HICKSON ROAD UPGRADE - STAGES 3 & 4

HISTORICAL ARCHAEOLOGICAL ASSESSMENT & IMPACT STATEMENT

NOVEMBER 2025

Hickson Road in 1923 after the demolition of the gasworks site, looking south. The five-storey building blocking Hickson Road to the south is part of Grafton Bond, soon to be demolished. NSWSA, NRS-9856-2-[Glass Neg Box1521]-Glass Neg Box 1521-1.

FINAL REPORT | to Infrastructure NSW and Lendlease (Millers Point) Pty Ltd

CASEY & LOWE
ARCHAEOLOGY & HERITAGE

HERITAGE NOW
ARCHAEOLOGY & HERITAGE CONSULTANTS

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EXECUTIVE SUMMARY

This report has been prepared by Casey & Lowe (2024) with updates made by Heritage Now (2025) to support the Review of Environmental Factors (REF) for the Hickson Road South upgrade and refurbishment (the Activity).

The Hickson Road South (refer Locality Plan – Hickson Road South 240059-00-REF-C01.31) upgrade and refurbishment design comprises of the upgrade of Hickson Road from the northern side of the Napolean Street intersection connecting to the existing road upgrade north of the High Street Steps, along with utility upgrades running adjacent to Barton Street and intersection upgrades.

This report accompanies a Review of Environmental Factors that seeks approval for the Hickson Road upgrade and refurbishment, which involves the following works:

- Adjustment to horizontal geometry of the existing Hickson Road, enabling the provision of;
  - Additional short term parking bays along the western side of the roadway;
  - A new two-way separated cycleway along the eastern edge of the roadway;
- Provision of two (2) un-signalised pedestrian crossings along Hickson Road, creating a pedestrian connection to Hickson Park and Central Barangaroo;
- Adjustments to two (2) existing un-signalised pedestrian crossing intersections along Waterman's Quay and Barton Street respectively;
- Installing of a formal left turn slip lane into Waterman's Quay from the north-bound approach on Hickson Road;
- Constructing new footpaths on the western and eastern sides of Hickson Road to match the already completed footpath works to the north and south of the existing extent of proposed works;
- Provision of permeable paving to accommodate existing trees;
- Landscaping works including the establishment of low-median planting between the eastern edge of the road carriageway and eastern footpath and installation of additional medium sized trees along both the eastern and western footpaths and within the landscape medians;
- Relocation and augmentation of utilities where necessary, including electrical, gas, water and telecommunications;
- Final roadworks, including kerb and gutters, road and footpath pavements, signage, lighting and line marking;
- Installation of new stormwater drainage pit and pipe infrastructure, including a trunk drainage line running adjacent Barton Street to an existing outlet to Sydney Harbour;
- Ancillary works for the project including, but not limited to, road furniture, tie-in works, earthworks, adjustments to existing stormwater drainage infrastructure and flood mitigation works

The Review of Environmental Factors prepared by Ethos Urban provides a full description of the proposed works.

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed development, it is determined that:

- The extent and nature of potential impacts to the historical archaeological resource within the study area are low-moderate, and will not have significant adverse effects on the locality, community and the environment;

- Potential impacts can be appropriately mitigated or managed to ensure that there is minimal effect on the locality, community and environment, as discussed below.

RESULTS OF IMPACT ASSESSMENT

The key results from this analysis are as follows:

- The northern portion of the study area is within the Stage Heritage Register Conservation Area for the 'Millers Point & Dawes Point Village Precinct' (**SHR 01682**). Although the study area does not contain any other specifically listed heritage items, several listed on either the State Heritage Register or under the Sydney LEP 2012 are situated nearby.
- Historically, the northern portion of the study area (Stage 4) contained part of several small waterfront allotments, the lower slopes of which frequently included wharfs or reclaimed land associated with small shipyards.
- The central portion of the study area (parts Stage 3 and Stage 4) was the location of the former AGL Co Gasworks, established in the 1840s and representing the first of its kind in Australia.
- The southern portion of the site (Southern Stage 3) is associated with the Grafton Bond Stores and Wharf, a complex established in the late-19th century and leased to various companies involved in shipping and commercial markets.
- Construction of Hickson Road through the study area in the 1910s to 1920s, resulted in the demolition of many structures and features associated with the Gasworks and Grafton Bond Store. These works included substantial modifications to the underlying sandstone bedrock and wider landscape, especially in the northern portion of the study area (Stage 4), where previous impacts and landscape modification had been relatively minor.
- Between 2015 and 2021, portions of the present study area (Northern Stage 3 and Stage 4) were subject to a substantial remediation program to clear the site of contamination from the former AGL Co Gasworks.
- Extensive archaeological investigation has been undertaken in the vicinity of the present study area, including for the following projects: Barangaroo South, Barangaroo Station, Barangaroo Station - Construction Only Package, Barangaroo Headland, Gasworks Remediation, Barangaroo South and Hickson Road, and the KENS site. Results of these investigations inform the potential and significance of any remnant archaeology within the study area.
- Overall, the assessed archaeological potential of the study area is as follows:
  - **High** potential for substantial footings and isolated artefact deposits associated with the demolished Grafton Bond Stores in the southern part of the site (Southern Stage 3).
  - **Moderate** potential for remains within the southeast corner of the former Gasworks site. Although remediation of this area was deemed unnecessary, 20th and 21st-century impacts related to the establishment of Hickson Road and the installation of modern services have considerably reduced the potential for structural remains and occupation deposits to survive within this area.
  - **Low-Moderate** potential for remains associated with 19th-century occupation to survive in the northern part of the study area (Stage 4). Any archaeology in this area would likely be limited to reclamation fills and associated structural features.
  - **Nil-Low** potential for archaeological remains within northern Stage 3, or the trunk drainage line along the northern side of Barton Street (Stage 4). Evidence of any early-19th-century land clearance is also expected to have nil-low potential within Stage 3 of the study area, as these portions have likely been

disturbed by subsequent development. Extensive remediation of the former AGL Co Gasworks site within northern Stage 3, has removed any evidence of the former industrial complex except the cleaned negative interface of several gasholder annuli and tar tanks, present beneath Hickson Road. It is worth noting that the footprints of the gas annulus are considered 'works' rather than relics and are not protected under the *Heritage Act 1977.*

  - There is **nil** potential for archaeological remains to survive in the portions of the study area that extend into Watermans Quay, as this area was excavated during archaeological investigations of Barangaroo South and was also partially within the area of remediation.
  - Portions of Stage 4 and northern Stage 3 may contain contaminants - including tar and asbestos - at levels above or exceeding human health criteria. While much of the former Gasworks has been remediated, there is potential that contaminants may be found in the adjacent areas and those not yet investigated.
- The archaeological resource within the study area would be considered significant at a **local** level for its historic significance and potential research values.
- Most of the proposed road works, including regrading and resurfacing, landscaping, and the installation of new services are expected to be relatively shallow, except for proposed tree pits, as well as new stormwater and potable water services. These two proposed elements are present throughout various portions of the study area and the depth of impacts are generally anticipated to be between 1.2m and 3.5m.
- There is no known or predicted potential for State significant relics to survive within the study area.

RECOMMENDATIONS

1. As there is the potential for impacts on archaeological relics by deeper subsurface works, an application for both a S60 approval and S140 excavation permit under the *Heritage Act, 1977* should be made to the Heritage Council of NSW or its delegate. The S60 permit would cover impacts in the portion of the study area within the SHR curtilage for the 'Millers Point & Dawes Point Village Precinct' (**SHR 01682**), whereas the S140 permit would apply to the remainder of the study area.
2. Applications for both a S60 and S140 excavation permit require the writing of an Archaeological Research Design and Excavation Methodology (ARD&EM) outlining the proposed excavation methodology and research questions. The ARD and this Archaeological Assessment must be provided as part of the S60 and S140 applications. These applications will also need to identify a suitably qualified Excavation Director to undertake the archaeological works. The applications will take approximately 6 to 8 weeks to be processed.
3. Any change to the proposed design requires this report to be updated prior to lodging the S60 and S140 applications.
4. Archaeological test excavation and monitoring will need to be undertaken by a qualified archaeologist to record any potential relics. Testing will involve investigation of any areas of extensive subsurface impacts, especially associated with the proposed tree pits and stormwater. Monitoring involves initial inspections of deeper sub-surface works with anticipated to confirm the model of archaeological potential for the site, the likely survival of relics and requirements for further archaeological investigation and recording.
5. The archaeological testing and monitoring program will need to be undertaken in accordance with both the S60 and S140 Conditions of Consent and the ARD.
6. If any *in situ* artefact deposits are found, then they will need to be collected for cataloguing and reporting.
7. An excavation report presenting the results of the archaeological program will be prepared at the end of the testing and monitoring program. The final report needs

to comply with both the S60 and S140 Conditions of Consent. A copy of the final report must be supplied to Heritage NSW.

8. Artefacts collected and retained from the site will need to be catalogued and analysed by appropriate specialists and the results included in the final report.
9. A repository, storage in perpetuity, for the artefacts recovered from the site, will need to be provided by the proponents. The purpose of the repository is to provide opportunities for further research on these artefacts. The owner of the site is the responsible owner of such artefacts.

CONTENTS

Report Status	Date Submitted	Purpose	Author	Reviewed
Draft Internal 1	01.03.2024	Internal review	Dr Holly Winter	Dr Mary Casey
Draft 1	12.03.2024	Client Review	Dr Holly Winter Dr Mary Casey	Dr Mary Casey
Final (Stage 3 ONLY)	12.4.2024	Final Issue	Dr Holly Winter	Dr Mary Casey
Updated Draft	11.09.2025	Update to include Stage 4 Works	Hannah Flood (Heritage Now)	Dr Mary Casey
Updated Draft V2	19.09.2025	Internal Review	Hannah Flood (Heritage Now)	Kylie McDonald (Heritage Now)
Final	03.11.2025	Final Issue	Hannah Flood (Heritage Now)	Ngaire Richards (Heritage Now)

HICKSON ROAD UPGRADE - STAGES 3 & 4

HISTORICAL ARCHAEOLOGICAL ASSESSMENT & IMPACT STATEMENT

1.0 INTRODUCTION

1.1 BACKGROUND

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1.2 STUDY AREA

The site is located along the southern portion of Hickson Road, Barangaroo within the City of Sydney Local Government Area (LGA). It comprises Stages 3 and 4 of the Hickson Road Upgrade, which covers the portion of road which extends from the northern side of the Napoleon Street intersection connecting to the existing road upgraded north of the High Street steps, along with utility upgrades running adjacent to Barton Street and intersection upgrades (Figure 1.1, Figure 1.2, Figure 1.3).

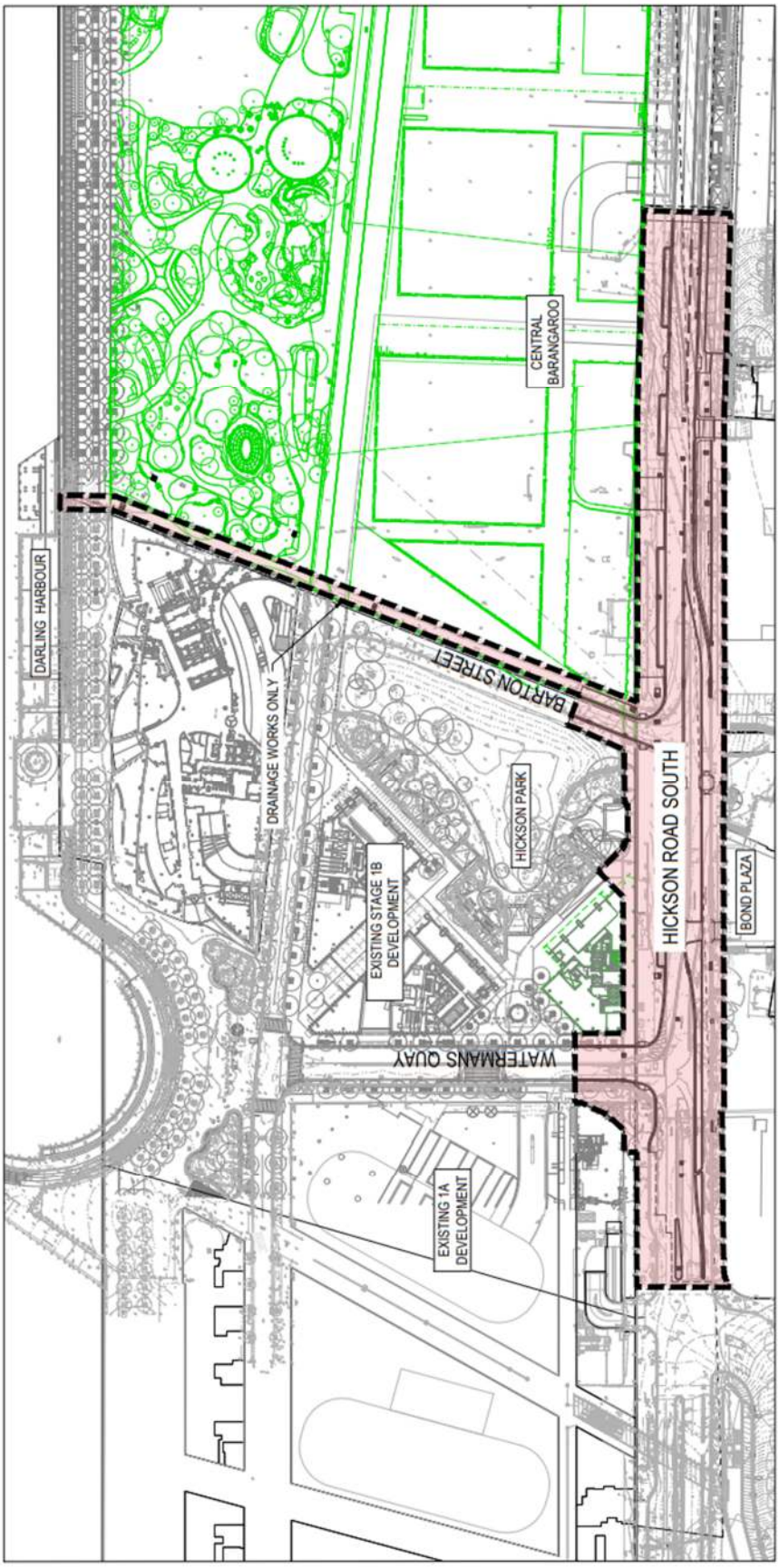

Figure 1.1: Locality Plan showing the study area for Stages 3 and 4 of the Hickson Road South project. Enspire Solutions Pty Ltd, 240059-00-REF-C01.31.

Figure 1.2: Staging plan for the Hickson Road South project; Enspire Solutions Pty Ltd, 240059-00-REF-C01.31..

Figure 1.3: Plan of the Stage 3 and 4 Hickson Road Upgrade Works, with the study area outlined in red. Note the large white structures to the west of Hickson Road were erected above the areas of gasworks remediation. Google Earth 28/02/2023.

1.3 PREVIOUS ARCHAEOLOGICAL AND HERITAGE REPORTS

Several other investigations and reports have been completed for sites in the vicinity of the study area particularly in relation to the development of Barangaroo and the eastern shore of Darling Harbour. These reports are listed below and the results of relevant reports are discussed in Section 4.0.

Two archaeological reports were commissioned by the Barangaroo Development Authority from Austral Archaeology at the initial stages of planning for Barangaroo:

- *Barangaroo Archaeological Strategy, Final Report*, 2009, by Austral Archaeology for the Barangaroo Delivery Authority.
- *Barangaroo Archaeological Assessment & Management Plan*, 2010, by Austral Archaeology for the Barangaroo Delivery Authority.

Casey & Lowe has since undertaken other archaeological/heritage impact statements and assessments relating to the non-indigenous archaeology at Barangaroo:

- *Archaeological Research Design and Management Strategy, Barangaroo Stage 1,* report to Lend Lease (Millers Point), May 2010.
- *Non-indigenous Archaeological Assessment, Barangaroo Stage 1 (Barangaroo South),* report to Lend Lease (Millers Point), July 2010.
- *Heritage Impact Statement, SSD 5897-2013 Remediation Development Application, Block 4 EPA Declaration Area 21122 and Stage 1b Basement Area, Non-Indigenous Archaeology, Block 4, Block 4, Barangaroo South,* report to Lend Lease Millers Point, prepared by Mary Casey, original report March 2011, updated August 2013.
- *Non-indigenous Archaeology, Heritage Impact Statement & Research Design, Stormwater Diversion, Hickson Road, Barangaroo South*, report to Bovis Lend Lease for Sydney Water, April 2011.
- *Statement of Heritage Impact, Proposed Temporary Pedestrian Bridge, Sussex Street and Napoleon Street, Barangaroo South*, report to Lend Lease, Project Management and Construction, May 2012.
- *Preliminary Advice – Archaeology Issues Barangaroo Central*, report to XXX, February 2014.
- *Non-Indigenous Archaeological Impact Statement, Proposed Road Works, Sussex Street & Hickson Road Barangaroo South, Sydney*, report to Lend Lease, July 2014.
- *Baseline Archaeological Assessment*, *Gas Diversion, Sussex Street, Barangaroo South,* report to Lend Lease, prepared by Amanda Dusting, August 2014.
- *Statement of Heritage Impact and S139(4) Exception Application, Napoleon Street, Barangaroo South*, report to Lend Lease, prepared by Mary Casey, January 2015.
- *Non-Indigenous Archaeological Research Design & Management Strategy, Declaration Area: Block 4 and Block 5, Barangaroo South*, report to Lend Lease, Casey & Lowe, September 2015.
- *Historical Archaeological Assessment, Impact Statement & Research Design, Grafton Bond, 201 Kent Street, Sydney (draft),* report to Investa Australia Pty Ltd, prepared by Casey & Lowe, March 2020.

Casey & Lowe has also undertaken a series of archaeological testing, monitoring and excavations in the vicinity of the study area since August 2010. These have been reported as:

- *Non-Indigenous Archaeological Testing, Barangaroo South*, report to Lend Lease Development, Casey & Lowe, November 2010.

- *Archaeological Monitoring & Recording, Stormwater Upgrades, High Street, Millers Point,* report to McLachlan Lister Pty Ltd on behalf of Department of Finance and Services, prepared by Casey & Lowe September 2012.
- *Archaeological Excavation, Barangaroo South, Preliminary Results*, report to Lend Lease (Millers Point), prepared by Casey & Lowe, October 2012.
- *Barangaroo Stormwater Diversion, Record and Interpretation of Archaeological Site Visit on 25/03/13 at Shelley Street Pit A5 (West Side),* March 2013.
- *Sydney Metro City & Southwest – TSE Works Barangaroo Station, SSI15_7400, Preliminary Report*, report to John Holland CPB Ghella JV, prepared by Casey & Lowe, January 2019.
- *Archaeological Investigation, Sydney Metro City & Southwest – TSE Works Barangaroo Station*, report to Sydney Metro, prepared by Casey & Lowe, July 2022.
- *Archaeological Investigation, Barangaroo South, Barangaroo,* report to Lendlease (Millers Point) Pty Ltd, prepared by Casey & Lowe, July 2022.

Other reports surrounding and/or directly related to the Hickson Road study area include:

- AMBS Ecology & Heritage 2024. Barangaroo Station COP – Archaeological Excavation Report, prepared for BesixWatpac.
- Archaeology & Heritage 2003a. *Archaeological recording and excavation, former AGL Site 38 Hickson Road, Sydney*, *Rock Shelf at Rear*, report to Bovis Lend Lease.
- Archaeology & Heritage 2003b. *Archaeological Investigations at Site of 1a High St Millers Point, Former AGL Site 30-38 Hickson Road, Sydney*, report to Bovis Lend Lease. Based on an archaeological Assessment prepared by GML (June 1999).
- Archaeology & Heritage 2004. *Archaeological recording of the Annulus of 1882 gasholder and details of the 19th century gasmaking, part of former AGL Site 30-34 Hickson Road, Sydney*, report to Bovis Lend Lease.
- Austral Archaeology 2012. *Archaeological Research Design, Main Works Phase, Barangaroo, Northern Headland*, October 2012.
- Austral Archaeology 2012. *Barangaroo Headland Park, Historical Archaeological Excavation, Sydney, Final Report*, report to Lend Lease, prepared by Alan Hay, December 2016.
- Broomham, R. 1987. *First Light, 150 years of gas*, Hale & Iremonger, Marrickville, Sydney.
- Broomham, R. 2007. *Land at Millers Point, ownership and usage*.
- Godden Mackay Logan 1999. *Archaeological Assessment, Former AGL Site, Hickson Road*, report to Delmo Pty Ltd.
- Godden Mackay Logan 2000. *Archaeological Research Design, 30-38 Hickson Road, Sydney (former AGL Site)*, report to Delmo Pty Ltd.
- Godden Mackay Logan 2001. *Conservation Management Plan, 30-38 Hickson Road*, Sydney, report to Delmo Pty Ltd.
- Godden Mackay Logan 2012. *Barangaroo Central Waterfront, Promenade and Interim Public Domain, Archaeological Assessment,* report to Baulderstone, October 2012. EIS, Appendix 17.
- Godden Mackay Logan 2012. *Barangaroo Central Waterfront, Promenade and Interim Public Domain, Interpretation Strategy*, report to Baulderstone, November 2012. EIS, Appendix 18.
- Godden Mackay Logan 2014. *Central Barangaroo Modification 9 Application, Heritage Impact Statement,* report to Barangaroo Delivery Authority, November 2014.

Casey & Lowe reports specifically relating to the Gasworks site (Stage 3 area) include:

- Casey & Lowe 2010. *Archaeological Research Design and Management Strategy Barangaroo Stage 1,* report to Lendlease Pty Ltd, May 2010.
- Casey & Lowe 2010. *Non-Indigenous Archaeological Assessment Barangaroo Stage 1 (Barangaroo South)*, report to Lendlease Pty Ltd, July 2010.
- Casey & Lowe 2013. *Heritage Impact Statement, SSD 5897-2013 Remediation Development Application, Block 4 EPA Declaration Area 21122 and Stage 1b Basement Area, Non-Indigenous Archaeology, Block 4, Block 4, Barangaroo South, for Lend Lease Millers Point.* Original report March 2011, updated August 2013.
- Casey & Lowe 2014. *Heritage Impact Statement, SSD 6533-2014 Remediation Development Application, EPA Declaration Area 21122, Non-Indigenous Archaeology, Block 5, Barangaroo Central,* report to Lend Lease Millers Point (Draft Update 4, June 2014).
- Casey & Lowe 2015a. *Declaration Area, Hickson Road, Barangaroo South, SSD 6617, EPA Declaration Ara 2112, Archaeological Research Design & Management Strategy,* report to Lendlease Pty Ltd. Updated in 2017.
- Casey & Lowe 2015b. *Heritage Impact Statement, SSD 6617-2014 Remediation Development Application, EPA Declaration Area 21122, Non-Indigenous Archaeology, Hickson Road, Millers Point,* report to Lend Lease Millers Point (Updated August 2015).
- Casey & Lowe 2015c. *Non-Indigenous Archaeological Research Design & Management Strategy, Declaration Area: Block 4 and Block 5, Barangaroo South,* report to Lend Lease, September 2015.
- Casey & Lowe 2017. *Declaration Area, Hickson Road, Barangaroo South, SSD 6617, EPA Declaration Ara 2112, Archaeological Research Design & Management Strategy*, report to Lendlease Pty Ltd.
- Casey & Lowe 2020. *The History and Archaeology of the Australian Gas Light Company, Millers Point, Australian Gas Light Company, Millers Point Gasworks Site, Barangaroo,* report to Lendlease Millers Point and Infrastructure NSW.

1.4 AUTHORSHIP

This report was initially prepared by Dr Holly Winter, Senior Archaeologist, Casey & Lowe. It has used information available from previous reports by Casey & Lowe on the Barangaroo area. The historical background (Section 3.0) is based on research prepared by Dr Rosemary Annable on the archaeology of Barangaroo South,[1] the late Professor Ian Jack, and Rosemary Broomham.[2] It also draws on further research undertaken by various staff of Casey & Lowe in relation to Barangaroo and Millers Point.

Casey & Lowe have formed a partnership with Heritage Now, and as a result, Heritage Now was commissioned to update the HAA and Impact Statement and Research Design for Stage 3 and include Stage 4 of the Hickson Road Upgrade. These updates have been made by Hannah Flood, Senior Projects Consultant, Heritage Now and Kylie McDonald, Senior Heritage Consultant, Heritage Now. The updated report (2025) has been reviewed by Dr Mary Casey, Director, Casey & Lowe.

[1] Casey & Lowe 2010b: 17-66.

[2] Broomham 2007; Casey & Lowe 2020a.

1.5 ACKNOWLEDGEMENTS

Jordan Gerakas, Lendlease
Matthew Lester, Enspire Solutions Pty Ltd
Mark Burns, Lendlease

1.6 LIMITATIONS

This report is designed to assess the historic occupation and development of the study area along Hickson Road between just south of Watermans Quay to Barton Street in the north, in order to determine the nature of historic archaeological remains that may be present. It does not deal with the potential of the study area to retain evidence of its Aboriginal occupation. The report is based on existing historical research held by Casey & Lowe in a number of previous archaeological reports which include the study area. There was sufficient time and funding to complete this report to a quality standard.

1.7 ABBREVIATIONS

ADB Australian Dictionary of Biography
AHD Australian Height Datum
b. born
Bk Book
c. circa
CT Certificate of Title
CSA City of Sydney Archives
DP Deposited Plan (LRS)
GAO Government Architects Office
GBB Grafton Bond Building
ha Hectare
HRA Historical Records of Australia
INSW Infrastructure for New South Wales
LEP Local Environment Plan
LPMA Land & Property Management Authority (NSW) [a predecessor to the LPI]
LPI Land and Property Information, NSW
LRS Land Registry Services
ML Mitchell Library (in the State Library of NSW)
NLA National Library of NSW
No. Number
NSWSA New South Wales State Archives
n.d. not dated
OSD Old System Deed (LPI)
PSI Preliminary Site Investigation
RL Reduced Level
SLNSW State Library of NSW
SHR State Heritage Register
SRNSW State Records of NSW
SMH *Sydney Morning Herald*
WC Water Closet

1.8 GLOSSARY

Historical Archaeology (Non-Indigenous/European)

Historical Archaeology (in NSW) is the study of the physical remains of the past, in association with historical documents, since the British occupation of NSW in 1788. As well as identifying these remains the study of this material can help elucidate the processes, historical and otherwise, which have created our present surroundings. Historical archaeology includes an examination of how the late 18th and 19th-century arrivals lived and coped with a new and alien environment, what they ate, where and how they lived, the consumer items they used and their trade relations, and how gender and cultural groups interacted. The material remains studied include:

- Archaeological Sites:
  - below ground: these contains relics which include building foundations, occupation deposits, rubbish pits, cesspits, wells, other features, and artefacts.
  - above ground: buildings, works, industrial structures and relics that are intact or ruined.
- cultural landscapes: major foreshore reclamation
- maritime sites: infrastructure and shipbuilding
  - shipwrecks
  - structures associated with maritime activities.

Archaeological Potential

Archaeological potential is here used and defined as a site's potential to contain archaeological relics which fall under the provisions of the *Heritage Act* 1977 (amended). This potential is identified through historical research and by judging whether current building or other activities have removed all evidence of known previous land use.

Archaeological Site

A place that contains evidence of past human activity. Below ground sites include building foundations, occupation deposits, features and artefacts. Above ground archaeological sites include buildings, works, industrial structures and relics that are intact or ruined.

Archaeological Investigation or Excavation

The manual excavation of an archaeological site. This type of excavation on historic sites usually involves the stratigraphic excavation of open areas.

Archaeological Monitoring

Archaeological monitoring is typically recommended for those areas where the impact of the works is not considered to mean the destruction of significant archaeological fabric. Nevertheless, the disturbance of features both suspected and unsuspected is possible. In order to provide for the proper assessment and recording of these features an archaeologist should inspect the works site at intervals they consider to be adequate and to be 'at call' in case the contractor uncovers remains that should be assessed by the archaeologist.

It is not anticipated that monitoring would impact on the planned works or unduly hold up the contractors' work schedules. If recording of features is necessary it would be carried out as quickly as possible so that any time delays are minimised.

Monitoring is a regular archaeological practice used on many building and development sites.

Archaeological Research Design (ARD)

A set of questions which can be investigated using archaeological evidence and a methodology for addressing them. An ARD is intended to ensure that archaeological investigations focus on genuine research needs. It is an important tool that ensures that when archaeological resources are destroyed by excavation, their information content can be preserved and can contribute to current and relevant knowledge.

Research Potential

The ability of archaeological evidence, through analysis and interpretation, to provide information about a site that could not be derived from any other source and which contributes to the archaeological significance of that site and its 'relics'.[3]

Relic

Means any deposit, artefact, object or material evidence that:
(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and
(b) is of State or local heritage significance.[4]

[3] Taken from NSW Heritage Branch 2009: 11.

[4] NSW Heritage Act 1977, Definitions, Part 1.4.

2.0 STATUTORY CONTEXT

The following section provides advice regarding the primary statutory controls protecting the historical archaeological heritage of the study area, as well as relevant approvals processes for the Project.

2.1 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979, PART 4 AND PART 5 (EP&A ACT)

The *Environmental Planning and Assessment Act 1979* (EP&A Act) provides the statutory basis for planning and environmental assessment in NSW. The EP&A Act provides the framework for environmental planning and development approvals and includes provisions to ensure that the potential environmental impacts of a development or activity are assessed and considered in the decision-making process. The Minister for Planning, statutory authorities and local councils are responsible for implementing the EP&A Act.

The EP&A Act contains three parts that enforce requirements for planning approval, The relevant section to the proposed works is Part 5 of the EP&A Act. These are generally as follows:

Section 5.5 of the EP&A Act requires the determining authority to examine and take into account to the fullest extent possible all matters affecting, or likely to affect the environment by reason of the Activity. The REF includes an environmental assessment, which addresses the requirements of Section 5.5 of the EP&A Act and Section 228 of the EP&A Regulation. Clause 228 of the EP&A Regulation also sets out a number of factors which must be taken into account concerning the potential impact of an Activity on the environment. The following are relevant to this historical archaeological impact statement:

- any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality,
- any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations,
- any cumulative environmental effect with other existing or likely future activities,

The EP&A Act establishes the framework for cultural heritage values to be formally assessed in the land-use planning, development assessment and environmental impact assessment processes.

2.1.1 HERITAGE LISTINGS UNDER THE EP&A ACT

2.1.1.1 SYDNEY LOCAL ENVIRONMENTAL PLAN (LEP) 2012

The study area along Hickson Road does not include any heritage or archaeological items listed under Schedule 5 of the Sydney Local Environmental Plan (LEP) 2012 (Figure 2.1). However, several listed heritage items of local and State significance are adjacent to the eastern boundary of the study area. These include the 'Grafton Bond Store' (I1813), the former 'MSB Stores' (I880), the 'Palisade fence and High steps' (I882) as well as the 'Millers Point/Dawes Point Heritage Conservation Area' (C35); a full summary of adjacent sites is included in Table 2.1.

Although primarily geared for built heritage items, the standard LEP also includes the following requirements which are relevant to archaeological heritage:

5.10 Heritage conservation

(1) Objectives

The objectives of this clause are:

(c) to conserve archaeological sites,

(2) Requirement for consent

Development consent is required for any of the following:

.....

(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,

.....

(7) Archaeological sites

The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the Heritage Act 1977 applies):

(a) notify the Heritage Council on its intention to grant consent, and

(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

Table 2.1: Summary of heritage items in the vicinity of the study area, as listed under Schedule 5 of the Sydney LEP 2012.

Item No.	Item name	Address	Property description	Significance
I880	Former warehouse "MSB Stores" including interior	36 Hickson Road	Lot 12, DP 1065410	State
I882	Palisade fence and High Steps	High Street	Lot 2, DP 869022	Local
I884	Terrace duplex group including interiors	3-9 High Street	Lot 18, DP 773849	State
I885	Terrace group (115-121 Kent Street) including interiors	3-9 High Street	Lot 18, DP 773849	State
I889	Terrace duplex group	74-80 High Street	Lot 11, DP 739194	State
I890	Lane off Gas Lane including sandstone walls and wrought iron street light.	Jenkins Street	-	Local
I924	Terrace group including interiors	123-125 Kent Street	Lot 22, DP 773847	State
I1813	Former Warehouse "Grafton Bond Store" including interiors	201-217 Kent Street	Remains of bond store	State
C35	Millers Point/Dawes Point Heritage Conservation Area	Millers Point		State

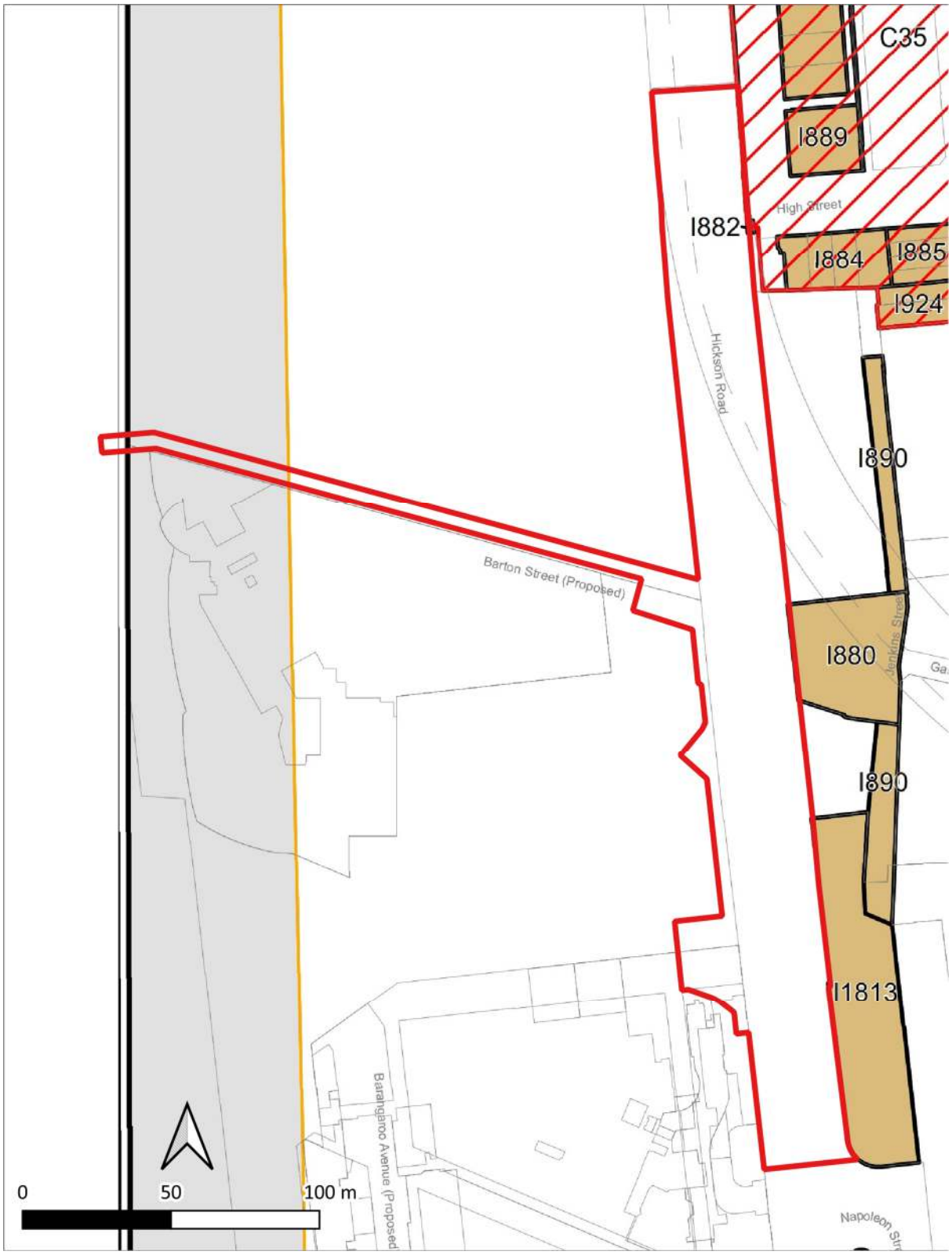

Figure 2.1: Detail of 'Heritage Map – Sheet HER_014', Sydney Local Environment Plan 2012. The study area (red outline) is located near the vicinity of a number of individually-listed heritage items, with the Grafton Bond identified as item no. I1813. The red hatching represents the Millers Point & Dawes Point Heritage Conservation Area. Spatial Collaboration Portal.

2.2 *HERITAGE ACT, 1977,* MANAGEMENT OF RELICS

The Heritage Act 1977 (Heritage Act) seeks to protect and conserve items of environmental heritage, which are defined as: those places, buildings, works, relics, moveable objects, and precincts, of State or local heritage significance.

Part 3A of the Heritage Act establishes the State Heritage Register (SHR), which is kept by the Heritage Council of New South Wales and provides for the identification and listing of items of State heritage significance.

Section 4A of the *Heritage Act 1977* defines the two levels of heritage significance as:

> ***'State heritage significance',*** in relation to a place, building, work, relic, moveable object or precinct, means significance to the State in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.
>
> ***'Local heritage significance',*** in relation to a place, building, work, relic, moveable object or precinct, means significance to an area in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.[5]

2.2.1 DIVISION 2: SECTION 57 – STATE HERITAGE REGISTER

Listing a heritage item, and where identified, any associated archaeology on the State Heritage Register (SHR) means that the Minister for Heritage and the Heritage Council of NSW considers the item is of State heritage significance and warrants conservation into the future for the State. Such listings are managed under S57 of the Act.

According to **Section 57**:

(1) When an interim heritage order or listing on the State Heritage Register applies to a place, building, work, relic, moveable object, precinct, or land, a person must not do any of the following things expect in pursuance of an approval granted by the approval body under Subdivision 1 of Division 3:

- (a) demolish the building or work,
- (b) damage or despoil the place, precinct or land, or any part of the place, precinct or land,
- (c) move, damage or destroy the relic or moveable object,
- (d) excavate any land for the purpose of exposing or moving the relic,
- (e) carry out any development in relation to the land on which the building, work or relic is situated, the land that comprises the place, or land within the precinct,
- (f) alter the building, work, relic or moveable object,
- (g) display any notice or advertisement on the place, building, work, relic, moveable object or land, or in the precinct,
- (h) damage or destroy any tree or other vegetation on or remove any tree of other vegetation from the place, precinct or land.

The northern portion of the current study area is within the Stage Heritage Register listing for the 'Millers Point & Dawes Point Village Precinct' (**SHR 01682**), (Figure 2.2). The current study area is also adjacent to the Millers Point Conservation Area (**SHR 00884**) as well as two additional items listed on the State Heritage Register: the 'MSB Stores Complex' (**SHR 01435**), situated at 36-38 Hickson Road, and the 'Grafton Bond Store and Sandstone Wall' (**SHR 01431**).

[5] NSW Heritage Branch 2009, p 6.

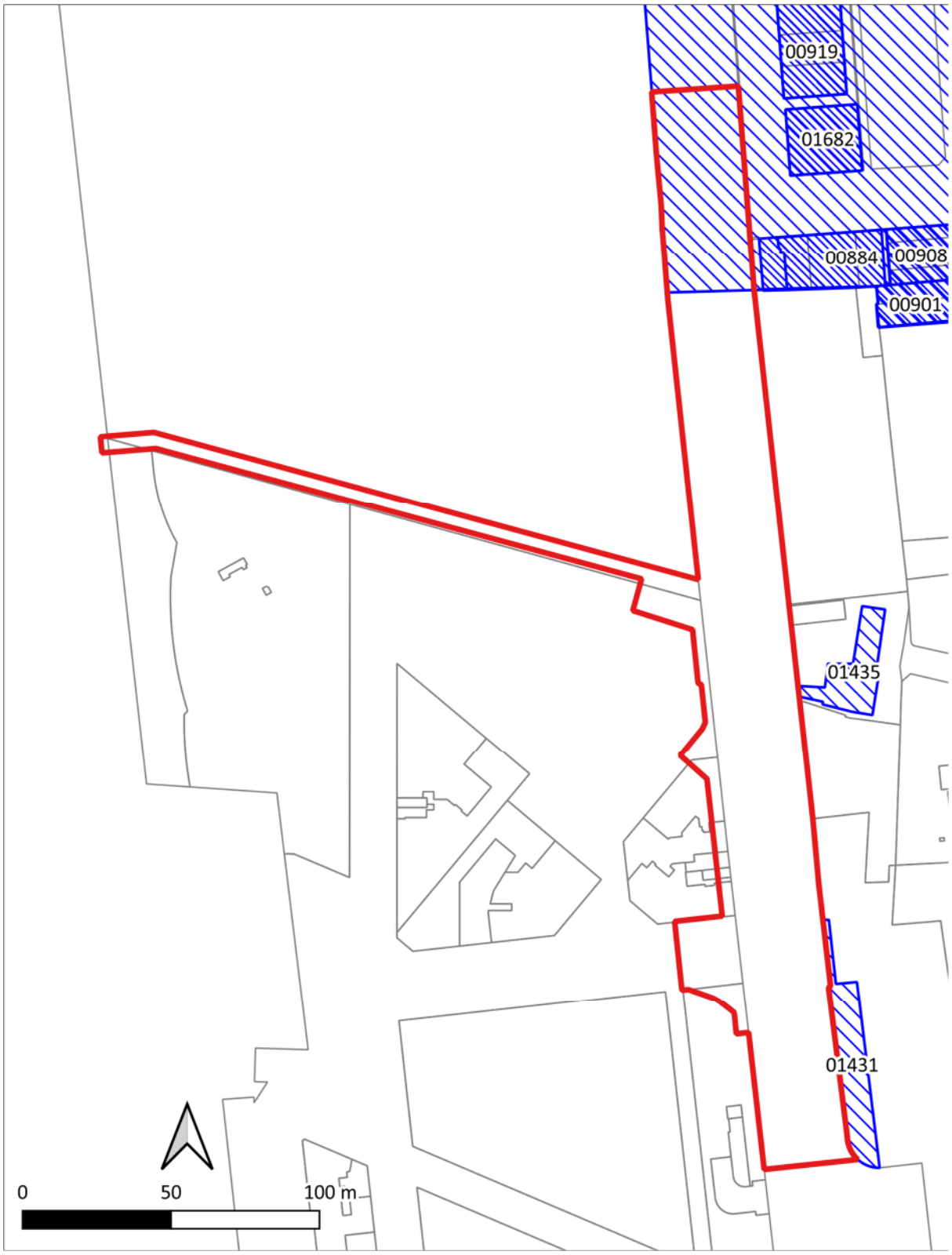

Figure 2.2: State Heritage Register listings in the vicinity of the study area (red outline). Spatial Collaboration Portal.

2.2.1.1 APPROVALS UNDER SECTION 60 AND STANDARD EXEMPTIONS

Archaeological remains or relics and works within an SHR-listed area receive protection as a matter of course and require an approval under Section 60. An S60 approvals requires

the submission of supporting documentation to the Heritage Council of NSW (or its delegate), including an Archaeological Research Design, specifying the methodology to undertake any excavation and field recording, in addition to nominating suitably qualified archaeologists to undertake this work.

Minor maintenance, repairs and alterations may fall within a Standard Exemption of the Act.[6] If applicable, the works could proceed after appropriate due diligence and documentation that support the assessment of the works as minor. Excavation or disturbance of land that may qualify for a **Standard Exemption 8: Excavation** must meet the following requirements:

> Specified activities/ works:
>
> a) Excavation or disturbance of land that is:
>
> i. for the purpose of exposing underground utility services infrastructure which occurs within an existing service trench, or
> ii. to carry out inspections or emergency maintenance or repair on underground utility services, or
> iii. to maintain, repair, or replace underground utility services to buildings, or
> iv. to maintain or repair the foundations of an existing building, or
> v. to expose survey marks, or
> vi. associated with feral animal/insect eradication.
>
> b) Removing contaminated soils.
>
> Relevant standards:
>
> c) Activities/ works must not disturb or remove any relics.
> d) Excavation must not compromise the structural integrity of any heritage structure or significant landscape elements.
> e) Activities/ works must not affect archaeological evidence, for example the archaeology of foundation trench deposits from the time of original construction.[7]

In summary, an Exemption cannot impact on archaeological relics.

2.2.2 RELICS PROVISIONS, HERITAGE ACT 1977

The main heritage legislative constraint on archaeological remains are the relics provisions of the *Heritage Act 1977*. A 'relic' is an item of 'environmental heritage' which is defined by the *Heritage Act 1977* as:

> ...those places, buildings, works, relics, moveable objects, and precincts, of State or local heritage significance.

A relic as further defined by the Act as:

> ... any deposit, 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.

According to Section 139:

> (1) A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.

[6] See https://www.heritage.nsw.gov.au/permits-and-approvals/state-heritage-items/standard-exemptions/

[7] NSW Government Gazette No 318 as of Friday 13 November 2020, p. 8. Available at: https://gazette.legislation.nsw.gov.au/so/download.w3p?id=Gazette_2020_2020-318.pdf

(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 or 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.

Any item identified as an historical archaeological site or relic cannot be impacted upon without an **excavation permit**. An excavation permit forms an approval from the Heritage Council for permission to 'disturb' a relic.
An application for an excavation permit must be made to the Heritage Council of NSW (Section 140), or its delegate. The application for a permit must nominate a qualified archaeologist to manage the disturbance of the relics.

2.2.2.1 EXCEPTION, SECTION 139(4)

For sites not listed on the SHR or under an Interim Heritage Order, the *Heritage Act 1977* includes exceptions for works in relation to relics which may not require an excavation permit if they fall within the terms of the S139(4) exceptions. The relevant exceptions are:

2 Exceptions

(a) Any disturbance or excavation of land that has limited archaeological research potential, as demonstrated by a heritage management document, such as an Archaeological Assessment, completed within the last five years.
(b) Any disturbance or excavation of land that constitutes minor works involving limited impact to relics of local heritage significance, in accordance with 'Relics of local heritage significance: a guide for minor works with limited impact' published by Heritage NSW.
(c) Any disturbance or excavation of land that constitutes minor works involving limited impact to relics of local heritage significance as demonstrated by a heritage management document, such as an Archaeological Assessment, completed within the last five years.
(d) Any disturbance or excavation of land for archaeological test excavation of relics of local heritage significance completed in accordance with the guideline 'Relics of local heritage significance: a guide for archaeological test excavation' published by Heritage NSW.
(e) Any disturbance or excavation of land for archaeological monitoring of relics of local heritage significance completed in accordance with the guideline 'Relics of local heritage significance: a guide for archaeological monitoring' published by Heritage NSW.
(f) Any disturbance or excavation of land:
    i. for the purpose of exposing underground utility services infrastructure which occurs within an existing service trench and will not affect any other relics;
    ii. to carry out inspections or emergency maintenance or repair on underground utility services with due care taken to avoid effects on any other relics;
    iii. to maintain, repair, or replace underground utility services to buildings which will not affect any other relics;
    iv. to maintain or repair the foundations of an existing building which will not affect any associated relics; or
    v. to expose survey marks for use in conducting a land survey.

3 General Conditions

(a) These general conditions apply to each of the exceptions to subsections 139(1) or (2) of the *Heritage Act 1977* prescribed above.
(b) The exceptions are self-assessed. It is the responsibility of a proponent to ensure that the proposed activities/ works fall within these exceptions.
(c) These exceptions do not apply to relics of State heritage significance or to a relic that is subject to an interim heritage order or a listing on the State Heritage Register.
(d) These exceptions do not apply to Aboriginal objects under the *National Parks and Wildlife Act 1974*.
(e) If any Aboriginal objects are discovered, excavation or disturbance is to cease and notification in accordance with section 89A of the *National Parks and Wildlife Act 1974* is required. Depending on the nature of the discovery, additional assessment and approval under the *National Parks and Wildlife Act 1974* may be required prior to works continuing in the affected area(s).
(f) Proponents must keep records of any activities/ works for auditing and compliance purposes by the Heritage Council. Where advice of a suitably qualified and experienced professional has been sought, a record of that advice must be kept. Records must be kept in a current readable electronic file or hard copy for a reasonable time.
(g) Anything done under these exceptions must be carried out by people with knowledge, skills and experience appropriate to the work. Some exceptions require suitably qualified and experienced professional advice/ work as set out in the guidelines **'Relics of local heritage significance: a guide for archaeological test excavation**' published by Heritage NSW and **'Relics of local heritage significance: a guide for archaeological monitoring'** published by Heritage NSW.
(g) A person who is aware or believes that he or she has discovered or located a relic, in any circumstances (including where works are carried out in reliance on an exception under section 139(4), must notify the Heritage Council in accordance with section 146 of the Heritage Act 1977. Depending on the nature of the discovery, additional assessment and approval under the *Heritage Act 1977* may be required prior to the recommencement of excavation in the affected area(s).
(h) Authorised persons under the *Heritage Act 1977* may carry out inspections for compliance.
(i) Activities/ works that do not fit strictly within the exceptions described above require approval, by way of an application under section 140 of the *Heritage Act 1977*.
(j) It is an offence to do any of the things listed in section 139(1) or (2) of the *Heritage Act 1977* without a valid exception or approval.
(k) The exceptions under the *Heritage Act 1977* are not authorisations, approvals or exemptions for the activities/ works under any other legislation local government or NSW Government requirements (including, but not limited to, the *Environmental Planning and Assessment Act 1979* and the *National Parks and Wildlife Act 1974)*.

