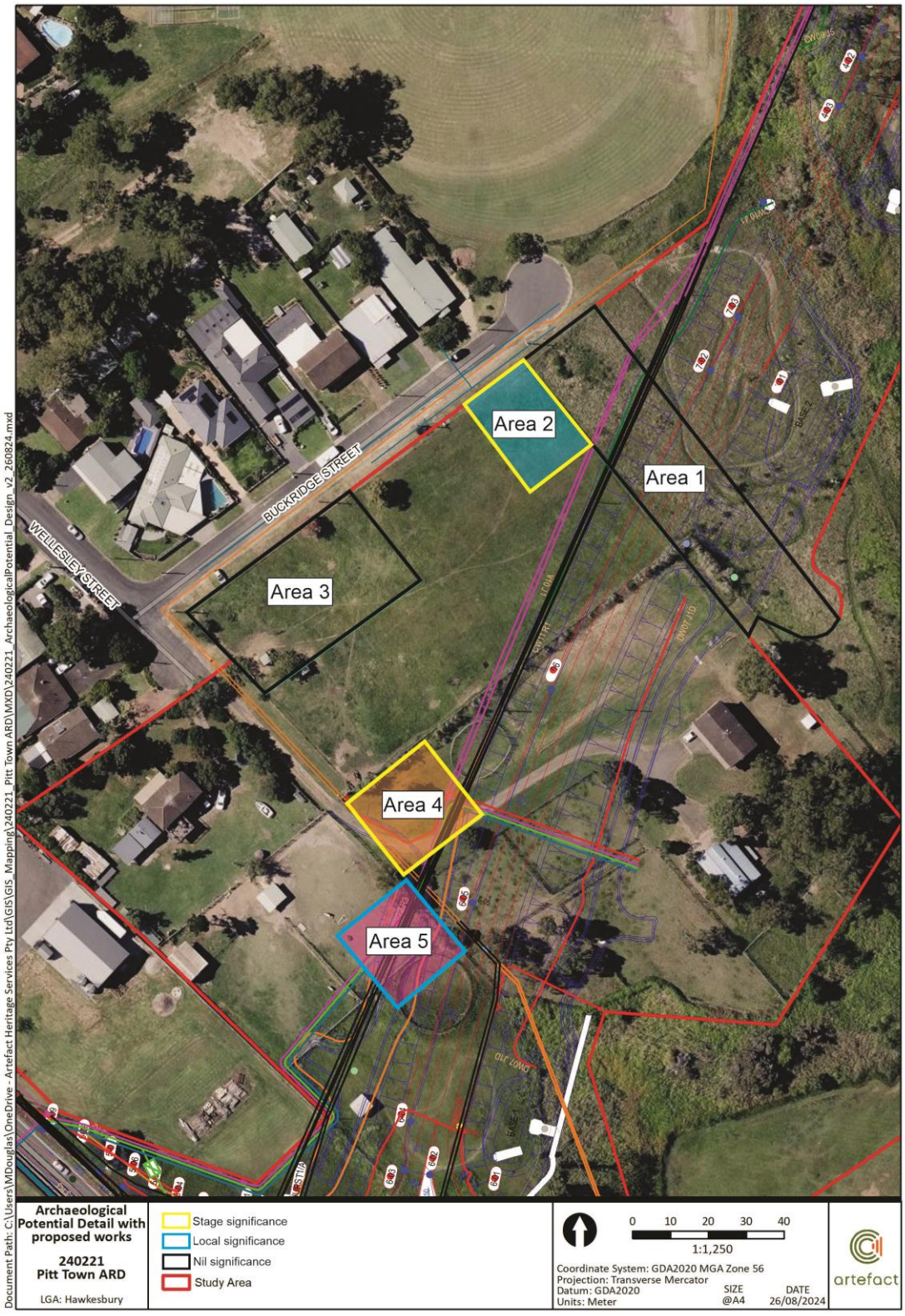


Figure 25: Overview of archaeological management. Area 2 (blue) protection measures; Area 4 (orange) protection measures, monitoring and salvage (if required); Area 5 (pink) testing and salvage

4.2 Excavation team

The study area has potential to contain significant historical archaeological resources. The archaeological program would therefore be undertaken by an experienced team that can appropriately manage and respond to the diverse site requirements.

4.2.1 Excavation Director

Archaeological investigations would be managed by suitably qualified and experienced Excavation Directors who would meet the NSW Heritage Council criteria. The Excavation Directors would be responsible for overseeing the archaeological investigation program.

The historical archaeological Primary Excavation Director would be responsible for the overall management of the archaeological program.

4.2.2 On site archaeologists and specialists

Archaeological excavation and monitoring tasks would be conducted by appropriately trained archaeologists under the coordination and supervision of the Excavation Director.

Input from appropriate and experienced specialists would be sought during the archaeological program as required. This would likely include a combination of on-site specialists during the archaeological investigations and off-site specialists for analysis tasks. On-site specialists are expected to include:

- An archaeological surveyor and planner – would be involved in the archaeological recording (preparation of measured drawings as required) and surveying of identified archaeological remains.

4.3 Contractor responsibilities

The contractor would set up site and then operate under the direction of the archaeologists during archaeological investigation. Contractor responsibilities would include, but not be limited to:

- Provide a heritage site induction to contractors in consultation with the Excavation Director
- Set out and secure the work area for the construction and archaeological team
- Provide machine plant to assist the removal of hard surfaces and fill where required under the supervision of the archaeological team
- Provide access to a surveyor to record archaeological features during works, where required.
- Provide dedicated storage and work locations, if required, or assist with organising suitable locations off-site
- Should a considerably intact archaeological resource be identified during salvage excavation within Area 5, the proponent should consider the suitability of hosting a public open day and/or providing information to the public.

4.4 Site induction

All staff involved with ground disturbing works must receive a heritage induction as part of their general site induction. This heritage induction must make clear the responsibilities of the Proponent, site contractor, and workers under the relevant heritage legislation. The heritage induction must provide workers with a basic understanding of the nature and appearance of Aboriginal and historical sites and artefacts and provide them with a clear understanding of the unexpected finds procedure.

Additional heritage briefings would be provided on site as needed to contractors who are working in conjunction with the site archaeologists during the archaeological investigations.