Three recent Heritage NSW (2022a, b, c) publications provide guidance in relation to assessing minor works and cumulative impacts. It is noted that the following relevant types of minor work are able to be undertaken under an Exception:

- The scale or nature of the proposed excavation, regardless of the depth, would not adversely affect the relics and deposits, such as where the excavation would:
  - only affect less important areas of an archaeological site and not areas of highest potential (e.g. cesspits, occupation deposits, wells), or
  - occur in areas previously disturbed or where relics have already been removed, or Under the Heritage Act 1977, a 'relic' means any deposit, artefact, object or material evidence that:
  - verify and assess the site conditions.

or

- the scale of works is otherwise consistent with a limited impact, assessed by:

- when the precise location of the archaeological relics is known, the area affected by the works is a small portion of the total known area of potential for relics, or
- when the precise location of the archaeological relics is unknown, but the works only impact a small portion of the overall area and manual techniques are used, or
- the cumulative impact of the works and any previous or proposed future works (see further below).

Considerations when determining if your works may be minor can include:

- Will the work expose, but not remove the relic(s)?
- Can your work reuse areas already disturbed, or areas of the relic(s) that are already disturbed?
- Can your work be redesigned to avoid the relic(s)?[8]

From the above it is clear an Exception self-assessment is suitable for any geotechnical or contamination testing based on this Archaeological Assessment. Depending upon the assessment of impacts in this report for services and landscaping works it is possible that an Exception self-assessment is also suitable or a S140 approval may be required if the impact of the works are assessed as having more than minor works.

Section 4.41 (3) of the EP&A Act allows for 'any investigative or other activities that are required to be carried out for the purpose of complying with any environmental assessment requirements under this part in connection with a development application for any such development' to be undertaken without approvals under the *Heritage Act*.

2.2.2.2 'WORKS' AND NOT 'RELICS'

The rock cut footprints (negative interfaces) of the gasholders which were remediated (2018-2019) are considered to be 'works' and not relics under the Heritage Act. Final site remediation works were completed in December 2019, with the backfilling and re-instatement of Hickson Road (following remediation excavation). Works are not protected under the Heritage Act but as the key remaining elements of Australia's first gasworks following remediation they do have heritage value.

2.2.3 STATUTORY AND NON-STATUTORY GUIDELINES

The management of heritage sites in NSW should conform to the requirements of the *Burra Charter* of Australia ICOMOS. Many of the following Heritage Council guidelines provide for best practice conservation approaches and can be used to inform the management of the archaeological remains. Key ones are from the Heritage Council of NSW *Heritage Manual*. There are a range of archaeological guidelines which inform the management of the place:

- *Archaeological Assessment Guidelines*, NSW Heritage Office, Department of Urban Affairs & Planning, 1996.
- *Assessing Significance for Archaeological Sites and 'Relics'*, Heritage Branch, Department of Planning, 2009.
- *NSW Heritage Manual*, NSW Heritage Office, Department of Urban Affairs & Planning, 1996.
- *Historical Archaeological Investigations: A Code of Practice*, NSW Department of Planning, 2006.
- *Historical Archaeological Sites, Investigation and Conservation Guidelines*, Department of Planning and NSW Heritage Council, 1993.
- *Excavation Director's Assessment Criteria*, NSW Heritage Office.

[8] Heritage NSW 2022a.1 Information Sheet.

- *ICHAM Charter, The ICOMOS Charter for the Protection and Management of Archaeological Heritage*, ICOMOS International, 1990.
- *Practice Note – The Burra Charter and Archaeological Practice*, Australia ICOMOS 2013.
- *Recommendation on International Principles Applicable to Archaeological Excavations*, UNESCO, 1956.
- *Relics of local heritage significance: a guide to minor works with limited impacts,* Heritage NSW Information Sheet 2022.1, Sept. 2022a.
- *Relics of local heritage significance: a guide for archaeological test excavation,* Heritage NSW Information Sheet 2022.2, Sept. 2022b.
- *Relics of local heritage significance: a guide for archaeological monitoring*, Heritage NSW Information Sheet 2022.3, Sept. 2022c.
- *Heritage Interpretation Policy and Guidelines*, Heritage Information Series, NSW Heritage Office, August 2005.
- *Photographic Recording of Heritage Items*, Heritage Information Series, NSW Heritage Office, 2006.

2.3 *NATIONAL PARKS AND WILDLIFE ACT 1974*: MANAGEMENT OF ABORIGINAL OBJECTS AND ABORIGINAL PLACES

The main legislation governing Aboriginal objects is the *National Parks & Wildlife Act 1974* (NPW Act). This Act provides statutory protection to all Aboriginal objects and places within New South Wales. The Office of Environment and Heritage (OEH) is the State Government agency responsible for the implementation and management of the NPW Act. Part 6 of the NPW Act provides provision for the protection of all 'Aboriginal objects', which are defined as:

> ...any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of...New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

An Aboriginal place is any place declared to be an Aboriginal place by the Minister for the Environment, under Section 84 of the Act. It is an offence to disturb Aboriginal objects or places without a permit (Aboriginal Heritage Impact Permit – AHIP) authorised by the Chief Executive, OEH (or delegate). In addition, anyone who discovers an Aboriginal object is obliged to report the discovery to the Chief Executive, OEH.

An AHIP may not be required in the following circumstances (the following is applicable to Aboriginal objects only, not Aboriginal places):

- for harm to Aboriginal objects if undertaking test excavation in accordance with the *Code of Practice for Archaeological Investigation in NSW* (2010), or
- if due diligence has been undertaken in accordance with *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* or industry-specific codes of practice adopted under the *National Parks and Wildlife Regulation 2009* and determined that Aboriginal objects are not present or are unlikely to be present and an activity will not harm those objects.

The NPW Act has also established the Aboriginal Heritage Management System (AHIMS) which is a database of known Aboriginal heritage place and sites within NSW.

Note: Under Section 4.41 (Part 4 Division 4.7) of the EP&A Act a permit under the *National Parks and Wildlife Act 1974* (NPW Act) is not required for this project, once approved.

Section 4.41 (3) of the EP&A Act allows for 'any investigative or other activities that are required to be carried out for the purpose of complying with any environmental assessment requirements under this Part in connection with a development application for any such development' to be undertaken without approvals under the *National Parks and Wildlife Act*.

3.0 HISTORIC BACKGROUND

The present study area has historic associations with two major 19th-century enterprises, the AGL Co Gasworks site and the Grafton Wharf and Bond Stores, as well as several smaller land grants occupied from the early-19th century. The following historical background is divided into three separate sections from the 1830s-1900 to give a detailed history of the two major enterprises and other localised developments further north. Following the construction of Hickson Road in the 1920s, the historical development of these three areas will come together again.

3.1 ABORIGINAL OCCUPATION, PRE-1788

The landing by the British on the southern shore of Port Jackson, at what came to be called Sydney Cove, was the first permanent incursion into Aboriginal land by non-Aboriginal people in the more than 60,000 years of Aboriginal habitation of the continent of Australia. Sydney Cove and the adjacent lands traditionally belonged to the Cadigal, a clan of the Eora, a word meaning 'people'.[9] Phillip's recording of the boundaries of some of the Aboriginal territories of the Sydney region was published in letters to Lord Sydney:

> The natives live in tribes, which are distinguished by the name of their chief...About the north-west part of this harbour there is a tribe which is mentioned as being very powerful, either from their number or the abilities of their chief. The district is called Cammerra; the head of the tribe is named Cammerragal.
>
> From the entrance of the harbour, along the south shore, to the cove adjoining (Darling Harbour) this settlement the district is called Cadi, and the tribe Cadigal; the women, Cadigalleon.

According to Collins only three Cadigal survived the 1788-89 'smallpox' epidemic - Colbee, Nanbarry and another man. This led them to unite with another 'tribe' for their own protection.[10]

The Aboriginal occupants of the land are likely to have used the area of Sydney Cove for many thousands of years prior to the arrival of the First Fleet on 26 January 1788. They would have used the edible plants of the area as well as seafood from the harbour. The continued use of Sydney Cove for fishing by Aborigines from canoes is suggested by a number of early paintings.[11]

3.2 THE SITE IN DARLING HARBOUR, 1788-1830

Following the establishment of a British colony at Sydney in January 1788, the initial focus of settlement was around Sydney Cove (now Circular Quay). By 1800 there were tracks heading to the west of what would later become the main military barracks (Figure 3.1, Figure 3.2). Occupation or use of the land in the vicinity of the study area appears to be related to the nearby military barracks (near modern Wynyard Station), which included officers' quarters and a magazine to store gun powder and ammunitions. Two of these areas were in close proximity to the shoreline, the as then unnamed cove to the west of Sydney Cove, first known as Cockle Bay and later as Darling Harbour (1826). By 1802 a track had been established along the western ridge, serving allotments and premises further to the south on the shore of Cockle Bay, indicating that there was already interest in these waterfront sites (Figure 3.1, Figure 3.2).

[9] Smith 2001:74.

[10] Collins 1798:497; Smith 2001.

[11] For example, McCormick 1987: pls. 22, 27, 31, 35, 55, 81, 93.

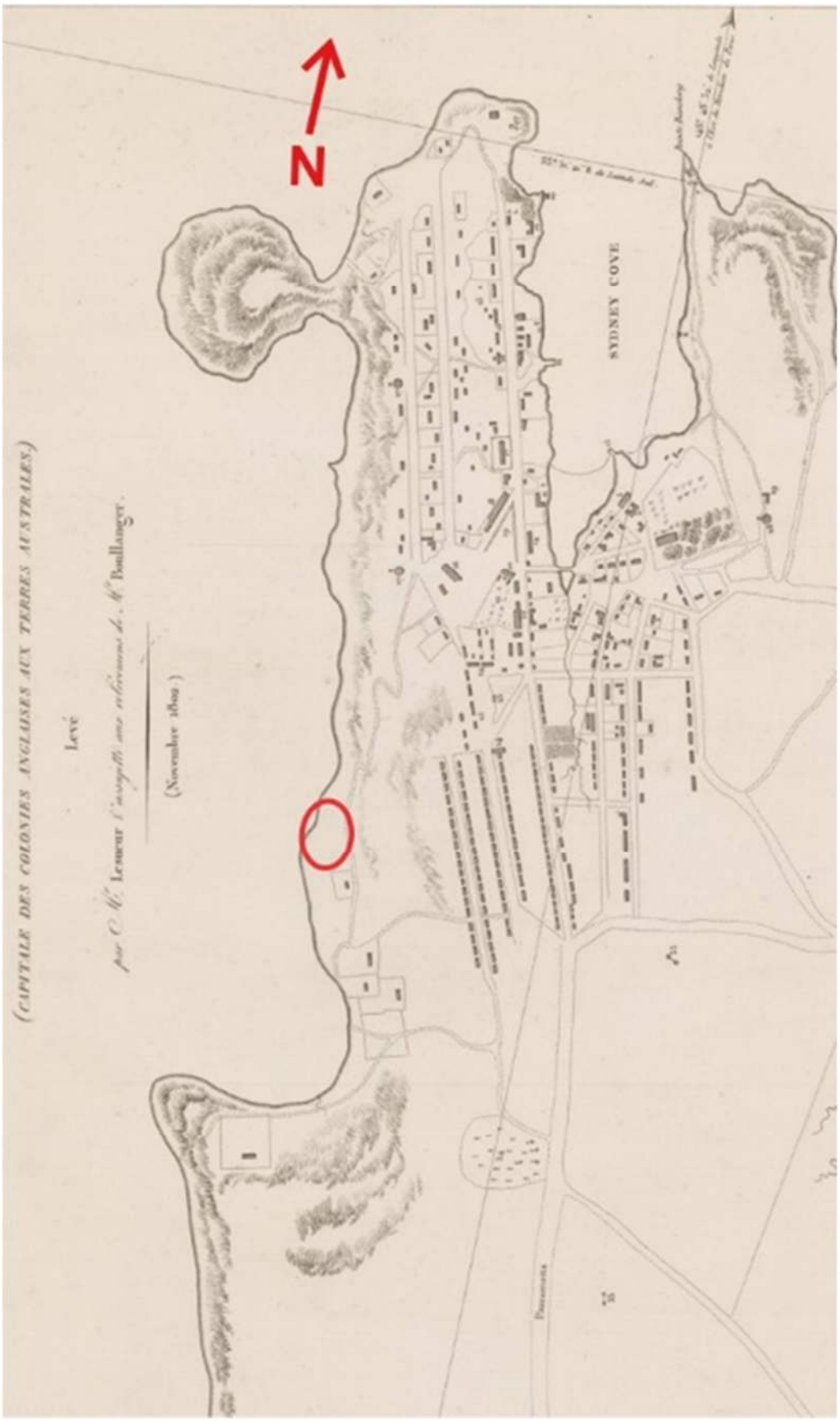

Figure 3.1: Development as of 1802 with no structures in the study area. The approximate location of the study area has been circled red. This map is not to scale and was produced by a visiting French artist from the 1802 Baudin expedition. Leseur 1802, Map of Sydney

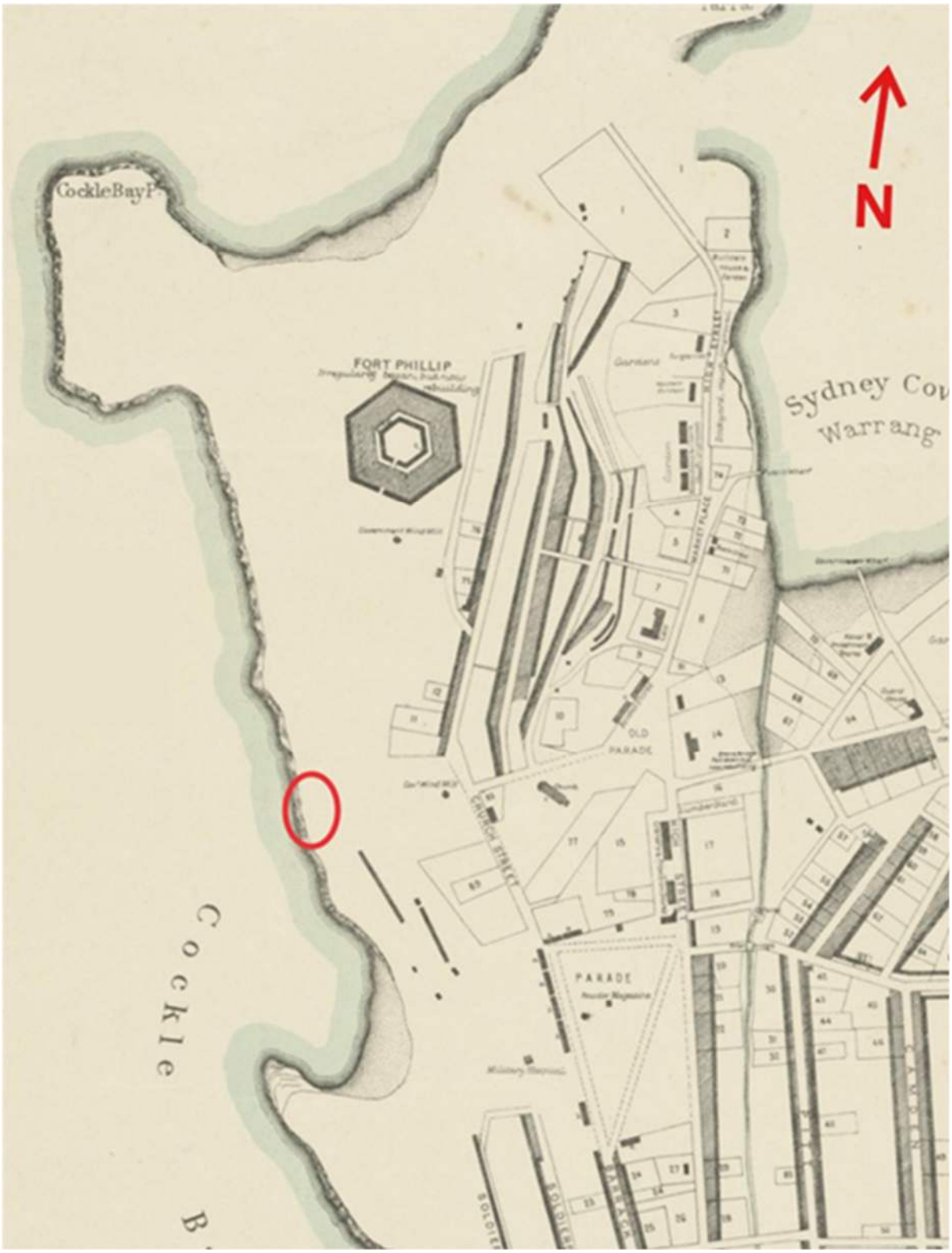

Figure 3.2: Meehan's 1807 plan of Sydney shows no substantial use of the eastern foreshore of Cockle Bay. The approximate location of the study area is in red. *Plan of the Town of Sydney in New South Wales,* NLA Map F 105B.

In the early days of the colony, the northern part of the western shore of Millers Point fell away steeply to Cockle Bay (known as Darling Harbour from 1825). The original steep waterfront is vividly represented in a contemporary watercolour by Samuel Elyard (Figure 3.3). This terrain discouraged early settlement, particularly on Cockle Bay, and by the early 1820s there were still only half a dozen houses in the area.[12]

Records of early land occupation in this area are patchy, but 'Harper's Plan of Sydney' shows the extent of early leases and associated building on the western side of Darling Harbour (Figure 3.4, Figure 3.5). Harper's earlier 1822 plan indicates there was some development in the area west of Kent Street and north of Erskine Street, with one small rectangular building depicted in the centre of the study area. Two additional small buildings are shown further to the south in the 1823 version of the plan.

Figure 3.3: The context of the future AGL site on Darling Harbour before 1839. The gasworks was built to the south of the arrowed area. The foreshore was often steep, one road on the higher ground and generally impassable other than where it was quarried out. Access was mostly over the top of the hill from the Rocks or by water. Watercolour by Samuel Elyard c.1862-73, from north. ML DGD 5, File No. FL650476, SLNSW.

[12] Fitzgerald, S. 2008 'Millers Point', *Dictionary of Sydney*, https://dictionaryofsydney.org/entry/millers_point#ref-uuid=6a58d9ef-674a-31d1-d520-5a2e5429f603 viewed 28/5/2020.

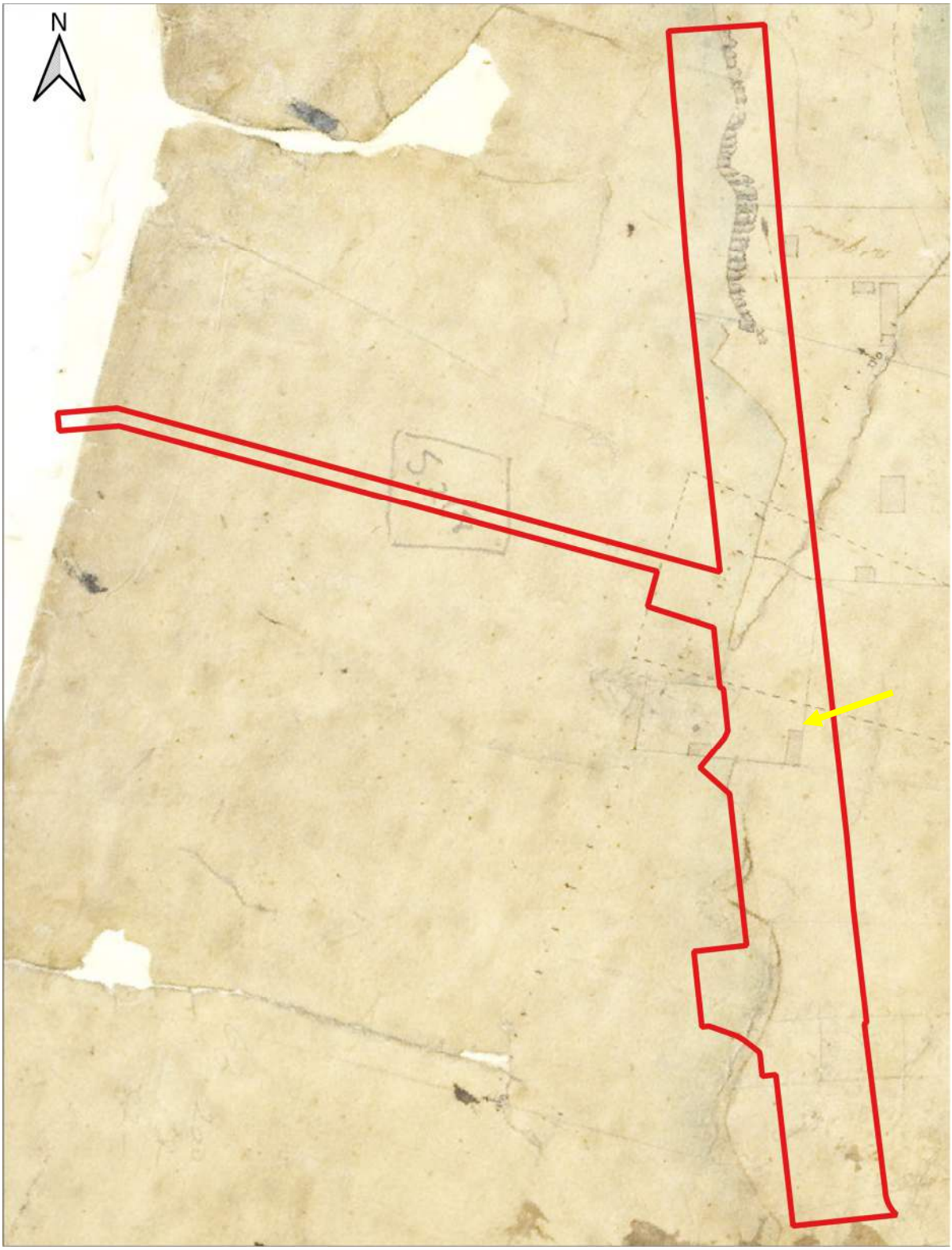

Figure 3.4: Harper's 1822 plan showing lot boundaries, shoreline and buildings within Section 67. The study area is in red. There is one rectangular structure and a possible Jetty within the study area (yellow arrow). William Harper's "*Survey of Sydney*", NSWSA, SZ 434.

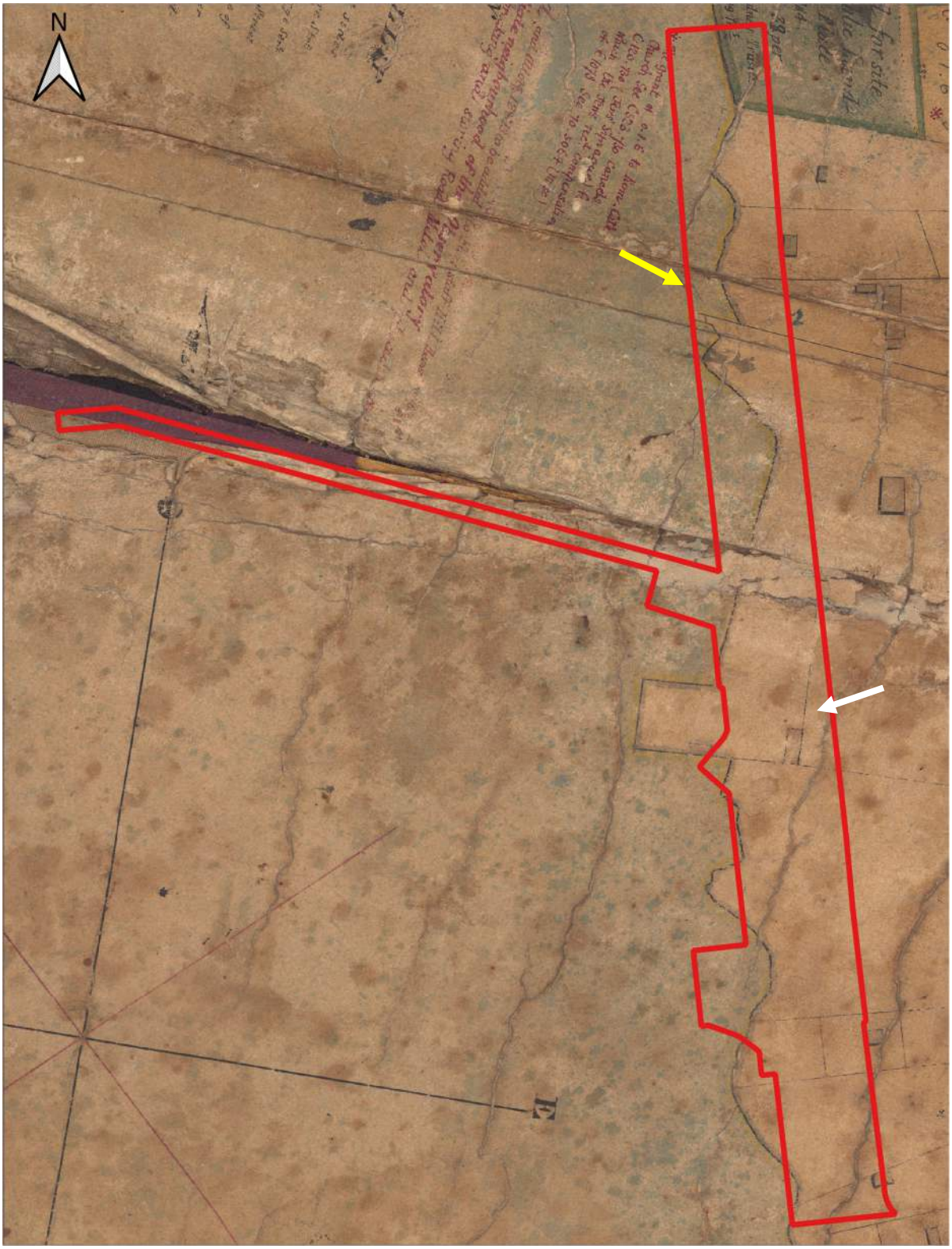

Figure 3.5: An 1823 version of the Harper plan, shows one structure (white arrow) and a possible jetty or slipway (yellow arrow) within the study area, with a possible third between them. '*Plan of the Allotments of Ground in Sydney*', prepared from S.268 Surveyor William Harper, drawn by Surveyor G.C. Stewart. NSWSA, Map SZ 469 (S.No.13).

3.3 1830S TO 1850S

From the late Macquarie period through to the early 1830s, New South Wales experienced a period of transition and growth, with an increase in private enterprise and free settlement. With the influx of free settlers from the later 1820s and a shift from convict to free labour, larger players came into prominence and the development in Cockle Bay gained momentum. As the population of the colony and Sydney doubled between 1828 and 1836, imports of all kinds were needed to feed consumer demand. Its obverse was the growing business of export, as the colony began to produce goods for overseas markets. In 1828 Cockle Bay took on a new name and was officially recognised as Darling Harbour.[13]

By the early 1830s formal ownership of town allotments was being determined by the Court of Claims. The following allotments within the study area were granted in the 1830s, listed from north to south and visible in Figure 3.6:

Section 93:

- **Lot 5:** Government Ground
- **Lot 4:** Thomas Agar – granted 1837.[14]
- **Lot 3:** John Forster Church – granted 1836.[15]
- **Lot 2:** Edward Cureton.
- **Lot 1:** James Jenkins – granted to his wife Elizabeth, 1839.[16]

Section 67:

- **Lot 15:** John Langdon.
- **Lot 16:** James Jenkins.
- **Lot 11:** Richard Aspinall, Warham Jennett Browne and Edward Aspinall (Aspinall Browne & Co.) – granted 1835 and acquired by Morgan.[17]
- **Lot 17:** Henry Thomson Bass – granted 1837.[18]
- **Lot 18:** Samuel Thompson and his wife Elizabeth – granted 1834.[19]
- **Lot 19:** Edward Bolger – granted 1835.[20]
- **Lot 5:** William Macquarie Molle & others.

Robert Russell's plan of Sydney Section 67 dated November 1834 identifies the boundaries of the allotments in the southern portion of the study area (Figure 3.7).[21] These allotments to the west, with access to the Darling Harbour shoreline, were considerably larger than those along Kent Street. The 1834 plan also shows the buildings on the allotments, some of which can be identified on the earlier 1823 Harper plan (Figure 3.4, Figure 3.5). In a sketch prepared by Russell the following year (Figure 3.8), the landscape does not appear as steep as in earlier depictions (Figure 3.3), however the rocky nature of the foreshore has evidently still constrained development of the area, such that most structures are situated on higher ground and only several wharfs or jetties are present along the waterfront.

[13] *Sydney Gazette* 4 July, 7 August 1828.

[14] Ser. 47 p 90 dated 29 April 1837 0a 2r 10p (LPMA).

[15] Ser. 39 p 165 dated 4 May 1836 0a 1r 34p (LPMA).

[16] Ser. 50 p 116 dated 30 December 1839 1a 2r 2p (LPMA).

[17] Ser. 39 p 29 dated 5 July 1835 1a 0r 27p (LPMA).

[18] Ser. 47 p 232 dated 17 November 1837 3r 21p (LPMA).

[19] Ser. 29 p 165 dated 16 August 1834 2r 0p (LPMA).

[20] Ser. 39 p 77 dated 8 August 1835 1r 16p (LPMA).

[21] Sydney Section 67, Crown Plan S.45.684 by R Russell dated 18 November 1834, AO Map 5421 (SRNSW).

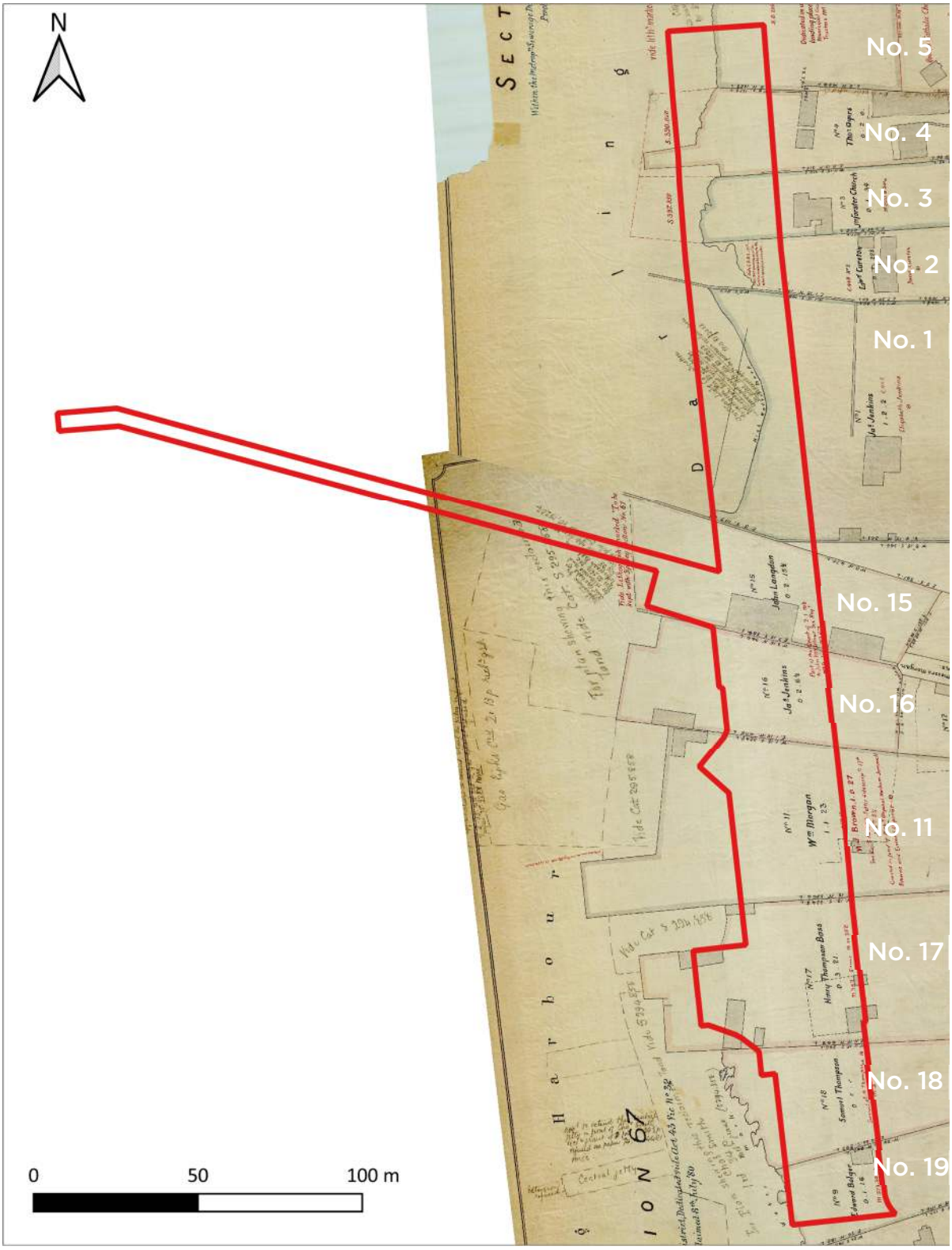

Figure 3.6: 1833 plan showing the allotments with names of those individuals granted the lots. Several structures can be seen within the study area outlined in red. Historical Atlas of Sydney, CSA, Sections 67 and 93.

Figure 3.7: 1834 plan showing the 1830s allotment grants and owners. The structures within the study area can also be seen on the earlier 1833 plan (Figure 3.6). Sydney Section 67 (Crown Plan S.45.684) by Robert Russell dated 18 November 1834. NSWSA, AO Map 5421.

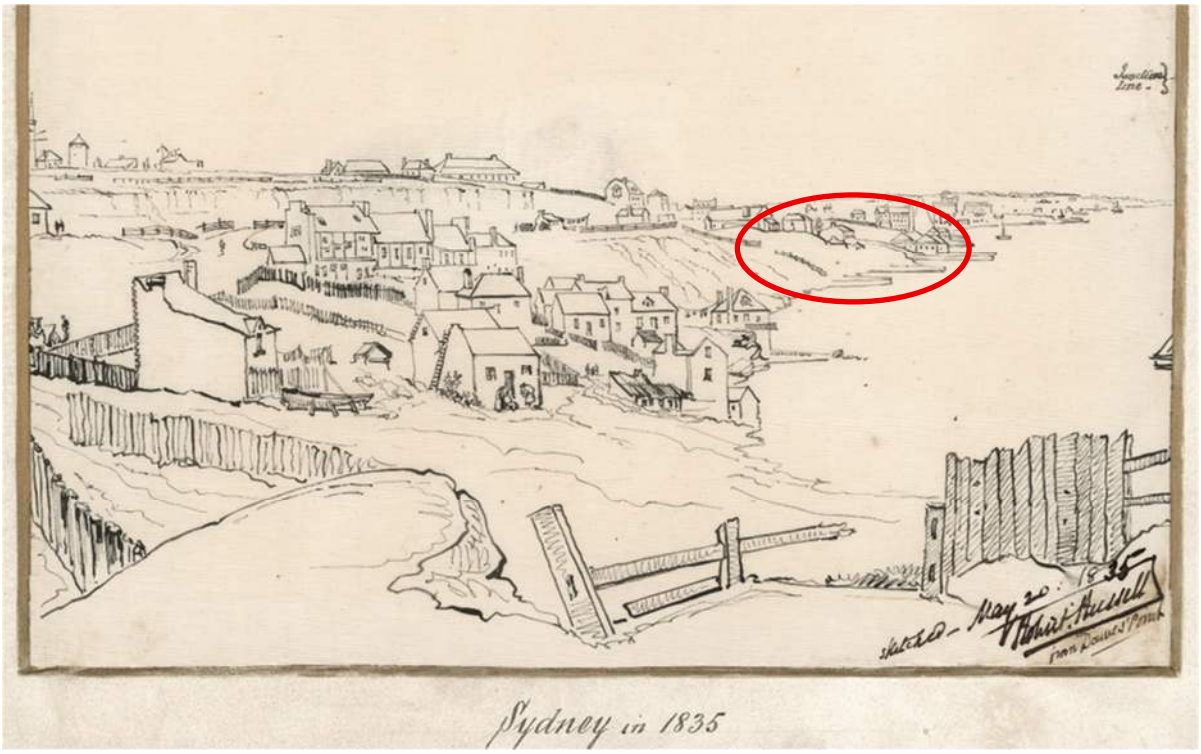

Figure 3.8: View to the south along the eastern foreshore of Darling Harbour. The approximate location of the present study area is circled. Robert Russell, March 1835; State Library of Victoria, Image H38121.

Edward Bolger purchased **Lot 19** at the southern end of the study area, on 6 August 1830. By 1823 there was a building by the northern boundary of his grant (Figure 3.5) and this might account for the purchase price of £190 when Boulger bought it that year, indicating the presence of improvements.[22] By 1831 there were two large shipping wharfs as well as 'a Cottage, with Garden' on Lot 19.[23] Sometime around Easter 1830, Evan Jones, a labourer, moved into this house on allotment 19.[24] He continued to live on the site until at least July 1834, at which time he placed an advertisement cautioning against debts incurred by his wife, Ann.[25] According to an annotated plan made prior to the 1840 auction of the land, this house on Lot 19 was a 'stone building; measuring 22 feet by 18 feet, inches' (Figure 3.9).

Further north, details for Lot 11 are scarce other than that this allotment was acquired in the 1830s by Richard Aspinall, Warham Jennett Browne and Edward Aspinall (Aspinall Browne & Co.) and granted in 1835. Morgan acquired it sometime afterwards before it was sold in 1863 to the Gasworks site. The building shown on the 1834 plan was not present in 1823 (Figure 3.4, Figure 3.5, Figure 3.7). As shown on the 1834 plan, this building is within the study area but appears to be largely beyond the area of proposed impacts.

Unlike Sydney Cove, the waters of Darling Harbour were quite shallow along the adjoining foreshore. In order to provide better harbour access and facilities for their commercial activities, the early landowners reclaimed land and built wharves and jetties. By 1833,

[22] Edward Boulger, Court of Claims Memorial 523, NRS 913, 2/1790, Reel 1205 (SRNSW). The building is shown on Surveyor General sketch books Vol. 1 Fol. 18, Reel 2778 with correspondence references dated 1830 (SRNSW).

[23] *The Australian* 11 November 1831, p 2a.

[24] SRNSW Memorial No. 3, Memorials forwarded by the Commissioners of Claims, 1832-1842 (1833 Act), NRS 913, Item 2/1777 Reel 1232. [page 7 of court evidence; this evidence was heard 11 April 1834].

[25] *Sydney Monitor* 26 July 1834, p 3(3).

Thomas Agar, Henry Bass and Francis Girard had extended their properties into the harbour through reclamation or the construction of private wharfs. These early reclamation events in the southern part of the study area, are illustrated on Russell's plan dated to 1834 (Figure 3.7).[26]

Figure 3.9: Detail of 1840 subdivision plan for Girard's estate (outside the study area). The southern section of the study area is outlined in red. 'Plan of 12 allotments part of Mr F Girard's estate, Sydney to be sold by auction by Mr S Lyons, on Wednesday Feby, 12th 1840'. SLNSW, Mitchell Map Collection, Maps/0121.

By the early 1840s, the new industrial enterprise of the AGL Co Gasworks (see Section 3.5), had been added along the eastern side of Darling Harbour, while on development on the western side was limited to the north end of Pyrmont, with the rest of the peninsula still in

[26] See Casey & Lowe 2012c for details of early reclamation events.

private hands as the Ultimo Estate. The economic depression of the 1840s was particularly disastrous for those with large investments in wool, but in the closely interconnected world of business finance, in which merchants offered loans, mortgages and advances amongst themselves, a 'domino' effect was inevitable as soon as some began to fall.

An 1843 'Map of the City of Sydney' shows the site shortly after the AGL Co Gasworks was built with the rapidly expanding city of Sydney to the east (Figure 3.10). The road immediately east of the Gasworks was Kent Street, which had been established on an area of considerably higher land.

Figure 3.10: Detail of Wells' 1843 'Map of the City of Sydney', showing the later site of the gasworks (circled). M Z/M2 811.17/1843/1, ML SLNSW.

3.4 SMALL PRIVATE LAND GRANTS (STAGE 4)

The northern portion of the study area (Stage 4) spanned five allotments fronting Darling Harbour, based on an 1833 survey plan of Sydney (Figure 3.6). Lot 5, the northernmost allotment, comprised more than an acre of crown land, dedicated as a place for ferry and public landings.[27] While quarrying was underway on the higher slopes of this allotment by at least 1855 (Figure 3.11), the land and the portion within the current study area remained largely undeveloped until the early-20th century.

Lot 4 was officially granted to merchant Thomas Agars in 1837, although earlier newspaper reports and the extensive development along the foreshore by 1833 suggest he likely took up residence before this (Figure 3.6).[28] A jetty or infilled wharf is depicted along the rocky foreshore of Agar's land by 1833, within the study area, however most of the development appears to be focused in the centre of the allotment and along the high ground fronting Kent Street.[29] An 1838 advertisement for the sale of a new 40-tonne Cutter from Agar's wharf indicates the eastern portion of Lot 4 was associated with shipbuilding, as many of the private waterfront properties along Darling Harbour were at this time.[30] Following Agars death in 1853 and the subsequent auction of the property, development intensified along the waterfront. By 1855, the foreshore was known as 'Trafalgar Wharf' and appeared to include a house or structure along the foreshore, beneath the rocky cliffs (Figure 3.11). A decade later, an additional structure appears to be present as well as a series of steps providing access down the steeper portions of the slope (Figure 3.13). This and subsequent structures likely comprised low-lying timber sheds, which given their nature and proximity to the foreshore, were inherently at risk of inundation. The wharf was expanded in the mid-1870s, and an additional workshop, boatshed and shed erected (Figure 3.14).

Under the ownership of John Foster Church, the foreshore of Lot 3 remained largely undeveloped until the c.1860s. Annotations on the 1833 plan suggest Church had permission to erect a wharf on his harbour allotment, however, his initial improvements instead focused on the erection of a structure in the centre of the allotment (Figure 3.6). The steep rocky foreshore of Church's grant remained undeveloped in 1855, although faint annotations on the plan suggest reclamation and development of the foreshore was undertaken shortly after this date (Figure 3.11). Only a few years later, two structures and a staircase are depicted occupying the western end of Lot 3 (Figure 3.13); although the absence of these improvements on the 1875 plan suggests they were short-lived, a c.1870s photograph of Darling Harbour suggests the foreshore of Lot 3 was in use as a shipyard (Figure 3.14, Figure 3.15).

Development of Lot 2, granted to Edward Cureton and quickly inherited by David Cureton, followed a similar trajectory to Lot 3, with a structure erected in the centre of the allotment before any development commenced along the foreshore (Figure 3.6). A government gazette notice published in 1849, advertised the intentions David Cureton to erect a wharf along the foreshore of his allotment, so long as it did not extend beyond those of his neighbours.[31] Despite these directions, the trigonometric survey suggests Cureton's wharf is more substantial than Agar's, spanning the entire foreshore of Lot 2, and extending beyond the present study area (Figure 3.13). A possible dwelling and small shed are briefly depicted within the study area on mid-19th century plans (Figure 3.14), however a c.1870s photograph indicates these likely represented a series of shipyard structures (Figure 3.15).

[27] *New South Wales Government Gazette,* 22 July 1835, p 493 – 'Town Allotments'.

[28] *The Sydney Herald*, 1 May 1834, p 2, 'Law Intelligence'.

[29] AMBS Ecology & Heritage, 2024, 29.

[30] *The Sydney Monitor and Commercial Advertiser,* 21 November 1838, p 3 – 'Advertising'.

[31] *New South Wales Government Gazette,* 23 February 1849, p 276 – 'Wharves'.

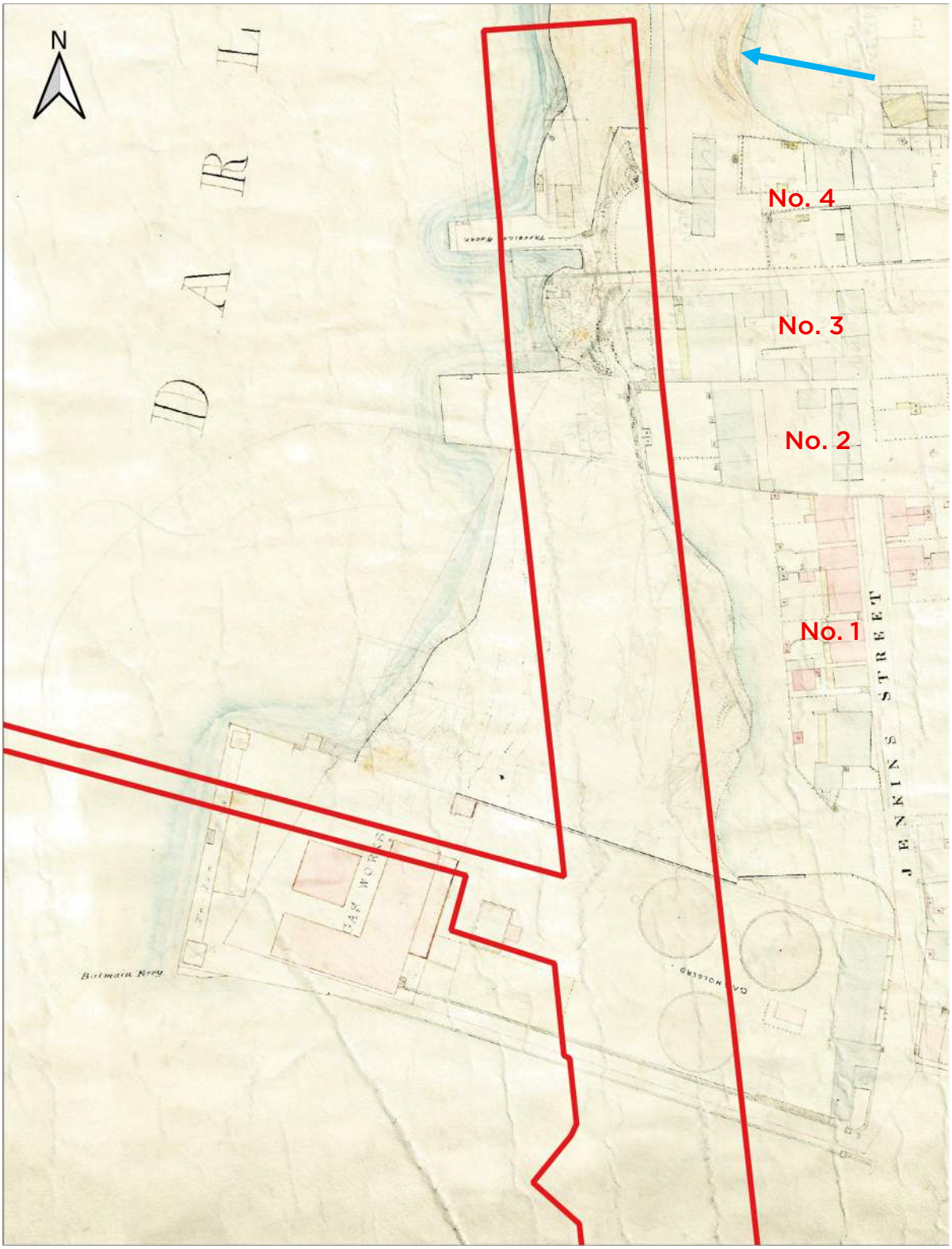

Figure 3.11: Detail of 1855 plan showing development within the central and northern parts of the study area. An area of quarrying within crown land (Lot 5) is arrowed. Historical Atlas of Sydney, CSA, 'City of Sydney – Detail Plans': Sheet No 2A.

Lot 1, the southernmost portion on Section 93 was granted to James Jenkins. Jenkins had arrived in Australia as a convict in 1802. After gaining his freedom, he worked first as a stonemason, but by 1822 was working as a shipwright. He prospered, acquiring 2,600 acres

(c.1052 ha) of land outside Sydney by 1828.[32] Jenkins lived near Darling Harbour, just to the north of Macarthur's land in Millers Point, and built a substantial house on government land, where he lived with his wife Elizabeth, the Australian-born daughter of two convicts. The footprint of this house, between the new streets Jenkins and View, is shown in an 1842 plan (Figure 3.12). James died in 1835 and Elizabeth inherited his property. In 1843 she remarried. Her new husband, William Burnicle, another shipwright, died three years later: Elizabeth survived until 1874.[33] Elizabeth's lands in Millers Point were usually referred to as the 'Jenkins estate'. Following Elizabeth's death, part of Lot 1 was acquired by the AGL Co for the expansion of the Gasworks further north, including the construction of the largest gasholder.

Figure 3.12: The footprint of James and Elizabeth Jenkins' house (arrowed) is to the north of the AGL site between Jenkins and View Streets in this 1842 plan. The earliest iteration of the gasworks, erected in 1839, is clearly marked, although there are some inaccuracies (see Figure 3.21). '... allotments... near the Gas Works'. SLNSW ML, ZM2 811.171/1831/1.

[32] 'Jenkins, James (1777–1835)'; Baxter 1999: 293 no.26881; Sainty and Johnson 1985: 208, 431, no. J2066.

[33] 'Burnicle, Elizabeth (1797–1874)'.

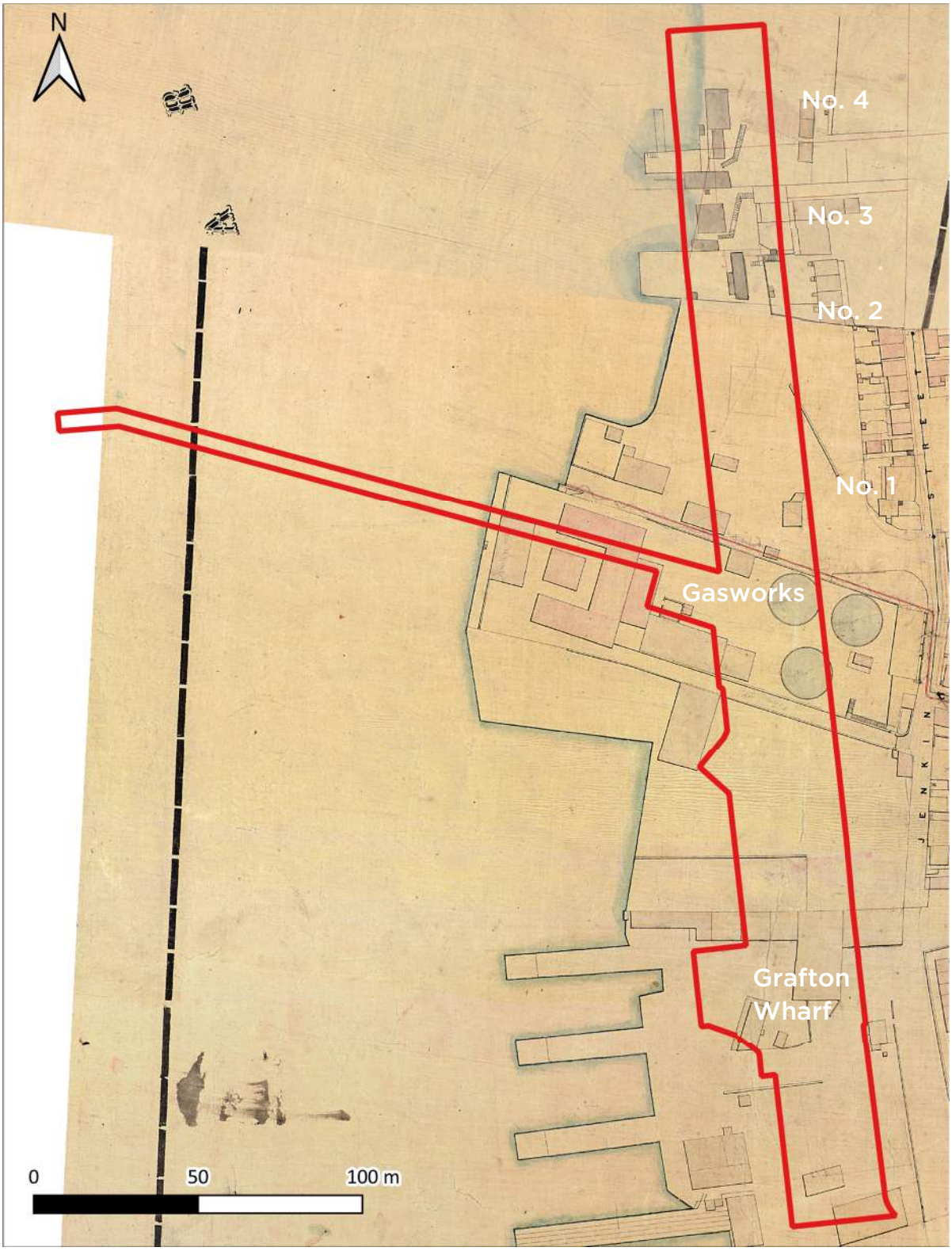

Figure 3.13: The study area drawn between 1857 and 1865, as part of the Trigonometrical Survey of Sydney. Numerous structures are shown throughout the study area, associated with small shipyards, the Gasworks and Challis & Smith Wharf. Trigonometrical Survey, Plans A2 & C2 Section 1. Historical Atlas of Sydney, CSA.

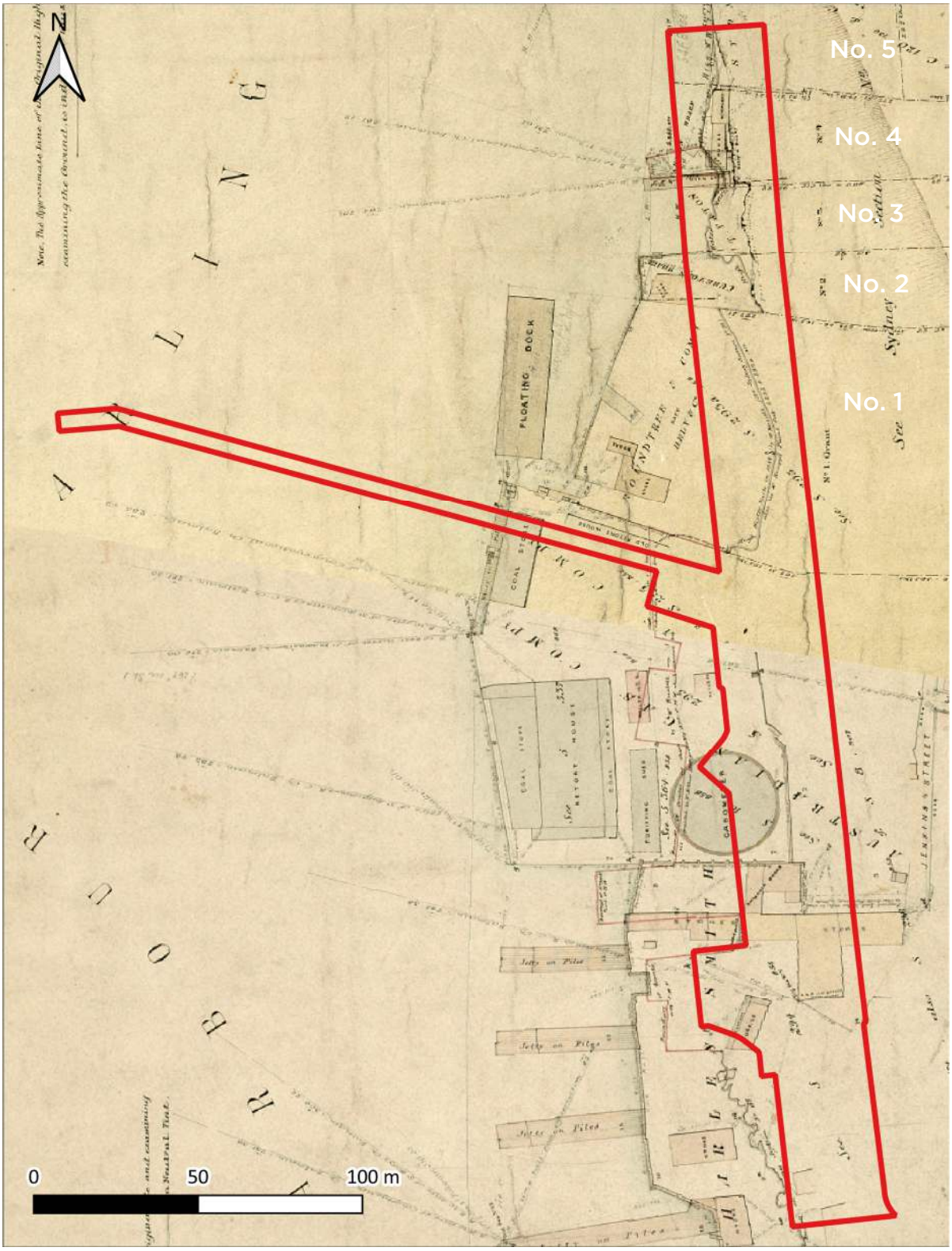

Figure 3.14: The study area in 1875, showing increasing areas of reclamation, especially associated with the small private shipyards in the north and the Gasworks. Darling Harbour Frontage, Sections Nos 1 and 2, AO Maps 4775 and 4774, NSWSA.

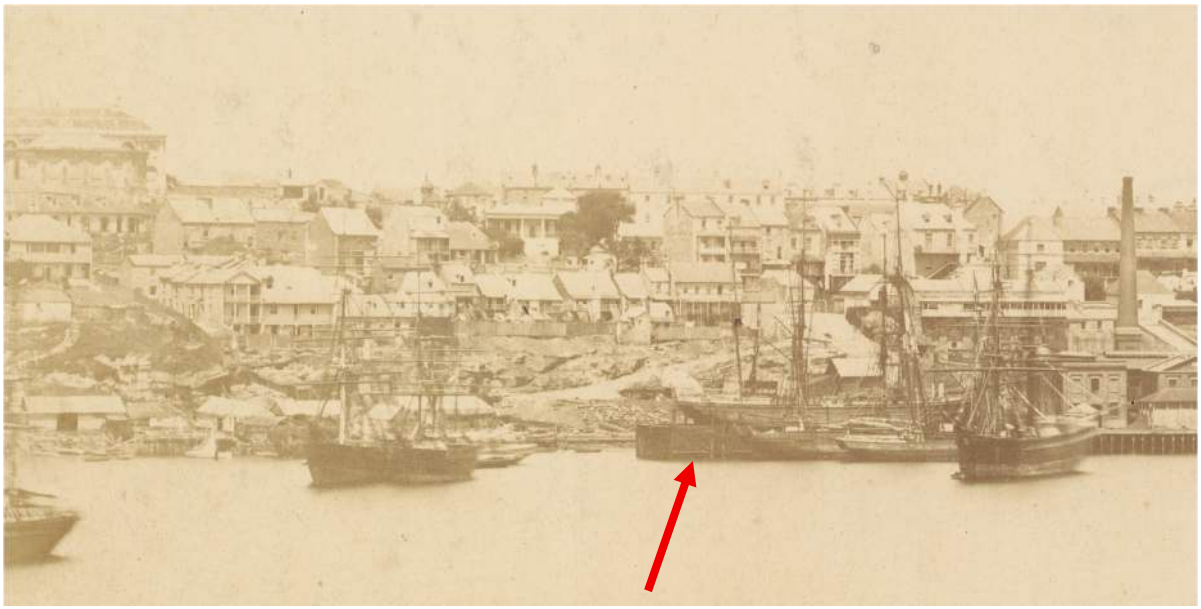

Figure 3.15: View of the eastern side of Darling Harbour showing the steep rocky foreshore along the northern part of the study area. The float dock (arrowed) near the Gasworks likely represents the one owned by Rowntree in the c.1870s. Most structures in the vicinity of the study area are situated either on the higher ground above, or on reclaimed land along the foreshore. 'Panorama of Darling Harbour from Balmain, No. 3', SRNSW digital no. 15344_a044_000017, earlier than 1880.

In 1880, the AGL Company acquired the western portion of Lot 1, then occupied by Roundtree & Company for further expansion of the Gasworks site (Figure 3.16). Thomas Rowntree (sometimes Roundtree), a master mariner and shipbuilder, established the ship-building business, Rowntree & Co, in 1853 alongside Thomas Mort and J.S. Mitchell. Rapid expansion and intense competition in the Balmain market eventually drove Rowntree to walk away from the business and Sydney in the 1860s. With financial assistance from two other individuals, Rowntree purchased a floating dock on Darling Harbour, presumably Lot 1, in 1872, where he re-commenced larger commercial operations under the name 'Rowntree & Co' (Figure 3.15).[34] By the 1880s, many of the other waterfront buildings and wharfs along the northern portion of the study area appear to have been demolished, except on Lot 2 where the 'Millers Point Boat Shed' had been in operation since 1968.[35] Over the following decade, a substantial new infilled wharf was established across the foreshore of Lot 4, with a similar extension likely also underway on Lot 3 by the end of the century, when the Darling Harbour resumptions begin (Figure 3.17).

[34] Walsh 1976.

[35] *The Sydney Morning Herald*, 16 May 1868, p 1 – 'Advertising'.

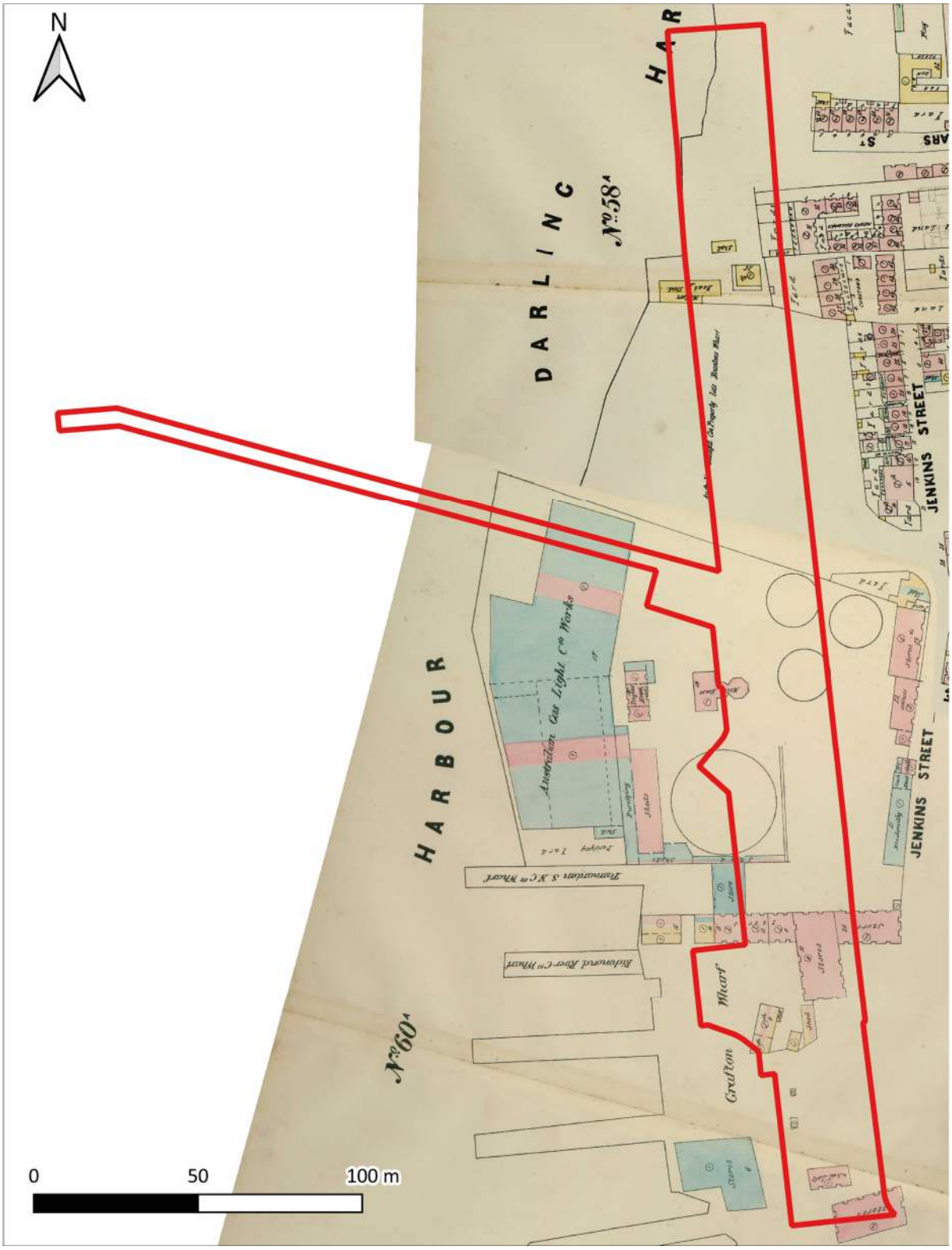

Figure 3.16: The project area as shown on Dove's c.1880 plan. Numerous structures in the northern portion of the study area have been removed, excluding several timber buildings on Lot 2. Pink denoted brick or stone, blue for iron, and yellow for wood. Plans copied by Percy Dove in 1880. Dove's Plans of Sydney, Sheet 60A and 58A. Historical Atlas of Sydney, CSA.

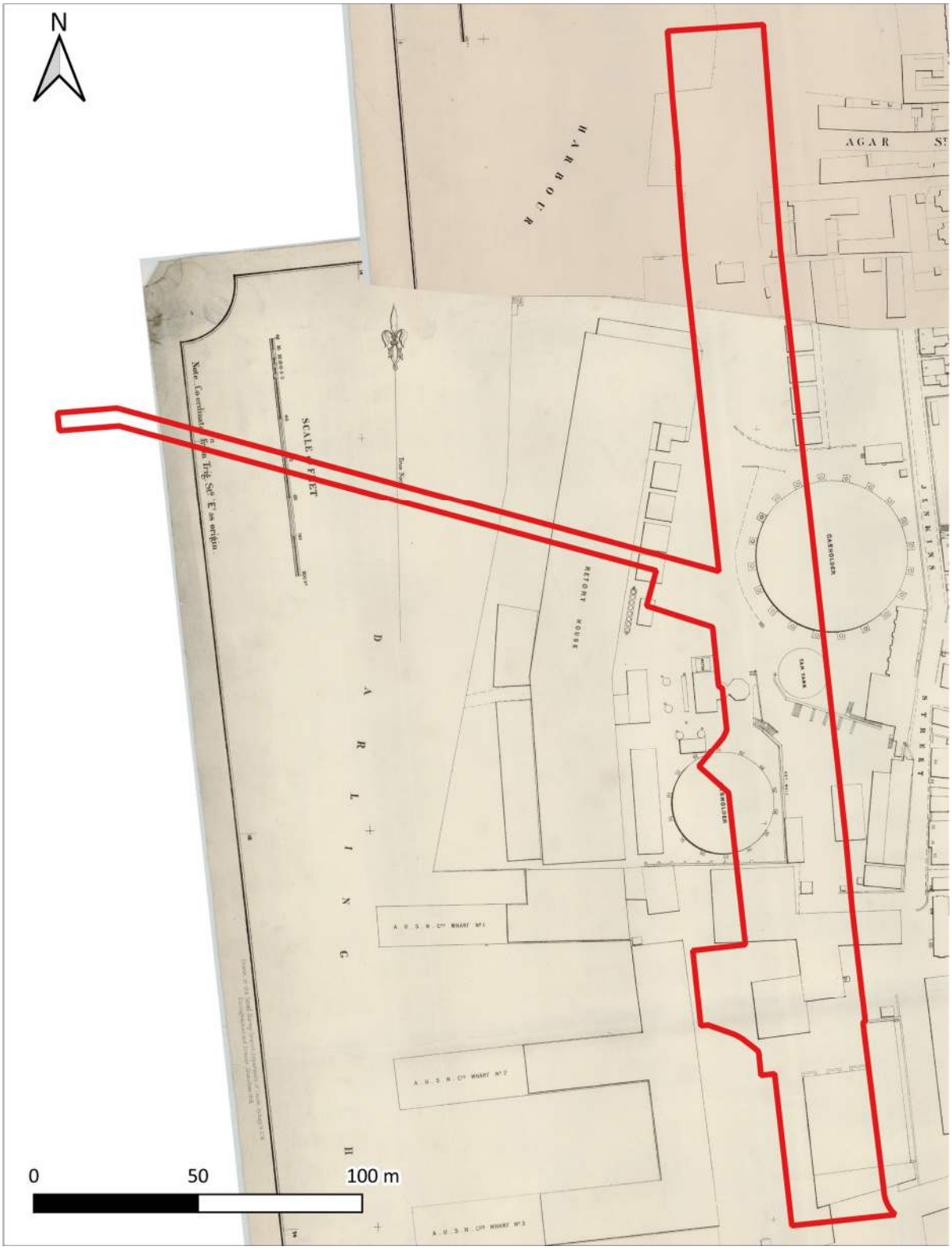

Figure 3.17: The study area in 1888-91, showing the northern portion of the study area as having been largely cleared, whereas the Gasworks and Grafton Bond Stores are well established. SLNSW, Metropolitan Detail Series, Sections 67 and 93. ML M Ser 4 811.17/1.

3.5 AUSTRALIAN GAS LIGHT CO (NORTHERN STAGE 3)

The first grant of land on this waterfront, later acquired by AGL, was made on 11 November 1808, during the interregnum after Governor Bligh was deposed (Figure 3.18).[36] Like many other grants of dubious probity made during this period, it was confirmed to the grantee, John Macarthur, by Governor Macquarie on the notional date of 1 January 1810.[37]

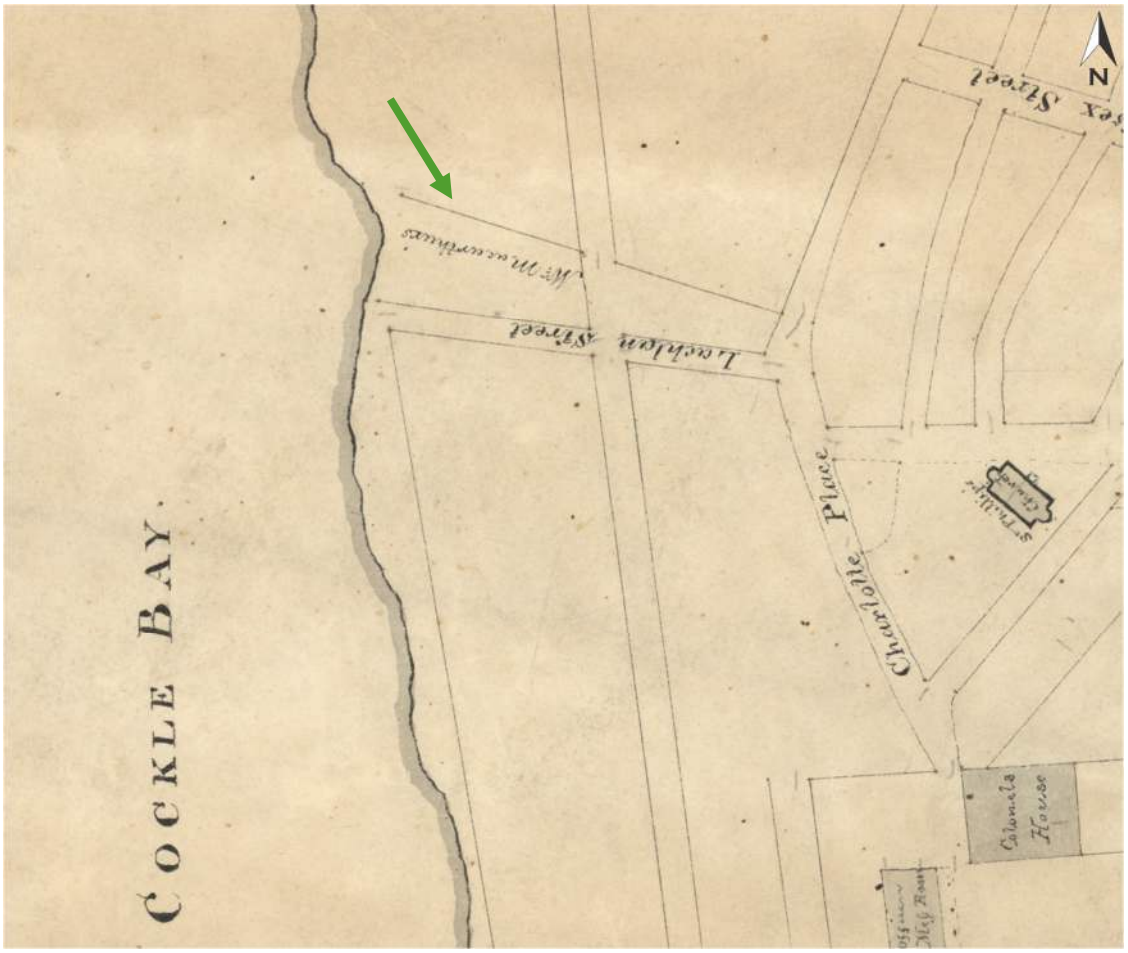

Figure 3.18: John Macarthur's 1808 grant (arrowed) shown on the c.1821 plan 'A Sketch of the Town of Sydney'. Kent Street runs north-south through his grant. SLNSW ML, M ZM4 811.16/1821/1.

The 1808 grant has to be seen in the context of Macarthur's early ambitions for the 55 choice acres (c.22 ha) at Pyrmont which he had acquired in 1799. In the years around 1808, Macarthur and his business associates sought to develop trading ventures in timber, spirits, salt and salted fish from this estate in Darling Harbour. In fact, the only substantial improvement made at Pyrmont was the erection of a massive tower windmill by Macarthur's merchant partner, Garnham Blaxcell, between 1807 and 1809, and the Pyrmont project lapsed when Macarthur returned to England in 1809 to give evidence in the trial of Colonel George Johnston. When Macarthur eventually returned to Australia in 1817, he

[36] Ryan 1981: 257, no.232.

[37] NSWSA, 6/10/45/11087.

became primarily concerned with his country estate at Camden and with the breeding of sheep.[38]

The 1808 grant in Millers Point, the future site of the AGL Company, was much smaller than Macarthur's Pyrmont estate, occupying a trapezium of 2 acres 1 rood and 10½ perches (c.0.9 ha), but it was strategically situated and may have been intended to play a role in the Pyrmont project.[39] It extended to the east as far as Princes Street and was intersected by Kent Street.[40] By 1821, there was a fledgling thoroughfare on the southern side, named Lachlan Street after the Governor but there was little development of the foreshore (Figure 3.18).

At some stage, however, certainly by the 1820s, Macarthur constructed a wharf and an adjacent cottage on the southern half of his frontage with Darling Harbour.[41] At the end of the decade an army officer, Lieutenant Burrows, built cottages intruding marginally on Macarthur's Kent Street frontage, while Aspinall Browne and Co., prominent merchants and wool-exporters, had taken up the land to the south and built their own wharf adjacent to Macarthur's. In November 1831, however, Macarthur sold the 2¼ acres (c.0.9 ha), divided into eight unequal allotments (Figure 3.19).[42]

Figure 3.19: John Macarthur's sub-division of his 2¼ acres in Millers Point, offered for sale in November 1831. SLNSW ML, ZM2 811.171/1831/1.

The Millers Point property was highly desirable. All eight allotments were instantly sold at a total price of almost £1,000 an acre.[43] The price was even higher for the two harbourside allotments, no's 1 and 2, later identified as lots 15 and 16 of the city section 67. Lot 1 (15) reached £585, while the slightly larger lot 2 (16), which included the wharf, was sold to

[38] Matthews 1982: 7-8; Dunlop 1966; Steven 1967; Hainsworth 1982.

[39] Ryan 1981: 257, no.232.

[40] ZM2 811.171/1831/1, ML SLNSW.

[41] Map SZ 434 NSWSA.

[42] ZM2 811.171/1831/1, ML SLNSW; Fifer 1992: 94.

[43] *Sydney Monitor*, 16 Nov 1831, p.3.

James Jenkins for £625. Jenkins also bought the smaller Lot 3, which extended East to Kent Street, for £140.[44]

3.5.1 THE GASWORKS: 1836 – 1869

The potential of coal-gas to illuminate factories, houses and streets was increasingly recognised as the Industrial Revolution gathered force in the later 18th century. The successful conversion of scientific innovation to commercial reality was most dramatically achieved by a brilliant Scottish engineer employed after 1777 by Britain's leading steam-engine manufacturer. The practical genius of William Murdock (later known as Murdoch) was encouraged by James Watt and Matthew Boulton. Among Murdock's many innovations was the successful use of coal-gas in 1792 to light the buildings at Boulton and Watt's Cornish plant at Redruth. He was encouraged to develop the potential of gas light and in 1803 he illuminated part of the firm's great Soho factory in Birmingham.[45]

This lighting of Boulton and Watt's factory attracted widespread notice and in 1804-1805 Murdock was employed to apply his new technology to the huge cotton mills in Manchester operated by Phillips and Lee. From then onwards, the lighting of city streets became a principal objective of a number of entrepreneurs, assisted by the failure of Murdock to patent his innovations. Philippe Lebon in France and Friedrich Winzler (anglicised as Winsor), who moved from Brunswick to Britain in 1803, publicised the need for street-lighting. The ensuing public interest resulted in 1812 in the creation of the Gas Light and Coke Company in London by royal charter enabled by an Act of the British Parliament.[46]

After severe teething problems were overcome both in London and Paris, there were by 1822 four public gas companies in London, lighting many streets by means of over 200 kilometres of mains fed from 47 gasholders and over 1300 retorts.[47] Gas lighting had become a major industry and began to spread across the globe.[48]

In the United State of America, the first tentative lighting of streets had already occurred in Newport, New Jersey, in 1805 and more generally in Baltimore in 1816. St Petersburg in Russia had its first few street lights in 1819.[49]

In the British Empire, however, the first establishment of public gasworks did not occur until the mid-1830s. Canada led the way, with a Parliamentary Act to enable the lighting of Montreal with gas in 1836.[50] Simultaneously in New South Wales the provisional Australian Gas Light Co. inaugurated a series of meetings early in 1836, which resulted in an interim Board of Directors being appointed in April, followed by formal elections on 28 June. The charter of incorporation was finally issued on 7 September 1837.[51]

The first directors in 1836 were respectable citizens. The Deputy Chairman was Thomas Shadforth, a distinguished soldier who in retirement played a prominent role in the commercial affairs of the colony.[52] A.B. Spark, the owner of Tempe House and a busy businessman, was the Treasurer, while the Secretary, Ralph Mansfield, was a Methodist

[44] ZM2 811.171/1831/1, ML SLNSW.

[45] Everard 1992: 13-15.

[46] Everard 1992: 15-26.

[47] Ure 1843: 545.

[48] Abbott 2016.

[49] 'Gas Lighting' *Wikipedia*.

[50] *Provincial Statutes of Lower Canada*, 6 William IV.

[51] *Commercial Journal and Advertiser* 16 Apr 1838, p.2; *Sydney Herald* 15 Sep 1836, p.4; Lukey 1897: 1.

[52] 'Shadforth, Thomas (1771–1862)', *ADB*.

preacher who edited significant newspapers.[53] The interim President had been Richard Jones, a pastoralist and merchant who adorned many committees, but he was replaced as foundation Chairman by Henry Wilson, who was also the First Police Magistrate. Wilson was less happy a choice, for he was a stormy petrel in civic life and was dismissed from his police magistracy in 1840.[54] There were 11 other directors, including Sir Charles Nicholson, at this time just beginning his distinguished commercial, educational and social career.[55] Another director, William Bourne, had had earlier experience of running gasworks in Scotland and France and claimed to be the first man to manufacture gas in Australia.[56]

After two months, the Board issued a prospectus on 1 September 1836. This appealed to the successful introduction of gas light into Britain, 'one of the highest luxuries conferred by science on modern times', and argued the case that improved lighting offered 'strong protection to person and to property…in shops, offices, and the various places of public resort'. The estimated outlay for plant and 12 kilometres of piping around the city, starting in George Street, was £18,000.[57]

The company searched for a suitable location for manufacturing the gas. Accessibility to heavy transport, a substantial area for the plant and a low-lying site, so that the manufactured gas, lighter than air, would move readily upwards in pipes to its consumers, were prime considerations for gasworks worldwide. So too was the knowledge that 'at best, the works do not improve the amenity of any neighbourhood'.[58] The 1836 Act provided that the plant must be sited outside the city limits, which was unacceptable to the company, but it did not succeed in having this clause amended until 18 September 1839. The change in the Act retrospectively legitimated the company's choice of the harbourside portion of John Macarthur's 2¼ acres (c.0.9 ha) in Millers Point.

In anticipation of legislative change, the company's former interim President, Richard Jones, purchased allotment 1 (15) of Macarthur's 1831 sub-division from the initial purchaser on 26 July 1839 and immediately sold it to the Gas Light Company. In the following October, after the Legislative Council had amended the Act, the company purchased the adjacent allotment, 2 (16), from Mrs Jenkins. The Board then instructed a surveyor, E.J.H. Knapp, to measure the two allotments and to propose a sub-division of allotment 2 (16). Knapp's diagonal line drawn across the Jenkins land created a neat rectangle out of two irregular lots (Figure 3.20).[59]

[53] 'Shadforth, Thomas (1771–1862)', *ADB*; Parsons, V. 1967. 'Mansfield, Ralph (1799–1880)', *ADB*.

[54] Shineberg, D. 1967. 'Jones, Richard (1786–1852)', *ADB*; King, H. 'Wilson, Henry Croasdaile (?–?)', *ADB*.

[55] Macmillan, D.S. 1967. 'Nicholson, Sir Charles (1808–1903)'. *ADB*.

[56] *Sydney Herald* 15 Sep 1836, p.4; *Sydney Free Press*, 10 Jul 1841, p.1.

[57] *Sydney Herald* 15 Sep 1836, p.4.

[58] Paton, J. 1879. 'Gas and Gas-Lighting', *Encyclopædia Britannica*, 9th ed., vol.10, p.90.

[59] AGL Co. Minutes, ML MSS, AGL 140 pp.47-48, SLNSW.

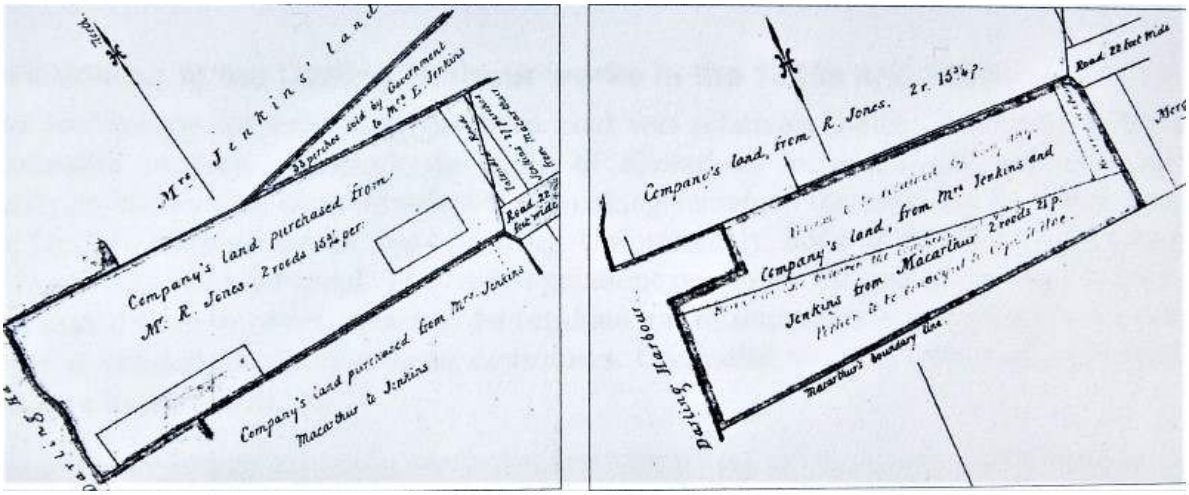

Figure 3.20: The drawings of the harbourside allotments 1 and 2 sold in the Macarthur sub-division of 1831 and acquired eight years later by the AGL. The drawings were made on separate pages in the minute-book of the company's Committee of Works (CofW) by surveyor, E.J.H. Knapp, in 1839. AGL Committee of Works Minutes. ML AGL 140 pp.47, 48, SLNSW.

The new trapezium on the southern part of lot 2 which had become surplus to the company's requirements was sold to Captain Milne, with the right of repurchase within 14 years.[60] The site of the first gasworks accordingly contracted to 4 roods 21½ perches (c.0.4 ha) from its original 4 roods 37¾ perches (c.0.5 ha).[61] A corollary to the reconfiguration was the loss of the Macarthur wharf, now owned by Captain Milne. The company soon built its own wharf just to the north, projecting 'several feet' into the harbour.[62]

Between 1838 and 1841 the Directors began attracting customers. It was a slow process and encountered a few problems. First the Directors need to identify the nature of the market for gas and the second to determine the price for gas when there was no experience of costs available.[63]

The first market which clearly interested the Directors was the Government – and the lighting of public lamps of Sydney with gas. This market, while obvious, was not without its problems. In May 1838 the Directors approached the Government who responded with interest and agreed to light the public lamps with gas once the AGL Company was able to supply it.[64] It was later agreed (August 1838) that the AGL Company would also supply the lamps and posts (to be imported from Great Britain).[65] There were delays in their arrival but when they finally arrived in September/ October 1840 they were inspected by a Government representative and it was later intimated that 50 lamps and posts would be required.[66] It would appear that a short time later the Government then changed its mind and told the AGL Company it would only pay for those that could be affixed to public buildings – resulting in only 23 being lamps being erected.[67] Ginswick notes that while the

[60] ML AGL 140, p.48, SLNSW. The land was in fact repurchased by the company in the 1860s.

[61] ML AGL 140, pp.48-50, SLNSW.

[62] *Australian*, 29 Jun 1841, p.2.; Committee of Works 22 July 1841 (cited in Ginswick papers, unpublished manuscript, n.d. chapter v; 14).

[63] ML MSS 9034 6/33, SLNSW (cited in Ginswick papers, n.d. chapter iv).

[64] Col Secretary to the AGL Co 23 May 1838 (cited in Ginswick papers, n.d. chapter iv; 22).

[65] Col Secretary to the AGL Co 18 August 1838 (cited in Ginswick papers, n.d. chapter iv; 14).

[66] Col Secretary to the AGL Co 13 October 1840 (cited in Ginswick papers, n.d. chapter iv; 14).

[67] Col Secretary to the AGL Co 20 February 1841 (cited in Ginswick papers, n.d. chapter iv; 14).

costs of lamp and posts were discussed, at no point did the Government or the AGL Company raise the price of gas to be charged.[68]

The price of gas for second market, the private consumer, was considered by the Directors. Gas could be sold/ provided in two main ways, by quantity through a meter or by supplying it for a period of time under a contract. At this point sale by meter could not be extensively employed as they were not yet reliable instruments for measuring the consumption of gas and if something went wrong, which was probable, they would be difficult to repair. However, some meters had been imported and could be used.[69] As a result supply by contract was the main avenue of sale. The maximum price was fixed at a limit 'descending only a little below the cost of burning with sperm oil'.[70]

The price of gas for public lighting was first raised by Government in November 1840. The AGL Co realised it could not treat the Government the same as a private individual. In Great Britain the practice was to charge a lower rate for public than for private lighting. The AGL Co. also realised in the future there would be a large potential demand if managed carefully. The AGL Co. offered to light each public lamp for £10 per annum, which included maintenance and the services of a lamplighter.[71]

What was to follow was experimentation with burning sperm oil in different Argand burners to discover upper price limits.[72] A decision on prices was made by mid-1840. Gas supplied through a meter was to be sold at 25/- per thousand cu.ft. with the meters being purchased from the company by the consumer (in exceptional circumstances a consumer could provide their own). Gas supplied by contract depended on the type of burner and the period of consumption.[73] This opened the potential for a third market, large consumers whose demand would be more responsive to lower prices than those charged to ordinary consumers, these were referred to as 'special contracts'.[74]

To attract the private consumer to gas the AGL Co. produced a pamphlet on the advantages of the uses of gas and distributed it to Sydney households. The pamphlet emphasised the value of gas lighting with its superiority and uniformity, its saving of labour, its cleanliness, its safety (based on lower premiums being charged by fire insurance offices in Great Britain where gas was used in factories and public works), and its comparative cheapness. It referred to the value of gas for cooking and warming the home.[75] Ginswick notes that the pamphlet must have had some influence, by the end of the first night of lighting the AGL had contracts with 119 consumers.[76]

The company in anticipation of being empowered to proceed had already ordered the necessary equipment from the London firm, Bryan, Howden & Co. This arrived in Sydney Harbour in May 1839, along with a British engineer, James Bryan.[77] By May 1841 the first small plant was ready to supply gas to Sydney.

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[68] Ginswick papers, n.d. chapter iv; 14 (ML MSS 9034 6/33, SLNSW).

[69] Ginswick papers, n.d. chapter iv; 14 – Forty-five meters had arrived from London (ML MSS 9034 6/33, SLNSW).

[70] AGL Co. Minutes 3 June 1839 (cited in Ginswick papers, n.d chapter iv; 15).

[71] AGL Co. Minutes 3 June 1839 (ref in Ginswick papers, n.d. chapter iv; 15).

[72] Ginswick papers, n.d. chapter iv; 15 - Unfortunately these estimates have not survived in the company records (ML MSS 9034 6/33, SLNSW).

[73] AGL Co. Minutes 14 December 1840 (cited in Ginswick papers, n.d. chapter iv; 15).

[74] Ginswick papers, n.d. chapter iv; 15 (ML MSS 9034 6/33, SLNSW).

[75] Circular address to the Inhabitants of Sydney. AGL Co. Minutes 14 December 1840 (cited in Ginswick papers, n.d. chapter iv; 16)

[76] Ginswick papers, n.d. chapter iv; 16 (ML MSS 9034 6/33, SLNSW).

[77]Lukey 1897, p.3.

In April 1841 sufficient work was completed at the gasworks site to enable the Directors to fix a date to introduce gaslighting to the streets of Sydney. It was determined a fitting date was 24 May 1841, in honour of Queen Victoria's birthday, this would then coincide with the general celebrations in the Colony. In addition, gas would be provided free of charge to all consumers on that evening, supper was provided to all men who had helped build the works, and a luncheon, cooked on a gas range imported by the AGL Co., was to be held in the retort room of the works for Directors, trustees and invited State dignitaries.[78] After a series of disputes between Directors, the luncheon was later dropped.[79]

In the evening, 24 May 1841, 180 burners were lighted, including several shops. The AGL Co. lit a specially constructed a triangular building on Church Hill (St Phillips, Millers Point would have been under construction at this time).[80]

The site remained small for the first 20 years. Rosemary Broomham has described the early plant:

> The retort room contained cast-iron retorts about seven feet long, stopped at one end and sealed with a gas-proof door at the other. They were arranged in benches of five to seven above a producer fire which was fed with some of the coke left after the coal had been carbonised. The purifying room contained a tank of lime water which removed the hydrogen sulphide (rotten egg gas) when the gas was passed through it. In between these rooms was a condenser which liquefied the tar and ammonia that were the other by-products.
>
> …The site preparation involved a significant amount of quarrying, to level the works yard and excavate the tanks for the gasholders. Some of the stone was cut into ashlar blocks for use in the buildings.[81]

The first gasholder, completed and put to work in May 1841, was much admired. In the 1843 edition of his *Dictionary of Arts, Manufactures, and Mines,* Andrew Ure described the characteristic design of the 'gasometer' at this time with his usual authority:

> It consists of two essential parts; 1. of an under cistern, open at top and filled with water; and 2. of the upper floating cylinder or chest, which is a similar cistern inverted and of somewhat smaller dimensions, called the gas-holder…. The best form of this vessel is the round or cylindrical; both because under equal capacity it requires least surface of metal, and it is least liable to be warped by its own weight or accidents. … Its dimensions ought to be such that when elevated to the highest point in the water, the height may be equal to the radius of the base.[82]

In May 1841 the *Sydney Herald* described the first gasholder at Millers Point in admiring terms:

> Yesterday [19 May 1841], the arduous and critical task of launching the Gas Company's gasometer into the tank, was performed in the most beautiful and efficient style. This immense vessel is made of sheet iron and is a cylinder of 50 feet in diameter by 20 feet deep: it floats in water and rises and falls according as it becomes charged or discharged with gas.[83]

[78] AGL Co. Minutes 10 May 1841 (cited in Ginswick papers, n.d. chapter iv; 21).

[79] AGL Co. Letter book January 1840 – December 1846, Secretary to Col. Barney No.246 (cited in Ginswick papers, n.d. chapter iv; 21).

[80] *The Australian* 25 May 1841.

[81] Broomham 2007: 14.

[82] Ure 1843: 552.

[83] *Sydney Herald*, 20 May 1841, p.2.

In 1842 a second gasholder was constructed. A sub-division plan of the adjacent streets in 1842 gives a simple, though not quite accurate, outline of the two circular gasholders, the retort room (the longest rectangle), the purifying room and the forge, but it does not show the new wharf which replaced the one John Macarthur had built, nor the high chimney beside the retort house which made the site so visible. The entry from Kent Street to the East was down the short thoroughfare known immediately as Gas Street or Gas Lane (Figure 3.21).

The *Australian* described the preparatory works in June 1841:

> A second tank for a gasometer of the same dimensions (namely, fifty-one feet diameter, and twenty one feet deep), as the one which at present supplies the town, is being sunk. The whole of the excavations, through the solid rock, necessary to laying the foundation of the whole building, are nearly completed; the soil raised to the height of fourteen or fifteen feet, and the surface formed with a concrete of coal tar and gravel.[84]

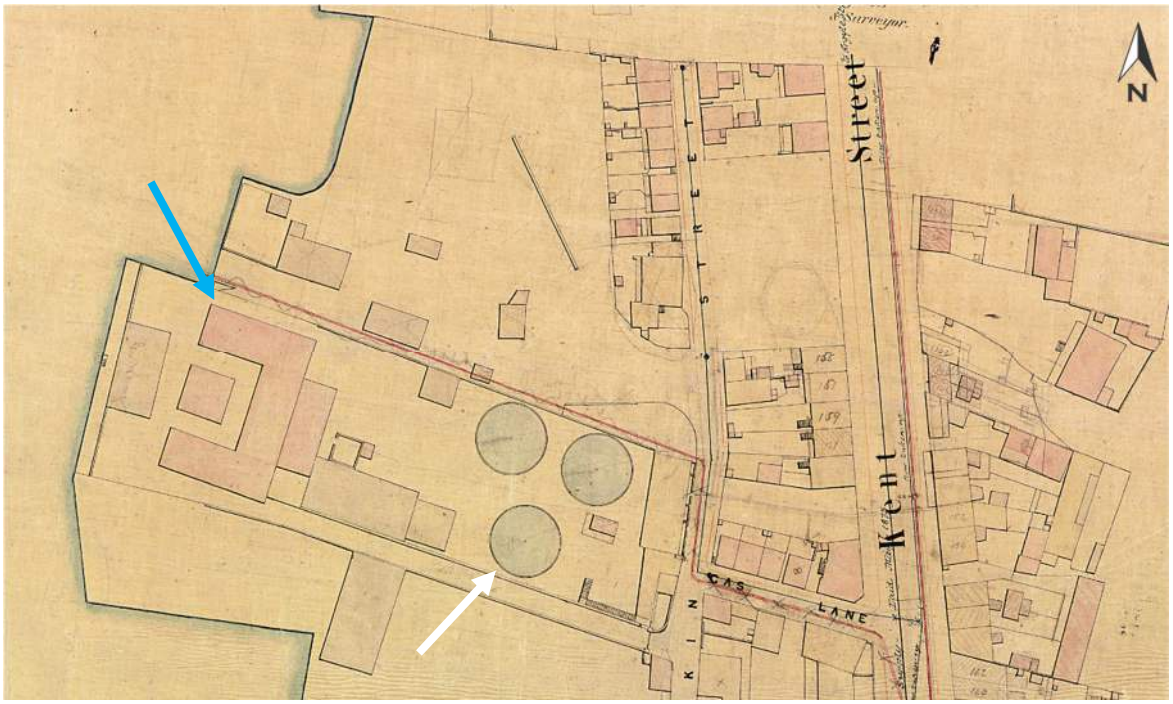

Figure 3.21: The site drawn in 1857, as part of the Trigonometrical Survey of Sydney, showing the third gasholder (white arrow) which was completed in 1859. The third gasholder took c. 3 years to quarry and had been started in 1851. The northern wing of the retort house (blue arrow), near the wharf, was also completed in 1859. Trigonometrical Survey, Plan C2 Section 1. Historical Atlas of Sydney, CSA.

During the first ten years (1841-1851) the AGL Co. showed clear signs of growth both in the private and public market. Gaslight was provided in shops, hotels, public houses, churches, offices and other places of work but only in a few homes.[85] Contracts for external gas lighting was generally for street lamps to be lighted from dusk to dawn every night barring the five night during a month of the full moon, with the exception of outside lights maintained by publicans which were lighted every night of the year.