4.5 Archaeological monitoring

Proposed works in the vicinity of the former residence in Area 4 include the installation of utilities, modification of the existing road corridor and construction works for the bypass (proposed drainage is shown in orange on Figure 26).

Proposed excavation works do not extend into the footprint of the former building. It is recommended that protection measure be put in place for the former building footprint to conserve any below ground archaeological remains. See Section 4.14 for an overview of proposed protection measures.

Mechanical excavation, conducted under archaeological supervision, would be utilised during the construction program for excavation activities within Area 4.

The Excavation Director would supervise excavation undertaken for construction but would also be able to direct machine excavation contractors to excavate areas of archaeological interest. This would be done to further expose identified features to assess their nature and significance. Archaeological excavation would be under the direction of the project archaeologist and would not exceed the approved impact area for the scope of work.

Should construction excavation work endanger potential archaeological deposits, the machine excavation contractor must cease excavation if advised by the monitoring archaeologist. Investigation works will continue by hand, if required, to expose, investigate and record the archaeological remains. Works would not recommence until the monitoring archaeologist has completed the recording and the Excavation Director is satisfied that further investigation is not required.

If significant and intact archaeological remains are identified, then further investigation such as salvage would be required prior to construction impacts occurring to the item. The salvage excavation methodology is outlined in Section 4.7.

4.5.1 Triggers for Stage 2 - salvage excavation

Should monitoring of the utilities identify archaeological material with the potential to respond to the research design, the program would proceed to Stage 2 – salvage. It is anticipated that salvage would be required to the extent of impact required by the project.

Figure 26. Location of archaeological monitoring

4.6 Test excavation

Due to the potential for significant archaeological remains to be subject to major impact in Area 5, it is recommended that a program of archaeological testing be conducted prior to project impacts. This would inform the need for salvage excavation in this area.

4.6.1 Pre-excavation

The proposed locations of the archaeological test trench would be confirmed and coordinates and plans showing the location provided to the client and relevant contractors prior to excavation commencing. Dial Before You Dig plans would be requested to confirm that the area does not contain utilities that may be impacted by the works.

Should services be located within the proposed trenching area, the location may require modification. The proposed location of a trench may also be impacted by vegetation on the site. Should the location of the test trench be found to be unsuitable, it is proposed that the trench be moved within 5 m of the proposed location to account for these circumstances.

4.6.2 Test trench locations

A single test trench as illustrated in Figure 27 would be excavated in Area 5. The test trench would measure 10m x 2m, targeting the structure on the 1843 survey, with the aim of determining preservation, extent and suitability for proceeding to salvage excavation.

4.6.3 Test excavation methodology

The test trench would be subject to machine excavation under the supervision of a team of archaeologists under the oversight of the Excavation Director. Machine excavation would use a 5- to 10-tonne excavator with a 1.2 m to 1.6 m flat bucket.

Machine excavation would remove vegetation and non-archaeological deposits in shallow layers. Removed soils would be stockpiled for backfill on finalisation of each testing location.

Machine excavation of the trench would continue until archaeological remains are encountered, or until natural strata is identified. Trenches would not be excavated beyond 1.5m in depth.

Any significant archaeological deposits or structural remains uncovered will be cleaned of overburden by hand, recorded and photographed *in situ*, and suitably protected with geofabric before the trenches are backfilled. Should buried remains be identified as non-significant, machine excavation may continue in that area once the remains have been recorded.

The trench will remain open until investigation and recording is completed and will be adequately protected overnight. Upon completion of the trench, any archaeological remains encountered will be protected with plastic and/or geofabric prior to backfilling. The trench will be backfilled with removed and/or clean imported spoil and the ground surfaces then reinstated.

The following would be taken into consideration during the test excavation program:

- It is not proposed that State significant remains or ‘relics’ be impacted or removed from site during the testing program. Should potentially State significant remains be identified, manual cleaning would continue to identify the extent of the resource only. All structural and associated artefact bearing deposits would remain in place during excavation

- During the test excavation program, any intact structural remains and/or deposits would be exposed, cleaned and archaeologically recorded
- *In situ* artefactual remains would not be impacted by the test excavation. Should de-contextualised artefacts be identified within non-significant deposits these would be recorded and collected
- Remains would be archaeologically recorded by context, photographed and their location precisely planned. Once recording had been completed, the remains would be protected by a layer of geofabric and backfilled with soil removed from the trench under archaeological supervision to ensure their preservation should salvage excavation not proceed immediately after testing
- Archaeological test excavation cannot exceed a safe depth. Maximum depth of excavation without shoring or increasing pit size is 1.5 m, however, the maximum safe depth in contexts with loose or unstable sediments will be less.

4.6.4 Next steps

4.6.4.1 Triggers for Stage 2 salvage excavation

Should the test excavation in Area 5 identify archaeological material with the potential to respond to the research design, the program would proceed to Stage 2 – salvage.

4.6.4.2 Triggers for archaeological monitoring

Should the testing program not identify significant archaeological remains, it is recommended that archaeological monitoring of the area of potential take place during project excavation works. See the monitoring methodology in Section 4.5.

4.6.5 Holding point – testing results report

If the need to proceed to salvage, or move to a monitoring program during works, is identified by the Excavation Director, a report would be prepared for the proponent including the following:

- Summary of the results of the testing program
- Demonstration of how the testing results do or do not respond to the research design and the significance of any remains
- Confirmation of the extent of the salvage excavation or monitoring program proposed and any alteration to the methodology included in Section 4.7 that may be required
- Should state significant archaeological remains be identified, this report would be submitted to Heritage NSW for comment to confirm suitability of approach.