[84] *Australian*, 29 Jun 1841, p.2.

[85] Ginswick papers, n.d. chapter v; 1-6 (ML MSS 9034 6/33, SLNSW).

Through this decade the Government continued with lamps fixed to public buildings, the only exception being in 1849 where two lamps affixed to posts were erected on the east side of Circular Quay. In 1843 the Government shared the responsibility of covering the costs of public lighting with the City Corporation.[86]

The town of Sydney was incorporated in July 1842 and was empowered to light the city and charge a rate for this. The City Corporation renewed the contract with the AGL Co. for lighting the existing 11 lamps (formerly belonging to the Government and now the responsibility of the council). However, it took three years of negotiation between the AGL Co. and the City Corporation before the City Corporation decided to use gas to illuminate its streets. The AGL Co. agreed it was prepared to sell the lamps and posts at prime cost and forgo any profits on the sale of the gas, as was the case in Great Britain.[87]

The City Corporation had established a Lighting Committee and in mid-March 1843 it released a report on the costs of lighting the city with gas. The report attacked the AGL Co. and stated it would be cheaper for the council 'to light Sydney with oil, than to encourage the exorbitance of monopoly by entering into any contract with the Gas Company on such terms as them stipulated by them in negotiating with the Council…'.[88] The Committee was then ordered to investigate the cost of lighting the city with oil only. A report was published at the end of March, with no definite conclusions. It acknowledged gas was cleaner and provided a clearer purer light than oil but defended its previous report. It provided an estimate of lighting the streets with oil and suggested it would be half the cost of lighting with gas.[89]

The AGL Co. was not asked to attend or report to the Lighting Committee meetings. It responded quickly to the first report, appointing its own Special Street Light Committee (Special Committee) to negotiate with the Council consisting of George Barney, Thomas Woolley and Thomas Barker, and giving it full power to determine the terms of any contract which could be concluded.[90] After the Lighting Committees second report the Special Committee produced a statement rebutting the charges made against the company dealing in detail with all the inaccuracies and distortions contained in the reports. In particular it dealt with being unjustly accused of trying to extract exorbitant prices 'seeing that lamps and pillars have been offered at prime cost, and gas at less than prime cost'.[91]

There were numerous changes and additions to the gasworks site during this period (1840s and 1850s). An five-storey office cum store building and a handsome two-storey cottage were built in stone in 1844-1845 by John Morris to the design of the architect Henry Ginn on Hickson Road/ Jenkins Street: these continued to be used into the 21st century as a feature of Jenkins Street / Hickson Road (Figure 3.22, Figure 3.23).[92]

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[86] AGL Co. Letter book January 1847 – June 1859, AGL to Col. Architect 16 April 1849 (ref in Ginswick papers, unpublished manuscript, chapter v; 10).

[87] AGL Co. Minutes 7 December 1842 (ref in Ginswick papers, unpublished manuscript, chapter v; 10).

[88] Report of the Committee of the City Council appointed to consider and report upon the most suitable means of lighting the City of Sydney. 14 March 1843.

[89] Supplementary Report of the Committee of the City Council appointed to consider and report upon the most suitable means of lighting the City of Sydney. 27 March 1843.

[90] AGL Co. Minutes 20 March 1843 (ref in Ginswick papers, unpublished manuscript, chapter v; 11)

[91] Memorandum on the report of the Committee of the City Council, appointed to consider and report on the most suitable means of lighting the city of Sydney / by the Committee of Directors. 29 March 1843.

[92] AGL Co. Minutes, ML AGL 141, pp.86, 95, 107,113, 117-124, 144, 146-148, 218, SLNSW. The office cum store is now forms part of the MBS Stores complex as is referred to as Building 1 (the building was later adapted to incorporate the stone cottage and a later addition which make up the two-storey section of the building to the south). The MSB Complex is listed on the SHR (SHR number 01435).

Figure 3.22: The office/store built by AGL Co. in 1845, Jenkins Street entrance (SHR number 01435). Lukey 1897.

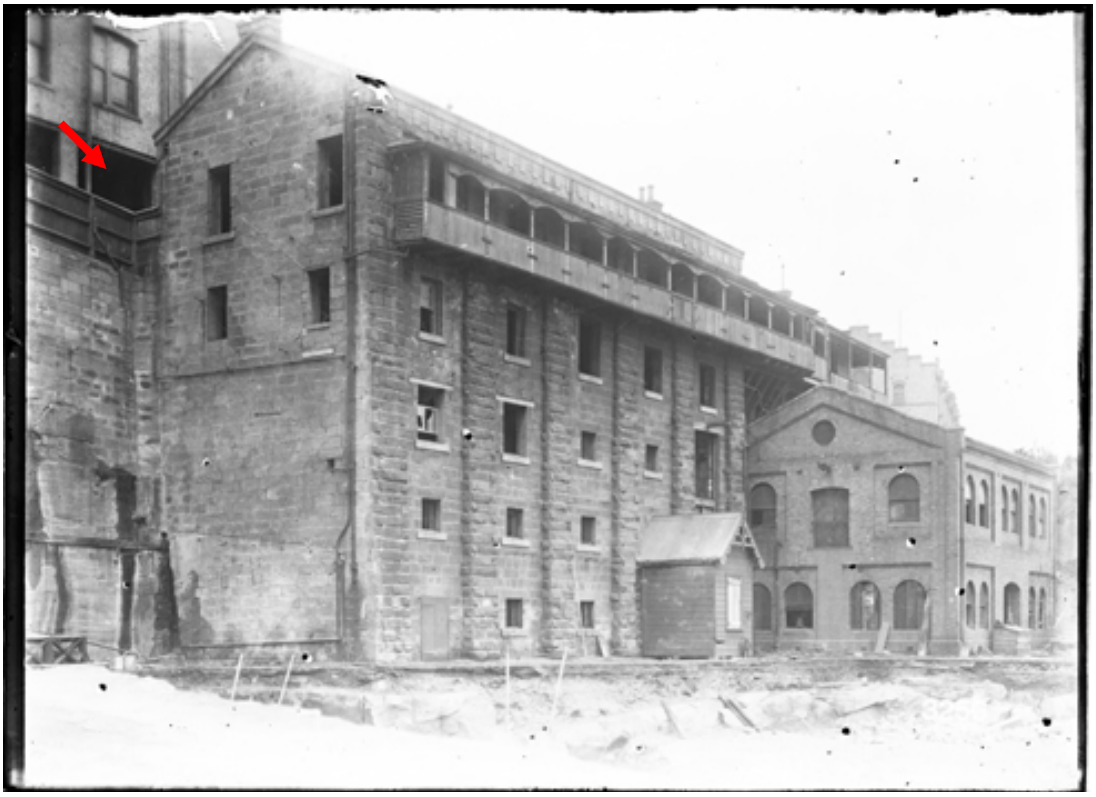

Figure 3.23: The office/store (Building 1) as viewed from Hickson Road in 1912 (prior to its conversion for use as Sydney Harbour Trust Main Store). (SHR number 01435). The Jenkins Street entrance is arrowed (also see Figure 3.22). NSWSA, NRS-9856-1-1-3256, Digital ID 9856_2017_2017000207.

Additional coal storage became necessary near the wharf, a second retort house was brought into service, a deeper well was sunk successfully in 1852 to ensure water supply and throughout the 1850s work proceeded to construct a third gasholder, which finally came in service in 1859 after excavation and other preparatory work which had commenced in 1851. In the same year, the addition of a north wing to the L-shaped retort house close to the wharf (Figure 3.24) created the U-shaped building shown on Figure 3.21.

Other sites were needed to cope with expanding demand. Already in 1852 the company had bought land at Woolloomooloo Bay and in 1854 at the Haymarket. In 1859 additional gasholders were brought into use on both these sites. It was clear that in the next decade extra land and plant would be required on the foundation site in Millers Point, which became known as the Head Station.[93] In 1863-1864 Ralph Mansfield, the Secretary of the AGL company, arranged the reacquisition of property from the southern part of the original Macarthur grant which the company had sold in 1839.[94] Permission to reclaim land on the water-frontage was obtained and in the latter years of the 1860s this greatly extended the harbourside land under the company's control, allowing for future growth both of industrial buildings and wharfage.[95] With a view to consolidating office space, land was also acquired in Kent Street and Jenkins Street.[96]

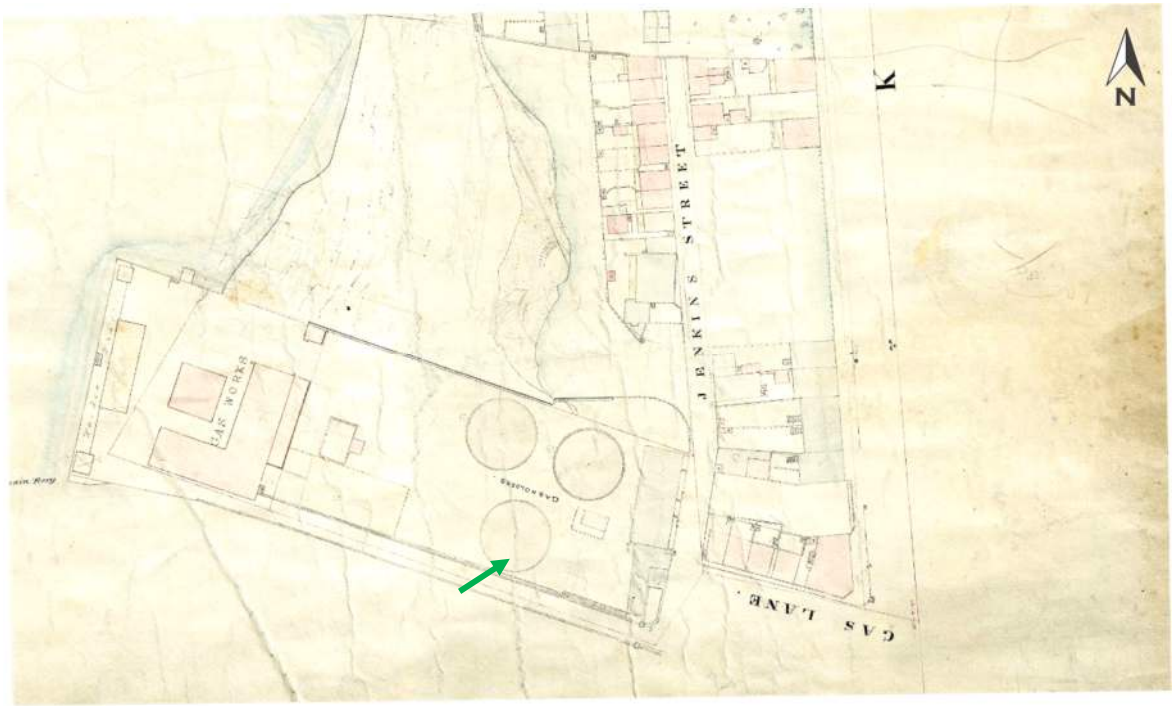

Figure 3.24: The site drawn in the mid-1850s, showing the location of the third gasholder, completed in 1859 (green arrow). The northern wing of the retort house was not yet constructed. City Detail Sheet 2A. Historical Atlas of Sydney, CSA.

[93] Lukey 1897: 10.

[94] 'Abstract of the title of the Reverend Ralph Mansfield Secretary to the Australian Gas Light Company to land at Darling Harbour', 17513/36/16/569 item 60, NSWSA; Certificate of Title, vol.94 fol.206.

[95] Lukey 1897: 12.

[96] DP 940681; ML MSS, 2921/31X, pp.343-347, 351-353, SLNSW.

By-products from the manufacturing gas from the processing of coal for gas included coke, tar, and ammonium sulphate. All of which had to be disposed of by either sale or dumping. Coke and tar had economic value, but ammoniacal liquor was dumped at sea. Coke was used as a fuel to heat the retorts or sold to the general public as fuel. The main market for tar was the general public with sales growing over the 1840s with five times as much tar sold in 1851 as that sold in 1842. Ginswick identifies that very few AGL Co. records survive in relation to this matter but does provide information on some of the activities the AGL Co. undertook to promote the sale of tar.[97]

On top of the engine house there were three large tanks in 1870, some four feet (c.1m) deep (Figure 3.25). One held water for flushing the toilets, one was for ammonia and the third stored tar. Close to the engine house there were 'pits capable of holding from six to eight thousand gallons of tar and liquor'.[98]

Throughout the 1870s the enlarged plant fed the trunk main, which had been greatly increased in size by 1865. In the retort house clay retorts replaced iron; there were savings in cost by replacing lime with iron oxide; a new steam coal-hoist was installed on the wharf to discharge directly from the ships; and a haulage system of tramways, one on the ground, the other 12 feet (c.3.5m) above, with wrought-iron wagons which could automatically discharge coal into a shed.[99]

Figure 3.25: View of the gasworks at Millers Point c.1873, watercolour by Samuel Elyard. SLNSW, DGD 5, File No. FL650473.

[97] ML MSS 9034 6/33, SLNSW (cited in Ginswick papers, n.d. chapter v; 15-16)

[98] *SMH* 13 Jul 1870, p.10.

[99] Lukey 1897: 11-14; *SMH* 13 Jul 1870, p.10. See the large 'Tar Tank' marked and named on an 1891 plan (see Figure 3.33).

3.5.2 CONSOLIDATION ON AN ENLARGED SITE AFTER 1869

The AGL Co. harbourside site approximately doubled in size during the 1860s. The details are based primarily on the minute-books of the AGL company.[100] In early 1868, following the death of the AGL Co. Engineer in December 1867, Thomas Ellerthorne Jones was appointed to the role.[101] Jones, at 48 years old, had worked in the gas industry for 30 years, the last ten as engineer to the Ballarat Gas Company in Victoria.[102] Ginswick states that Jones was 'an able, vigorous man who provided a revolutionary stimulus to the growth of the company'.[103] In March of the same year Jones plan was presented to the board. The plan called for a complete reorganisation of the method of gas production including sweeping technical changes with the purpose of increasing output while reducing unit costs.[104] Within a week of receiving the plan the Directors agreed to its introduction and set in motion.[105] Most of the necessary plant and equipment was acquired from Henry Balfour & Co., Leven Iron Works in Scotland, who also acted as technical advisors to the AGL Co.'s agents in purchasing the rest.[106]

At a projected cost of £40,000, the plan would see the 7.5 foot (c.2m) cast iron retorts discarded and replaced by 20 foot (c.6m) clay retorts. A new retort house built containing 12 benches, each of seven clay retorts and adequate coal storage capacity constructed alongside the company's wharf. Stoking was mechanised. An exhauster was installed to reduce the pressure inside the retorts during the carbonising process. Condensers were enlarged. A laboratory and new meter and governor houses, as well as an additional gas holder, twice the size of those previously used, were built. Methods of purification were to be improved: with scrubbers for more effective removal of ammonia and the installation of (larger) purifying tanks containing iron oxide instead of hydrated lime. The erection of a steam hoist on the wharf saw the unloading coal mechanised. Coal wagons, drawn by a locomotive, ran between the wharf and the coal shed. With the operation now only needing a handful of men instead of the numerous coal lumpers and wheelers normally engaged.[107]

This enlargement of the site allowed for increased wharfage, while extensive new plant was constructed on the southern section. Older buildings on the original rectangle were progressively demolished and replaced. Two plans based on the state of play around 1870 show stages in this rapid development (Figure 3.26, Figure 3.27). The U-shaped retort house to the north was modified and progressively replaced by a larger building (Figure 3.28), 182 by 80 feet (c.55 x 24m) and 60 feet (c.18m) in height, on the newly reacquired land to the South, while the three older gasholders were about to be replaced by a much larger gasholder constructed in 1869-1870 on the new land.[108]

Unfortunately, Jones died in 1868, and did not see the completion of his plan. The importance of Jones' role was not underestimated and his widow was given a gratuity of 100 guineas 'in consideration of the valuable services especially in designing the new

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[100] i.e. *AGL Co. records 1836-1930*, ML MSS 2921, SLNSW; R. Broomham, R. 2007; *Supplementary report on Land at Millers Point, Sydney: Historical Context* and Ginswick papers, n.d. particularly chapter viii (ML MSS 9034 6/33, SLNSW).

[101] AGL Committee of Works Minutes, 3 February 1868 and 5 February 1868 (cited in Ginswick papers, n.d. chapter viii; 3-4).

[102] *SMH* 25 Feb 1868.

[103] Ginswick papers, n.d. chapter viii; 3 (ML MSS 9034 6/33, SLNSW).

[104] AGL Committee of Works Minutes, 18 March 1868 (cited in Ginswick papers, n.d. chapter viii; 4).

[105] AGL Company Minutes 25 March 1868 (cited in Ginswick papers, n.d. chapter viii; 4)

[106] The Engineer to H. Balfour 26 March 1868; See also The Secretary to W. Coward 27 March 1868, Letters to England Vol III. (cited in Ginswick papers, n.d. chapter viii; 4).

[107] *SMH* 28 Sept 1869.

[108] *SMH* 13 Jul 1870, p. 10.

plant'.[109] Jones was replaced by John Newlands Wark, who had worked at the Glasgow City and Suburban Gas Company and had, for the preceding five years, been the engineer to the Auckland Gas Company.[110]

The engine house, which is marked and named in Figure 3.27 in the centre just to the East of the new retorts, was equipped with new booster engines to control the rate of extraction of gas from the retorts. A new chimney stack, towering 120 feet (c.35m) over the landscape, was completed in 1869 (see Figure 3.28).[111] The new building shown directly east of the engine house was the Meter House where the external flow of gas to consumers could be controlled. Iron oxide replaced lime in the purifiers, cutting the costs of gas production substantially.[112]

In 1869 the Sydney Morning Herald wrote of the works:

> Very extensive and costly improvements are now in progress on the premises of the Australian Gas Light Company, Darling Harbour – improvements consisting less in the alteration of the present plant than in the formation of an entirely new establishment, which will be capable of being worked with it should the demand for gas here-after sufficiently increase to require the operation of the two plants. The magnitude of the works now in progress is in striking contrast with existing arrangements; and when the new works are finished, the company will have at its command appliances fully adequate to the supply of the prospective requirements of the City. The increased power of production probably implies a diminution in the cost and many of the arrangements appear to be adapted as well to economise labour as to insure the manufacture of the best quality of gas.[113]

[109] AGL Committee of Works Minutes, 16 November 1868, and 2 December 1868 (cited in Ginswick papers, n.d. chapter viii; 5).

[110] AGL Committee of Works Minutes, 31 December 1868 (cited in Ginswick papers, n.d. chapter viii; 5-6).

[111] *SMH* 13 Jul 1870, p. 10; Lukey 1897: 12.

[112] Lukey 1897: 12.

[113] *SMH* 28 Sept 1869.

Figure 3.26: Detail of 1870 plan showing the new retort house (green arrow) to the south of the earlier retort complex (pencil outline), which was demolished during 1868. The 1870 gasholder (white arrow) co-exists with the three earlier gasholders, two of which are shown as disabled. 'Australian Gas Light Company Sydney plan of [gas] mains' Sheet 3. SLNSW ML, 811.17/1870/1.

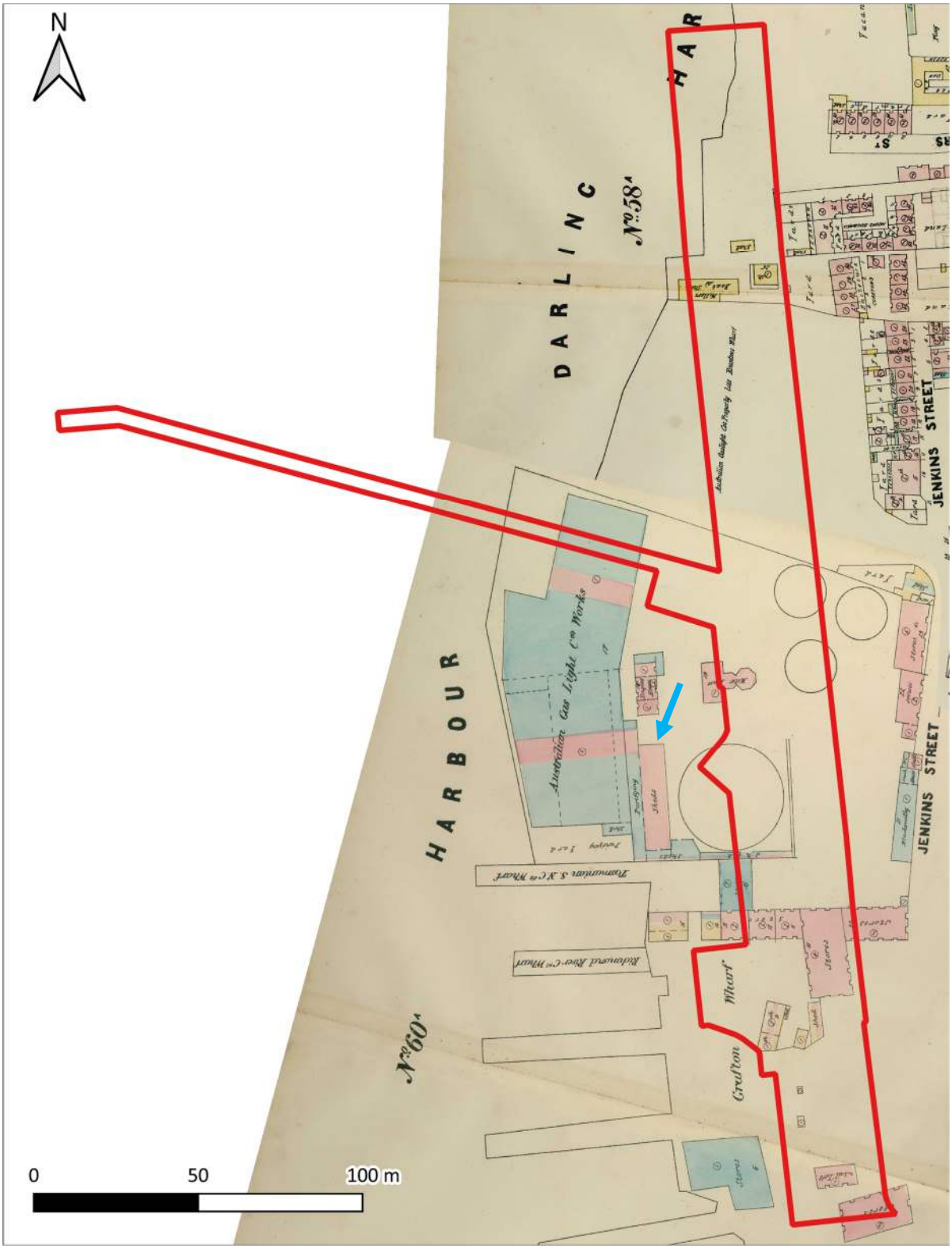

Figure 3.27: Plan of the extended AGL site as it was in c.1880, showing additional details of coal-sheds (arrowed) beside the new retort house (labelled), as well as buildings on Jenkins Street. Pink denoted brick or stone, blue for iron, and yellow for wood. Plans copied by Percy Dove in 1880. Dove's Plans of Sydney, Sheet 60A and 58A. Historical Atlas of Sydney, CSA.

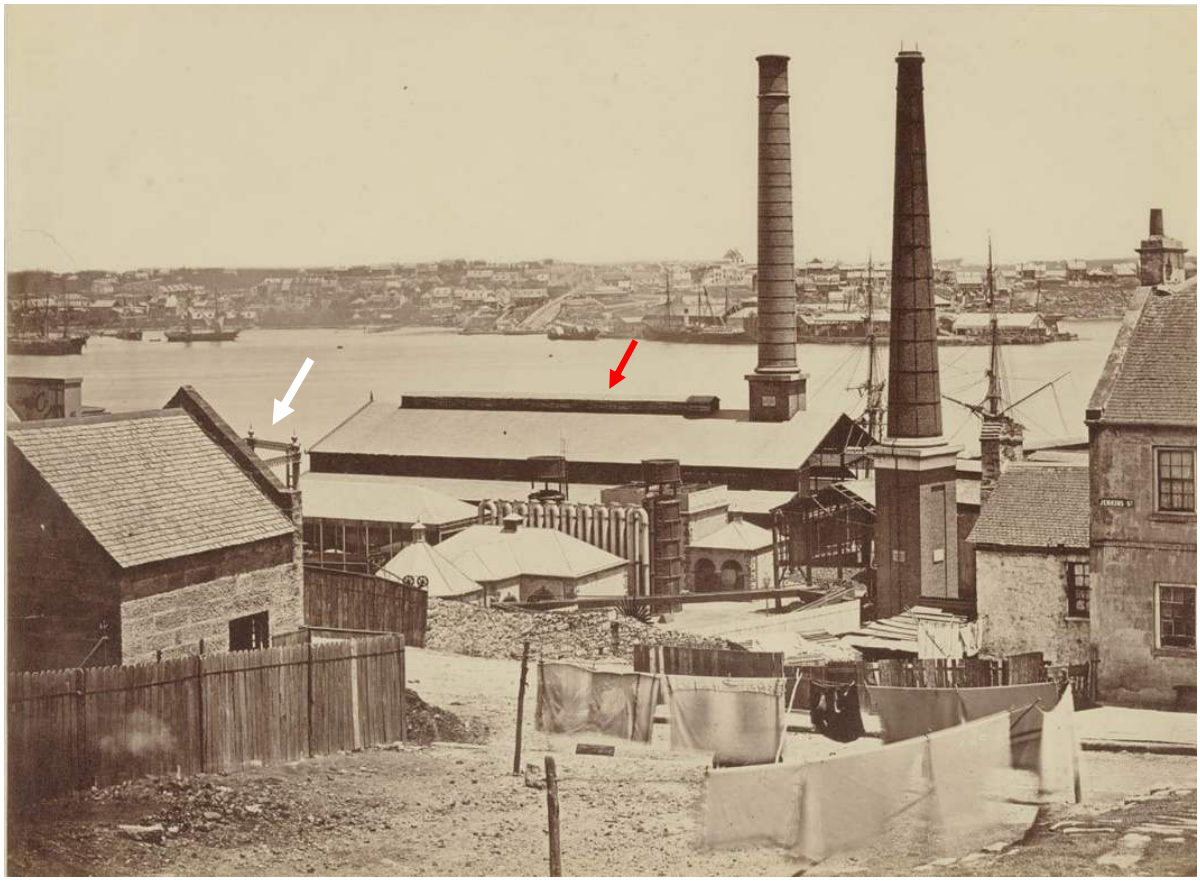

Figure 3.28: The Millers Point head station in 1870 showing the new retort house (red arrow), two high chimney stacks and, and peeking out from the gable of the building in the left foreground two of the columns surrounding the 1869 gasholder (white arrow). View to northwest. SLNSW, SPF / 955.

For a period these extensive alterations were supervised by the company's own engineer, John Newlands Wark, a Scot who had previously run the Auckland Gas Works in New Zealand.[114] However, Wark was a difficult man and was dismissed in 1873.[115] The new gasholder, imported from Scotland, had a diameter of 100 feet (c.30.5m), twice that of its three predecessors. Some 30 feet (c.9m) of bedrock had been excavated both above and below the high tide mark, twice as much as for the three previous gasholders at Millers Point. The western part of the new gasholder was partially above the height of bedrock and therefore on reclaimed land.

When the new gasholder was completed in 1870 this part of the foreshore had been partly reclaimed but part of the tank of the gasholder still was not constructed fully within bedrock. The western edge and possibly western half would have had a tank built partially above the height of bedrock. Bedrock was below high tide, and probably deeper, which means that the upper 0.50m to 2.0m of the tank was built in fill (Figure 3.29). The placement of the 1870 gasholder across rock and partly on reclaimed land allowed for tar seepage which was further exacerbated by the presence of a volcanic dyke crossing through the northern edge of the excavation for the gasholder.[116]

[114]Find a Grave 2024; *SMH*, 13 July 1870, p.10.

[115] AGL Minutes of Special Committee 16 October – 12 November 1873; Minutes 12 November 1873; Minutes 26 November 1873 (cited in Ginswick papers, n.d. viii; 5-6).

[116] Coffey 2013.

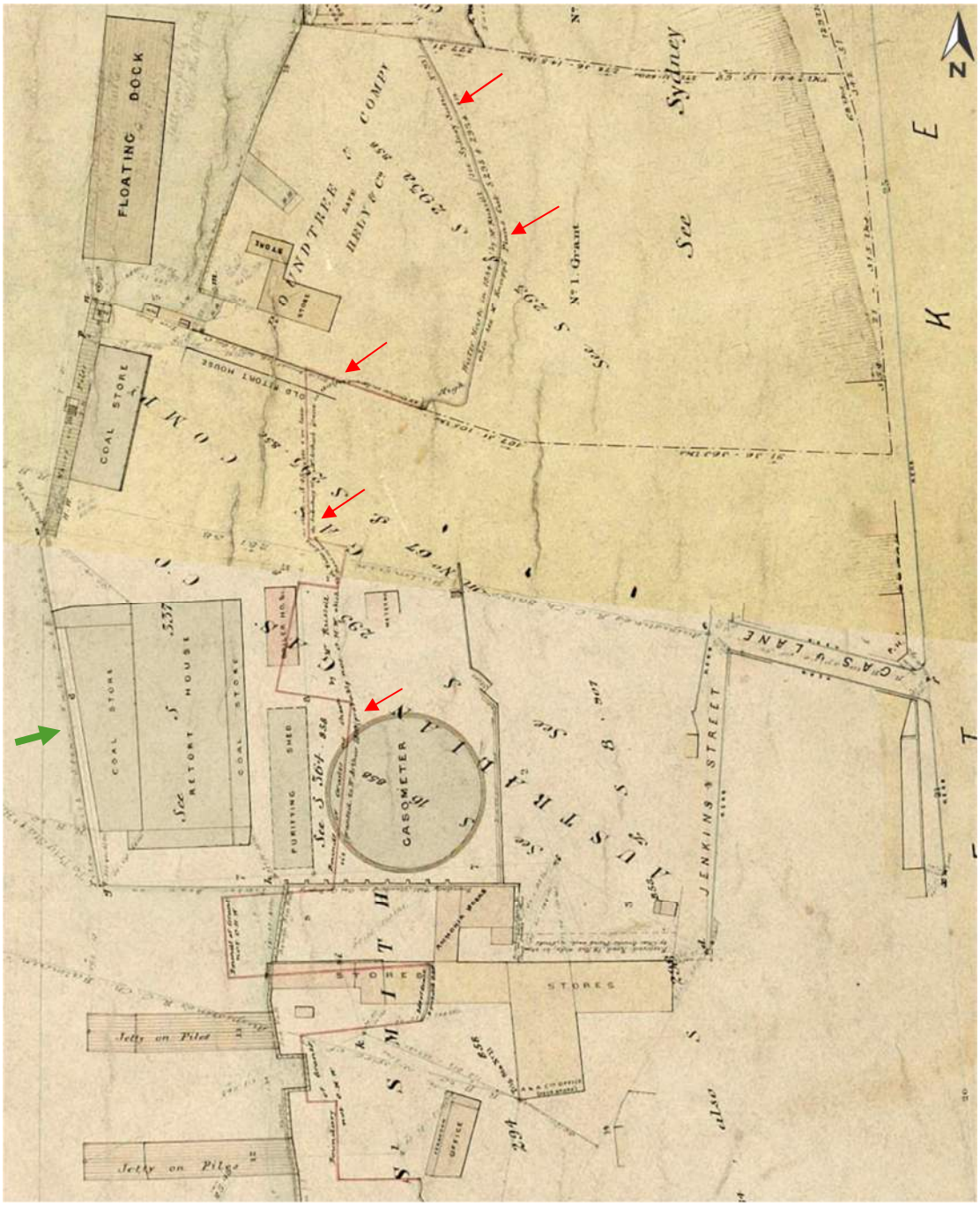

Figure 3.29: The enlarged Head Station in 1875. The three 1840 gasholders and the 'old retort house' on the north have now been demolished (see Figure 3.21). The frontage of the coal store on the harbour is described as comprising 'Piles with stone wall at back' (green arrow). Rowntree's 2 acres, sold to AGL in 1880, are to the north. The line of the early foreshore (red arrows) passed under the gasholder indicating it was partly built on reclaimed land. The western land with the new retort house was completely built on reclaimed land. Darling Harbour Frontage, Sections Nos 1 and 2, AO Maps 4775 and 4774, NSWSA.

The gasholder of 1869-1870 was itself state of the art technology:

> It has been made on what is known as the non-trussed principle. The site is surrounded by thirteen iron columns, each thirty feet high, and to the top of them the circular iron lattice girder is bolted. There is a sort of fret work in relief on the outside of the girder, and each of the columns is surmounted with a ball and a spear. The holder stands well

> up on the face of the hill, and it is very handsome.... On the rising ground above the holder there is a stone retaining wall 16 feet long with a depth of 20 feet. This wall has been built to protect the holder and form the roadway for vehicles.[117]

All this work was supervised by men of distinction. The Clerk of Works for the massive changes around 1869 was Norman Selfe, at the beginning of his distinguished career as an engineer.[118] The supervising architect for the reshaped works was George Allen Mansfield, already the well-known architect for NSW schools.[119]

During the 1870s the company gradually satisfied its need for substantial offices close to the Head Station. Suitable land between Jenkins Street and Kent Street was acquired after the death in 1874 of Elizabeth Jenkins (by then the widowed Mrs Burnicle), who had first sold land to the company in 1839, and in 1882 a handsome, two-storey building, designed by Mansfield, was completed on Kent Street just north of Gas Lane (Figure 3.30).

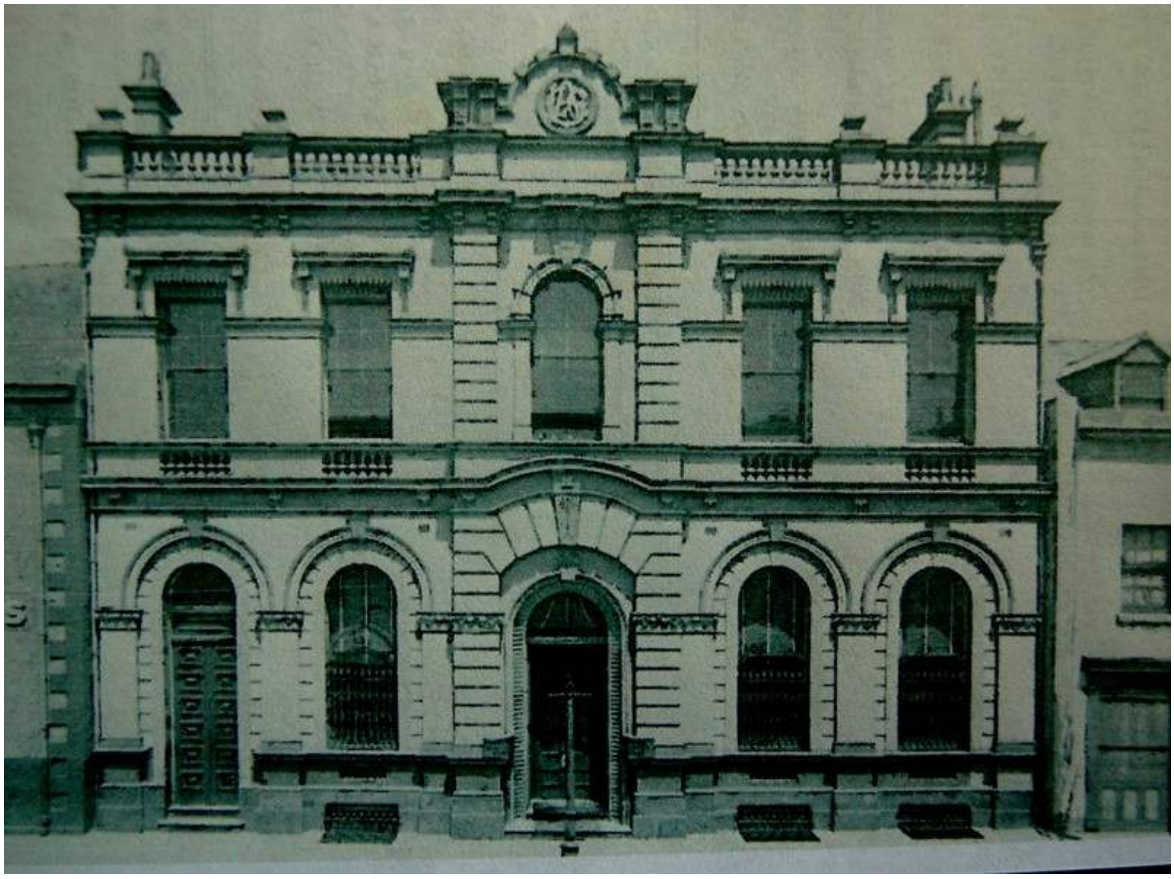

Figure 3.30: The company offices in Kent Street, opened in 1882. Lukey 1897.

As demand for gas increased, the company was obliged to expand its plant, both at Head Station and at new suburban centres. By 1871 the AGL Co. was considering the possibility of extending a trunk main from the Haymarket Station to Balmain via Glebe Island bridge. The demand was deemed insufficient to justify the expenditure and the possibility of a establishing a small gas manufacturing plant in the area weas explored with the AGL Co.

[117] *SMH*, 13 July 1870, p.10.

[118] S. Murray-Smith, 1976. 'Selfe, Norman (1839–1911)', *ADB*.

[119] 'Mansfield, George Allen (1834–1908)', *Obituaries Australia*.

founding the Balmain gasworks in 1873, after the failure of a small group of local prominent businessmen to establish their own.[120] To service new needs in Ashfield and Burwood, the company bought five acres at Five Dock and established 'a small model works' there in 1881, but replaced this in 1886 with a much larger plant on 80 acres (c.32 ha) bought in 1885 at Mortlake, strategically sited on the Parramatta River.[121] Despite the looming competition from electricity – Tamworth was to become the first town in Australia lit by Council-generated electricity in 1888[122] – there was still substantial confidence in the future of gas.

Although Mortlake rapidly came to dwarf the Head Station at Miller Point, the company did not neglect the foundation works. Redundant buildings were demolished. Protracted attempts to purchase 2 acres (c.0.8 ha) to the immediate north were finally successful in 1880, when Thomas Rowntree, who had run his ship-building yard there since 1872 (see Figure 3.29), moved to Balmain.[123]

A final, larger, gasholder (no.5) was built close to Jenkins Street in 1882, on land which had to be built up on the western side (Figure 3.31, Figure 3.32). Gasometer no.3 was converted into a large tar tank, which was capped early in the 20th century and concealed by 1911 under the engineers' shop, in use until 1918 (Figure 3.33). Some tar also settled and remained below water level in the annulus of the new gasholder.

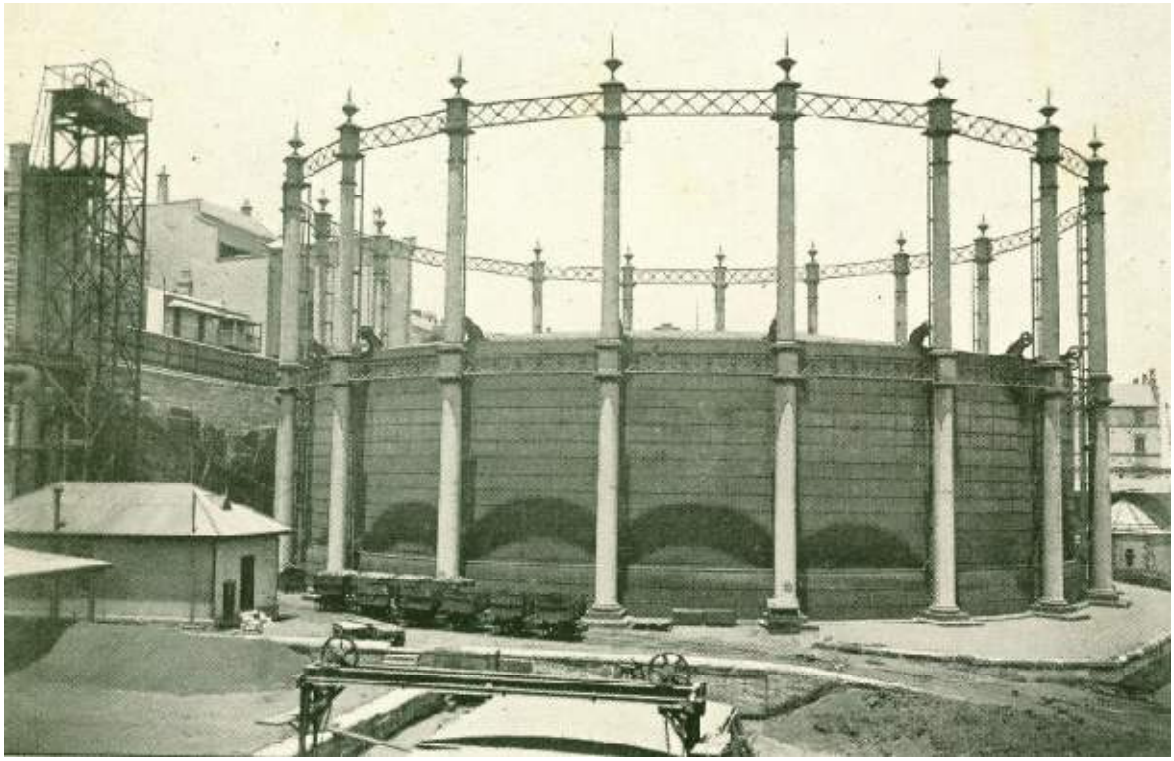

Figure 3.31: The 1882 gasholder, showing how its foundations were built up on the left, from north. Lukey 1897.

[120] AGL Committee of Works Minutes, 15 March 1871; 12 April 1871; 19 April 1871; 12 July 1871; 23 April 1873; (ref in Ginswick papers, unpublished manuscript, chapter viii; 4)

[121] Lukey 1897: 18-21.

[122] Turnball 2011.

[123] Broomham 2007: 23. For Rowntree, see http://monumentaustralia.org.au/display/20144-thomas-rowntree, viewed June 2020.

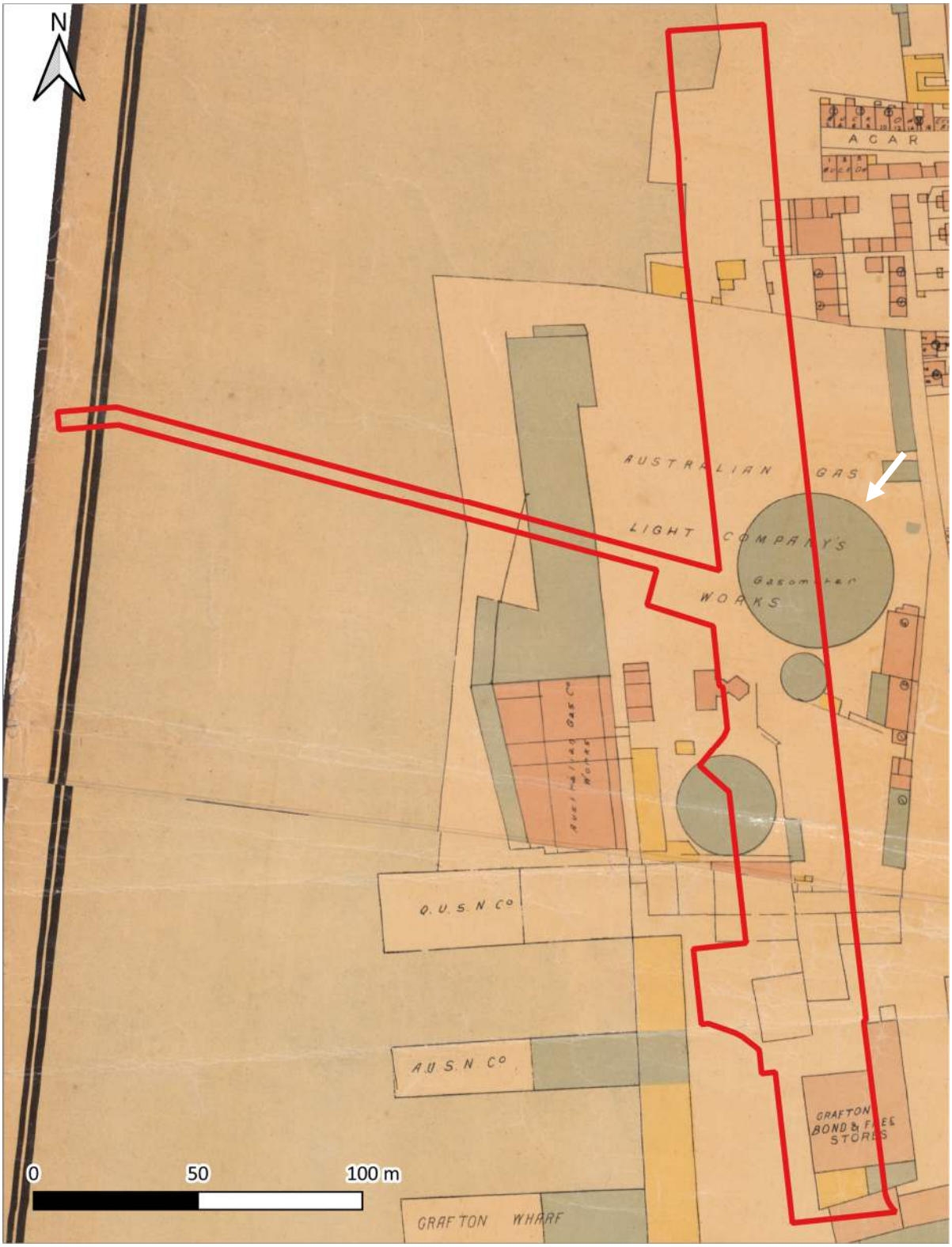

Figure 3.32: The study area in 1889, showing the new gasholder (no.5) (arrowed) erected within the AGL Co Gasworks site. The khaki coloured structures are galvanised iron, red coloured structures are brick and / or stone, and yellow are wood. Subdivision Plans for City of Sydney. ML M F981.11/C, File No. FL3775988, SLNSW.

Figure 3.33: The AGL in 1891. Both the 1869-1870 and 1882 gasholders are shown, along with the tar tank, the new coke yard on Jenkins Street (green arrow) and the company offices on Kent Street (red arrow). SLNSW, Metropolitan Detail Series, Section 67. ML M Ser 4 811.17/1.

An elevated bridge across Jenkins Street, fed by a hydraulic hoist, led to an elaborate new coke-loading depot which was built on land acquired on the east side of Jenkins Street (Figure 3.34).

In the 1890s gas cooking had assumed a new importance and was actively promoted by the AGL Co. By 1893 the AGL Co. had built a specially designed showroom on Gipps Street at Haymarket, adjacent to Anthony Horden's Furniture Warehouse, in the heart of the popular shopping area. The new showroom, designed by architect L.L. Ramsay, was a single storey building, and the first in Australia to be constructed for the sole purpose of being a gas showroom (Figure 3.35). The interior was designed and fitted with a lecture room where gas cooking was taught free of charge.[124]

[124] Broomham 2007: 89-90.

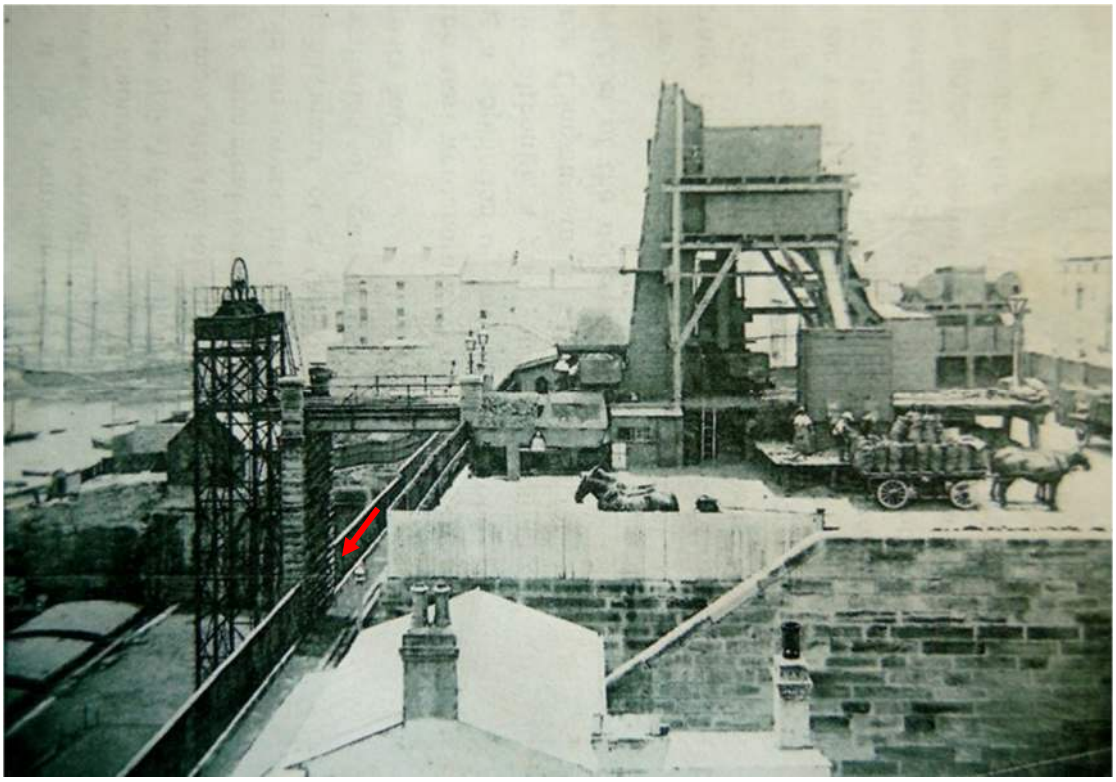

Figure 3.34: The bridge across Jenkins Street bringing coke directly to the new coke depot on the right, from south. A portion of the sandstone wall (arrowed) survives on the western side of Jenkins Street. Lukey 1897.