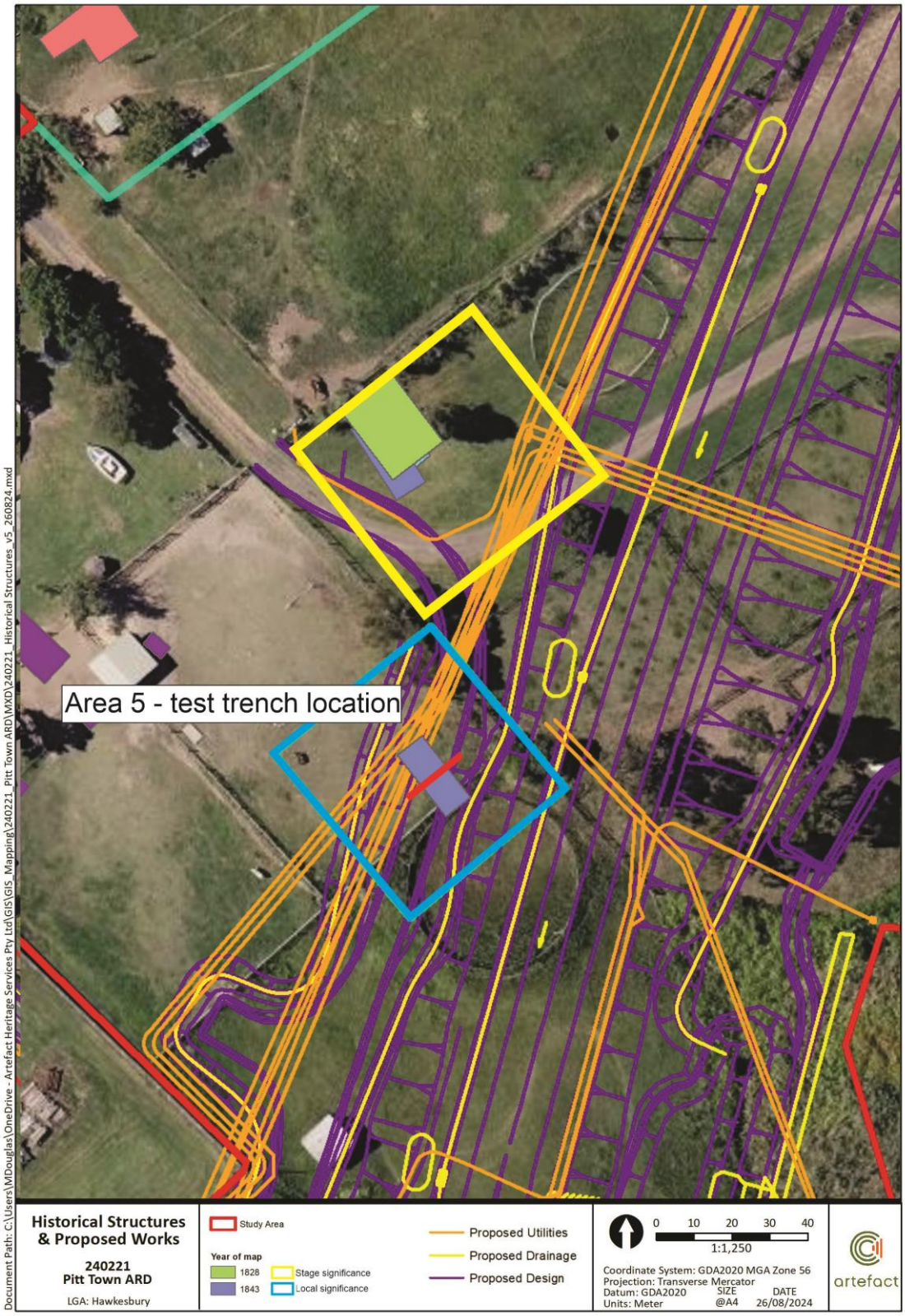


Figure 27. Location of proposed archaeological test trench

4.7 Stage 2 - Salvage excavation

If require, it is proposed that the following be subject to open area salvage excavation if required:

- Area 4 – salvage to the extent of the proposed impact only (utility trenches as shown in Figure 26)
- Area 5 – Should testing identify significant remains, the trench would be extended to the full horizontal extent of the archaeological resource within the footprint of Area 5 (the wider salvage footprint is required to identify any potential outbuildings).

Open area salvage refers to archaeological excavation under the control of the Excavation Director in which the full horizontal extent of an area of site is investigated and cleared, preserving the stratigraphic record. Investigation of the area would involve machine and hand excavation under the supervision of the archaeological team and Excavation Director.

Excavation of the area would continue until significant archaeological remains or natural subsurface culturally sterile soil layers have been identified, or until the depth of impact or the limit of safe excavation has been reached. If the limit of safe excavation has been reached but the depth of impact has not, the Excavation Director would determine in consultation with the Proponent and site contractor whether any further investigation and/or mitigation measures are feasible.

The following would be taken into consideration during excavation program:

- During the excavation program, any intact structural remains would be exposed, cleaned and archaeologically recorded
- *In situ* remains would be archaeologically recorded by context, photographed and their location precisely planned
- Archaeological excavation cannot exceed a safe depth. Maximum depth of excavation without shoring or increasing trench/pit size is 1.5m, however, the maximum safe depth in contexts with loose or unstable sediments will be less
- Excavation would continue until non-cultural depots are identified.

Construction works would not proceed until the salvage excavation is completed in the relevant location and the Excavation Director has provided clearance for the area in question.

4.7.1 Deep subsurface structural remains

Structural remains of wells, cisterns and cesspits often contain substantial amounts of backfilled material and artefactual remains. Artefacts find their way into these features through a number of actions, including deliberate placement and accidental loss. Structures of this type often contain a number of backfill or deposition events and are typically excavated suing a combination of machine excavation and hand excavation at depth. Accumulated deposits are often useful for soil and pollen analysis.

If the well or cesspit is found to extend to a substantial depth complete excavation of the fill may not be possible due to Occupational Health and Safety requirements. In this situation fill would be removed to a safe depth to allow for the recording of the structure and collection of a representative stratified sample of any fill or artefacts. It is possible that further excavation or monitoring of particularly deep structures, such as wells, may be able to be undertaken by machine at a later date.

As this would involve the removal of substantial amounts of soil, the archaeological program would need to have been finalised in the immediate vicinity to avoid disturbance to any archaeological relics or deposits.

Should any intact and deep structural features be encountered it may be necessary to remove any demolition or fill material within by mechanical excavation under the supervision of an archaeologist. Any material removed by excavator would be examined for artefacts by the archaeologists.

4.7.2 Underfloor deposits

The study area has some potential to contain underfloor deposits that may have accumulated beneath flooring. Deposits of this type are sensitive and are investigated via a system of grid squares, careful excavation with hand tools and sample sieving.

Intact underfloor deposits would be excavated in a grid system, either 50 centimetre or 1 metre depending on extent of deposit. Excavation would be by context if stratigraphic layers are identifiable. If the deposit is homogenised, excavation would proceed in 5 or 10 centimetre spits. Excavated material would be wet or dry sieved. The range and percentage of archaeological material collected would be in accordance with a sieving strategy developed by the Excavation Director.

This type of investigation can recover data that may be utilised in the analyses of interior spaces and in the identification of activities within those spaces.

4.7.3 Protection of the archaeological resource during excavation

Where there is a halt in excavation such as a cessation of excavation due to inclement weather, or for other reasons outside the control of the archaeological team, suitable measures should be put in place to protect exposed archaeological remains until archaeological investigation/recording re-commences.

Protective measures may include back-filling open excavation units or trenches under the guidance of an archaeologist and include protection of any remaining archaeological resource using geofabric material or similar and clean back-fill. Other protective measures may include the site contractor deploying sandbags and sediment fencing to divert surface water away from open excavation units and trenches.

4.8 Contaminated soils and deposits

Archaeological excavation would be undertaken in accordance with the specified work health and safety (WH&S) and environmental protocols established for the site prior to the commencement of works. The archaeological team is reliant on contamination and hygienist contractors to provide prompt analysis of potential contaminants and detail contamination controls for safe excavation. Expected hazardous materials such as asbestos and coal-tar must be handled under project management and mitigation procedures and policies defined by the Proponent and site contractor. Archaeological staff are not trained in the management or disposal of hazardous material and must not be called upon to assess, handle or dispose of it.

Where soils or deposits are encountered that pose a health risk to archaeological excavation, all archaeological work in that location must pause until assessment of the likely health hazard is made by suitably qualified environmental professionals. There may be a requirement to deviate from the proposed archaeological methodology, in order to ensure the health and safety of on-site staff. This response may include the use of protective clothing, face masks, and specified gloves, additional washing protocols, through to the need to cease hand excavation on site. It is noted that whole-of-

body PPE (such as contamination suits) exacerbate heat stress in workers and the routine use of this PPE to excavate through contaminated deposits is not recommended – rather, where archaeological remains are identified in contaminated deposits, remote recording techniques are recommended over risking worker safety. However, basic contamination control PPE would be present with the archaeological team at all times (specifically, N2-masks for preventing inhalation of airborne asbestos fibres as well as impermeable gloves for handling soil).

If safe work methods for continuation of archaeological investigation can be developed, then this archaeological investigation may proceed under the supervision and management of appropriately trained environmental professionals provided by the Proponent and site contractor. Alternatively, remote recording techniques may be utilised where appropriate to minimise exposure to harmful materials. Depending on the type of contamination, complete archaeological investigation of those contexts may not be possible.

The Excavation Director would provide justification wherever the proposed excavation methodology is deviated from in order to protect human health during archaeological investigation and outline the revised archaeological methodology for investigating specific remains.

Should the requirement to employ mechanical excavation rather than hand excavation arise, archival photographic recording of archaeological material would be conducted from a safe distance (as specified in the WH&S requirements of the remediation specialists). Should significant and robust archaeological remains be identified within contaminated deposits, opportunities for photogrammetry and orthography would be prioritised.

4.9 Recording and documentation procedures

Significant archaeological remains would be recorded in accordance with the following methodology:

- A site datum would be established
- Levels would be reduced to Australian Height Datum
- Survey and scaled plans of the area, trench locations and any significant archaeological features uncovered in the monitoring, test and salvage program. The plans would include elevations recorded by a surveyor where possible. Should a large amount of archaeological resources be identified during the excavation, the site would be digitally surveyed and recorded
- Scaled section drawings where appropriate
- Photogrammetry where appropriate
- Digital photography, in RAW format, using photographic scales and photo boards where appropriate. A photographic record of all phases of the work on site would be undertaken
- A standard context recording system will be employed: The locations, dimensions and characteristics of all archaeological features and deposits will be recorded on a sequentially numbered context register. This documentation will be supplemented by preparation of a Harris Matrix showing the stratigraphic relationships between features and deposits
- Artefact collection by context. Large or redundant artefactual materials from individual contexts would be sample collected as supported by a discard register. Hazardous material would not be collected
- Registers of contexts, photos, samples and drawings would be kept.

4.9.1 Survey control

A survey control for the site would be established, tied to the Geocentric Datum of Australia (GDA) 2020. For preference, survey data would be recorded with a DGPS and post-processed to sub 1 centimetre accuracy. Alternatively, a Total Station would be used to establish the survey and record survey data. An automatic level could also be used to record depths and tied to known datum points.

Within an archaeological excavation area, the archaeological team would set out a grid where possible for ease of recording and, where required, and establish main and subsidiary datums based on survey information. Further datums for vertical control will be established to allow all excavation areas to be surveyed into a nearby datum. These will be tied back to Australian Height Datum (AHD) and the survey grid.

Where electronic surveying equipment is not available to the archaeological team, horizontal measurements and detailed scaled plans of excavation areas and features would be prepared. Vertical relative elevations would be taken with dumpy level. These plans and levels would be tied to a previously surveyed main or subsidiary datum. Every level taken is assigned a number and is recorded on a level sheet.

This information would be made available to the archaeological team to support recording and prepare plans.

4.9.2 Recording of contexts

All soil deposits and significant features would be given a unique context number without duplication. Context numbers will be recorded in a register of context numbers to ensure context numbers are not duplicated. Each context is numbered sequentially.

Rubble deposits would be recorded only where they provide specific information regarding masonry and construction (i.e. wall finishes, material etc.). Fills need to be described in detail as there are varying types of fills (e.g. demolition, levelling).

All contexts would have a pre and post excavation level taken. This would be converted to AHD and included on plans produced.

Contexts would be related to each other through the use of a Harris Matrix. The relationships between each of the contexts are recorded on the context sheet and these are also recorded in a computer program such as Stratify, which can be used for the digital production of Harris Matrices.

4.9.3 Recording of archaeological features

Significant archaeological features would be recorded through the preparation of plans and sections. Structural elements, such as brick walls or timber posts, would be recorded *in situ* to observe phases in construction, and then removed in stratigraphic sequence.

Plans and sections will be labelled with details of what is being recorded, context numbers and details of the recorder. Each plan, map or section will be catalogued and receive a number which is put on the plan and in the catalogue. The plan, map or section will be placed flat in an artist portfolio.