Figure 3.35: The AGL Co. showroom, Gipps Street, Haymarket. Broomham 2007.

Experience at Mortlake, where the stoking of the retorts had been mechanised from the outset, was brought to Millers Point. By 1896 the retort benches at Head Station had been totally rebuilt with this improved technology. Efficiency was such that the price of gas to customers was reduced. A small addition was made to the wharfage by the purchase of a few feet of land on the northern boundary of what had been Rowntree's shipyard.[125] The final celebration of the company's diamond jubilee in 1897 was the installation throughout Sydney of incandescent burners in the street lamps. The historian of the jubilee remarked without apparent irony that:

> The altered appearance of the streets at night is most marked, the new burners giving to gas the brilliancy of electricity.[126]

The ability of the AGL to continue to introduce new gas technology on both its Mortlake and its Millers Point gasworks sites gave it lasting relevance. But circumstances quite outside the company's control imperilled the future of the old Head Station in the early years of the 20th century and in the end forced the plant's closure in 1918 and its belated transfer to the Sydney Harbour Trust in 1921, 20 years after it was established and resumed the surrounding land due to the bubonic plague.

3.6 GRAFTON BOND (SOUTHERN STAGE 3)

3.6.1 BASS' SHIPYARD 1832-1854

Henry Thompson Bass arrived in Sydney in the 1830s. He was a shipbuilder by trade, with previous experience in the naval shipyards at Plymouth and Portsmouth in England. In 1832, Bass bought Lot 17 from Solomon Levey for £350.[127] He was formally granted the land in 1837.[128] In 1836, Bass bought the adjoining Lot 18 from Samuel and Elizabeth Thompson.[129] It was at this time he leased his large shipyard to John William Russell, also a shipbuilder.[130] Bass moved his operation to a property he owned near Bradley's Head, North Shore.[131] Russell continued to occupy and develop Lots 17 and 18 until he bought his own property in Pyrmont in 1841 and moved his shipyard to the other side of Darling Harbour.[132] From the 1830s to the 1850s reclamation within Bass' land consisted of wharfage parallel with the original shoreline and what may have been in effect a small dock or shallow inlet.[133] In addition to the wharf, the premises included a workshop and two houses, these are likely to be the buildings shown within the study area at the southern end of the lot in in 1834 (Figure 3.7).[134] Early quarrying was also taking place by Bass with evidence visible in a painting of Bass' shipyard and the neighbouring gasworks (Figure 3.37). Quarrying was common along the eastern foreshore of Darling Harbour as there was limited access to this steep foreshore for buildings or roads unless it was all quarried away to make suitable building platforms.

By 1850 Bass had also built a row of very small houses off Kent Street North on the east side of his property, known as Bass' Buildings; no doubt a lucrative source of income. Wells'

[125] Lukey 1897: 24-25.

[126] Lukey 1897: 25.

[127] SRNSW Memorial No. 352, *Memorials forwarded by the Commissioners of Claims*, 1832-1842 (1833 Act) NRS 913, Reel 1203.

[128] Ser. 47 p 232 dated 17 November 1837 3r 21p (LPMA)

[129] *Sydney Gazette* 3 March 1836, p 2 (6)

[130] *Sydney Herald* 20 August 1835, p 1 (4)

[131] *Sydney Herald* 30 January 1837m o 3 (1)

[132] *Sydney Morning Herald* 10 October 1842, p 3 (8)

[133] This can be seen in the 1875 plan on which the shoreline as in Russell's 1834 survey is also shown, see C H Wansbrough, Darling Harbour Frontage Section No. 2, 1875, (Crown Plan P.26.574) AO Map 4775 (SRNSW)

[134] Rate Assessment Gipps Ward 1845 (City of Sydney Archives)

map of the City of Sydney in 1850 (Figure 3.38)[135] and the 1854 Woolcott & Clarke plan (Figure 3.39) both show the property and buildings. By comparison with his neighbours the rateable valuation of Bass' property was quite low, suggesting that his waterside premises were perhaps not very sophisticated or up to date.[136] In 1853 Bass sold the land to John Reeve, and in 1854 it was purchased by merchants Charles Smith and John Henry Challis. A year later Smith and Challis also purchased **Edward Boulger's Lot 19**, immediately to the south, which appears to have remained undeveloped since the 1830s, and with this extension to Bass' original holdings began to redevelop the property.[137]

Figure 3.36: The figure shows the gasworks site (tall chimney) and Henry Bass' shipyard to the south (right of image). While dated c.1870 this image it is probably earlier as the shipyard was redeveloped into Challis wharfage by 1865. Note the small structures on the foreshore (red arrows), possibly the two houses in Bass' shipyard and the small timber piled wharf. The building further back may be the building within the study area (yellow arrow) on plan from 1823 to 1865. The vertical face behind the structure may be evidence of quarrying. View of Miller's Point and Darling Harbour, c.1870 / artist unknown], SLNSW ML DG 392.

[135] W H Wells: 'Map of the City of Sydney 1850', Mitchell Library on-line.

[136] The Hunter River Company's wharf and Breillat's wharf were assessed at £400 and £500 and Bass' wharf at £50, Rate Assessment Gipps Ward 1845 (CSA).

[137] PA 569 (LPMA).

Figure 3.37: The detailed figure to the left shows the gasworks site (tall chimney) and Henry Bass' shipyard to the south (right of image). While dated c.1870 it is probably earlier as the shipyard was redeveloped into Challis wharfage by 1865. Note the small structures on the foreshore (red arrows), possibly the two houses in Bass' shipyard and the small timber piled wharf. The building further back may be the building within the study area (yellow arrow) on plan from 1823 to 1865. The vertical face behind the structure may be evidence of quarrying. View of Miller's Point and Darling Harbour, c.1870 / artist unknown], SLNSW ML DG 392.

Figure 3.38: 1850 plan showing early Gasworks and still limited structures in the south. 'This plan of the City of Sydney, including the environs of Pyrmont, Balmain, Redfern, Chippendale, the Glebe, Surry Hills, Paddington & c.', William Henry Wells. SLNSW Z/M4 811.17gbbd/1850/1, Sheet 2.

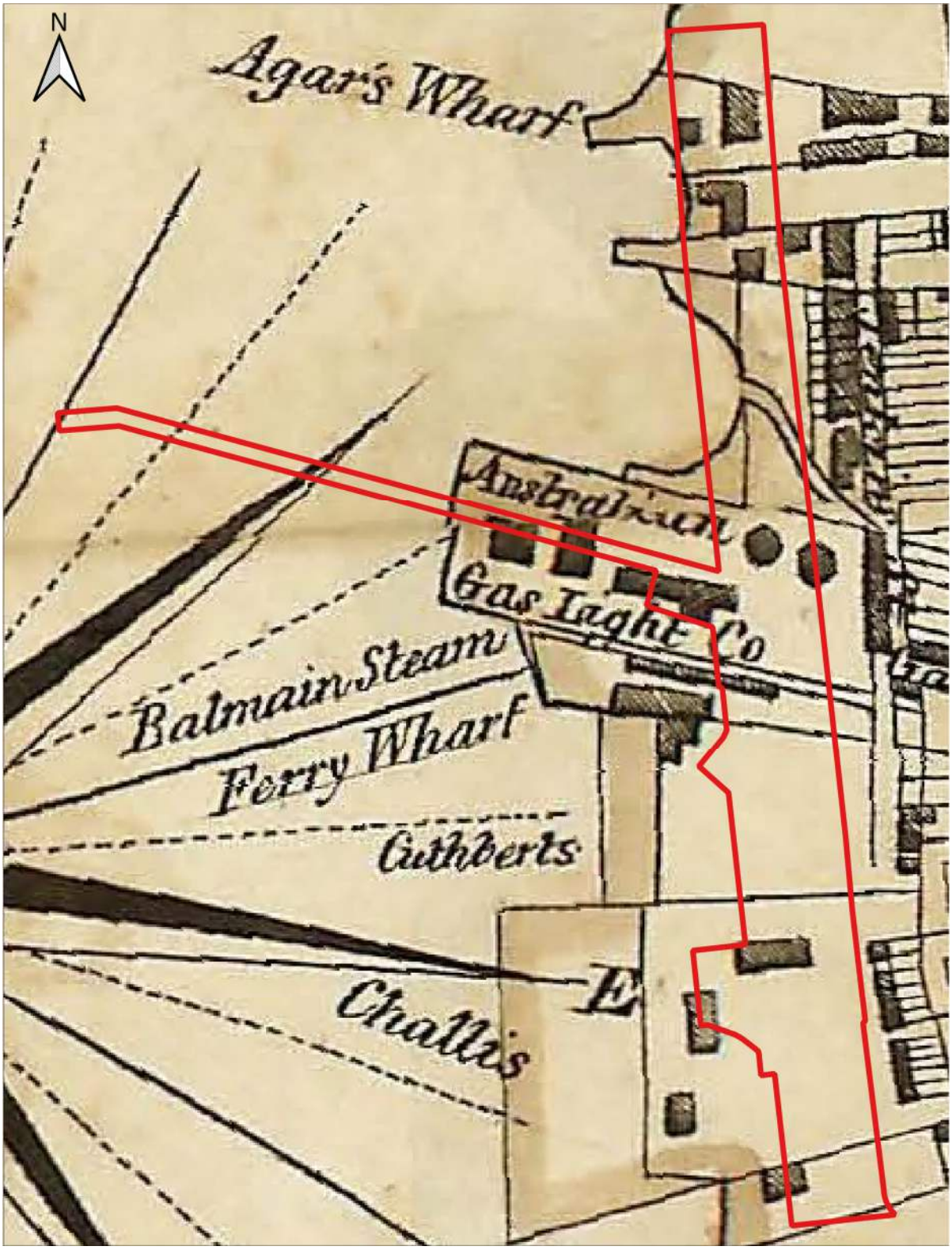

Figure 3.39: Plan of 1854 showing the newly purchased wharf annotated Challis (south) and Cuthbert's ownership of the northern land. The Gasworks had not acquired the northern land and no Gasworks buildings or other structures are shown. Woolcott and Clarke, Map of the City of Sydney, 1854, Historical Atlas of Sydney, CSA.

3.6.2 GIRARD'S QUARRY & FLOUR MILL 1832-1841

South of the study area was Lot 20 acquired by Francis Girard in 1832.[138] By 1834 Girard had constructed his flour mill and announced it was open for business, claiming it had the capacity to grind 3000 bushels of wheat a week (Figure 3.7).[139] A sawmill was also operational on the same premises.[140] Girard's mill is notable because he constructed a saw mill to make use of the steam engine when not used for milling. The flour mill and related buildings were partially quarried into the rock shelf. The footprint of the mill partially lies underneath the route of Sussex and Napoleon streets. The mill building was constructed from sandstone quarried on site. The evidence for quarrying of the area immediately surrounding the eastern end of the mill can be seen in the plan of 1840 that described the areas to the north and south of the building as 'deep areas' (Figure 3.40). By this time, Girard had also reclaimed land and created wharf facilities for his mill making his land some of the most valuable property in this part of Darling Harbour in the 1830s. Grain from the outlying agricultural settlements on the Hawkesbury could be delivered straight to the mill by water, a much more efficient means of transport for bulk goods than the existing roads.

Like his neighbour Henry Bass, Francis Girard also built upon his original grant by purchasing other land in the vicinity. In 1839 he purchased W M Molle's large grant to the north (Lot 5) and also Edward Boulger's grant (Lot 19). In October 1839 Girard advertised his intent to develop his newly purchased properties of Molle and Boulger into a quarry.

> To Masons and Builders,
>
> THE undersigned having purchased the large of Plot of Ground, adjoining his Mills, gives notice that he will open the same as a Quarry in the course of next week; and the Stone, which is of the best description, will be sold, either on the Premises, or delivered.
>
> F. GIRARD.
>
> N. B.-Six Quarrymen wanted, and a Working Overseer, to whom good Wages will be given, if sober, and useful. [141]

He consolidated his lots and promptly sold all his Darling Harbour properties between 1840-1841. The south end was bought by the Hunter River Steam Packet Company (later Australasian Steam Navigation Company) for £5000.[142] The larger portion of land, including the mill and wharf, was bought by a consortium of investors known as the Sydney Flour Company, who paid £15,750.[143]

[138] SRNSW Memorial No. 840, Memorials forwarded by the Commissioners of Claims, 1832-1842 (1833 Act), NRS 913, Item 2/1842 Reel 1208

[139] *Sydney Gazette* 22 July 1834 p.1 (2) http://nla.gov.au/nla.news-article2216670

[140] *The Australian* 29 July 1834, p3 (1)

[141] *Sydney Monitor* 4 October 1839, p 3(4)

[142] *Sydney Herald* 25 March 1840 p2 (3)

[143] *The Australian* 26 November 1840, p 2(4); *Sydney Herald* 4 January 1841, p 1(3); Casey & Lowe 2010b: 42, citing LPI Book V 242, dated 1-2 February 1841

Figure 3.40: A detail of plan of the sale of Girard's Estate which shows evidence of early quarrying in the area around the Flour Mill with the annotations 'deep holes' (green arrows). The red arrow pointing to 'Excavation for building'. This area is further south (outside the study area) but confirms quarrying was taking place within the area in the early 19th century. "Plan of 12 allotments part of Mr. F. Girard's estate, Sydney: to be sold by auction by Mr. S. Lyons, on Wednesday Feb, 12th 1840 / John Armstrong, surveyor." SLNSW, Mitchell Map Collection, Maps/0121.

3.6.3 GRAFTON WHARF - SMITH & CHALLIS 1854-1880

In 1854, business partners Charles Smith and John Henry Challis purchased Bass' former shipyard, **Lots 17 and 18** (Figure 3.41).[144] Smith and Challis purchased the land jointly, with Challis' name appearing on Woolcott & Clarke's 1854 map (Figure 3.39). In 1855, Challis returned to England, leaving Smith to run the business in Sydney. The whole area underwent redevelopment, with a large range of stone buildings erected along the northern boundary.[145] Some of the store buildings extended into the study area (Figure 3.42, Figure 3.43) and four new jetties were constructed between 1856 and 1861. By 1874 Smith had also acquired the Sydney Flour Company's allotments (originally Lots 5, 19 and 20) and consolidated the area into a large complex that became known as Grafton Wharf. Only Smith's name appears on Wansbrough map of 1875 (Figure 3.45).

Figure 3.41: Undated map showing a proposed road (annotated 'Road to Wharf', yellow arrow) running through the study area in a northeast-southwest direction to the wharf. The wharf is still annotated Bass Wharf therefore pre-dating the renaming to Grafton Wharf after the purchase by Smith & Challis. There are no structures within the study area. NLA Map F 745.

[144] Casey & Lowe 2010b: 23 citing PA 569 (LPI)

[145] Rate Assessments Gipps Ward 1856 and 1861 (CSA)

The *Sydney Morning Herald* announced in January 1861 that a 'spacious and commodious stone store' was,

> ...on the eve of completion at the Grafton Wharf. The stonework is of the most substantial description the roofs are of slate. The principal store ninety feet in length, forty two feet' in width, and fort five feet in height up to the eaves; it is divided into four buildings, and .is well lighted and ventilated the doors being so situated as to give the greatest facilities for receiving and discharging goods. There are three smaller stores, which contain in their united capacity 54,000 cubic feet. The whole area well drained with Dalton stoneware pipes, and made impervious to rats. Convenient sheds are also in course of erection on the wharf, the whole to be finished a week or two. The stores are the property of Messrs Challis and Smith, and have been built by Alston, from the plans of M. Jubert, architect.[146]

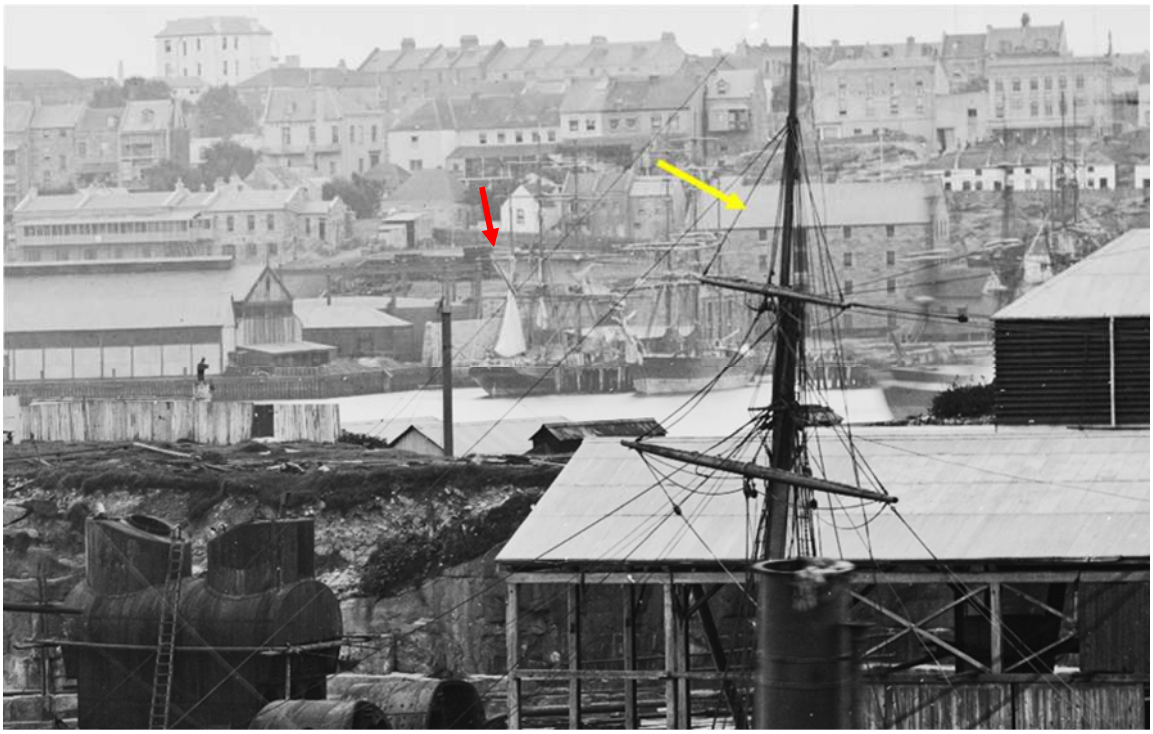

Figure 3.42: Grafton Wharf viewed from the west across Pyrmont and Darling Harbour, c.1870-75. The yellowed arrowed building is the stone store (later Store F) with slate roof stores described in the *Sydney Morning Herald* article above. The eastern end of this store extended into the study area, while not visible in this photo it is shown in Figure 3.43. There were a group of small building running along the southern edge of this stores. The section of Lot 18 of the Gasworks within the study area is mostly a yard area (red arrow) possibly storing barrels with a small building in the northeast corner of the yard. American & Australasian Photographic Co, SLNSW ML ON 4 Box 60 No356.

[146] *SMH* 21 Jan 1861: 8.

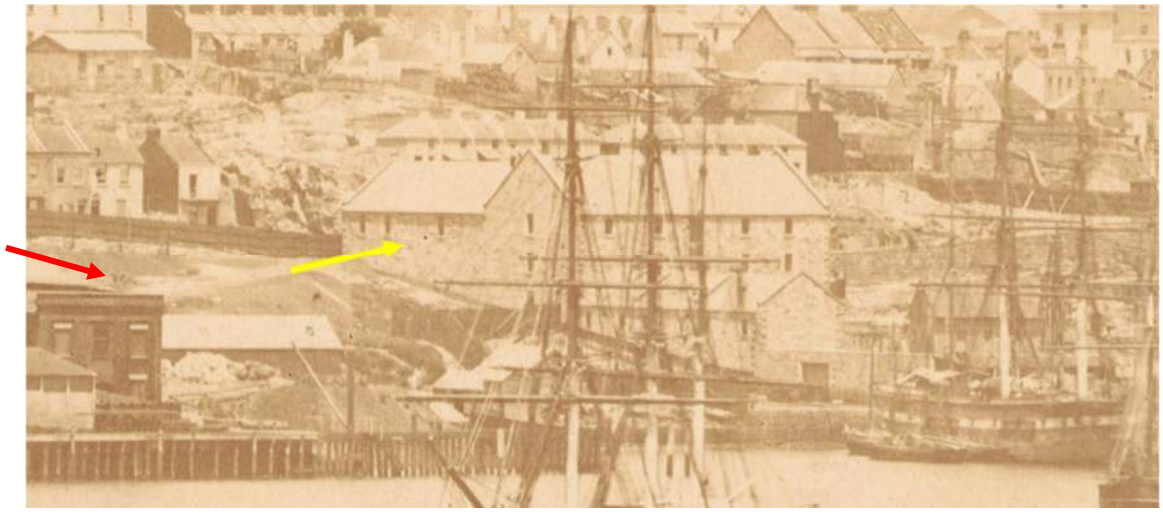

Figure 3.43: View towards the southeast showing Smith's new stone stores built by 1861. These buildings were retained when the Grafton Bond Stores were built in 1880s. The yellow arrow points to the 2-storey building with basement that later became known as Store F. This east-west aligned building is within the study area. The section of the gasworks (red arrow) is on high steep ground and vacant. 'Panorama of Darling Harbour from Balmain, No. 3', SRNSW digital no. 15344_a044_000017, earlier than 1880.

Another wharf was added near the gasworks between 1875 and 1877. By 1880 two smaller jetties to the south had been replaced with a much larger single jetty (Figure 3.44). During Smith and Challis' ownership of Grafton Wharf they leased the jetties and buildings to various companies, including the Intercolonial Royal Mail Steam Packet Company (southern jetty, 1861), the California, New Zealand and Australian Mail Company (offices), W R Hill's flour and corn stores and several providores and boiler makers.

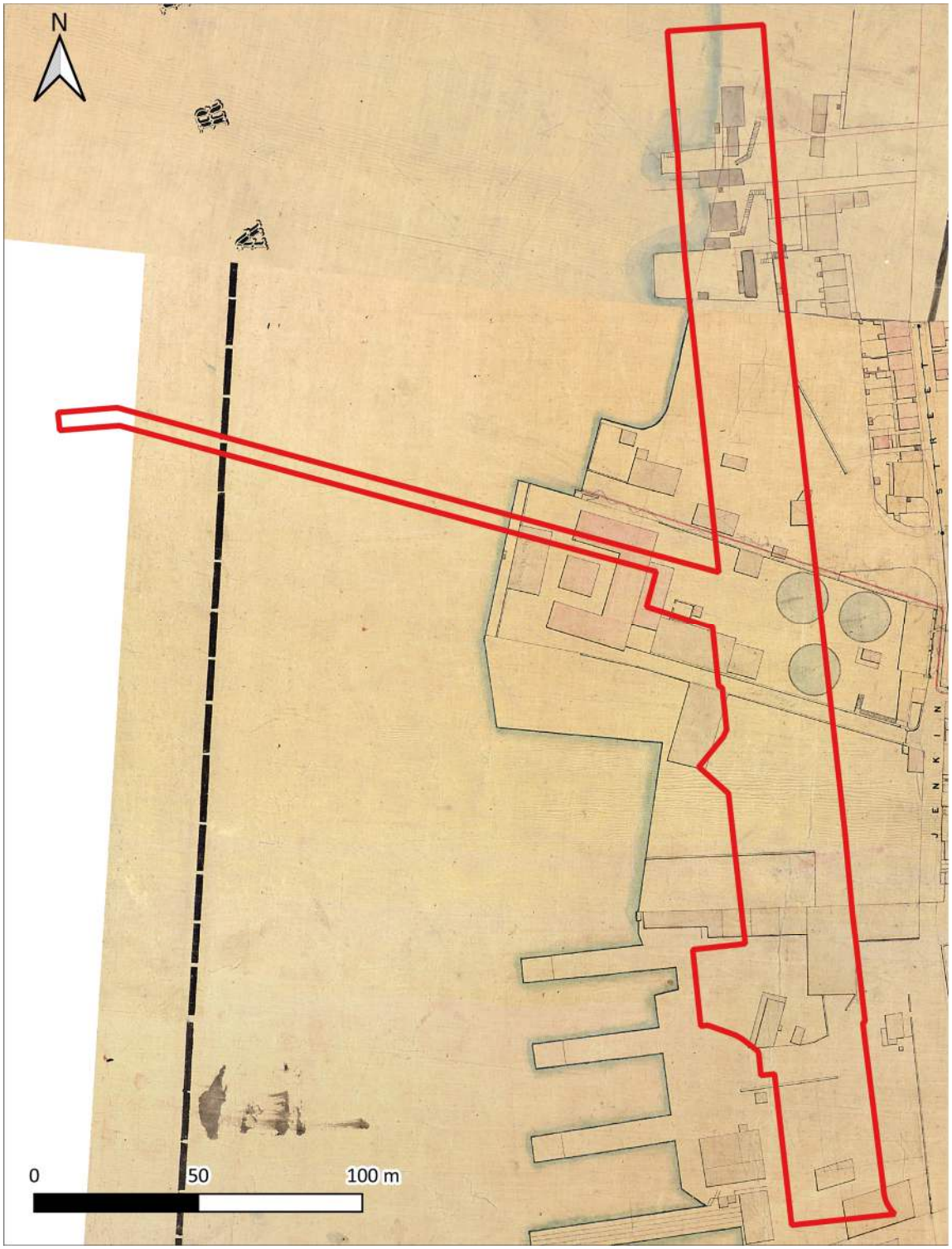

Figure 3.44: The 1857-65 plan showing the new east-west buildings constructed by Smith and Challis in the middle of the site. Buildings extending into the southern portion of the study area (Southern Stage 3) are shaded grey. The four new jetties constructed by Smith between 1856 and 1861 are directly west of the study area. The dashed yellow line indicates the southern boundary of the Gasworks. Detail of 1865 'Trigonometrical Survey of Sydney', Block C2, Historical Atlas of Sydney, CSA.

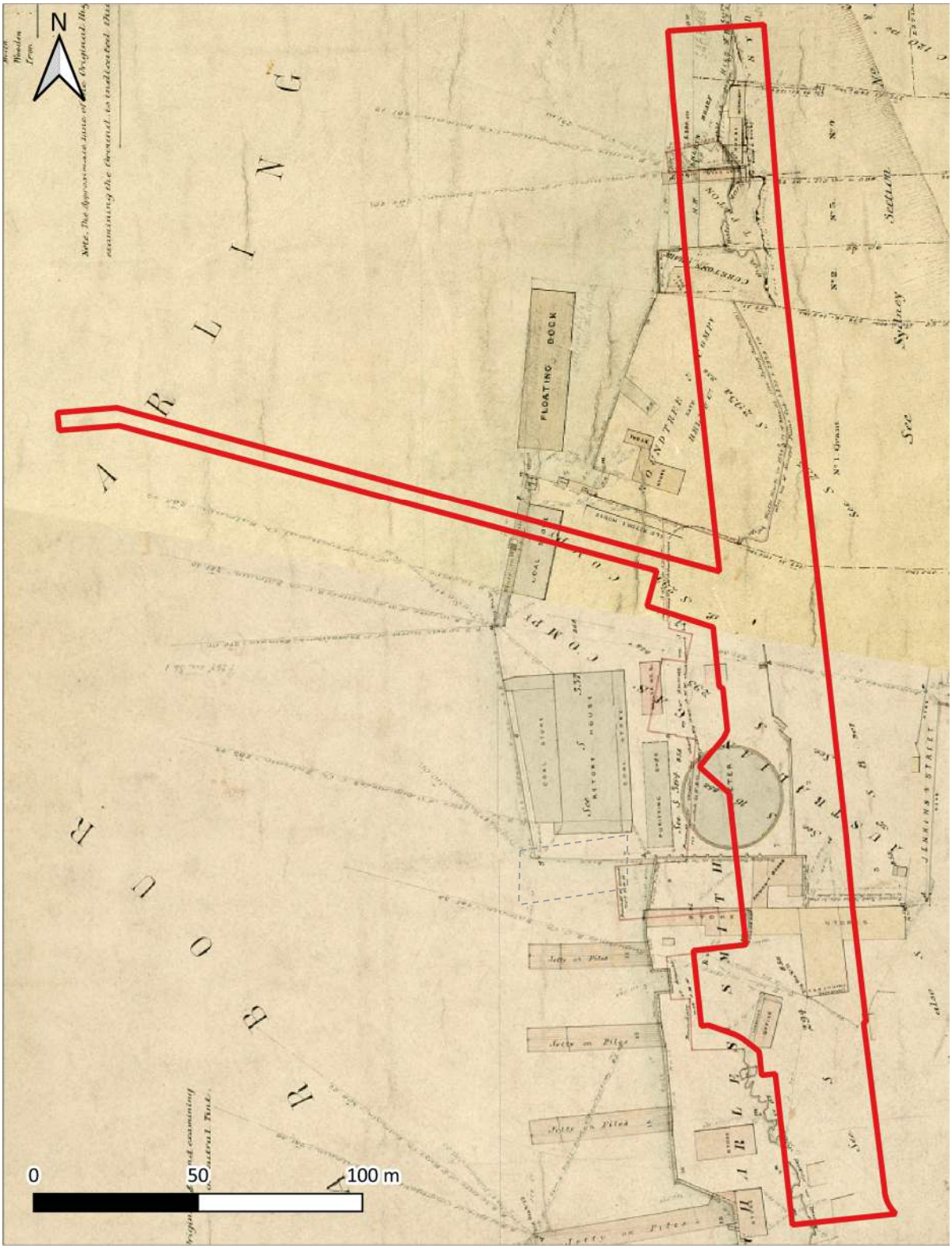

Figure 3.45: Plan of the area dated to 1875 with the site outlined in red. This plan identifies the materials of buildings and also shows the original shoreline from Russell's 1834 plan, illustrating the extent of additional reclaimed land by 1875 (outside the study area). This plan included Smith & Challis stores and these structures appear again on Dove's 1880 plan. CH Wansbrough, Darling Harbour Frontage Section No. 2, 1875 (Crown Plan P.26.574), AO 4775 (SRNSW).

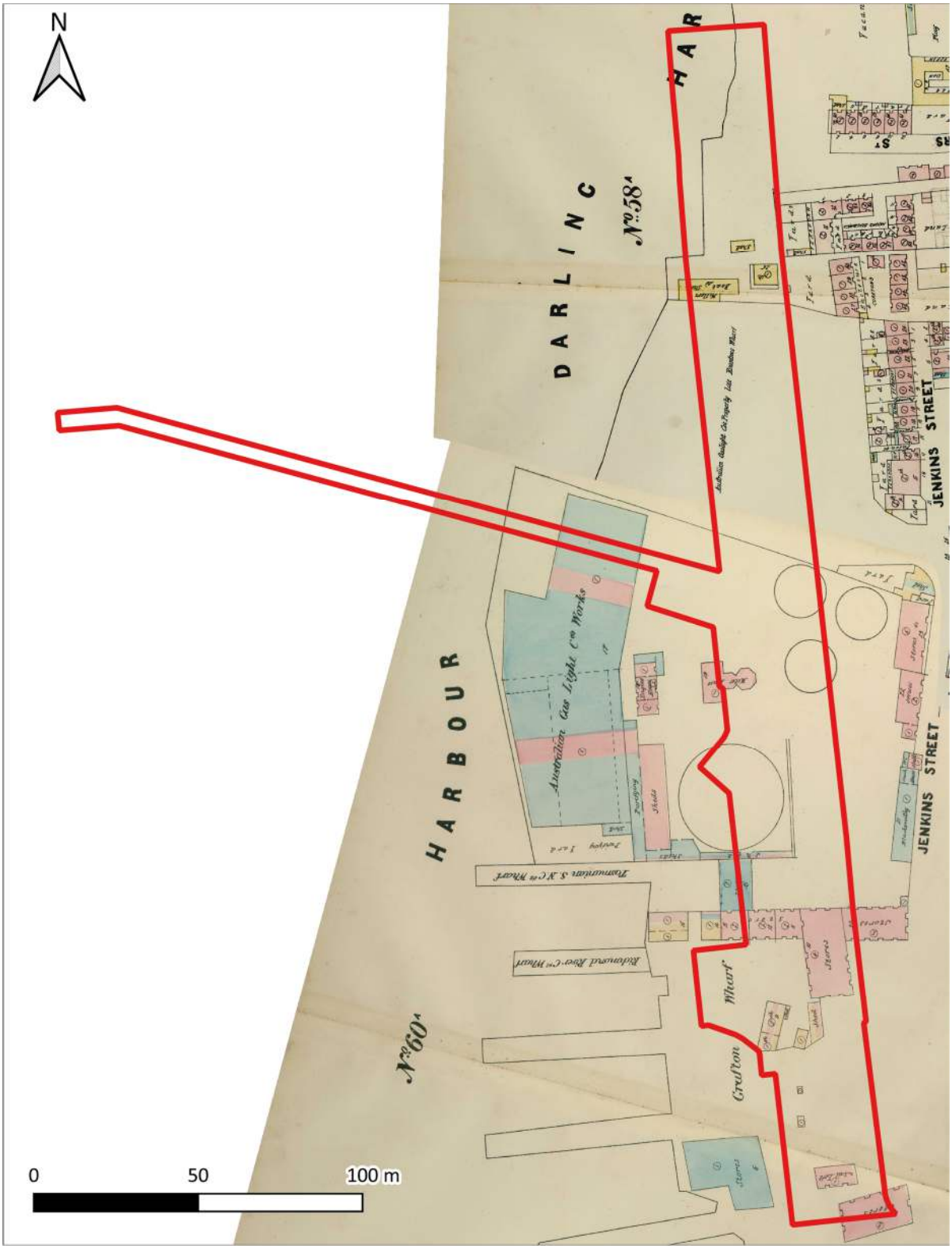

Figure 3.46: 1880 Dove plan showing the same east-west buildings shaded pink (stone) and annotated 'stores' immediately to the south of the Gasworks site (yellow line). CSA, Historical Atlas of Sydney, Zone 60A.

3.6.4 THE GRAFTON WHARF AND BOND 1880-1900

In 1880, Smith and Challis sold the Grafton Wharf to James Watson and James Evans.[147] The Grafton Wharf was then redeveloped, with the Bond stores rebuilt with ten new five-storey warehouses being added (Figure 3.47). These were said to store up to 35,000 tons of goods. At this time the Grafton Wharf was also said to be generally raised by two feet to aid larger ships using the wharves. They also installed new hydraulic machinery and laid bluestone paving over the entire complex and approach roads.[148] Besides the warehouses, wharfage and enclosed sheds along the waterfront, there was at the time stabling for 24 horses, wharf offices and residences for foremen and the manager (Figure 3.48). The buildings were 'built entirely of brick on a stone basement'. The architect was William Wardell and the style of architecture, 'although of the plainest possible character (being built entirely of brick on a stone basement)' included the 'picturesque stepped gables of old English buildings.'

> ...a pleasant feature amongst somewhat dingy surroundings, for although of the plainest possible character (being built entirely of brick on a stone basement), the proprietors have wisely departed from the dreary straight lines so often thought to be classic and architectural, and have adopted the picturesque stepped gables of old English buildings.[149]

Large scale quarrying took place in the 1880s to allow for the construction of the Grafton Bond Stores (Figure 3.49) The bricks were brought as ballast from Newcastle-upon-Tyne in England and the stores were claimed to be the largest bond warehouse in Australia.[150]

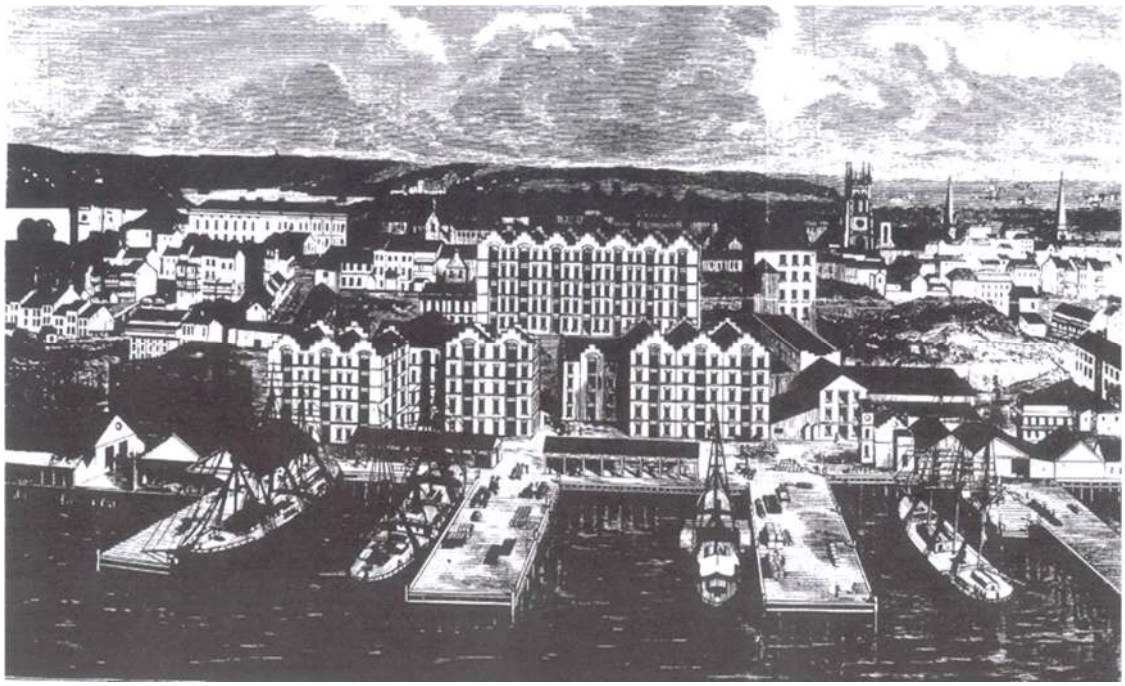

Figure 3.47: This sketch of the Grafton Wharf shows all the Grafton Wharf Bond Stores most of which have now been demolished. This shows the bond stores prior to the construction of Hickson Road and the removal of the front of the stores. 'The Grafton Wharf, Sydney, *Illustrated Sydney News*, 29 September 1883, p 13.

[147] Casey & Lowe 2010b: 34.

[148] "The Grafton Wharf, Sydney" *Illustrated Sydney News*, 29 September 1883, p3 & ill. p13.

[149] 'The Grafton Wharf, Sydney, Illustrated Sydney News, 29 September 1883 p 3 & illus p 13.

[150] Emery Balint: 'Record of commercial buildings constructed in the Victorian era in NSW', 3rd ed., June 1987, NSW Department of Environment & Planning, pp 31-33.

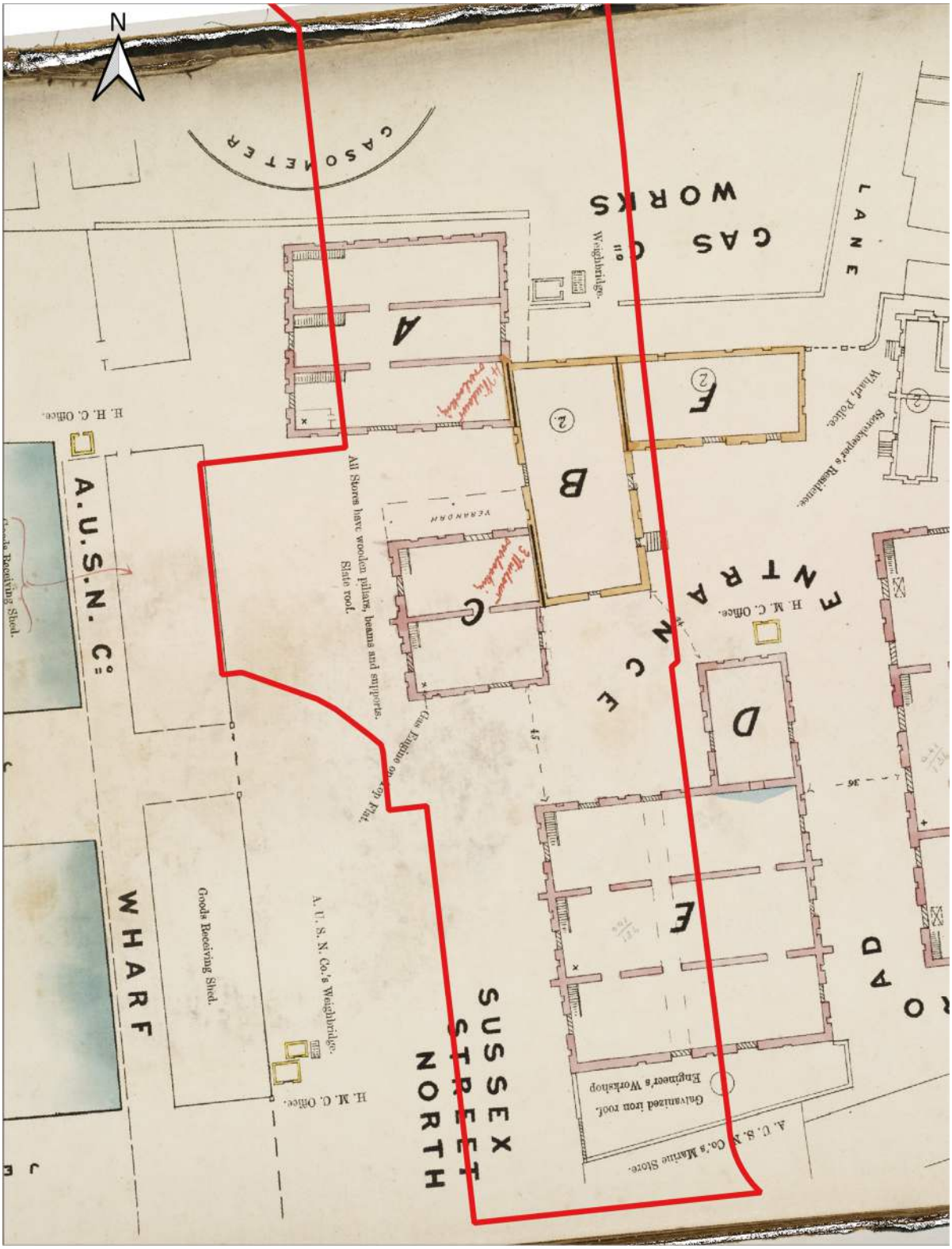

Figure 3.48: 1894 sketch plan of the Grafton Stores and adjacent wharfage. Building stores B, C, E, and parts of A and F are within the study area (red outline). G Mahlstedt, 'Sydney Bonded and Free Store Plans', ML, pg. 11, 1894 MAX 811.17/1894/1.

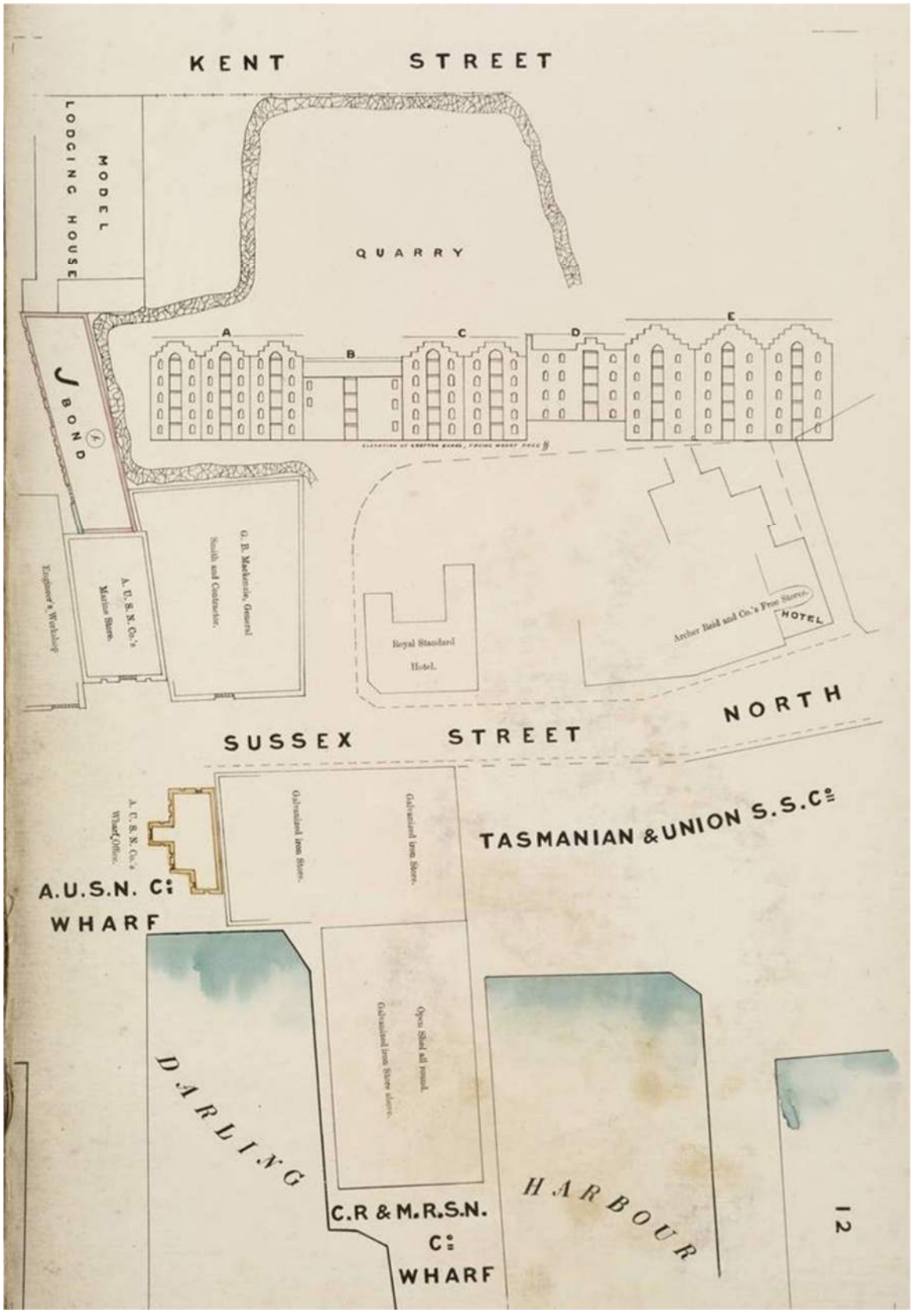

Figure 3.49: This 1894 plan (not accurate) showing the area around the Grafton Bond stores had been quarried in the early 1880s to allow for the construction of the stores. An elevation of the facades of Grafton Bond Buildings is included on the plan. G Mahlstedt: *Sydney Bonded and Free Store Plans*, pg. 12, 1894 MAX 811.17/1894/1 (Mitchell Library and on line) [Digital order No. a1920015].

A detail sheet plan from 1891 shows the extent of development at that time (Figure 3.50). The new Grafton Bond Stores extended across what is now Hickson Road. The former flour mill (built by Girard) remained standing at the time, while other buildings continued to line an irregularly-shaped Sussex Street and what in the early 20th century would become Hickson Road.

Figure 3.50: An 1888-91 plan showing the new Grafton Bond Stores with annotations of the functions of the larger buildings. The yellow dotted line indicated the southern boundary of the Gasworks which now contains a number of structures. SLNSW, Metropolitan Detail Series, Sections 67 and 93. ML M Ser 4 811.17/1.