Archaeological remains need to be directly surveyed during works or four control points on each plan that can then be surveyed in to georeference the plan. All records of vertical sections would include elevation data to ensure accurate measurement of stratigraphic layers at the site. Open area excavation of significant features would include elevation levels throughout site, recorded either with a DGPS or total station, or with a dumpy level measured off surveyed datum control points for the site.

The surface level and end of excavation elevation levels for all test excavation trenches, and all salvage excavation areas, would be recorded, converted to Reduced Level (RL) and shown on plans and sections.

4.9.4 Photography

In photographically recording significant archaeological remains, photography must meet the requirements for photogrammetry, which includes accurate scale bars, overlapping of images and recording with a colour card where required. Photographs would be recorded in a register identifying the shot number, direction and a description of the scene.

Photographic recording of significant archaeological remains would be informed by the standards established in the *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Office 2006), accepting that parts of these guidelines are technically obsolete. Artefact Heritage would use a digital SLR camera and shoot in raw format to capture the maximum amount of information from the camera sensors. Photograph numbers will be documented on a photo register, including information such as photo direction and content.

4.9.5 Artefact management

Artefacts are likely to be uncovered during archaeological investigations. Artefacts from secure or *in situ* contexts would be collected and recorded (by context). Retrieval of artefacts should focus on diagnostic pieces and other items whose analysis would contribute to the research questions for this site.

Should diagnostic or significant artefacts be present within the fill layers (out-of-context), a sample would be retained as part of the archaeological record. Any discarded items will be recorded on context or discard sheets (in the case of sieving).

Artefacts would be collected by context and bagged with a label recording their registered context number, site code, date and initials of the collecting individual/s. Each artefact bag or individual artefact would tagged with a Tyvek® tag and sealed in plastic bags. A record and description of relevant artefacts would be included in their corresponding context sheet and photographed where necessary. All artefact bags would be catalogued prior to being stored in an archival quality storage container to prevent loss or misattribution of contextual data.

4.9.5.1 Modern deposits

Artefacts from modern (post-1960) deposits would be sample collected to demonstrate the nature and context of the remains.

4.9.5.2 Historic fills and secondary deposits

Similarly, artefacts collected from historic fills and other bulk deposits that lack stratigraphic integrity will be recorded and a representative sample collected.

4.9.5.3 Primary deposits

All artefacts from primary deposits would be collected by context and bagged. Diagnostic or unique/fragile artefacts would be bagged separately under their corresponding context.

4.9.5.4 Building materials

Building and structural materials would be collected by type and sampled. For example, one full brick and one partial brick of the same type, two samples of mortar, stone, timber and plaster (bagged by context). All collected samples would be noted on their corresponding context sheet and recorded in a building material sample register.

4.9.5.5 Organic or fragile materials

Metal and fabric or organic materials such as timber, leather, bone or shell would be stored in paper bags for conservation purposes under their corresponding context. If significant and diagnostic fabric or leather items are found, these would be submitted to a conservation specialist with two months of collection.

4.9.5.6 Hazardous materials

Artefacts manufactured from hazardous material such as asbestos or found within a contaminated deposit would not be collected, although their presence within the context would be recorded in their corresponding context sheet. Such artefacts would be disposed of in an appropriate manner according to guidelines for dealing with hazardous waste and any project specific manual.

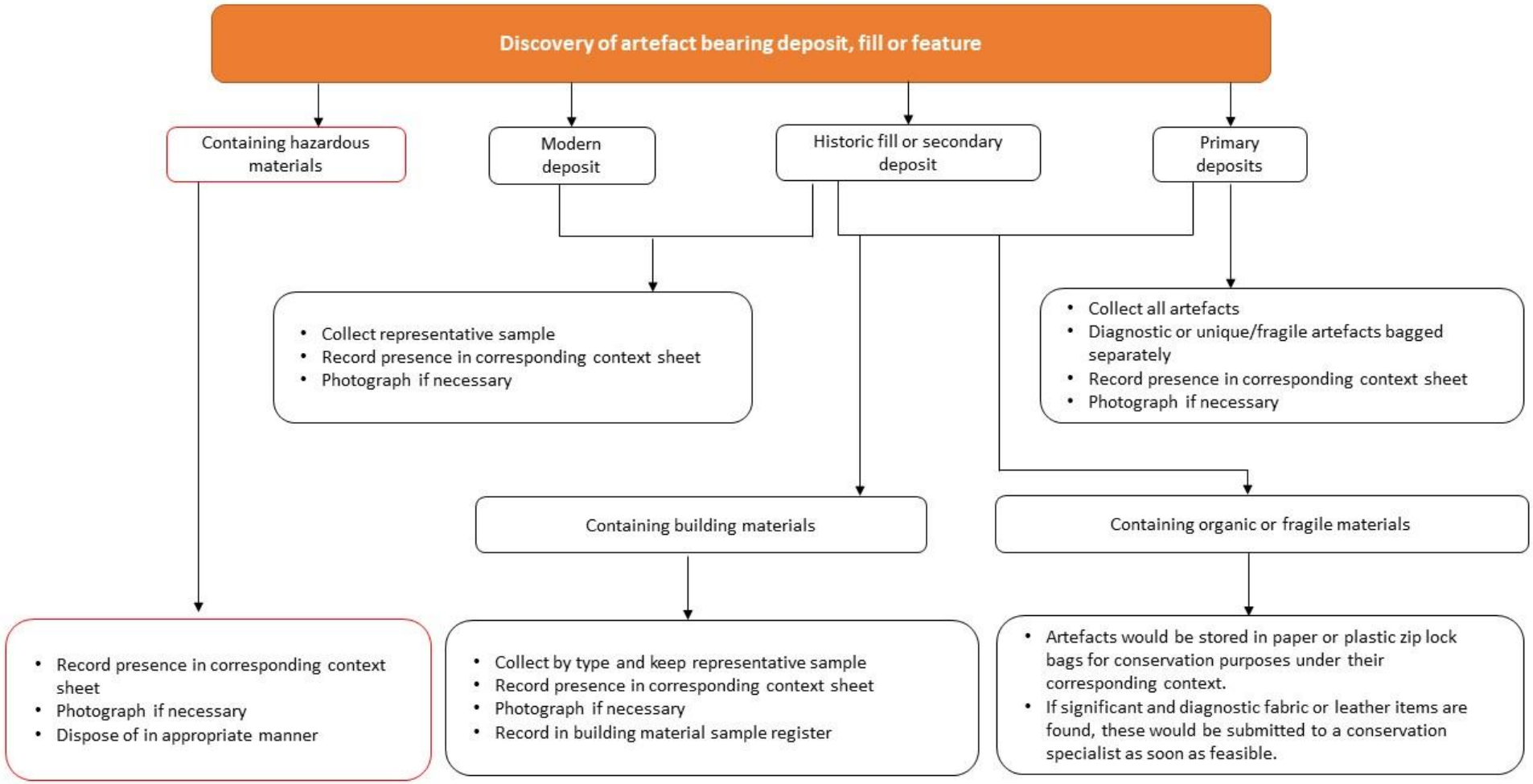
4.9.5.7 Artefact discard guidelines

Non artefactual material is not to be collected from sieves or the field unless in response to a targeted research question such as retention of soil samples. In the event that non artefactual material has erroneously entered artefact collections this may be disposed of at any stage without further recording. Non artefactual material includes:

- Hazardous material
- Modern material resulting from the demolition and excavation process (includes items such as dynabolts, geofab, food wrappers and containers, construction PVC)
- Fragments of construction material including ballast, broken bricks, pipes and tiles
- Unmodified stones and rocks
- Metal items that have rusted to an unrecognisable form
- Items such as ceramic or glass that are smaller than 1cm x 1cm and which show no diagnostic features (visible pattern, decoration or makers mark)
- Pieces of wood that are not identifiable in form &/ are too small for species identification (5cm x 3cm)
- Items with no contextual ID
- Degraded items that cannot be identified.

Discarded material would be recorded and logged on a register during excavation work. This register will stay with the collection and included in the final report.

Figure 28. Recommended artefact retention procedure for the project



4.9.6 Long-term management of recovered artefacts from site

Retained artefacts would be cleaned, processed, catalogued, and analysed by an archaeologist experienced in historical artefact assemblages. Where possible recovered archaeological remains would be initially cleaned and sorted on site. Following this the collected remains would be transported and temporarily stored by Artefact for the completion of detailed artefact processing and analysis. Artefact analysis would include production of a database in accordance with best practice archaeological data recording. The resulting information would be included in the final excavation report.

Opportunities for artefactual material to be incorporated into future interpretive spaces should be considered. Should recovered archaeological remains be considered unstable for long-term storage, assessment of their condition, integrity and significance would be undertaken in the first instance. This assessment should be undertaken by the artefact specialist and Excavation Director.

The assemblage would be assessed for retention by the artefact specialist and Excavation Director. Should non-significant (unable to respond to research design or be considered relics), hazardous, or duplicate artefacts be identified as being suitable for discard, this process would be recorded, records of discarded artefacts made, and this information would be included in the artefact assemblage.

Should artefactual remains be significant to justify long-term storage and conservation, conservation handling would be undertaken for long-term preservation. This would involve engagement of a specialist conservator who has experience with the material in question, for example metals or wood. The material would be stabilised and stored securely.

Should unstable artefacts not be considered suitable for long-term storage and/or display, they would be subject to a discard policy prepared for the project.

The Proponent would be responsible for the long-term management of the collected artefactual material.

4.10 Post-excavation analysis and reporting

4.10.1 Changes to the project

This ARD is based upon the most recent information made available to Artefact as of the date of preparation of this report. Over the course of the project changes may be required due to factors such as design changes, site constraints, and/or changes in construction/investigation methodology. Where changes to the project are required which may result in additional archaeological impacts, impacts to additional areas or archaeology that have not been previously assessed, or substantial changes to the methodology outlined in this ARD, additional assessment may be required. Additional approvals may be required as a result of these changes.

4.10.2 Clearance

On immediate completion of each stage of archaeological investigation, a brief clearance letter would be provided by the Excavation Director indicating next steps for the location or clearing the area for project works.

4.10.3 Post-excavation analysis

Following the completion of on-site archaeological works, post-excavation analysis of the findings would be undertaken. This includes artefact analysis, environmental and building material sample analysis, stratigraphic reporting and production of Harris Matrices, production of detailed site survey plans, illustrations and interpretative drawings, generation of catalogues, data records and site registers, and detailed analysis of soil samples. Where appropriate, these tasks would commence during the archaeological program to ensure that records are accurate and to reduce the post-excavation timeframe following the completion of the archaeological site program.

An archaeological excavation report will be produced that will comprehensively describe and interpret the findings of the investigation within the context of the research design and research questions.

The document would be issued as a single report incorporating the findings of the archaeological program. This would include stratigraphic reporting, production of illustrations, detailed site plans, photographs, analysis of significant out-of-context artefactual finds and provide responses to the research questions. The report would include a reassessment of archaeological significance based on the investigation results and recommend future actions required to manage historical archaeology at the site.

The report would be prepared in accordance with any conditions included in the s140 permit.

4.10.4 Record management

All paper records would be digitised and then appropriately filed on completion of the project. This includes all registers and plans prepared. Paper copies would accompany the project archive and any retained artefacts.

Survey data, and other digital information would be stored online in a cloud-based system and also provided in digital form to accompany the project archive.

4.11 Aboriginal cultural heritage

Aboriginal AHIP 4664 applies to the current study area. It is assumed that TfNSW will be managing the conditions of that permit. It is understood that surface collection as a condition of AHIP 4664 would take place prior to commencement of historical excavations. Any Aboriginal objects identified during historical excavation will be managed by TfNSW as per the AHIP.

4.12 Heritage NSW notification

Should significant remains not predicted by the 2018 SoHI or this ARD be identified during the test and salvage excavation program, there may be a requirement to notify the NSW Heritage Council under s146 of the Heritage Act. Additional approvals may be required.

4.13 Unexpected finds procedure

All works not directly managed by the archaeological team would be managed under the unexpected finds procedure (UFP) for the project. This includes works undertaken in areas not previously flagged for archaeological monitoring or management, and in areas where archaeological clearance has previously been provided.

Additional assessment and approval may be required prior to works continuing in the affected area(s) based on the nature of the discovery.

4.14 Protection measures

4.14.1 Area 2

4.14.1.1 Ancillary facility

The compound layout must be designed to avoid ongoing movement by heavy vehicles over Area 2. This area has the potential to contain state significant archaeological relics. Light-weight elements should be prioritised for areas with the potential to contain an archaeological resource.