3.7 BUBONIC PLAGUE AND DARLING HARBOUR RESUMPTION

Sydney folk commuting to work in the city at the end of the 19th century on board the Balmain and Hunters Hill ferries were confronted with a view of Darling Harbour which was less than prepossessing. Behind the squalid structures and fevered bustle of the wharves of the coastal shipping companies, rows of cramped terraces and crooked streets came into view, jammed between factories, flour mills and the gasometers of the Australia Gas Light Company (Figure 3.25, Figure 3.51). This area contained some of the worst slums in Sydney, many of them old, ill-drained, badly ventilated and overcrowded.[151]

It was an area ill-equipped to deal with bubonic plague, which arrived by boat in Sydney in January 1900. At about midday on 19 January 1900 Arthur Payne, a carter who lived in Ferry Lane, Millers Point was driving through the city when he was seized with giddiness, headache and pain in the stomach. After lying down at the warehouse to which he was making a delivery he then finished his day's work. During the night he had a high fever. On 25 January his illness was diagnosed as bubonic plague and Arthur Payne, his household and several people with whom he had been in contact were removed to the Maritime Quarantine Station. A month later the second case of plague was diagnosed and the infection was officially announced. By August just over 300 people had contracted the disease, one third of whom had died.

The outbreak was far from unexpected. From its appearance in Hong Kong in May 1894 the course of the disease had been tracked as it moved relentlessly across the globe via the sea ports on the major trading routes to Australia. When the disease inevitably arrived in Sydney, certain wharves at Darling Harbour were identified as the source of infection. Their decrepit condition made it difficult to eliminate rats. On shore, the 'deplorable state' of much of the housing in The Rocks was also adversely commented upon. As cleansing operations continued, the stark reality of the failure of local government to regulate housing and sanitation was laid bare.

Plague was by no means the only disease of potentially epidemic proportions to frequent the city during the 19th century. Epidemics of smallpox and typhus were common and caused many more deaths. But in the public mind plague, the 'Black Death', was different. The very name aroused fear. The devastating effects of the disease were legendary, even at such great remove from the events of centuries before in Europe. By March panic was rising, as inoculation began. On 27 March members of the Legislative Assembly petitioned the Premier to resume the whole of the wharfage from Darling Harbour to Circular Quay.

Although lack of hygiene was initially assumed to be the cause, the emphatic demonstration that the culprits were fleas brought by ships' rats only added the eradication of rats to zeal for public cleansing and demolition of sub-standard properties. The direct result of relevance to Darling Harbour was the state government's decision to resume all wharves, whether private or public, in the area. In 1901 the government created the Sydney Harbour Trust to administer the Darling Harbour Wharf Resumption Act of 1900. The move was not primarily a public health measure, but was intended to make Darling Harbour the finest harbour in Australia through the resumption and demolition of housing and wharves which were deemed substandard. The consolidation of land allowed the government to redevelop the land along the Darling Harbour foreshore which had previously been restricted by multiple property boundaries in private ownership.

[151] Fitzgerald 1987: 23.

As part of the resumptions, most of the structures on Lots 3 and 4 (Section 93) in the northern part of the study area were demolished, excluding several residential terraces along Kent Street. The Grafton Bond Stores south of the Gasworks were also included in the resumptions, although most of these buildings appear to have been retained. The Act had, however, made an exception of the AGL Company, although any future right to resume its property was not extinguished. As a result, when the Sydney Harbour Trust in 1907 finally began to construct rat-proof walls along Darling Harbour, to prevent rats from landing, no wall was constructed across the AGL site (Figure 3.51). By 1908 the adjacent properties to north and south were protected by a new, reinforced concrete wall on the harbour side, but not the AGL.[152]

Although the Sydney Harbour Trust had from its inception been expected by the government to create an integrated new scheme for wharfage in Darling Harbour, in the shape of new or improved jetties, this had to wait until the rat-free walling was largely completed in 1908. In the Trust's Annual Report for 1907-1908, however, plans were revealed for the construction of new jetties 2, 3 and 4 immediately to the north of the gasworks site.[153] At last in July 1912, the AGL Head Station was resumed by the New South Wales government (Figure 3.23), including Mansfield's fine office building in Kent Street. The total acreage transferred was 7 acres 1 rood 35½ perches (c.3 ha) (Figure 3.52).[154]

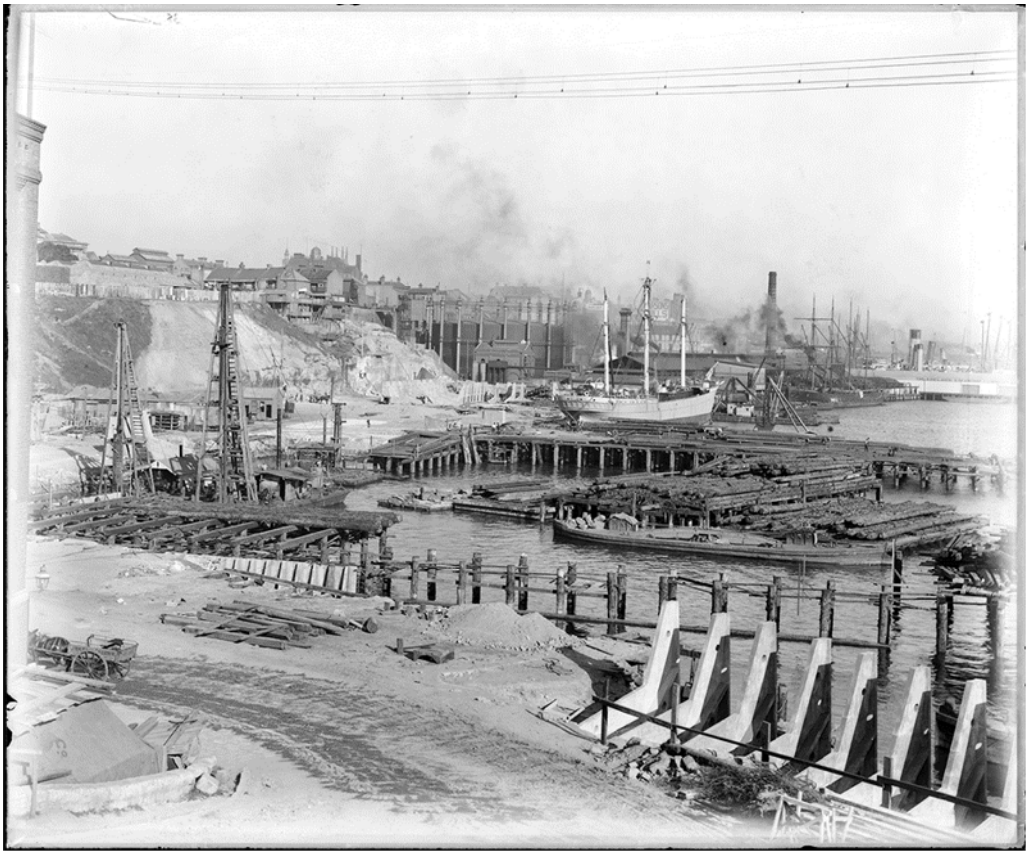

Figure 3.51: View of the gasworks c.1909, still in operation when wharf rebuilding had commenced to the north by the Sydney Harbour Trust. This shows old timber wharves where rats could easily climb the piles and then onto the land. The Monier concrete rat proof seawalls are being stored nearby. Note the gasholder in the middle background. NSWSA, NRS-9856-3-19-MSBL-7.

[152] *Sydney Harbour Trust Annual Report, 1907-1908*, p.7; *1908-1909*, p.22.

[153] *Sydney Harbour Trust Annual Report, 1907-1908,* p.7.

[154] *New South Wales Government Gazette,* 18 September 1912, no.135.

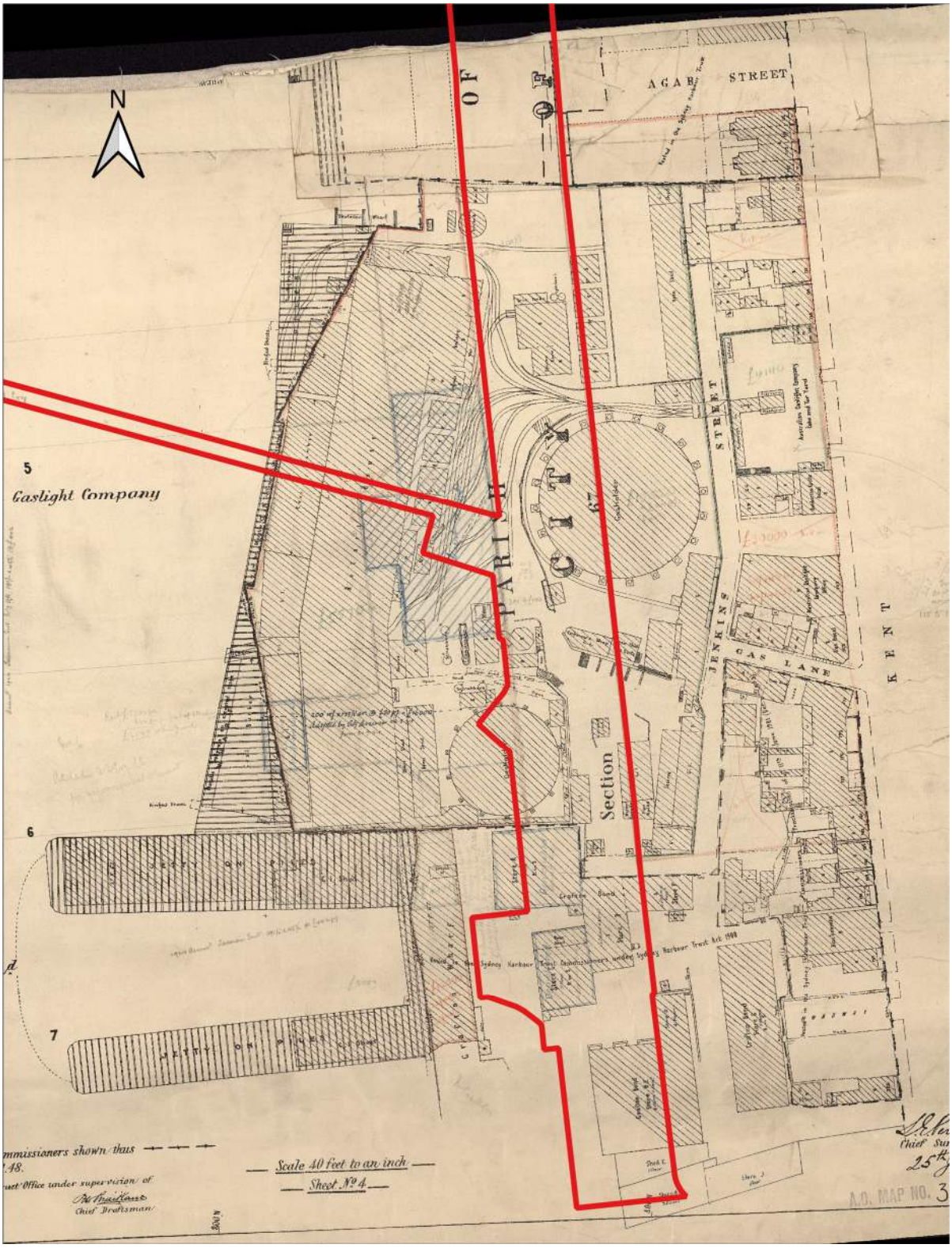

Figure 3.52: Detail from gasworks plan showing the uses of the site on 25 January 1911, including land vested in the Sydney Harbour Trust. Pencil annotations show the proposed wharves and the seawall. The tar tank shown in Figure 3.33, from 20 years before, is not shown on this plan and was presumably covered over or capped. Study area is outlined in red. 'Darling Harbour vested in the Sydney Harbour Trust Co.'. NSWSA, AO Map 374.

The Trust reported for 1912-1913

> Immediately after the resumption of this property the Commissioners [of the Trust] made arrangements with the Gas Company which enabled them to proceed with the erection of a 600-foot jetty on the frontage and the work of the substructure has been pushed on very nearly to completion. Double-decked sheds will be erected thereon with temporary access to both the upper and lower roads in front of McIlwraith, McEachern's new jetty at No. 4 Darling Harbour. When completed this jetty will be occupied by the Union Steamship Company of New Zealand.[155]

Despite the resumption, the gasworks remained in operation until 1918, with the land leased to the AGL, who paid rent to the Sydney Harbour Trust. Nonetheless in 1912 work commenced on berth 5, projecting from the AGL site. Both sides of berth 5 were to be used by the Union Company of New Zealand on completion in 1914 (Figure 3.53).[156]

> *5a and 5b Berths, Darling Harbour*. – Before commencing this jetty, it was necessary to construct a landing stage along the north side of N. 6 Berth for the Gas Company's employees, and a line of fender piles along the Gas Company's Wharf to protect the coal gantries. The work on the jetty was begun on 17th February last [1912], and the whole structure 600 feet x 100 feet has been practically completed, except for a small gap on the north side at the junction with the shore, which is necessary for the present to allow the Gas Company's punts to berth. Only 90 feet of the decking at the outer end of the jetty now remain to be laid. A portion of the temporary elevated roadway, to give access to the upper floor of the double-decked shed about to be erected thereon, has been constructed. Expenditure for the year, £8,425 15s 8d.[157]

At the same time, the jetties adjacent to AGL land on the south (nos 6 and 7) were much improved for use by the Adelaide Steam Ship Company (Figure 3.53, Figure 3.54):

> *Nos. 6, 7a, 7b Berths, Darling Harbour.* – The work of extending these two jetties by 100 feet and cutting back the width of No.7a to give more waterway was completed in August last [1912]. Extensive alterations and additions to the cargo sheds were carried out, affording more covered space and extra office accommodation. Coal elevators and conveyors for lifting bunker coal from hulks and carrying it over the jetty into the steamer bunkers were erected. The framing was put up by the Trust and conveying plant by the Adelaide S.S. Company, the lessees of the premises. The cross wharf between the jetties was widened by 20 feet, and a portion of the decking covered with 2-inch sheathing. Expenditure for the year, £3,705 4s 5d.[158]

In August 1914 the First World War broke out, so plans to complete a new roadway running north-south and bisecting the AGL Co Gasworks site were postponed. The AGL Company continued to produce gas at Millers Point, supplementing their main production at Mortlake. After a few weeks of temporary closure in September-October 1917, the Company finally closed Millers Point in February 1918, but still retained its lease and ensured that the plant remained fit to restart if necessary. Staff remained in the Mansfield offices in Kent Street until early 1920, moving eventually in 1922 to a new Head Office in Haymarket.[159]

On 30 September 1921 AGL absolutely and finally relinquished its foundation site to the Sydney Harbour Trust.[160] This opened the way to the completion of Hickson Road, which had been blocked by the AGL works (Figure 3.59).

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[155] *Sydney Harbour Trust Annual Report, 1912-1913*, p.2.

[156] *Sydney Harbour Trust Annual Report, 1913-1914*, pp.2, 16.

[157] *Sydney Harbour Trust Annual Report, 1912-1913*, p.19.

[158] *Sydney Harbour Trust Annual Report, 1912-1913*, p.19.

[159] AGL Minute books of Board and Committee of Works, cited by Broomham 2007, p.38.

[160] AGL Board Minutes, ML MSS 2921/29X, pp.404, 435-437, loose leaf, SLNSW.

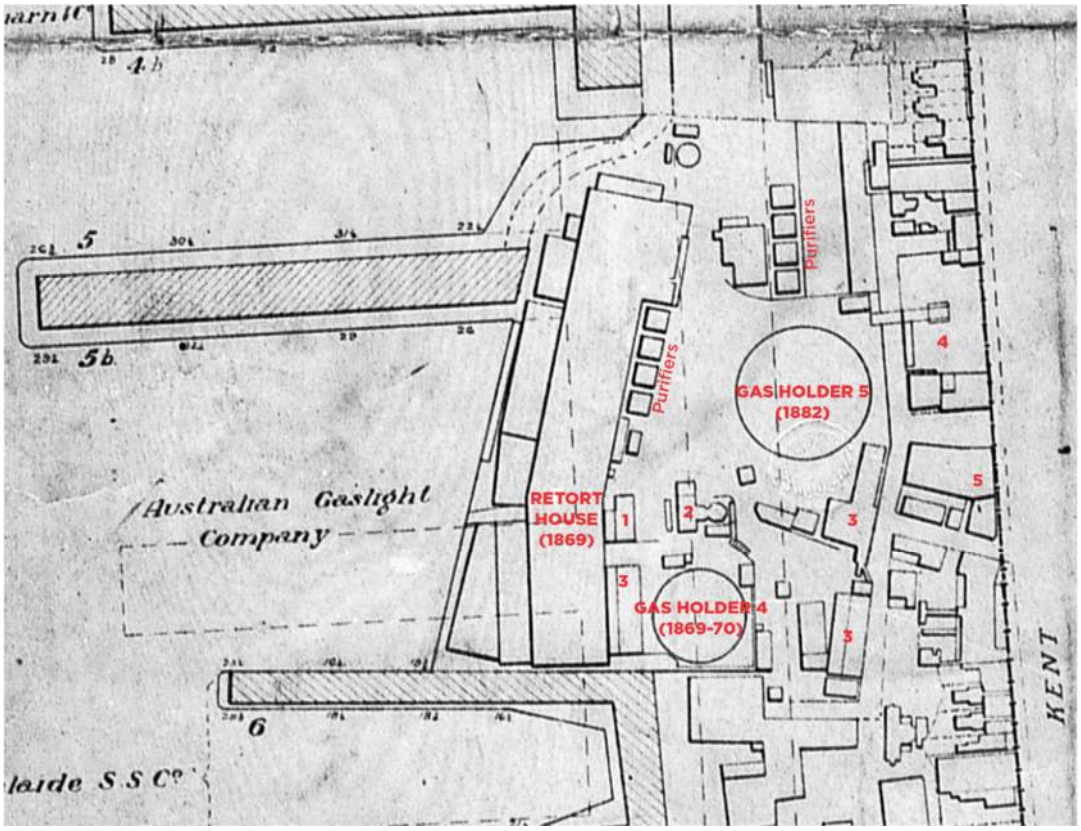

Figure 3.53: Berths 4 to 6 shown in December 1915. The AGL site is marked with annotated red dashes. The red numbers added show features such as (1) Engine House, (2) Meter House, (3) Sheds, (4) Coke and Tar Yard (5), AGL Company Office. 3 Dec 1915, G2-49/2. 'Government Plan showing lands extending along East Darling Harbour'. CSA, G2-49/2.

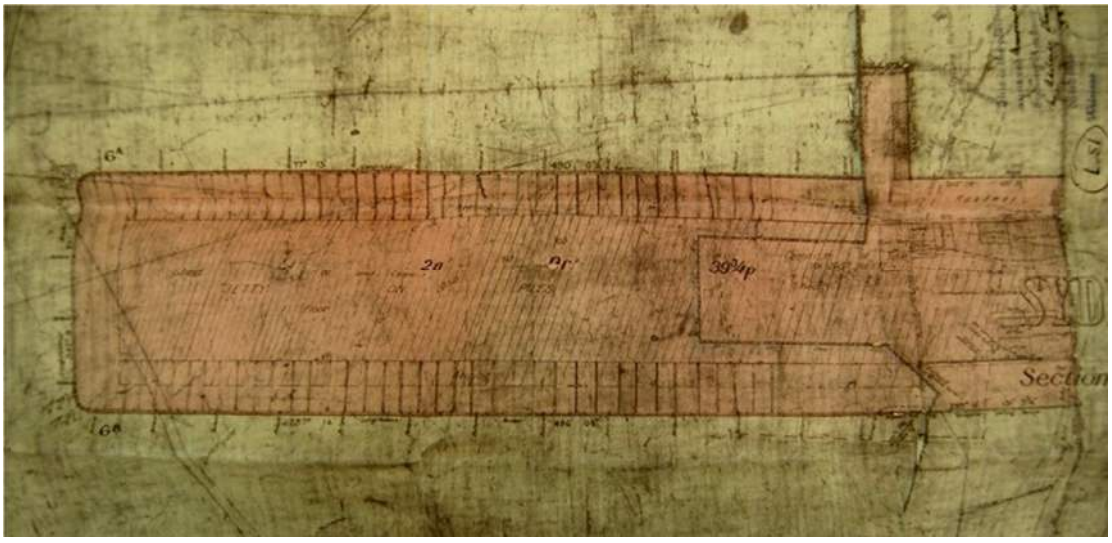

Figure 3.54: Berth 6 in Darling Harbour immediately south of the AGL site, occupied by Adelaide Steam Ship Company in 1929, from south. Primary Application, 17513/29/57/30133, Item 16, NSWSA.

3.8 CONSTRUCTION OF HICKSON ROAD

The construction of Hickson Road to connect the new wharves at Walsh Bay with the upgraded wharves at Darling Harbour was a cardinal element in the Sydney Harbour Trust's reshaping of the foreshore area (Figure 3.58). The new road was envisioned to eliminate the need for hydraulic cart lifts by providing road access to both levels of the two-tiered sheds, finally overcoming the problem of the steep topography. Construction for the road commenced in 1909 from the northern end, with the AGL Co Gasworks and Grafton Bond Stores the last structures demolished to make way for Hickson Road.

North of the Gasworks site, substantial excavation was necessary to cut back the cliff face and provide a level surface for the new road along the eastern side of Darling Harbour. Quarrying of the bedrock was well underway in 1909, although portions of this area were evidently also utilised in the replacement and upgrade of neighbouring wharves (Figure 3.55, Figure 3.56). The modified bedrock provided a base for portions of the new sandstone wall established along the eastern side of Hickson Road (Figure 3.57), with the works in the vicinity of the study area likely nearing completion in 1911, when the first houses were erected on High Street above.[161]

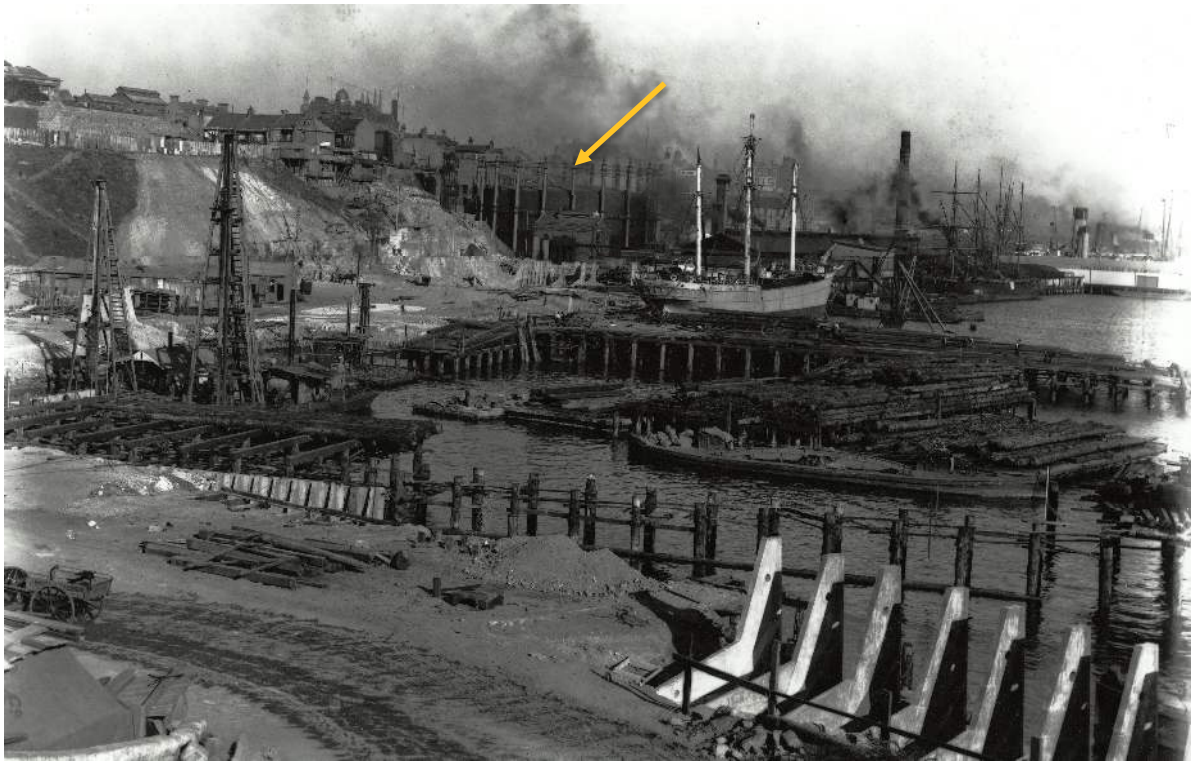

Figure 3.55: Redevelopment of wharves along the eastern foreshore of Darling Harbour, prior to the construction of the High Street retaining wall, 1909. The rock face observed to the north of the large gasholder (yellow arrow) was substantially cut back as part of the construction of Hickson Road in the early-20th century. SRNSW, 'View of the reconstruction of Darling Harbour from Millers Point showing Dalgetys Wharf No. 1 partly completed', 01/01/1909, 9856_ao17000007.

[161] AMBS 2017: 10.

Figure 3.56: Detail showing extensive bedrock modification to the north of the AGL Co Gasworks and the large gasholder, probably associated with the construction of Hickson Road. SRNSW, 'View of the reconstruction of Darling Harbour from Millers Point showing Dalgetys Wharf No. 1 partly completed', 01/01/1909, 9856_ao17000007.

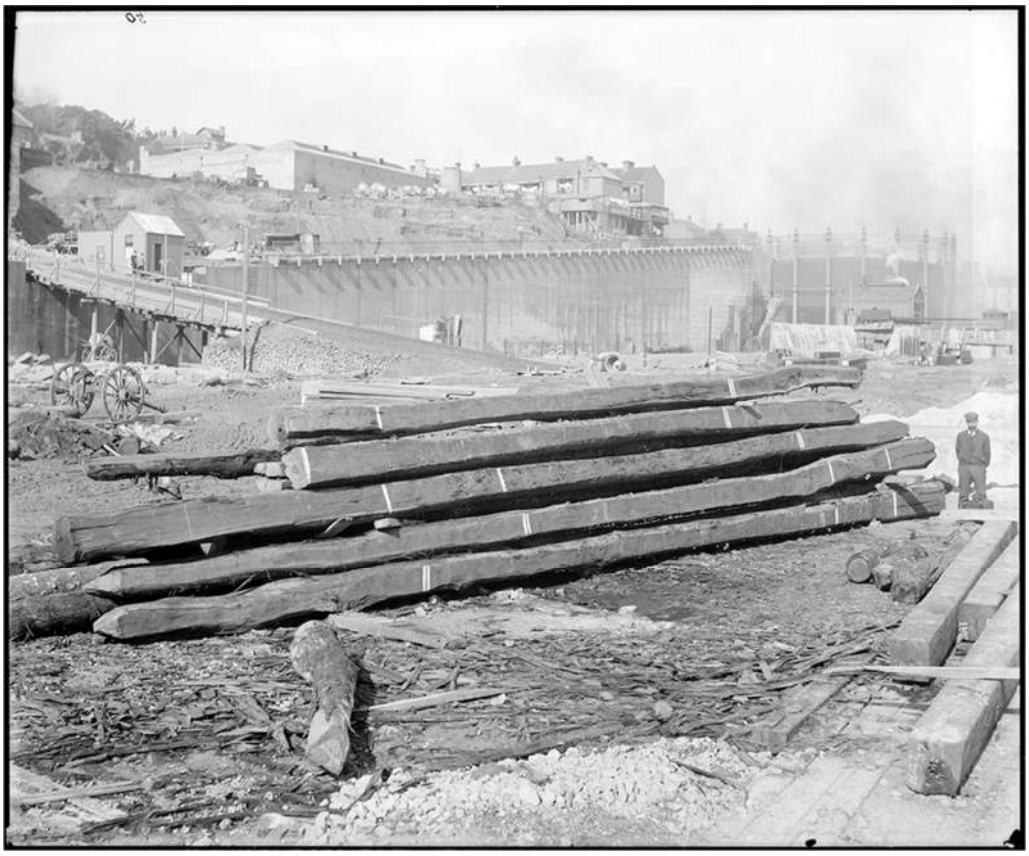

Figure 3.57: Pre-1911 Photograph showing the construction of Hickson Road in the vicinity of the study area, with the Gasworks and large gas annulus visible in the background. SRNSW, 'Millers Point and Hickson Road (Under construction) with Sydney Gasworks gasometer at right', no date, glass plate negative, NRS-9856-3-18-MSBL529.

In July 1920, a temporary road was established through the AGL Gasworks site, winding between the surviving industrial remains, whilst awaiting delays in the formal transfer to government ownership (Figure 3.60). After the above-ground structures of the gasworks were removed and preparations completed for the extension of Hickson Road, another temporary road was inserted at a higher level above the concrete base of the new section of Hickson Road (Figure 3.61). The annulus of the 1869-1870 gasholder lay quite low within the site and would have been covered by the temporary road. The land to the left shows that the 1882 gasholder was completely removed and there appears to be gravel backfilling the tank/annulus for the gasholder. The use of filling material was required to raise the level of the ground to the height of the new road which appears to be at least 2m above the base of the former 1882 gasholder.

Construction of the new jetties to the west of Hickson Road was influenced by a gradual shift in the size and scale of 20th-century shipping; the days of shallow coal barges at the AGL Co wharf having ended. New berths had to be higher to cope with ships of greater draught, hence the service roads also needed to be raised. Monier concrete seawalls erected along the eastern side of Darling Harbour in the 1920s finally included the Gasworks site, although these works ultimately relocated the shoreline further east. As a result, any Gasworks structures and industrial features located west of the new seawall were demolished, and dredging used to excavate out the western extent of the gasworks reclamation area. Prior to the construction of the concrete seawall, new ballast was likely introduced to provide a more stable base than any remnant Gasworks reclamation material. The new ballast buried the remains of the earlier reclamation whilst preserving parts of earlier seawalls as archaeological features.

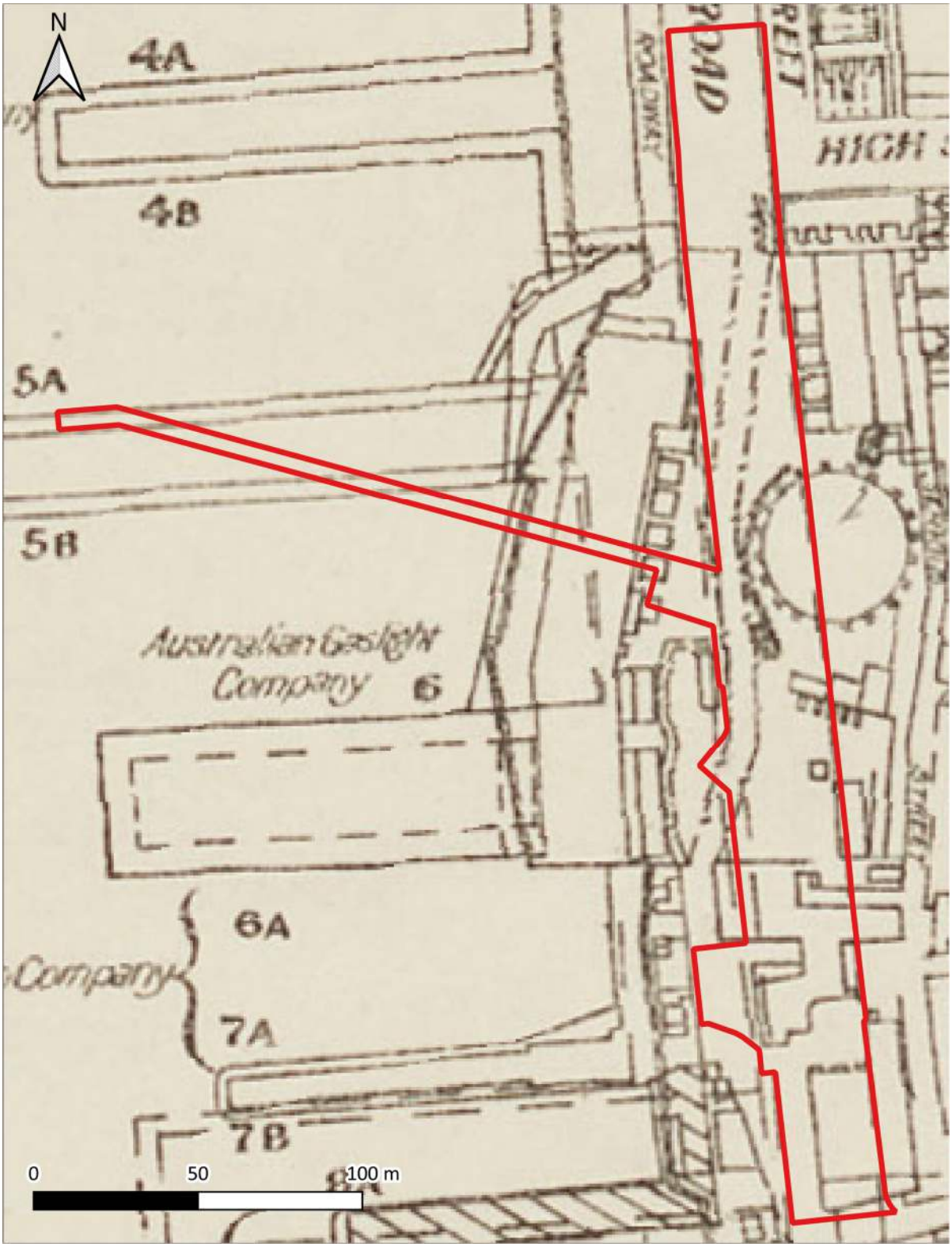

Figure 3.58: 1921 plan showing the gasworks and Grafton Bond buildings still extant, prior to the construction of Hickson Road. Site area is outlined in red with modern Hickson Road shaded in red. SANSW, Sydney Harbour Trust Map.

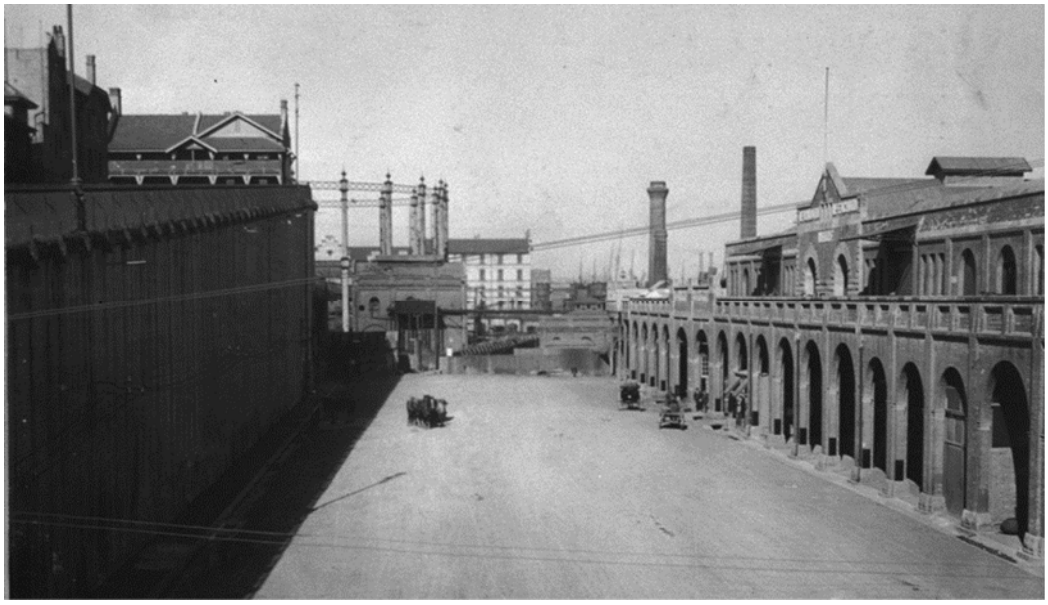

Figure 3.59: 'Gasworks at end of Hickson Road'. Hickson Road could not be completed until the Gasworks was decommissioned. Government Printing Office 1 - 24734, Original negative held by State Archives & Records Authority of New South Wales. SLNSW, nX6I2VLY.

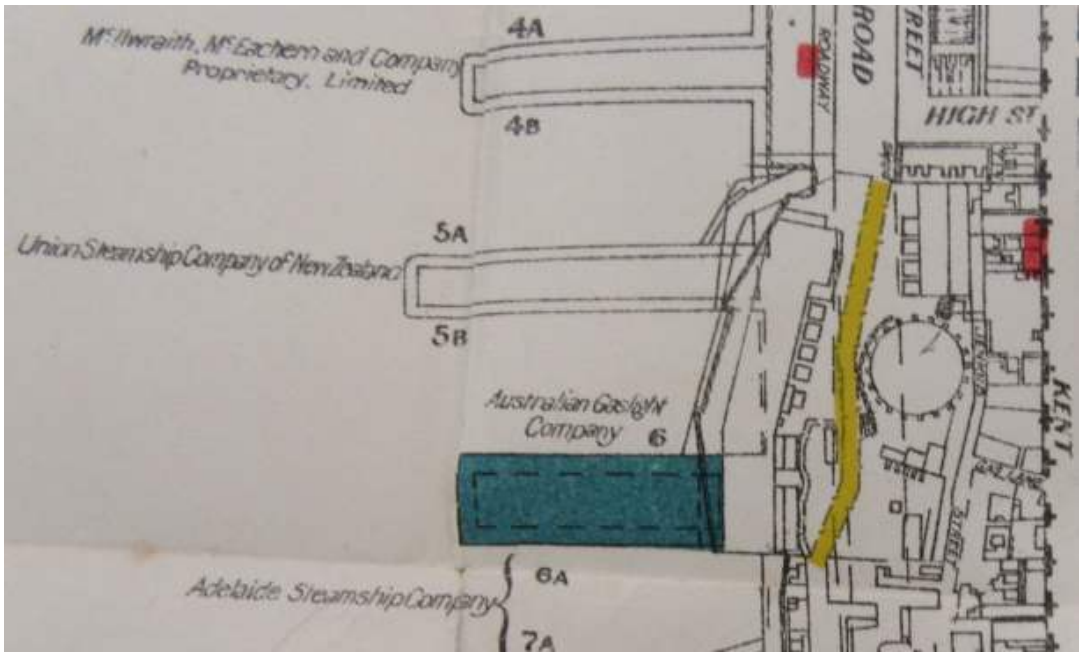

Figure 3.60: The temporary road, in yellow, extending Hickson Road southwards through the AGL site. This was built during the financial year 1920-1921. *Sydney Harbour Board, Annual Report*, 1920-1921, annotated.

Figure 3.61: Construction of Hickson Road through the former Gasworks site 1923, looking south. Note the front part of the remaining MSB Store Complex building (red arrow). The five-storey building blocking Hickson Road to the south is part of Grafton Bond, soon to be demolished. The 1860s stone store (yellow arrow) built by Smith and Challis, later named Store F. Only the eastern building was retained and the western building was demolished. Note in the photo how the eastern part of Store F is set into the high rock shelf. The temporary road on the West is shown in use. The adjoining slope was quarried to achieve the modern streetscape. NSWSA, NRS-9856-2-142-6454.

By 1924 Hickson Road had been driven through the AGL site and berth 5 to the west was nearing completion. The new wharves matched the height of Hickson Road, with the adjacent example consisting of a timber-framed structure with a brick façade and double-storey road frontage (Figure 3.62). The construction of wharf 5 had involved:

> Cutting into the land and the extension shoreward of the wharf for a length of 70 feet, also the construction of a broadside jetty between that and No.4 Berth. ... The [shore] shed consists of two floors of brick and concrete walling, the floors being of reinforced concrete.[162]

Structural remains of similar timber wharf structures have previously been identified from archaeological excavations at Barangaroo South (Figure 3.63). While remediating the land formerly occupied by AGL buildings, the Sydney Harbour Trust erected two office buildings on the eastern side of Hickson Road, for the use of workmen, carpenters, blacksmiths and plumbers (Figure 3.64).

[162] *Sydney Harbour Trust Annual Report 1924-1925*, p.2.

Figure 3.62: The new wharves adjacent to Hickson Road on the AGL site in May 1924. CSA, 086/086897.

Figure 3.63: Timber frame construction of Wharf No. 4 McIlwraith, McEacharn & Co. Walsh 1911:91.

Figure 3.64: On the left, Sydney Harbour Trust buildings on the AGL site in 1928. SLNSW ML, GPO 1-19641.

The section of Hickson Road immediately north of Napoleon Street was not completed until the Grafton Bond Stores underwent extensive modifications between 1923 and 1928. Some buildings were demolished, others partly demolished and new stores were built. Stores E and F (see labels on Figure 3.52 for location) were partly demolished and had new facades built to match the new Hickson Road alignment.[163] The extent of the changes to the buildings can be seen in a comparison between photos of the corner of Napoleon and Sussex Streets (Figure 3.65, Figure 3.66, Figure 3.69). These changes allowed the construction of the modern alignments of Hickson Road and Sussex Street.

The works on the Grafton Bond Stores and Hickson Road in the 1920s involved substantial excavation of sandstone bedrock in various locations. During 1925-1926, 7000 cubic yards of bedrock were removed from the area in front of the Grafton Bond Stores and a stone retaining wall was erected at the rear of the area of the excavation area.[164] More sandstone bedrock was removed the following year, when large parts of the Grafton Bond Stores were demolished and further excavation was undertaken to prepare a level surface for Hickson Road. Historic images suggest the bedrock excavated in the 1920s could have extended over only part of the area covered by the Grafton Bond Stores (Figure 3.65, Figure 3.67). The portion of Hickson Road through the area of the former bond stores took two years to complete (Figure 3.68). Specifications for the portion of road between berth 6 (roughly between Barton Street and Waterman's Quay) and Napoleon Street required the new Hickson Road to be constructed out of nine-inch thick concrete over another four inches of blue metal.[165] This interpretation is supported by a visual inspection of present day Hickson Road, where sandstone bedrock is visible on the eastern side of the road for only part of the present study area.

[163] Casey & Lowe 2010b: 60.

[164] Sydney Harbour Trust 26th, 27th and 28th Reports for years ended 30 June 1926 to 30 June 1928.

[165] Broomham 2007: 41.

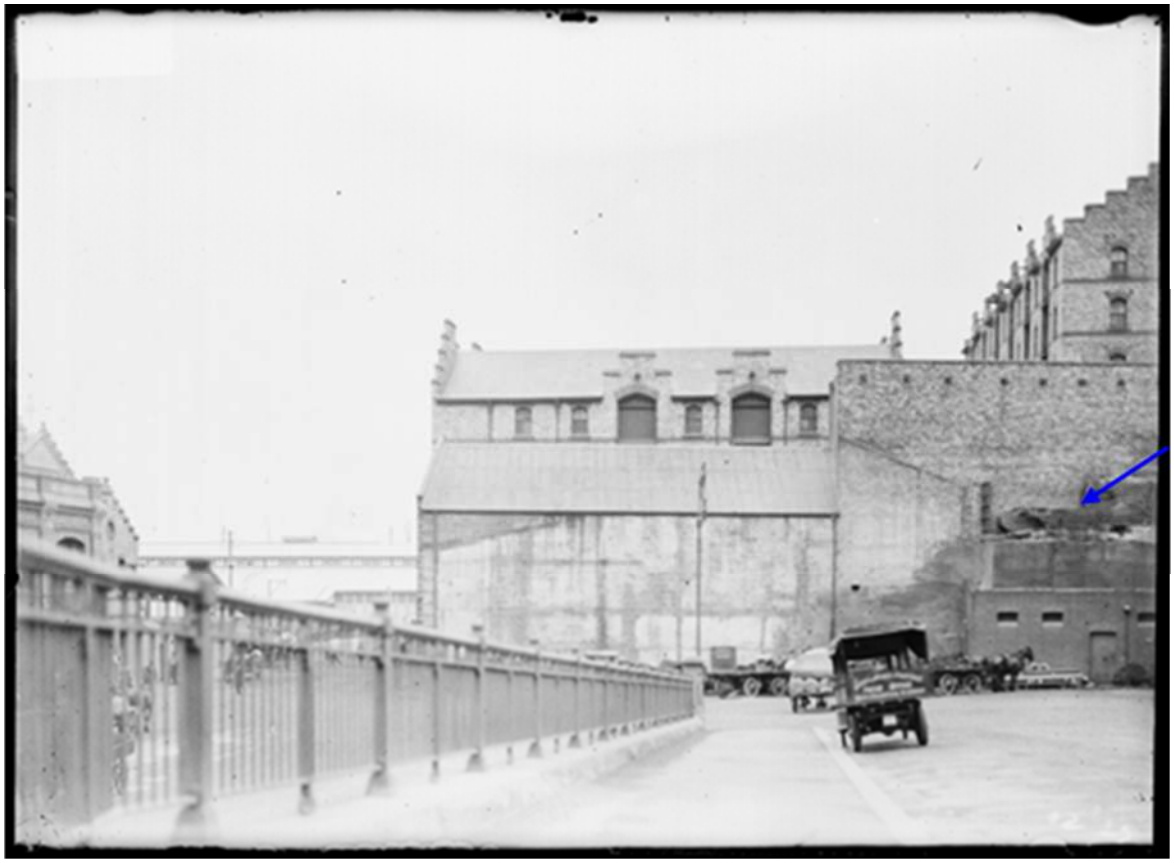

Figure 3.65: Looking down Napoleon Street towards the Grafton Bond Store c.1923 before the modifications to the façade. The quarried rock face is arrowed in blue. SRNSW NRS-9856-2-113-6334.

Figure 3.66: Grafton Bond Stores from the south, prior to their removal for construction of Hickson Road. NSWSA, NRS-9856-2-111-6293.

Figure 3.67: Grafton Bond Store with horse-drawn wagon handling materials', photo dated 4/12/1923. Note the fence at the front of the building suggesting a road sloping up to the north of the building. NSWSA, NRS-9856-2-113-6335.

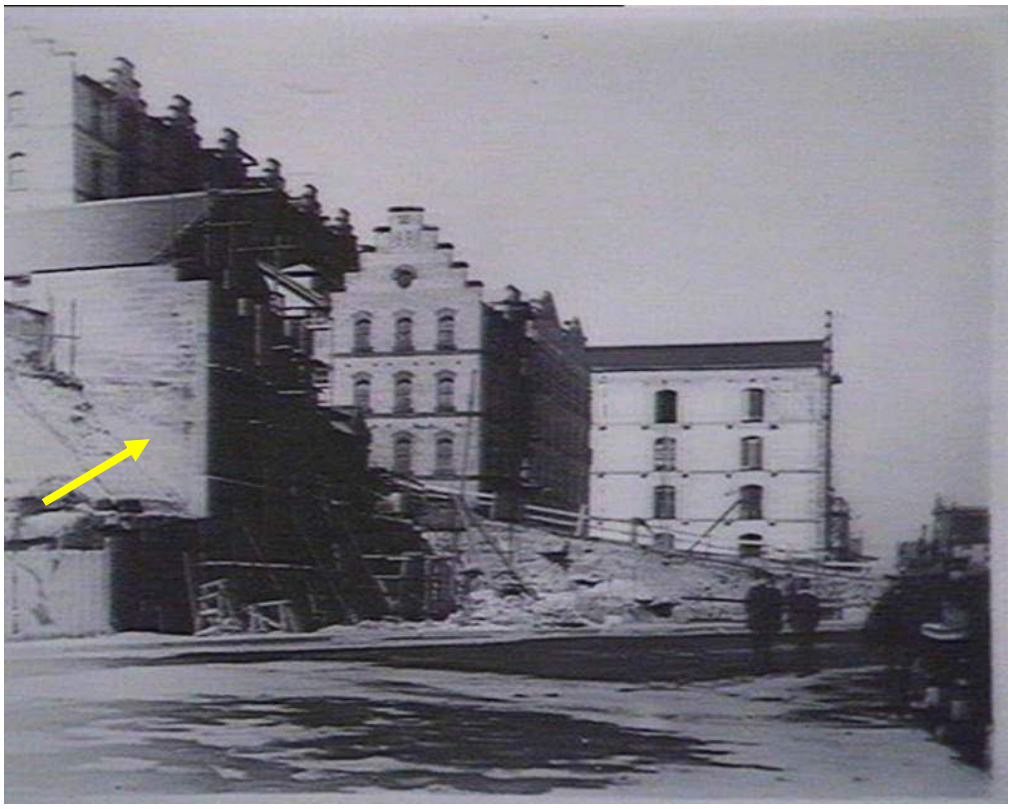

Figure 3.68: Partial demolition of Store F (yellow arrow), looking south. The western end of the store was demolished and remodelled to align with Hickson Road. SLNSW Government Printing Office 1 – 19861, IE1873931.

Figure 3.69: Napoleon Street, looking north towards the corner of Sussex Street, 31 August 1932. CSA, SRC8276.

3.9 SUCCESSORS OF THE SYDNEY HARBOUR TRUST

In February 1936 the Maritime Services Board replaced the Sydney Harbour Trust. It continued to use the Trust's buildings on the AGL site as centres for maintenance, particularly of the wharves.[166] After World War 2 ended in 1945, the Board entered on a ten-year plan for modernisation of the wharfage. Though progress was slow, a new brick building for fitters and carpenters was constructed on the southern end of the AGL site.