The following recommendations should be adopted when preparing the compound site:

- Area 2 should be excluded from use
- No levelling or ground surface impact should take place
- The area of hardstand should adequately cover the area required for the compound, with an appropriate buffer
- A layer of Heavy Duty Builders Black Plastic should be placed across the compound area to create a barrier, and minimise any inadvertent liquid/fluid seepage from the compound area into the existing top soil to minimise any inadvertent mixing between the existing topsoil and the fill to be introduced and facilitate easier removal of the hardstand post construction
- A suitable soil matrix (sand/gravel/crushed stone/crushed rock etc) should be introduced to dissipate the impact exerted by equipment and temporary structures. This fill should be placed at a depth of at least 250mm and create a level surface. Care should be taken to avoid impact to the ground surface during the introduction of the fill
- Erosion control measures should be implemented to prevent water run-off from the hardstand affecting the surrounding ground surface.

4.14.1.2 Post construction

- Area 2 should be excluded from landscaping works
- No planting or ground disturbance should occur

4.14.2 Area 4

The footprint of the former residence in Area 4, and the rear yard, are avoided by the proposed design (see Figure 29). It is recommended that this area be subject to a protection zone. The protection zone illustrated in Figure 29 should be excluded from use during the life of the project. It is recommended that hoarding be used to physically exclude this location from project use.

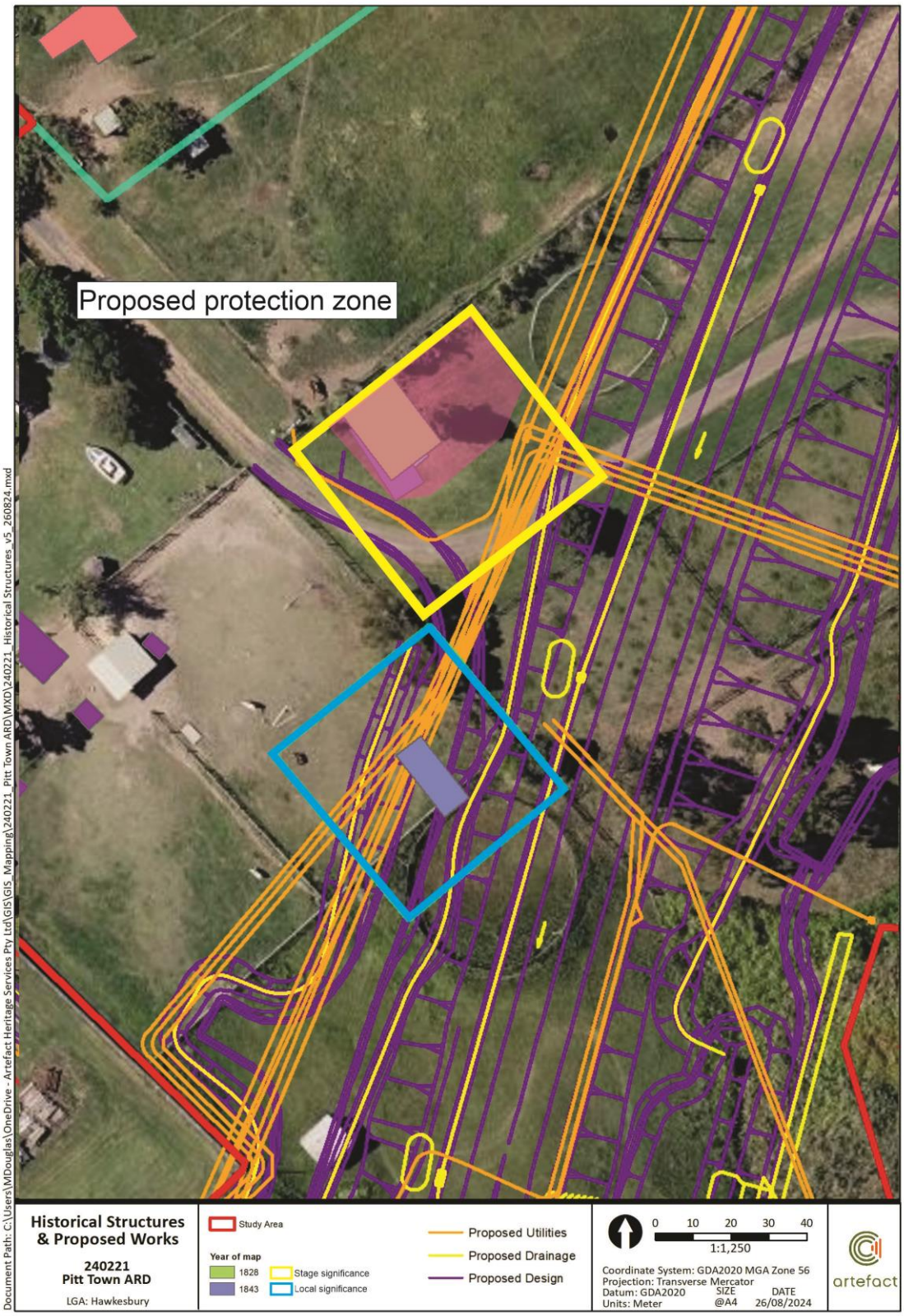


Figure 29: Proposed protection zone for Area 4

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This report concludes the following:

- The study area has the potential to contain local and state significant archaeological relics These relics have the potential to contribute to our understanding of the earliest phase of the development of Pitt Town post colonisation, as summarised in Table 8.

Table 8: Summary of archaeological potential

Phase	Date	Archaeological remains	Significance	Potential
1 – First land grants	c.1805 – c.1814	None	Nil	Nil
2 – First phase subdivision and occupation	c.1815 – 1843	Structural remains of residences, cesspits, cistern, well, artefact bearing deposits	State (if highly intact)	Low to moderate
3 – Modification of first phase occupation and consolidation	1843 – c.1900	Structural remains of dwellings and associated outbuildings, cistern, artefact bearing deposits.	Local	Moderate
4 – 20th century occupation and farming	c.1900 – 1964	Structural remains of dwellings and associated outbuildings, cistern, artefact bearing deposits.	Unlikely to reach local significance threshold	Moderate
5 - Modern development	1964-present	Nil	Nil	Nil

5.2 Recommendations

Due to the sensitivity of the potential archaeological resource, this report recommends the following mitigation measures be implemented to reduce impact where possible, and to manage the archaeological resource effectively and appropriate to its significant.