In the post-war period, starting in the late 1950s, the Maritime Services Board (successor to the original Sydney Harbour Trust) responded to the changing transport technology by turning the wharf and jetties to the west of Hickson Road into a flat concrete apron. This allowed the wharfage to accommodate containerised facilities, such as cranes, large stores and a lineal frontage of 3000 feet (914m).[167] The lineal wharfage was pushed further out into the harbour, with concrete caissons and metal sheet piles creating a seawall, followed by yet another huge land reclamation event.[168] A photograph of the reclamation work in the early 1960s annual reports show the extent of these works (Figure 3.70). The remnant parts of the Grafton Bond Flemish-style tower building can be seen in the bottom of the photographs (Figure 3.70, Figure 3.71). This building was on the western side of Hickson road, almost opposite the current study area.[169]

Work to upgrade and modernise all of the wharfage continued through the 1960s and 1970s, however it became clear that Port Botany was much better suited to handling the

[166] *Maritime Services Board Annual Reports*, 1936 to 1939.

[167] *Maritime Services Board* 26th Annual Report 1960-1961.

[168] *Maritime Services Board* 29th Annual Report for year ended 30 June 1964.

[169] *Maritime Services Board* 26th Annual Report 1960-61, p 17 & 27th Annual Report 1961-62, pp 16-17.

semi-trailers to transport the goods (Figure 3.72). By the mid-1980s, Darling Harbour had become a major entertainment and tourist complex as part of a 1988 Bicentennial project. With the Walsh Bay Urban Renewal Project of the late 1990s proving such a success, in 2003 NSW Premier, Bob Carr, announced leases at Darling Harbour East, White Bay and Glebe Island would not be renewed. An international design competition was held, and in February 2007 the Minister for Planning announced his approval of a concept plan for the newly named Barangaroo (west of Hickson Road), to be redeveloped between 2008 and 2020.

Figure 3.70: 1960s reclamation work in progress on the western side of Hickson Road to create lineal wharfage. Note the small Grafton Wharf tower building in the left foreground (yellow arrow) almost opposite the current study area. *Maritime Services Board 27th Annual Report* for year ended 30 June 1962.

Figure 3.71: This 1870s photo shows the Grafton Bond store building (left) that was later modified for the construction of Hickson Road. The Grafton Bond clock tower building in the centre is the same building shown in Figure 3.29. Foundations of this building were found during the excavation of Barangaroo South, Stage 3 (2012). 1870s, Kerry & Co. SLNSW ML, PXA 449.

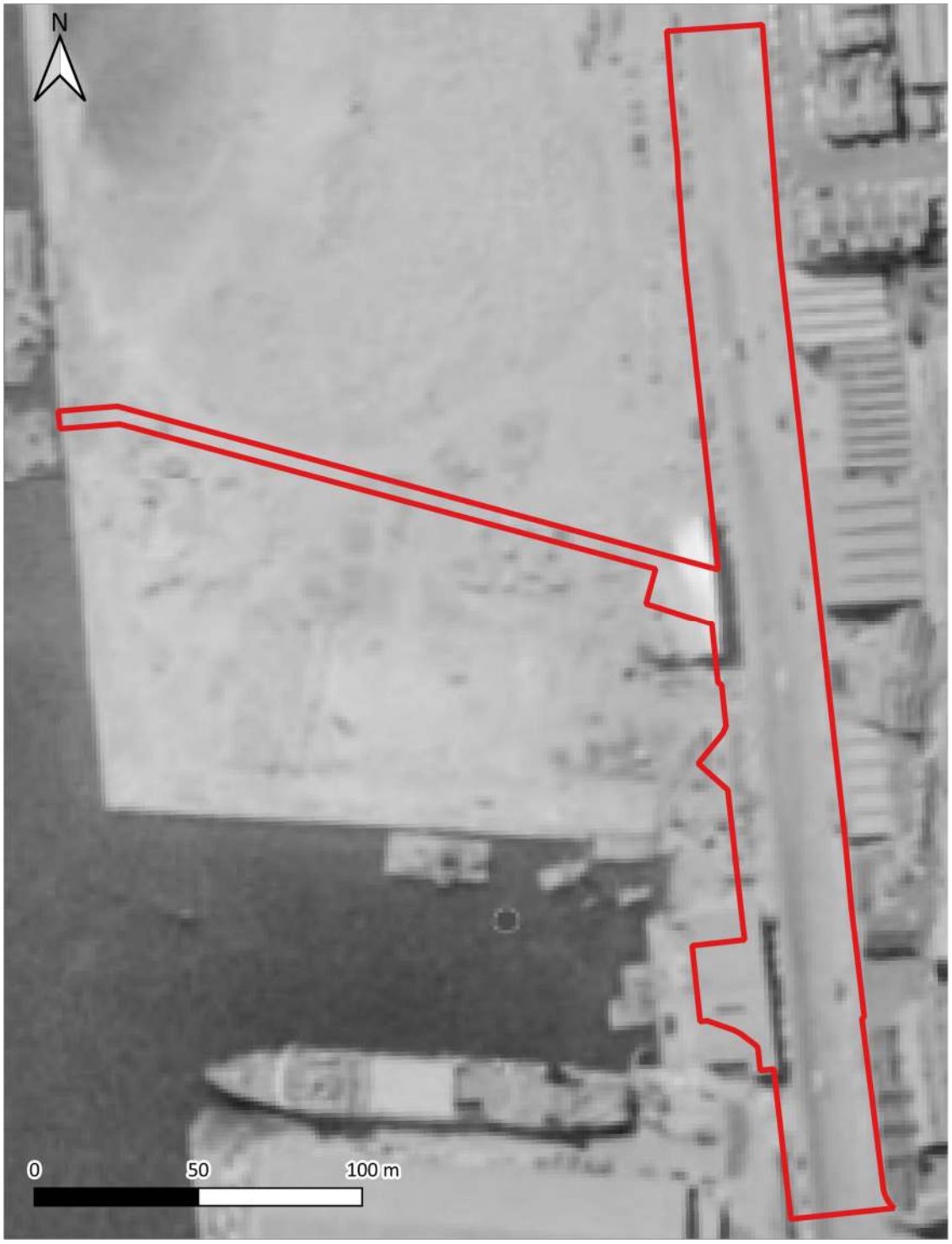

Figure 3.72: The study area in 1971, showing extensive reclamation to the west prior to the establishment of a large concrete apron for container ships. Historical Imagery Viewer.

In 2000 the first major development proposal was advanced for part of the AGL site. Delmo No 2 Pty Ltd sought to erect two substantial apartment blocks on what was now 30-38 Hickson Road, on or near the site of the earlier gasholders. In 2009, however, the passing of the *Barangaroo Delivery Authority Act* by the New South Wales State Parliament and the creation of the Barangaroo Delivery Authority (BDA) has superseded all previous decisions. On 1 July 2019, the BDA was abolished and its functions, development of Barangaroo and management of its public spaces, were transferred to Infrastructure NSW.

4.0 COMPARATIVE ANALYSIS

4.1 PREVIOUS NEARBY ARCHAEOLOGICAL INVESTIGATIONS

Numerous archaeological assessments and investigations have been undertaken in the vicinity of the current site. Research and results from these assessments, testing programs and excavations can help inform understanding of the types of remains and level of preservation that can be expected at Grafton Bond as well as locating the site within a broader contextual landscape of significance and associations. Previously assessed and investigated sites that are of particular relevance to the current study area and discussed below are:

- 2018: Barangaroo Station[170]
- 2010-2012: Barangaroo South, Darling Harbour[171]
- 2012: Stormwater Upgrades, High Street Millers Point[172]
- 2008/2009: Darling Walk, Darling Harbour[173]
- 1999: Gasworks Archaeology and Heritage[174]
- 2005: KENS Site, Darling Harbour[175]
- 2003: 30-34 and 38 Hickson Rd (The Bond)[176]
- 2020: Grafton Bond Stores[177]

4.1.1 BARANGAROO SOUTH (2010-2012)

Casey & Lowe was commissioned by Lendlease (Millers Point) to manage the archaeology at Barangaroo South, west of the current study area. Casey & Lowe prepared a *Non-Indigenous Archaeological Assessment* and an *Archaeological Management Strategy & Research Design* for the site in May 2010.[178] The assessment identified high potential for archaeological remains of reclamation, maritime infrastructure and businesses dating from the 1820s. Most of the archaeological resource was assessed as being of local heritage significance with potential for some State significant remains. As the construction of the basement would remove all archaeological remains within its footprint, it was recommended that a comprehensive archaeological investigation be undertaken.

This investigation consisted of initial archaeological testing of the site in August and September 2010,[179] and a large-scale open area excavation in three stages between January 2011 and August 2012.[180] Comber Consultants undertook monitoring and testing for Aboriginal archaeological remains during the third stage of the program. The archaeological excavation was located to the west of Hickson Road/Sussex Street, south of the remediation area of the Gasworks, and was approximately 210m long and up to 40m wide (Figure 4.1, Figure 4.2). Archaeological remains dated from the 1830s to the early 20th century and consisted of evidence for the early waterfront, wharf and store buildings

[170] Casey & Lowe 2019.

[171] Casey & Lowe 2012c.

[172] Casey & Lowe 2012b.

[173] http://www.caseyandlowe.com.au/portfolio_page/darling-quarter/

[174] Godden Mackay Logan 1999.

[175] Wendy Thorp; talk at Sydney Practitioners Workshop, November 2004; http://www.aacai.com.au/newsletter/101.html#summary

[176] Archaeology & Heritage Pty Ltd 2003; Archaeology & Heritage Pty Ltd 2004.

[177] Casey & Lowe 2020b.

[178] Casey & Lowe 2010a & 2010b.

[179] Casey & Lowe 2012c: 1.

[180] Casey & Lowe 2022a.

including underfloor deposits, reclamation, a substantial sandstone seawall dating from the 1840s, and other maritime constructed as the new offices of the AUSN Co.[181]

The archaeological material had a high degree of intactness as it had generally been buried below reclamation fills rather than having been removed during subsequent development at the site. This included accumulations of underfloor material built up below the timber floors of sheds along the wharves. These deposits contained artefacts associated with the use of the wharf buildings during the mid to late 19th century. Of particular relevance to the current study area was the redevelopment of Grafton Bond Wharf and the new buildings constructed in the 1880s. This included the construction of a two-storey Flemish-style building with a clock tower that was built by 1883 and the bond stores built by 1891.

The footing remains of the southern wall of the Flemish-style building were found during excavation and consisted of cyclopean concrete (Figure 4.3, Figure 4.4) and not sandstone blocks. There was evidence of the ground level being raised. Photographic evidence from the 1880s shows new surfaces of bluestone cobbles laid throughout the complex. Although there was no in situ archaeological evidence of bluestone paving found in the area around the Flemish-style building, pieces of bluestone paving were found in modern cuts dug after the building was demolished in the 1960s.[182] In addition, the footing remains of the western wall of Bond Store C of the Grafton Bond was uncovered in Area P up to two courses surviving and laid on a concrete base (Figure 4.5).[183]

Figure 4.1: Barangaroo South, outlined in red, was the southern of three redevelopment areas at Barangaroo. Google Maps. C & L Preliminary Report, Barangaroo South, 2012. The current study area (yellow arrow) is to the right of the red outline.

[181] Australian United Steam Navigation Company.

[182] Casey & Lowe 2022c.

[183] Casey & Lowe 2022d: 46-50.

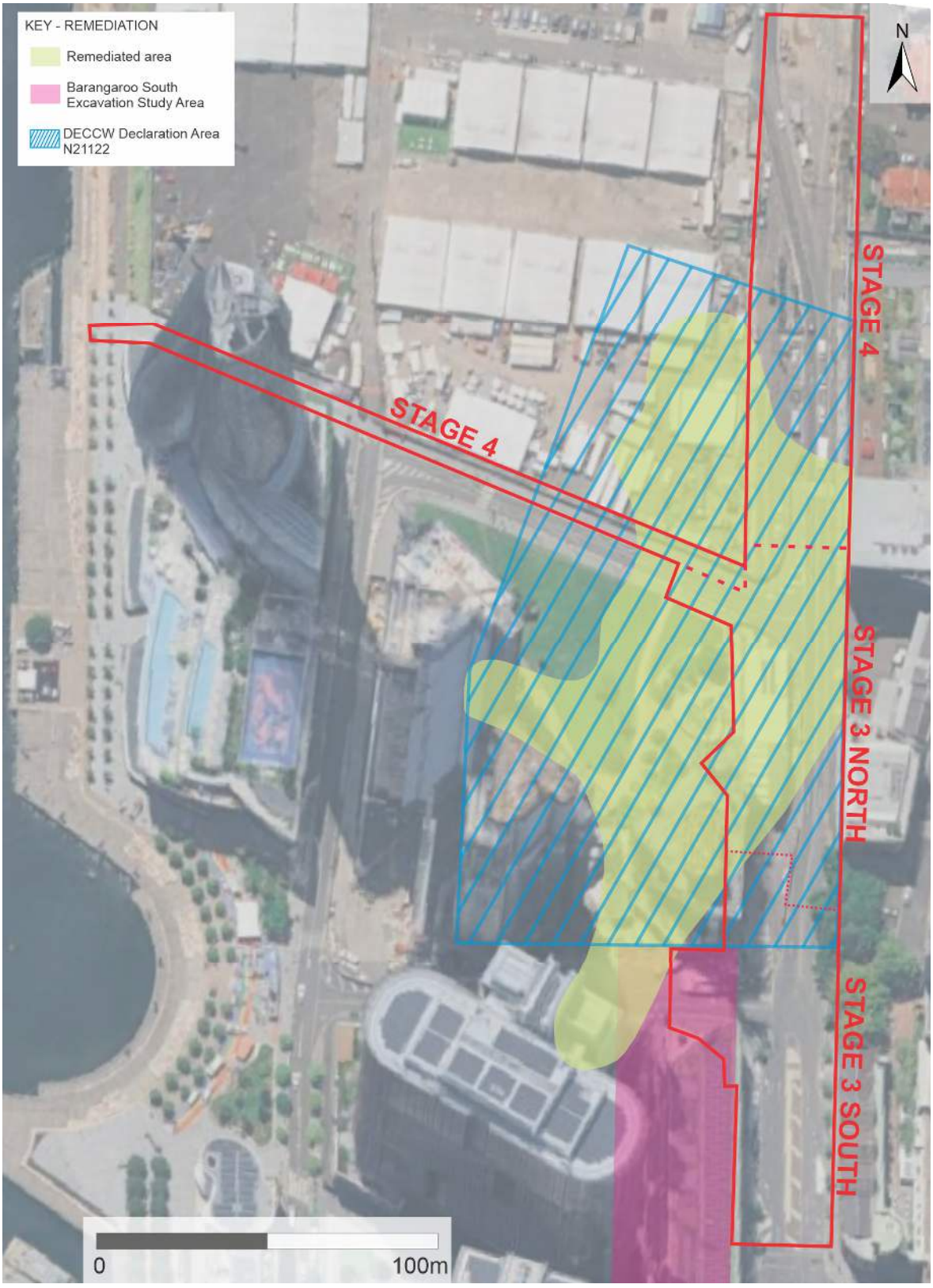

Figure 4.2: The Barangaroo South excavations (purple) in relation to the current study area (red) of Hickson Road. The Declaration Area 21122 (dashed blue) and remediation extent (light green) are highlighted.

Figure 4.3: In the foreground is part of c.27m of sandstone seawall. On the right (blue arrow) are the concrete footings for the Flemish-style building. In the background is the rebuilt bond building on Hickson Road both part of the Grafton Bond stores. View to northeast. Casey & Lowe 2012.

Figure 4.4: Part of the 1880s concrete footing of the Flemish-style building with an inset detail showing the sandstone fragment aggregate. Scale 1m. View to south. Casey & Lowe 2012.

Figure 4.5: The footing of the Grafton Bond Store showing the sandstone rubble 'formwork' (bottom), the cyclopean concrete (context 12813 above), and the lowest course of sandstone blocks (centre of image, context 12806). Scale 1m. View to east. Casey & Lowe 2022d.

4.1.2 BARANGAROO STATION - METRO

Casey & Lowe were commissioned by AMBS Ecology and Heritage on behalf of Transport NSW to undertake historical archaeological investigations at the Barangaroo Metro site, Sydney. The archaeological resource of the site was assessed as being of local heritage significance. A rare abandoned vessel discovered buried in harbour silts was assessed as being of State significance. The site is located within and to the west of Hickson Road, Barangaroo, within the City of Sydney. Much of the site is directly adjacent to High Street in the east (Figure 4.6). The excavation program took place between July and December 2018.[184]

Within the study area several historical construction phases were identified, buried beneath thick layers of imported fill material used as construction fill for the 1920s finger wharves and for the construction of the container terminal in the 1950s, or sealed beneath levelling fills for the construction of Hickson road. These included: the remains of a c.1830s house consisting of sandstone foundations and seawall, structural remains for a pre-1855 timber boatshed, a timber boat wreck adjacent to Lanford's house deposited pre-1865 (Figure 4.8), sandstone foundations for 19th century saw shed, multiple 19th century sandstone seawalls, sandstone foundations for 20th century stores, timber piles and the foot of Clyde Street constructed from sandstone blocks and bluestone setts dated to 1900 (Figure 4.7). Extensive modification to natural bedrock outcrops was also observed.

[184] Casey & Lowe 2019 *Sydney Metro City & Southwest – TSE Works, Barangaroo Station, SSI 15_7400, Preliminary Report*, February 2019.

Figure 4.6: Location plan showing the site outlined in red and the excavation areas hatched in yellow. Casey & Lowe, Preliminary Results Report 2019.

Figure 4.7: Northwest facing view of the termination of Clyde Street showing the bluestone set surface. The surface is orientated with the flow of Clyde Street traffic, suggesting that it was intended for traffic crossing over from Dibbs' northern and southern wharves. Scale is 1m. Casey & Lowe, Preliminary Results Report 2019

Figure 4.8: View of the abandoned timber boat found in the intertidal zone at the foot of the historical location of Clyde Street partly beneath an 1850s seawall. Casey & Lowe, Preliminary Results Report 2019

4.1.3 BARANGAROO HEADLAND

Austral Archaeology undertook a program of archaeological excavation at Barangaroo Headland, to the north of Barangaroo Station (Figure 4.9).[185] This work was commissioned by Lendlease Building Contractors on behalf of the Barangaroo Development Authority. The testing program proposed 21 individual trenches within seven areas. These had been assessed as having moderate to high archaeological potential. Monitoring and two instances of open area excavation were also undertaken.

The investigation revealed that the archaeology had survived to varying degrees across the site. Remains ranged in date from the 1830s to the early 20th century and included the well-preserved walls of a pre-1833 store (with foundations likely surviving intact below) and abutting blacksmith workshop, heavily damaged footings associated with Moore's Wharf building, other waterfront buildings, a sandstone road, retaining walls, early 20th-century terrace houses, and several pre-1865 mixed residential and commercial properties. Much of the archaeological material was conserved *in situ*.

[185] Austral Archaeology 2016.

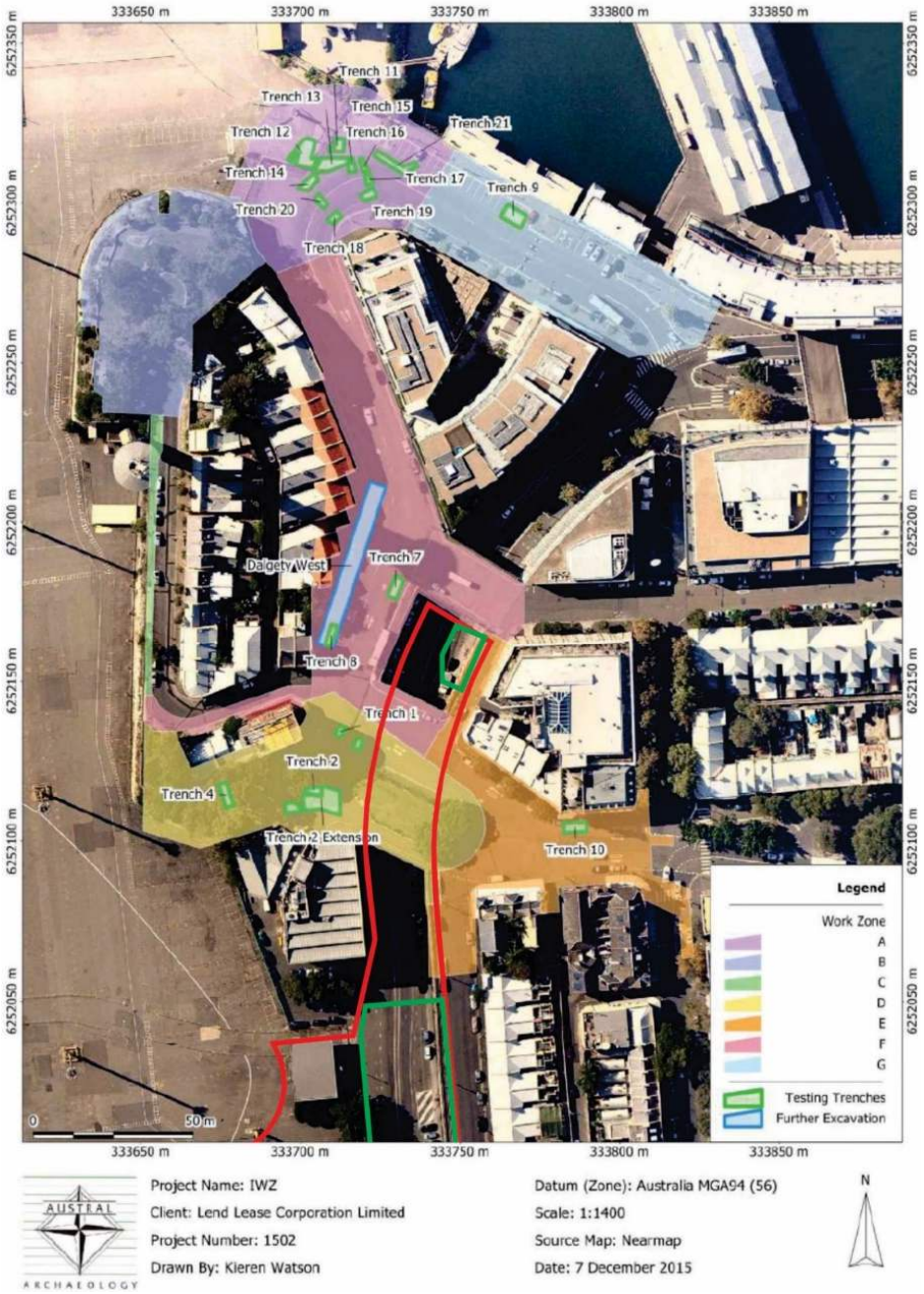

Figure 4.9: Overlay showing the Barangaroo Station study area (outlined in red and green), in relation to the area previously excavated by Austral Archaeology, mostly to the south. Austral 2016: 3 with C&L additions.

4.1.4 BARANGAROO STATION - CONSTRUCTION ONLY PACKAGE (COP)

AMBS were commissioned by BESIXWatpac on behalf of Sydney Metro in 2017, to undertake archaeological investigations for the Barangaroo Metro Station Construction Only Package (COP), which involved the fit out of the new station, installation and connection of services and the establishment of the new road surface on a portion of Hickson Road. Testing was undertaken in between December 2021 and January 2022, in three areas with an assessed moderate to high potential to contain archaeological remains; these three areas were Hickson Road South, Barangaroo Headland and Nawi Cove (Figure 4.10).

Results from archaeological testing at Hickson Road South, including the northern portion of the current study area, indicated some archaeology was present in the base of the test trenches, although new stormwater and electrical trenches were not expected to impact the observed archaeological resource. Archaeological testing undertaken in Trench 1 identified a surface and two structural sandstone features at a depth of 1.4-1.5m (RL 1.29-1.43m), (Figure 4.11). Although remains of the two possible sandstone features were limited, they were interpreted as representing two phases of reclamation associated with Agar's infilled wharf (1830s-1860s). Both were infilled with clayey sand and sandstone rubble, covered with later- fills attributed to later iterations of wharf expansion.

Further east, Trench 2.1 contained similar fills and depths, although these were observed above a fractured sandstone and rubble fill, which likely acted as a base for reclamation and wharf building. Although the eastern half of Trench 2.2 was impacted by an electrical service, a portion of cut sandstone bedrock was exposed at a depth of 0.85m (RL 1.84m) (Figure 4.12). The remaining area of this trench contained decontextualised sandstone fill, capped with industrial waste.

Archaeological testing at Nawi Cove and Barangaroo Headland as part of the same program of investigation, identified remains of an 1860s sandstone seawall and two intact wharf surfaces, as well as several ship knees in various states of processing.[186]

[186] AMBS Ecology & Heritage 2024 *Barangaroo Station COP – Archaeological Excavation Report – Final,* June 2024.

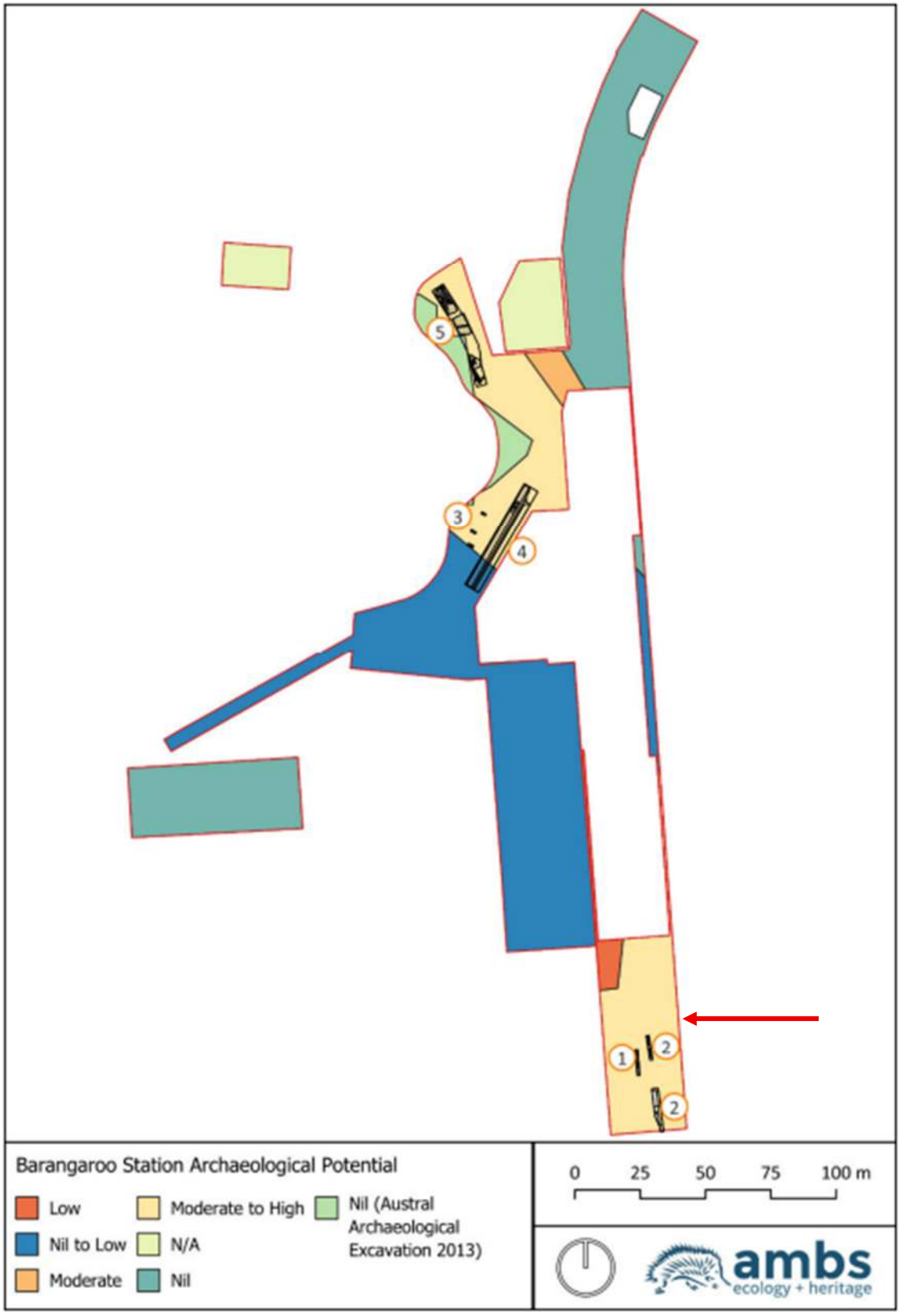

Figure 4.10: Location plan showing the assessed potential of the Barangaroo Station COP study area. The test trenches investigated by AMBS are indicated by the numbers included on the plan. Two trenches are labelled number '2'; of these the northern one represents Trench 2.1 and the southern Trench 2.2. Stage 4 of the Hickson Road upgrades overlaps with the area of moderate-high potential at the southern extent of the area investigated by AMBS (arrowed). AMBS Ecology & Heritage 2024: 41.

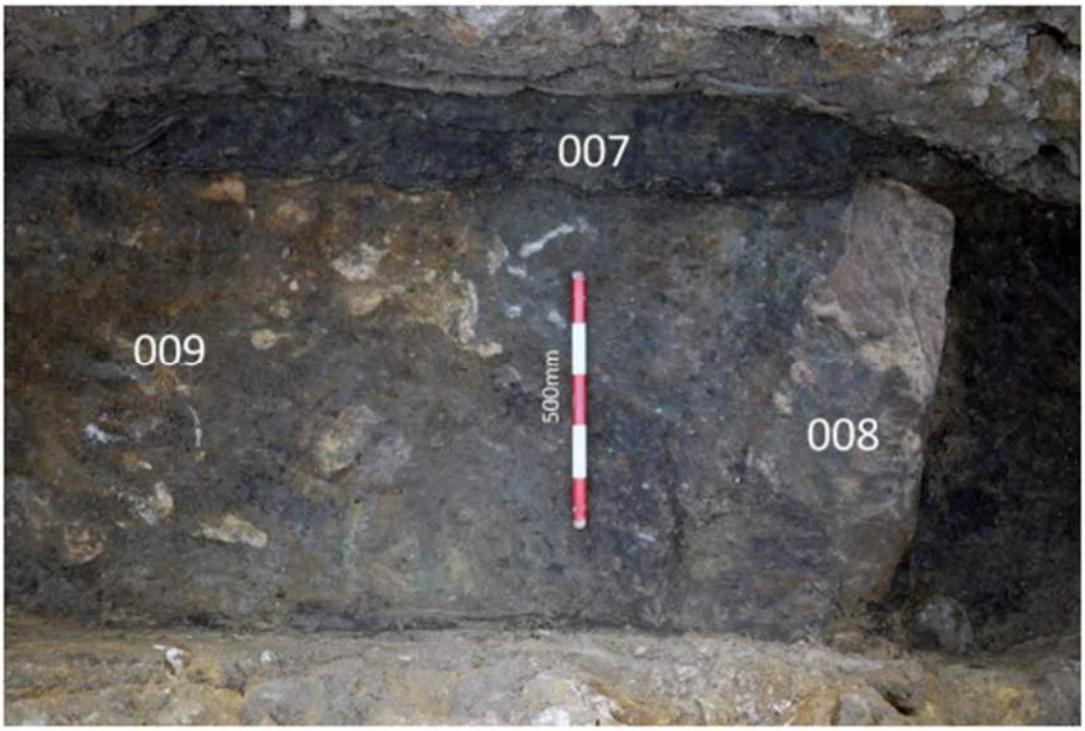

Figure 4.11: Sandstone feature with retained rubble fill observed in Trench 1. AMBS 2024, Figure 4.8.

Figure 4.12: Cut bedrock observed in the base of Trench 2.2. The High Street wall is visible in the background. AMBS 2024, Figure 4.17.

4.1.5 DARLING WALK, DARLING HARBOUR

The Darling Walk Site was excavated between October 2008 and April 2009 by Casey & Lowe. Most of the site was originally below the high-water mark. Reclamation of the foreshore of Cockle Bay (renamed Darling Harbour in 1828) began in the late 1830s resulting in substantial wharfage by the 1860s. Both Darling Walk and Barangaroo South sites have considerable similarities in the way the foreshore was reclaimed and developed. The Darling Walk site was an extensive remnant industrial landscape associated with important industrial precincts:

- Barker's Mill, established in the 1820s – remains of the millpond and early jetty.
- Workers' housing.
- PN Russell Foundry and Carriage Works.
- Small foundries and soap factories.
- Extensive incremental reclamation and pre-reclamation use of the foreshore, including timber fences and environmental archaeology associated with the reclamation fills.
- Aboriginal archaeology – remains of a midden.
- Evidence of the original foreshore, rocky outcrops and sandy beaches with remnant cockle beds beneath the sandy beach.

The final archaeological investigation for Darling Quarter can be found at:
http://www.caseyandlowe.com.au/portfolio_page/darling-walk/

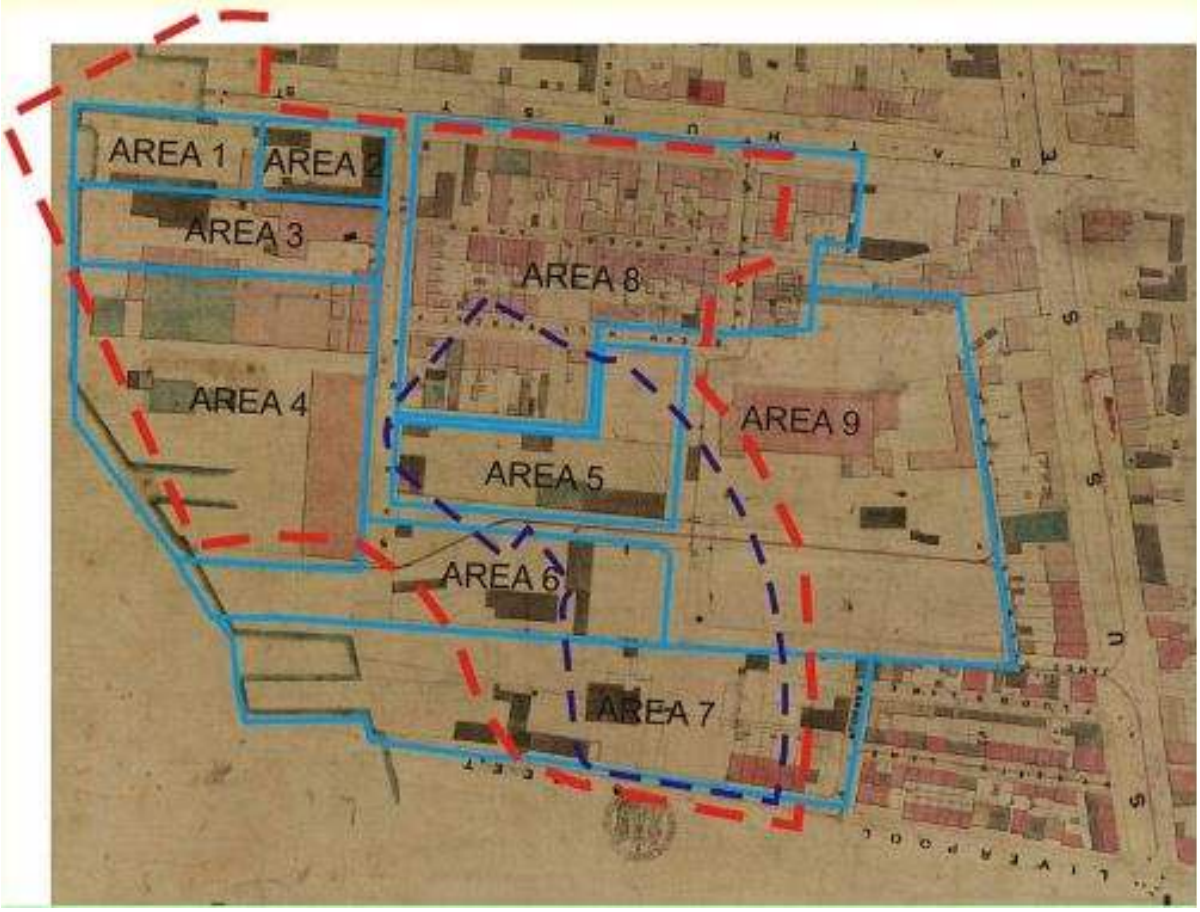

Figure 4.13 1865 Plan of Darling Harbour. The site outline is in red and the basement excavation in blue. Area 8 is the worker's houses and Area 9 is part of Barker's Mill. http://www.caseyandlowe.com.au/portfolio_page/darling-walk/

4.1.6 HIGH STREET, MILLERS POINT – STORMWATER UPGRADES

In May 2012 Casey & Lowe undertook monitoring of trenching work associated with providing new stormwater services to 115-125 Kent Street. Substantial sandstone walls were uncovered in High Street. High Street is located within the Millers Point Conservation Area (SHR 884) and the Millers & Dawes Point Village Precinct (SHR 1682). Casey & Lowe identified the sandstone walling as likely to be part of a stone building constructed by Thomas Agars in the early 1830s. The building was demolished after 1865 to make way for Agar Street and new buildings. These in turn were demolished in the early 1900s when High Street was created.

The sandstone walls belonged to buildings that pre-dated High Street. The structure was constructed on elevated ground that sloped steeply from Kent Street in the east towards Darling Harbour in the west. In forming High Street, these buildings were demolished and the ground level was raised in order to correct the steep gradient, thereby burying the remains of the earlier structure. The Millers Point area was subject to extensive quarrying and development from the early 19th century, thereby altering the natural topography. Access in the stormwater trench was restricted but natural weathered clay and bedrock was noted in the eastern end of the trench c.400mm below the street level. There was no evidence for quarrying found in the eastern part of the trench.

The main east-west wall of the structure was constructed down the steep sloping landscape and was seen to be cut into the natural clay and bedrock. Given the steepness of the topography, at the eastern end of the trench the main east-west wall was three courses that rested on the natural while at the western limit of the trench, the wall was ten courses over a footing course. At the western end the ground level was estimated to be over 2m below the current street level (Figure 4.14, Figure 4.15). The archaeological evidence strongly indicates that the structural remains are of one construction phase dating to at least the 1850s and therefore they cannot be the remains of the Agars building depicted on these plans from the 1830s, although some of the lower courses of stone appear different and are the potential remains of the earlier 1830s building.

The extensive archaeology within the roadway was found within an old quarry.

Figure 4.14: Trench for new stormwater service on the southern side of High Street. Left: The arrows indicate the main southern wall of the building which extended deep below the current street level. Right: View to east showing detail of the main sandstone wall.

Figure 4.15: Photos showing the depths of the sandstones walls to accommodate the natural topography. The floor in each room dropped in level from east to west from about 400mm to 2.2m below modern street level.

4.1.7 KENS SITE, DARLING HARBOUR

The KENS Site was excavated over six months in 2005. According to an interview given by Wendy Thorp:

"We excavated the best part of the city block minus the terraces at the southern end of the site," archaeological director Wendy Thorp explains. "It was an extraordinary site as it had some unusual circumstances that led to the depth of preservation. We were excavating down on an average of 5m and in places up to 12m and all of that was European occupation. It was like city on city on city, so we excavated through 20th century levels right through to the various early years of the settlement.

"One of the most interesting finds was that in one part of the site along Sussex Street which was originally part of Darling Harbour, we found remnants of private dockyards, there was an area for boats to come in, seawalls all around it, steps leading down and part of the beach was intact. Along the rest of that frontage we also found other docks, slips and landing places.

"Higher above that, after the reclamation, we found essentially quite a rural landscape. On the newly formed land they had extended the boundaries of the land property out with fences. The fences had been buried in the fill and were still standing, and that was from about 1839. We found evidence of small wooden, stone and brick cottages and a lot of animal pens and paddocks."

It wasn't just pieces of rubble that were uncovered, Thorp says. "We found the foundations, then in places as we got further up the hill the buildings were up to shoulder height - you could walk into them. In Kent Street there were buildings of that height and they were a mixture of 1830s, 1840s and later – you could walk in the back door, you could see where the window ledges were."

The earliest evidence of British settlement was located on the corner of Kent and Napoleon Streets, according to Thorp. "We found the remains of a building that certainly went back to the very settlement of Sydney around the 1790s and early 1800s, and that lay under another house and that in turn was expanded and became a hotel and the hotel remained up till the 1950s."

Although the archaeological team had an idea of what they would find, they were surprised by just how much original material remained. Thorp says the reasons for this are twofold. "Firstly, there was the unusual circumstances of the site that allowed preservation: topography – there was a slight slope in places, then it jumped over a rock cliff which we also found had come to Kent Street, so people had built up the slope but instead of knocking things down they simply knocked them to a certain level and then filled over the top to level the slope out. Secondly because the site hasn't really been touched - all the later 19th century material was demolished in about 1913, so this combination of circumstances led to an extraordinary state of preservation."

The original profile has changed in that most of Sussex Street up to 1839 was part of the bay, Thorp says. "We found that shoreline, then the bay was reclaimed, then Sussex Street was extended, so we went from the shoreline to a street frontage, then a topographic change from going from a fairly gentle slope with one rock face to what it is now."

Although none of the remnants have been kept physically on the site, Thorp says the artifacts recovered have been catalogued and will be accommodated in the completed development and the information retrieved from them will become part of a prepared

interpretation package that will be incorporated into the development so there is a link between the new and the old. "There are lots of ways to do this," she says. "It's not been firmly decided on what shape it will take, but there's the potential for signage or for some of the objects to be displayed. Some of the public art may reflect some of the older occupation on the site."

In addition to the wealth of evidence of European occupation, Aboriginal archaeology was also found on the site. "In a couple of places there were tool-making areas where Aboriginal people had sat upon the cove and made tools," says Thorp. While the exact dates of this pre-European settlement have not been finalised, they go back at least a few thousand years.[187]

The KENS site is also similar to Darling Walk as it was the subject of major reclamation after 1839 when Sussex Street was extended northwards into that area. This reclamation phase is generally later than that undertaken at Darling Walk where major sections of it appears to have been reclaimed by Thomas Barker in the early 1830s. The KENS site indicates that reclamation can be much more extensive than perhaps previously understood. Notably there was up to 1 m of fill within this site and remains of buildings were occasionally up to shoulder height.

4.1.8 GASWORKS ARCHAEOLOGY AND HERITAGE

In 1999 Godden Mackay Logan assessed the archaeological potential of the eastern side of the AGL gasworks site for Delmo Pty Ltd. They assessed the eastern part of the site was been heavily impacted by quarrying for the 1882 annulus for the gasholder. This annulus was photographically recorded by Anne Bickford in 2002. The Annulus was 152 ft in diameter (46.3m) and destroyed most of the earlier archaeological resource in the eastern part of the site.[188] The main item recorded by Bickford in 2002 (2004 report) was the cutting for the annulus. Bickford was limited to recording the remains by photos 'because the toxic by-products of gasmaking by burning coal, the site was highly contaminated and no closer record by measuring or plan drawing could be made of the annulus'.[189] It is noted that while the archaeological resources had been removed to the east of Hickson Road, it should still survive within Hickson Road, which was proven during remediation. Also some gasworks buildings survive at 38 Hickson Road and 2-4 Jenkins Street (Figure 4.17, Figure 4.18, Figure 4.19).[190]

[187] Wendy Thorp; talk at Sydney Practitioners Workshop, November 2004;

[188] Archaeology & Heritage 2004:12; GML 1999:29, 39.

[189] Bickford, Archaeology and Heritage 2004:3.

[190] Archaeology & Heritage Pty Ltd 2003. *Archaeological recording and excavation, former AGL site 38 Hickson Road, Sydney, rock shelf at rear*, prepared for Bovis Lend Lease..

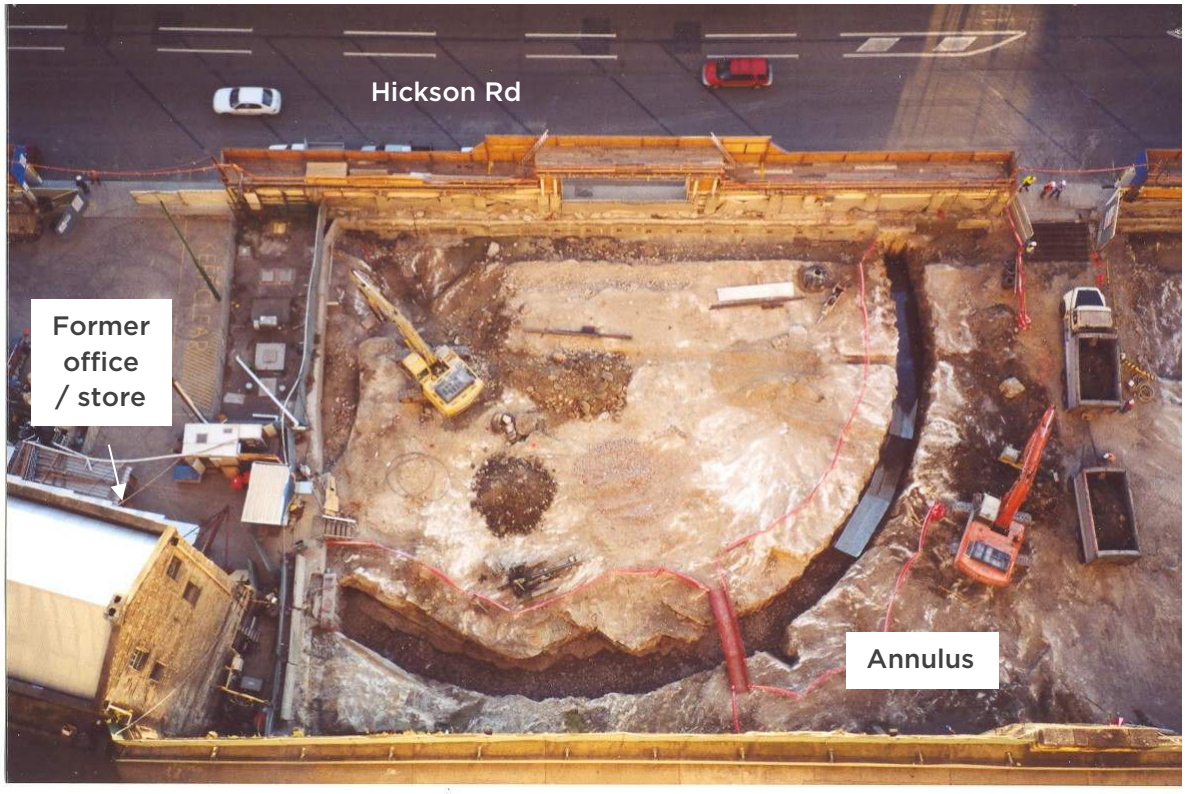

Figure 4.16: Aerial view of the 1882 gasholder annulus recorded at 30-34 Hickson Road, Millers Point (shown to continue under Hickson Road). Image provided by Mark Burns, Lendlease (2002).

Figure 4.17: Former gasworks building at 34 Hickson Road.

Figure 4.18: Former gasworks building at 36 Hickson Road.

Figure 4.19: Former gasworks building, Jenkins Street above the Hickson Road buildings.

4.1.9 GASWORKS REMEDIATION, MILLERS POINT

Archaeological monitoring of remediation works at the former Australian Gas Light Company (AGL Co.) site in Millers Point was undertaken by Casey & Lowe in 2019-2020.[191] The AGL Co. operated a manufactured gas plant on the site from 1841 to 1918. Due to the highly contaminated nature of the site, the archaeological investigation of remediation works precluded any detailed on-site archaeological recording and analysis. The

[191] Casey & Lowe 2020a.

archaeological report instead provided a detailed history, an analysis of the primary sources as well as bringing together the various disparate phases of archaeological and monitoring works for the site. The only surviving archaeological remains from this site after remediation works were two extant State Heritage-listed buildings (SHR 01435) and the negative evidence of two gasholders. The cleaned negative interface of the 1882 gasholder annulus and an earlier gasholder that was later reused as a tar tank, remain under the present day Hickson Road.

The current project, the remediation of the Millers Point Gasworks at Barangaroo and Hickson Road, found evidence of four buried gasworks structures:

- 1870 Gasholder Annulus
- 1882 Gasholder Annulus (the portion beneath Hickson Road following on from the earlier excavations at 30-34 Hickson Road by Archaeology and Heritage in 2002)
- Tar Tank and Tar Well
- Small Gasholder.

Table 4.1 provides a summary of the structures encountered during the remediation works (with approximate dimensions).

Table 4.1: Summary of structure encountered during the remediation works.