This report recommends the following:

- This ARD should accompany an application for a section 140 excavation permit to Heritage NSW under section 141 of the *Heritage Act 1977*
- A program of archaeological test excavation and monitoring, under the approved section 140 permit, should be conducted where archaeological remains have been predicted, as discussed in this report
- Should significant archaeological remains be uncovered, open area salvage would be required to appropriately investigate and record archaeological remains prior to impact

- Protection measures must be implemented for those Areas of archaeological potential where excavation can be avoided
- Relics are protected under the *Heritage Act 1977* and the Heritage Council of NSW should be notified in accordance with section 146 of the Act if relics not anticipated by this ARD are identified. All human skeletal remains are statutorily protected.

5.3 Safeguards and management measures

The following non-Aboriginal archaeological safeguards and management measures are included in the project REF and should be implemented throughout the life of the project.

Table 9: Safeguards and management measures

No.	Impact	Environmental safeguards and management measures	Responsibility
NA7	Non-Aboriginal Heritage	All staff involved in ground-disturbing works must receive a heritage induction as part of their general site induction. The heritage induction will make clear the responsibilities of Transport, the contractor, and workers under relevant heritage legislation. The heritage induction must provide workers with a basic understanding of the nature and appearance of Aboriginal and historical sites and artefacts and provide them with a clear understanding of the unexpected finds procedure. Additional heritage briefings would be provided on site as needed to contractors who are working in conjunction with the site archaeologists during the archaeological investigations.	Contractor
NA8	Non-Aboriginal Heritage	A test excavation will be undertaken in Area 5 as described in the Archaeological Research Design Report, in order to determine the structure's heritage significance. The test excavation would be undertaken in compliance with the methodology described in section 4.6 of the Archaeological Research Design Report. The test excavation will need to occur prior to any pre-construction activities, site establishment, or construction activities for the project.	Transport
NA9	Non-Aboriginal Heritage	Archaeological monitoring is required for excavation works in Area 4 that is outside the area designated for protection (Figure 29 in the Archaeological Research Design Report). An onsite archaeologist is required to be present during any mechanical excavation. Should construction excavation endanger any potential archaeological deposits, the machine excavation contractor must cease excavation if advised by the monitoring archaeologist. Investigation works will continue by hand, if required, to expose, investigate and record the archaeological remains. Works would not recommence until the monitoring archaeologist has completed the	Contractor

No.	Impact	Environmental safeguards and management measures	Responsibility
		recording and the Excavation Director is satisfied that further investigation is not required.	
NA10	Non-Aboriginal Heritage	Heritage salvage excavation works will occur in compliance with the methodology outlined in section 4.7 of the Archaeological Research Design Report in Area 5. Prior to moving to salvage in Area 5, if deemed required to be salvaged after test excavations, the project must follow the Hold Point with a short report of the testing results and receive confirmation to proceed to salvage as per the Archaeological Research Design. The heritage salvage excavation will need to occur prior to any construction activities for the project within the identified areas as per the Archeological Research Design Report.	Transport, Contractor
NA11	Non-Aboriginal Heritage	Significant archaeological remains will be recorded in accordance with the methodology described in section 4.9 of the Archaeological Research Design Report.	Transport
NA12	Non-Aboriginal Heritage	Protection measures within the proposed ancillary facility will be enacted by the contractor, including: Where feasible, Area 2 as described within the Archaeological Research Design Report should be excluded from use as a no go area. If exclusion from use is not feasible: No levelling or ground surface impact should take place The area of hardstand should adequately cover the area required for the compound, with an appropriate buffer A layer of Heavy Duty Builders Black Plastic should be placed across the compound area to create a barrier, and minimise any inadvertent liquid/fluid seepage from the compound area into the existing top soil to minimise any inadvertent mixing between the existing topsoil and the fill to be introduced and facilitate easier removal of the hardstand post construction A suitable soil matrix (sand/gravel/crushed stone/crushed rock etc) should be introduced to dissipate the impact exerted by equipment and temporary structures. This fill should be placed at a depth of at least 250mm and create a level surface. Care should be taken to avoid impact to the ground surface during the introduction of the fill Erosion control measures should be implemented to prevent water run-off from the hardstand affecting the surrounding ground surface.	Contractor

No.	Impact	Environmental safeguards and management measures	Responsibility
NA13	Non-Aboriginal Heritage	The compound layout must be designed to avoid ongoing movement by heavy vehicles over Area 2 as described within the Archaeological Research Design Report. This area has the potential to contain state significant archaeological relics. Light-weight vehicles and equipment should be prioritised for areas with the potential to contain an archaeological resource.	Contractor
NA14	Non-Aboriginal Heritage	Area 2 as described in the Archaeological Research Design report should: Be excluded from landscaping works No planting or ground disturbance should occur If relics are located in this area, notification to Transport is required.	Contractor
NA15	Non-Aboriginal Heritage	Within area 4 high potential areas as described in the Archaeological Research Design (shown as pink area in Figure 29) report should: Be demarcated as a no go area for the entire duration of the project construction and post construction completion works. Demarcating to be clearly signposted and include either flagging fence, temporary fencing or hoarding. Be excluded from landscaping works No planting or ground disturbance should occur If relics are located in this area, notification to Transport is required.	Contractor
NA16	Non-Aboriginal Heritage	After initial testing in Area 5 (Figure 27 in Archaeological Research Design Report) if no relics are identified, proceed to archaeological monitoring of the rest of Area 5, according to Section 4.5 of the Archaeological Research Design Report. During test excavations if relics are confirmed the project will notify Transport and following a hold point, complete a testing report and await confirmation from Transport toproceed to salvage of all relics within the area 5. If relics are located in this area, notification to Transport is required.	Contractor
NA17	Non-Aboriginal Heritage	At the completion of the archaeological test excavation program an excavation report will be prepared to document the findings of the historical archaeological excavations conducted. The report will include a clear, plain English summary explaining what was found, where it was located, and how the archaeological findings have answered the research questions and provided new information to understand the development of Pitt Town.	Contractor

No.	Impact	Environmental safeguards and management measures	Responsibility
		The final report should state where the relics recovered from the project are stored including detailed location maps and descriptions of findings.	

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