Structure	Location	Dimensions	Type of Structure encountered
1870s Gasholder Annulus *Gasholder 4*	Block 4 / Hickson Rd	Depth ~ 9.2m below ground Width (of annulus trench) ~ 2m	Sections of the annulus walls were found to be constructed of sandstone blocks, particularly where there was surrounding fill material (Figure 4.20, Figure 4.21). Remaining areas were natural sandstone bedrock (Figure 4.22). The base was natural sandstone bedrock.
1882 Gasholder Annulus *Gasholder 5*	Hickson Rd	Depth ~ 9.2m below ground Width (of annulus trench) ~ 2m	Some sections of the annulus walls comprised brick or cement rendered brick (Figure 4.23). This was generally in the upper portion of the annulus to top of natural bedrock (1-2m depth). Exception to this was where the annulus cut through the (earlier) small gasholder resulting in some deeper sections of brick wall (~5-6m depth). In remaining wall areas and the base, the structure was natural sandstone bedrock (Figure 4.24, Figure 4.25).
Tar Tank converted c.1870 *Gasholder 3* (c.1850s)	Hickson Rd	Depth ~ 5.6m below ground Diameter ~ 15m	The base and walls were unlined, natural sandstone bedrock (Figure 4.26, Figure 4.27, Figure 4.28).
Tar Well	Hickson Rd		Encountered on the northwest corner of the tar tank.
1839-42 Small gasholder *Gasholder 2*	Hickson Rd	Depth ~ 5.7m below ground Diameter ~ 15m	Generally, sandstone bedrock for the walls and base, except for some areas of brick wall or concrete where later structures/services cut through (Figure 4.29).

Figure 4.20: Excavation of the 1870s gasholder annulus within Block 4. Lendlease 2019.

Figure 4.21: Excavation of the 1870s gasholder annulus within Block 4, showing the worked sandstone blocks used in the construction. Lendlease 2019.

Figure 4.22: The 1870s gasholder annulus within Hickson Rd, cut into the bedrock. Lendlease 2019.

Figure 4.23: Detail of a section of the 1882 gasholder annulus wall comprised of a brick wall with a cement render, Hickson Road. Lendlease 2019.

Figure 4.24: Excavation of the 1882 gasholder, excavated into the natural sandstone, under Hickson Road. Lendlease 2019.

Figure 4.25: Excavation of the 1882 gasholder, , excavated into the natural sandstone, under Hickson Road. Lendlease 2019.

Figure 4.26: Cleaning out of the tar tank, excavated into the natural sandstone, under Hickson Road, cutting sandstone bedrock. Lendlease 2019.

Figure 4.27: Base of Tar Tank, following removal of all residual tar and cleaned to natural sandstone, under Hickson Road. Lendlease 2019.

Figure 4.28: Detail of the base of tar tank, cut into sandstone bedrock, under Hickson Road. Lendlease 2019.

Figure 4.29: Excavation of the small gasholder under Hickson Road, cut into bedrock. A section of brick wall is visible to one side (arrowed). Lendlease 2019.

4.1.9.1 ARCHAEOLOGY

The extent of development across the former AGL Co. Millers Point gasworks site has seen the archaeological resource removed from large areas of the site.

However, small pockets of archaeology may survive in the following locations:

- The southern portion of Hickson Road (immediately outside of the project area remediated under SSD 6617).
- The lower southeast portion of the AGL Co. gasworks site (the north western corner of the Grafton Bond site).
- Within Building 1 and Building 2 of the MSB Stores Complex (depending on the scope of works undertaken for the redevelopment) archaeology may survive in the form of underfloor deposits below floorboards, graffiti on the structures (made during the AGL Co. period) and any material 'hidden' or placed within wall, floor or roof cavities. Those it is noted this was subject to considerable conservation works in the 20th century.

Additionally, after the remediation of the site, the cleaned negative interface of the 1882 gasholder annulus and tar tanks also survive under the present Hickson Road. These are a testament to the size and scale of the AGL Co. enterprise and significant physical work that went into the site.

4.1.10 GRAFTON BOND STORES

Casey & Lowe completed an impact assessment and research design for the historical (non-Aboriginal) archaeological remains, and their significance, of the Grafton Bond Building site, 201 Kent Street.[192] The area of proposed redevelopment included the refurbishment of the Grafton Bond stores building and the construction of a new low-rise tower on the adjacent vacant land to the north to create a combined building with potential use as a hotel. There was to be bulk excavation at the northern section of the study area which would remove any potential relics surviving in this area. A known State Heritage Register building and sandstone retaining wall were identified on the site and the remaining archaeology of the site was considered to be of local significance.

[192] Casey & Lowe 2020b.

5.0 ARCHAEOLOGICAL POTENTIAL

5.1 NATURE OF ARCHAEOLOGICAL POTENTIAL

Archaeological potential is the degree to which archaeological remains are considered likely to survive within the study area considering modern impacts and historic activities. Typical archaeological remains found in Sydney and Parramatta take a number of forms:

- Structural remains associated with buildings shown on plan are likely to survive but will be impacted by later phases of construction. These typically include:
  - building footings, piers, postholes or timber posts
  - other types of deposits associated with construction or demolition.
- Certain types of remains are typically not shown on plan although some may be on later plans:
  - wells
  - cesspits
  - site drainage
  - rubbish pits/dumps
  - evidence for gardens, layout and use of the yard areas
  - fencelines, assisting with clarification of lot boundaries and internal use of lots.
  - pollen and soil evidence
  - modification of the landform, including excavation of the bedrock and major filling events, such as reclamation of the foreshore.
  - land clearing including ephemeral evidence of land use, such as tree stumps, drainage channels.
  - boats or evidence of other maritime activities
  - underfloor deposits associated with the occupation of houses or other structures.
  - other types of archaeological deposits.
- Later building phases will impact on the remains of early phases.
- The greater the number of phases, the more complex the nature of the archaeological the remains.

5.2 GEOTECHNICAL DATA

Tetra Tech Coffey Pty Ltd (Coffey) were engaged by Lendlease to undertake geotechnical investigations and preliminary waste classification to support the planning application and new pavement design for Stages 3 and 4 of Hickson Road Upgrade Works.[193] These works were undertaken in accordance with a desktop assessment previously prepared by Coffey.[194] Hickson Road comprises four lanes that run north-south about 150m to 200m inland from the present day Barangaroo foreshore. The present alignment approximately coincides with the former natural shoreline, hence the Barangaroo developments to the west of Hickson Road are generally located over a low relatively flat area of reclaimed land.

The previous desktop study prepared by Coffey, the 1:100,000 Geological Map of Sydney, Dept of Mineral Resources Geological Survey of NSW, Map Sheet 9130, First Edition 1983, indicated the present study area comprises fill and Quaternary Age Alluvium overlying Triassic Age Hawkesbury Sandstone. An igneous dyke (Pittman LIV dyke) of inferred Jurassic Age passes through the study area, with this dyke previously exposed during excavation for 38 Hickson Rd. The dyke was 3m wide with vertical sides and exclusively

[193] Coffey 2025: 1

[194] Coffey 2023.

consisted of weathered dolerite. It is thought that it has been remediated to below subgrade level, although some associated clay soils may be locally encountered, and the dyke may serve as a conduit for seepage.[195]

The design drawings provided by Enspire Solutions Pty Ltd show that the current road levels vary from c.3.4m AHD in the south at Napoleon Street to c.2.6m AHD in the north at Barton Street. Tetra Tech presumes that the road pavement was replaced after each occurrence of site remediation works, however, no information was found that details the pavement type and thickness that was used to replace the old road. At the time of construction of Hickson Road in the 1920s, the road comprised around 200 mm concrete over 100 mm road base for non-rock subgrade and 150 mm concrete over rock subgrade.[196] The subgrade for road construction is likely to mainly consist of remediation backfill (VENM, quarry product or cement stabilised materials).

Geotechnical investigation of the Stage 3 works area was undertaken in June 2024 and encompassed the excavation of nine boreholes and six slit trenches. Stage 4 of the geotechnical works were undertaken in September 2025 in conjunction with the utilities investigation and involved the digging of 3 additional potholes. Testing at the borehole and pothole locations generally used a combination of non-destructive digging and continuous solid flight augers fitted with a Tungsten Carbide attachment. Although the desktop assessment recommended that cores were drilled to either the top of the bedrock, or a depth of 3m, the maximum depth reached in the present geotechnical investigations was 1.3m.[197] To avoid impacts to existing services, auger drilling did not continue any further than the depth of non-destructive digging.

The observed soil profiles throughout the various boreholes generally consisted of three units. Unit 1 generally consisted of a combined asphalt and concrete layer, measuring up to 400 or 500mm in thickness. Unit 2 represented the underlying fill material, which consisted of gravelly or silty sand with sandstone and igneous gravels and occasional clayey sand. This fill was highly variable in nature and thickness throughout all areas of investigation, although brick fragments were only identified in this layer in PH11.[198] Unit 3 was the inferred sandstone bedrock observed in the base of six boreholes across Stages 3 and 4 (PC1, PC5, BH9-PC12), at a depth of between 0.5 and 1.3m. All six bore holes refused at the ls level, between 0.55 to 1.2m in depth, however Coffey could not confirm whether this represented bedrock or sandstone rubble in historic fill. The remaining boreholes refused either on geogrid, concrete or an unidentified bonded material. Six slit trenches were also investigated as part of these works to identify the location of underground utilities in select locations.

Twenty samples taken across ten of the boreholes were sent for preliminary waste classification. This assessment, undertaken by Coffey, generally concluded that the road pavement materials and underlying fill were both classified as General Solid Waste (non-putrescible) although given the nature of non-drilling techniques, it was difficult to determine whether any asbestos inclusions were present.[199]

In summary, geotechnical investigation of Hickson Road Stages 3 and 4 determined that the subgrade material is highly variable along the road corridor and may comprise bedrock,

[195] Coffey 2023: 4, 8.

[196] Coffey 2023: 5.

[197] Coffey 2025: Appendix C, PC4.

[198] Coffey 2025: 10.

[199] Coffey 2025: Appendix E.

historical fill, remediation backfill or existing pavement construction. Precise delineation of these areas prior to construction commencement would be difficult, even after further geotechnical investigation.

5.2.1 CONTAMINATION ISSUES

A moderate possibility for contamination is prevalent due to the historical activities that occurred across the study area. According to Tetra Tech Coffey, while the central portion of the study area has been significantly remediated, there may be some residual contamination, and the possibility of undetected contamination, particularly in areas that were not remediated (Figure 5.1).[200] It is likely that most risks can be managed by appropriate personal protective equipment, disciplined hygiene practises, and routine site monitoring equipment for relatively low risk contamination sites but this will be further clarified during contamination testing..

The central portion of the study area from Barton Street to Watermans Quay was originally part of the Australian Gas Light Company started in 1841. The remediation of the Millers Point Gasworks at Barangaroo and Hickson Road was undertaken by Lendlease between October 2016 and December 2019, on behalf of the NSW State Government (Barangaroo Delivery Authority then Infrastructure NSW). Remediation was required by the NSW Environment Protection Authority (EPA) to address significant gasworks contamination at the site, which they regulated as a declared Remediation Site. The NSW EPA Declaration Area No. 21122 (Area No. 3221) coincides with the known footprint of the former Millers Point gasworks facility (Figure 5.2). The contamination at the gasworks predominantly comprised tarry waste products and mixed fill with asbestos. The tar impacted material had the potential to generate significant odours during remediation, so a key component of the works was management of air quality.[201] Following successful remediation, the full Declaration Area was repealed by the NSW EPA on 18 June 2020. The Declaration repeal was formalised through issue of a Section 44 notice (under the CLM Act) by the NSW EPA.[202]

The southeast corner of the former Declaration Area was outside the zone of completed remediation (Figure 5.1), as there was no gasworks contamination identified in this area which required remediation. Hence, no excavation of any historic fill material was undertaken there, as part of the remediation works. There is a risk of potential contamination being present, although significant contamination is not anticipated in this area, based on previous testing which confirmed remediation was not required here for the EPA Declaration.[203]

No remediation or testing has been undertaken to the south of the Declaration Area in Hickson Rd, so the extent of actual contamination there is unknown (Figure 5.1). Potential exists for some site contamination to be present in Hickson Rd south of the Declaration Area. However significant gasworks contamination is not anticipated in this area, based on previous testing completed in the Declaration area.[204]
As these are both preliminary investigations, no detailed ground investigation with groundwater monitoring, soil sampling and in situ and laboratory testing has been undertaken at the time of writing this assessment.

[200] Coffey 2023: 9.

[201] Casey & Lowe 2020a: 8-9.

[202] Environmental Protection Authority 2020, *Notice to amend Declaration of Significantly Contaminated Land and Management Order, Section 44*.7,

[203] Pers comm. Mark Burns, Senior Remediation Specialist, Integrated Solutions, Lendlease, emails 7, 9/2/2024

[204] Pers comm. Mark Burns, Senior Remediation Specialist, Integrated Solutions, Lendlease, emails 7, 9/2/2024

Figure 5.1: Mapping showing the remediation undertaken within the study area (red line) and Declaration Area (blue line). The orange indicates the remediated area, the green the area where remediation was not required and the dark blue lines are the outline of the exposed gasholder annuli/tar tanks. Google Earth 2023.

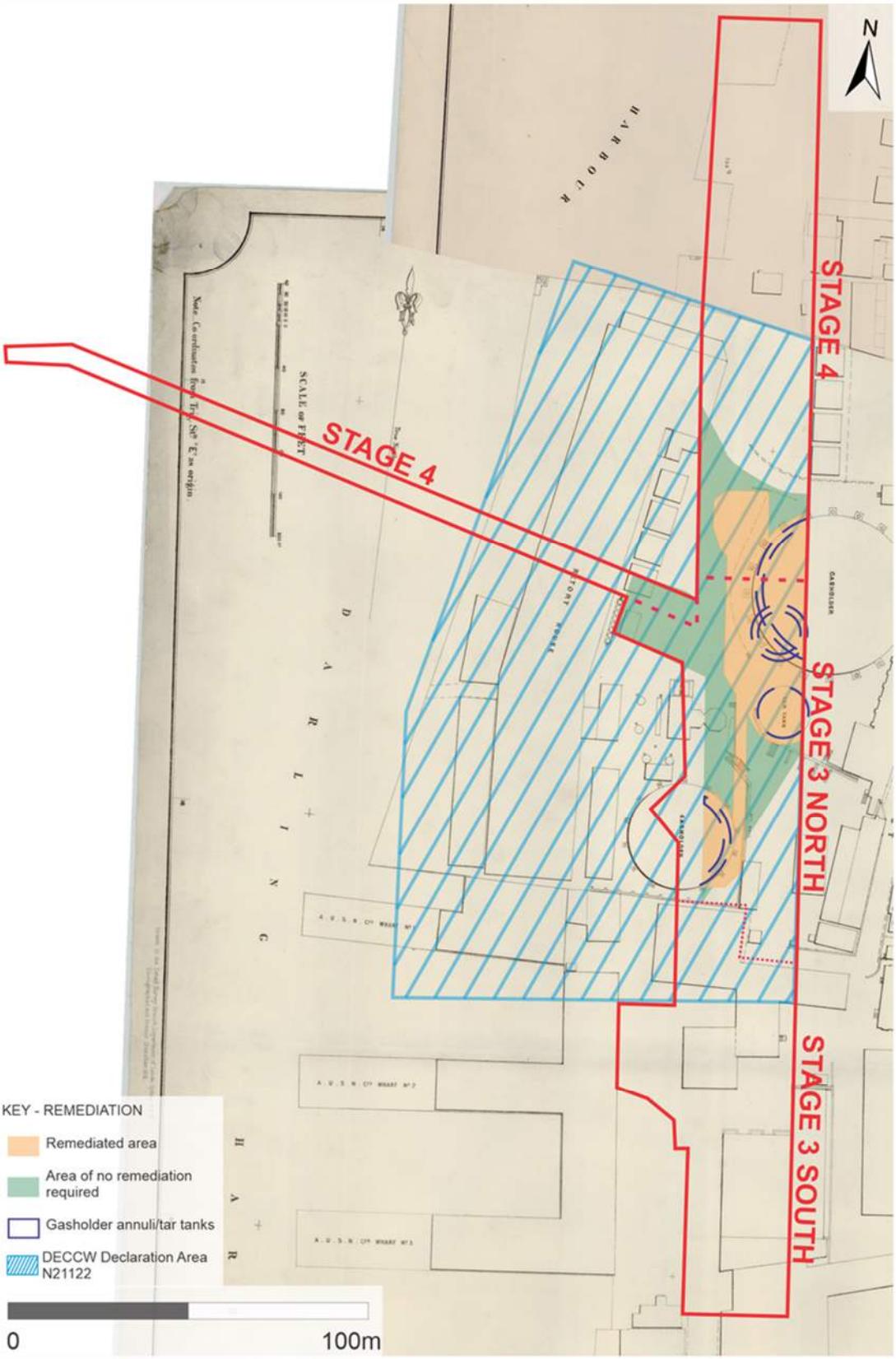

Figure 5.2: 1891 plan showing the Gasworks overlaid with the remediated area (orange) and the area where remediation was not required (green). The former Declaration Area is dashed in blue. SLNSW, Metropolitan Detail Series, Section 67. ML M Ser 4 811.17/1.

5.3 IMPACTS FROM MODERN BUILDINGS

The realignment of Sussex Street and the construction of Hickson Road in the early 20th century likely removed all earlier structures within the study area. The north of the study area was largely occupied by the former AGL Co. gasworks site and, due to the extent of development and contamination removal, has seen most of the archaeological resource removed from large areas of the site. Additionally, after the remediation of the site, the cleaned negative interface of the 1882 gasholder annulus and tar tanks also survive under the present Hickson Road (Figure 5.3, Figure 5.4). The area in between the Gasworks and the existing Grafton Bond Building (reconfigured in the 1920s), appears to have been partially quarried. Any area quarried in the 1920s would have little potential for archaeological remains, except perhaps a well or other unexpected feature. The area of Hickson Road south of this quarried area is likely to have been impacted by the early 20th-century road construction and the installation of buried services beneath the road.

Figure 5.3: Detail of the base of tar tank, cut into sandstone bedrock, under Hickson Road. Lendlease 2019.

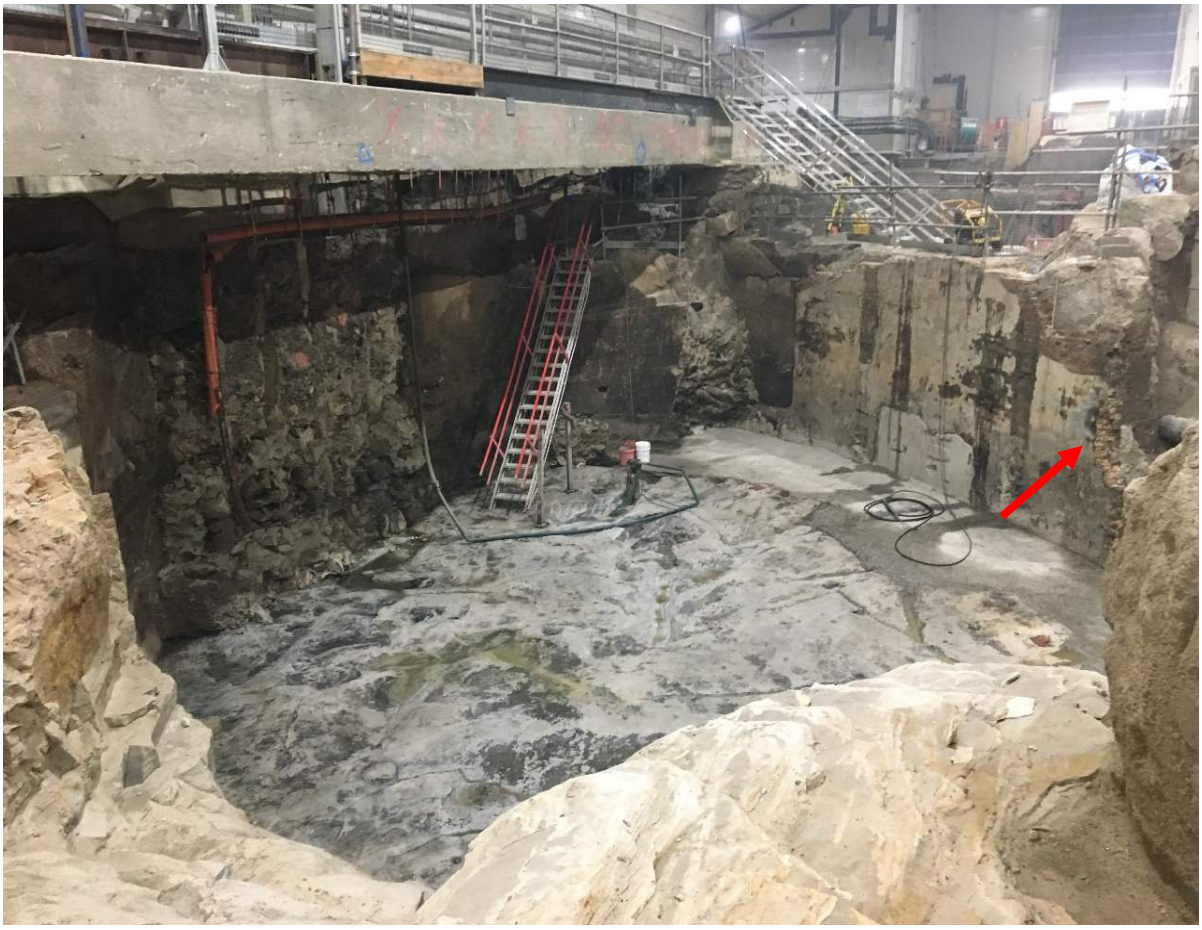

Figure 5.4: Excavation of the small gasholder under Hickson Road, cut into bedrock. A section of brick wall is visible to one side (arrowed). Lendlease 2019.

5.4 ARCHAEOLOGICAL POTENTIAL

A series of gradations (**Nil**, **Low**, **Moderate** and **High**) of potential are identified and mapped to indicate the degree to which potential archaeological remains are likely to survive within the study area. The overlay maps show the location of historic buildings within the study area (Figure 5.23, Figure 5.24, Figure 5.25). The mapping of archaeological potential (Figure 5.14, Figure 5.22) takes into consideration the predicted survival of remains based on impacts from modern buildings and activities (such as remediation), as well as earlier phases of development. The identified levels of archaeological potential are:

- **Nil to Low Potential**: there is no likelihood or a very low likelihood of archaeological remains, or remains have been removed by later structures.
- **Low to Moderate Potential**: while there is likely to be moderate impacts in these areas, building footings and deeper sub-surface features such as wells, cesspits and their artefact-bearing deposits may survive.
- **Moderate to High Potential**: low impacts in this area mean a range of archaeological features, including both shallower remains and deeper sub-surface features may have survived such as yards and surfaces, rubbish dumps, artefact deposits, along with footings, wells, cesspit and drains.

The archaeological potential for significant relics under the *Heritage Act, 1977* to survive within the study area is assessed through an analysis of historical research (Section 3.0), comparison with similar sites as a model to inform prediction of survival of archaeology (Section 4.0), and the Geotechnical data (Sections 5.2) all of which informs the potential

for archaeology to survive across the site. Understanding the archaeological potential is critical for assessing heritage significance and for making recommendations to manage the archaeology of this site.

The study area has been divided into three sections based on 19th-century development along the Darling Harbour foreshore: Stage 4 was largely owned and occupied by private wharfs and small shipyards, northern Stage 3 represents the main area occupied by the AGL Co Gasworks from the 1840s and southern Stage 3 the area occupied by the Grafton Bond Stores and Wharf (Figure 5.5). The entire study area has been covered by Hickson Road since the establishment and configuration of this thoroughfare in the early-20th century, which involved the gradual demolition of various commercial and industrial structures, as well as considerable excavation into the sandstone bedrock.

The following discussion of archaeological potential largely focuses on Stage 4 and southern Stage 3 as there is nil to low potential for any structures of the AGL Co Gasworks to have survived in the northern Stage 3 due to the extensive remediation process. The only exceptions to this are the rock cut gasholders and tar tanks, remediated footprints of which remain beneath Hickson Road in areas of Stage 4 and northern Stage 3 (Figure 4.22, Figure 4.23, Figure 4.24, Figure 4.25, Figure 4.26, Figure 4.27, Figure 4.28, Figure 4.29). Under the Heritage Act 1977, these footprints cut into the sandstone bedrock are considered "works" rather than relics.

A summary of key historical developments and associated archaeological remains associated with each phase is provided below:

- Phase 1: Natural landscape & environment
  - Naturally steep and rocky topography, with rocky foreshore along Darling Harbour
  - Limited evidence of the natural landscape and environment is expected to survive due to the extensive remodelling associated with the Gasworks, Grafton Bond Stores and Hickson Road, as well as various 20th and 21st century impacts.
- Phase 2: Aboriginal occupation
  - Evidence of such activities are unlikely to survive within the study area due to extensive modifications and quarrying of the natural landscape throughout the 19th and early 20th century.
- Phase 3: Early grant holders and land use, 1788-1840s (Figure 5.6, Figure 5.7)
  - Early landscape modification including cuts into bedrock, quarrying and small-scale reclamation along the foreshore.
  - Limited evidence of early-19th century structures or features along the foreshore are likely to survive throughout the study area due to extensive remodelling and landscape modification associated with the Gasworks and Grafton Bond Stores in the 19th-century and Hickson Road in the early-20th-century. Previous archaeological investigations revealed some reclamation fills and possible associated features within the Stage 4 study area, although interpretation was hindered by the limited exposure.
  - Any unmapped archaeological features could include reclamation fills, structural remains, postholes, fencelines, drainage systems, rubbish dumps.
- Phase 4: AGL Co and Grafton Wharf, Smith & Challis, 1850s-1880s (Figure 5.8)
  - Substantial landscape modification and quarrying into the bedrock for the establishment of the gasworks as well as localised modification for private wharf enterprises to the north and south.

- Construction or extension of wharfs in the Stage 4 study area throughout the 1850-1860s.
- First gasworks site in Australia erected in centre of study area, which initially included two circular gasholders, as well as various brick and stone buildings, one of which served as a retort house. A third gasholder was constructed in 1859.
- Enlargement of the gasworks site in the 1860s-1870s, which involved the construction of a new large gasholder and the replacement of various processing facilities beyond the extent of the current study area.
- Demolition of older c.1820s house within Bass's former allotment (Lot 17), now within the southern portion of the study area (Southern Stage 3)
- Redevelopment of southern portion of Stage 3 by Smith & Challis, which involved the construction of new stores and jetties including Grafton Wharf.
- Footings, unmapped features and artefact deposits associated with various structures, stores, workshops and sheds.
- Road/paths and surfaces leading from Kent Street to the various wharfs.

- Phase 5: Grafton Wharf, Watson & Evans, 1880-1900 (Figure 5.9, Figure 5.10)
  - Landscape modification throughout this period included considerable quarrying and earthworks for establishment of new wharfs and stores.
  - Demolition and removal of structures, wharfs and potential reclamation areas on all but Lot 2, Section 93, within the northern portion of the study area (Stage 4)
  - Expansion of private reclamation areas associated with Lots 2 and 4, Section 93 (Stage 4).
  - Construction of two new large gasholders and reuse of remaining 1859 gasholder as a tar tank. The 1882 gasholder completely removed any evidence of two smaller c.1840s gasholders.
  - Modification of existing buildings and construction of additional stores, warehouses and offices associated with Grafton Wharf. Archaeological remains are largely expected to comprise footings, artefacts and deposits/fills.
  - New approach road from the south and bluestone paving over the entire Graton Bond complex.

- Phase 6: Resumption and Renewal, 1900-1950s (Figure 5.11, Figure 5.12, Figure 5.13)
  - Residences and ship-building residences north of the Gasworks (Stage 4) largely resumed and demolished, prior to the construction of Hickson Road.
  - Construction of Hickson Road begins north of the Gasworks in 1909 and involves extensive quarrying and bedrock preparation in the northern part of the study area (Stage 4) prior to the establishment of the road surface. Several sandstone walls are constructed as part of the road works, including one along the eastern side of the Stage 4 study area.
  - Gasworks demolished in the 1920s to make way for Hickson Road, including the gasholders and all surrounding buildings.
  - Grafton Bond Stores demolished in the mid-1920s and extensive modifications carried out to any retained portions of the complex.

- Phase 7: 1950-Present
  - Grafton Bond building refurbished, new additions coinciding with construction of Maritime Towers on Kent Street.
  - Large area of reclamation undertaken to the west of Hickson Road in the c.1970s.

Figure 5.5: The three portions of the study area, delineated based on the staging of the works and historical development: private grants in Stage 4 (green), the Gasworks in northern Stage 3 (blue) and Grafton Bond in southern Stage 3 (yellow). Google Earth 2023.

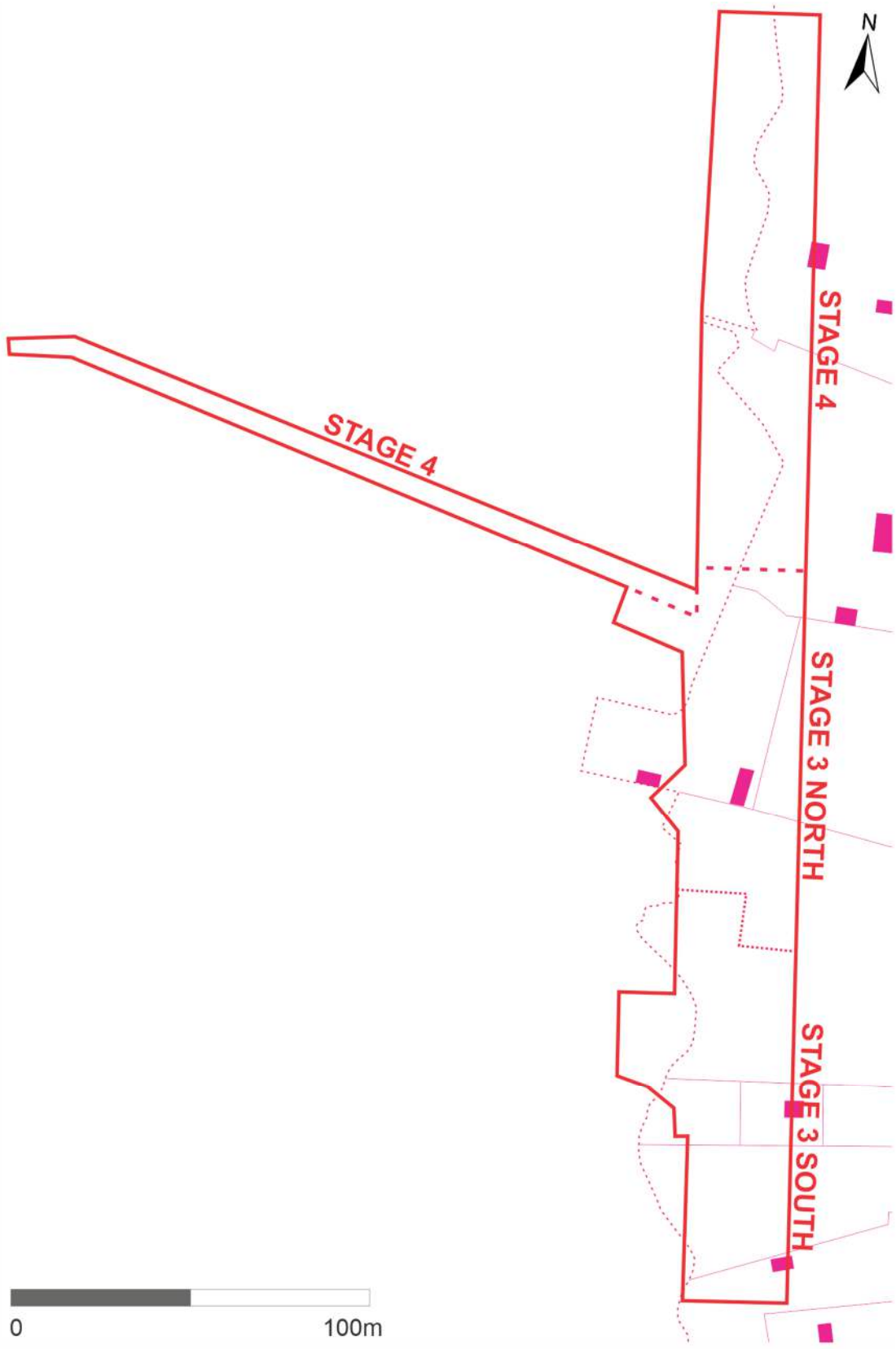

Figure 5.6: Historical overlay depicting the study area in 1823 with early buildings. The early foreshore is indicated by the dashed red line and the study area is outlined in red. Developed using the 1823 plan of Harper's *Survey of Sydney*, SRNSW, SZ 469.

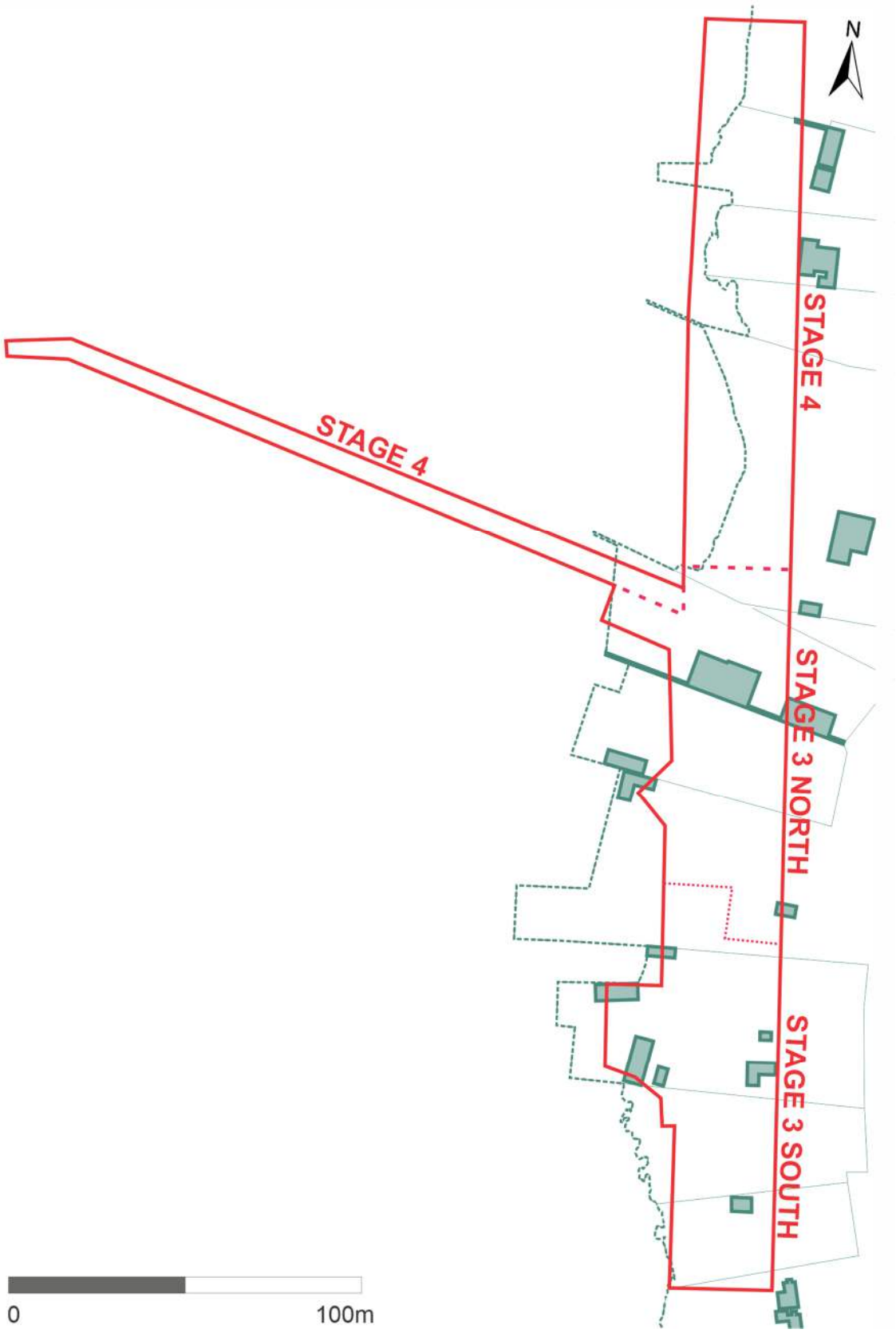

Figure 5.7: Historical overlay depicting the study area in 1833. The modified foreshore is indicated by the dashed line and the study area is outlined in red. Developed using the 1833 *City of Sydney Survey Plans*, Section 67, Historical Atlas of Sydney, CSA.

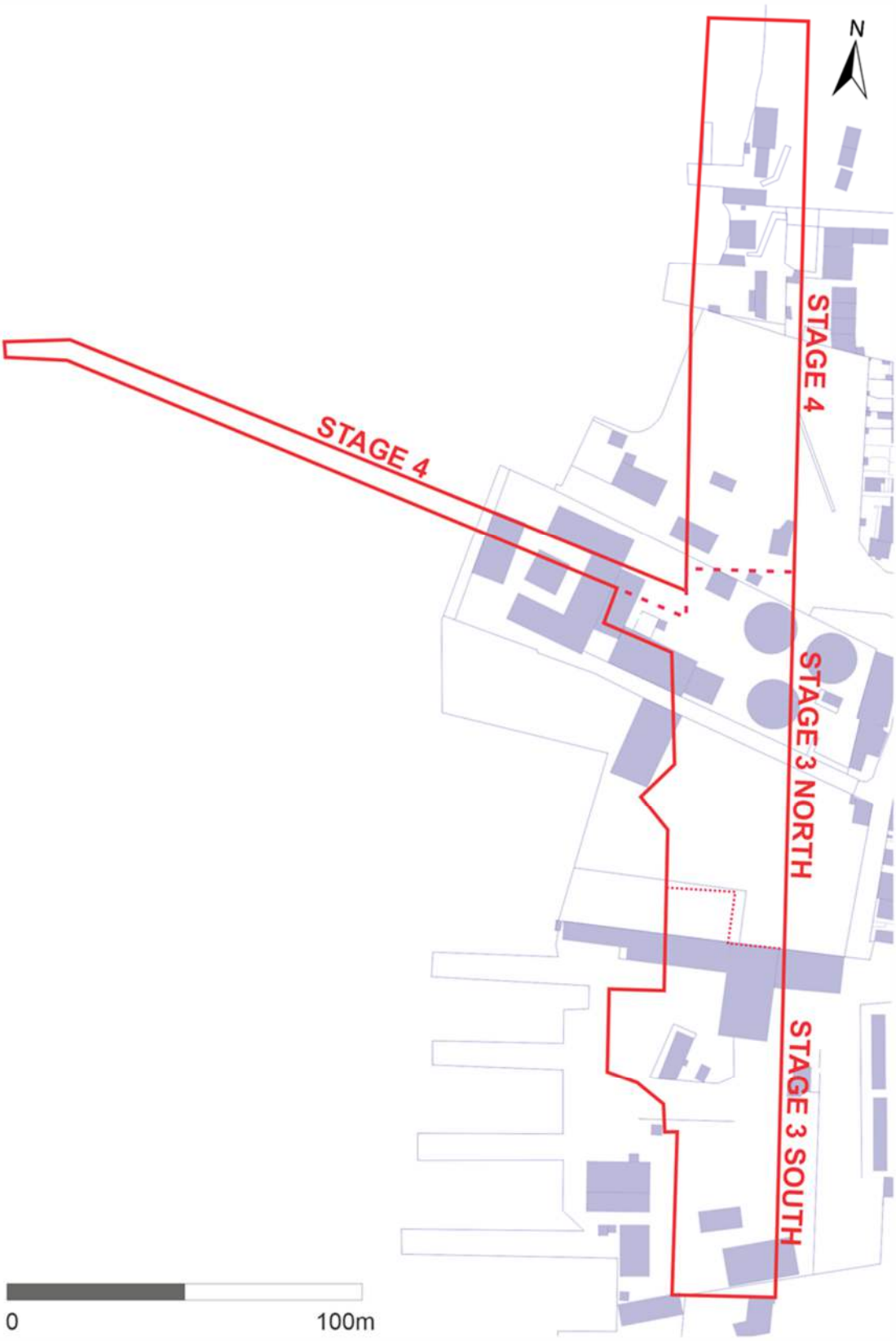

Figure 5.8: Historical overlay depicting the study area in 1865.. The foreshore is indicated by the dashed line and the study area is outlined in red. Developed using the 1865 *Trigonometrical Survey of Sydney*, Block C2, Historical Atlas of Sydney, CSA

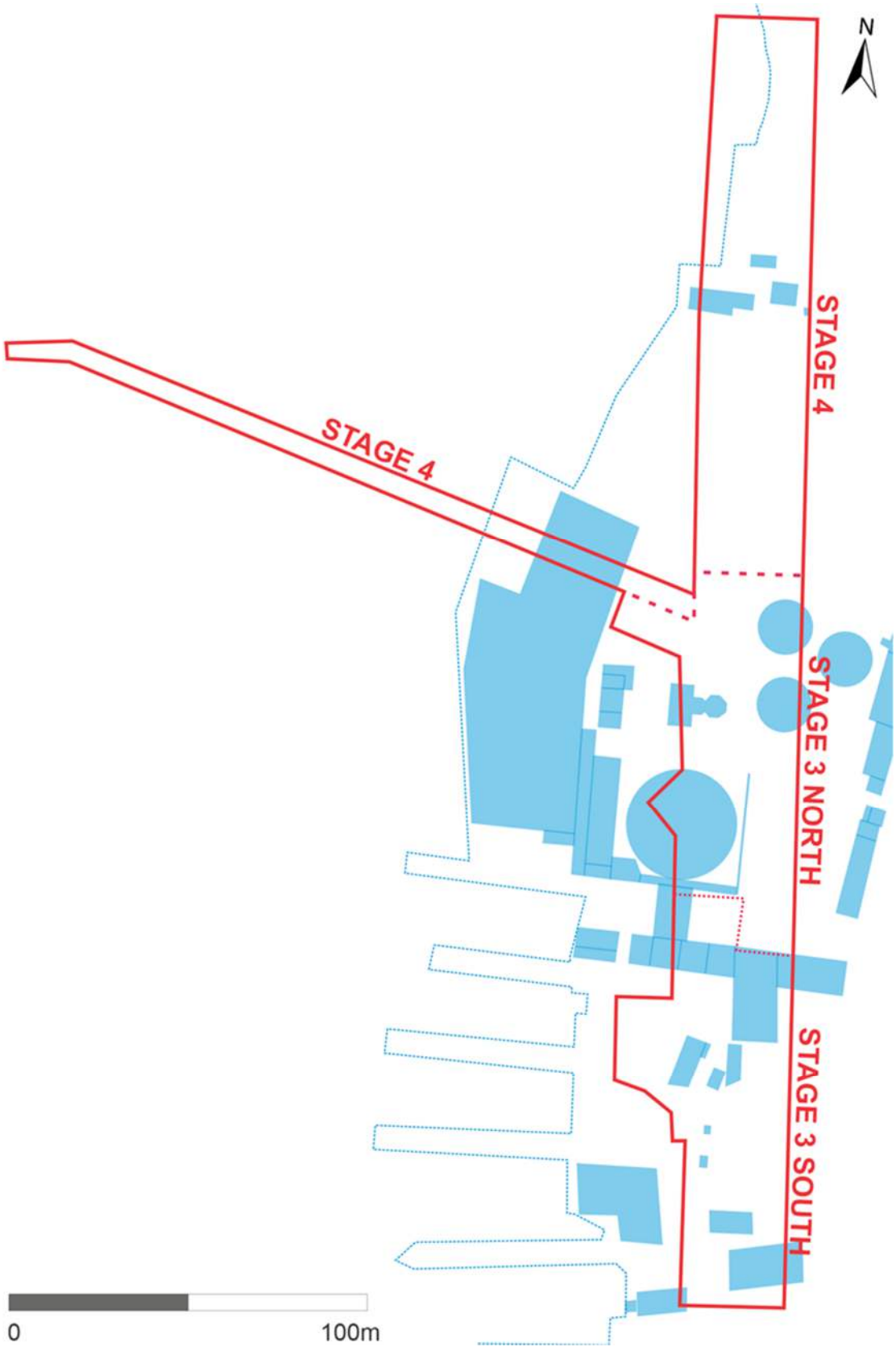

Figure 5.9: Historical overlay depicting the study area in 1880 with early buildings. The foreshore and wharves are indicated by the dashed line and the study area is outlined in red. The buildings primarily referred to as the Grafton Bond stores have not been built yet. Developed using the 1880 Dove's *Plans of Sydney*, Sheets 60A and 58A, Historical Atlas of Sydney, CSA.

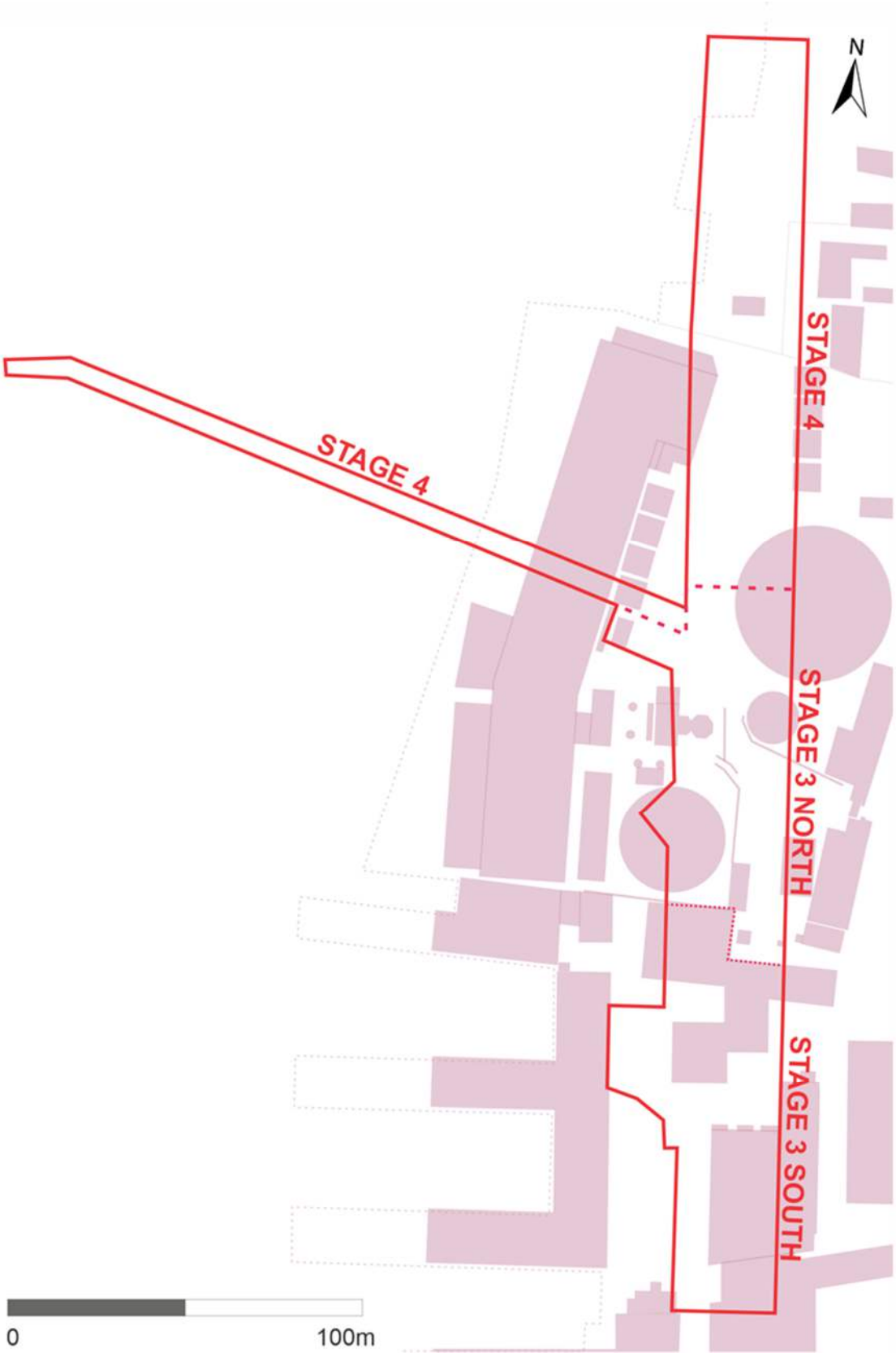

Figure 5.10: Historical overlay depicting the study area in 1891. The foreshore and wharves are indicated by the dashed line and the study area is outlined in red. Developed using the 1891 plan of *Metropolitan Detail Series*, Section 67, SLNSW ML M Ser 4 811.17/1.

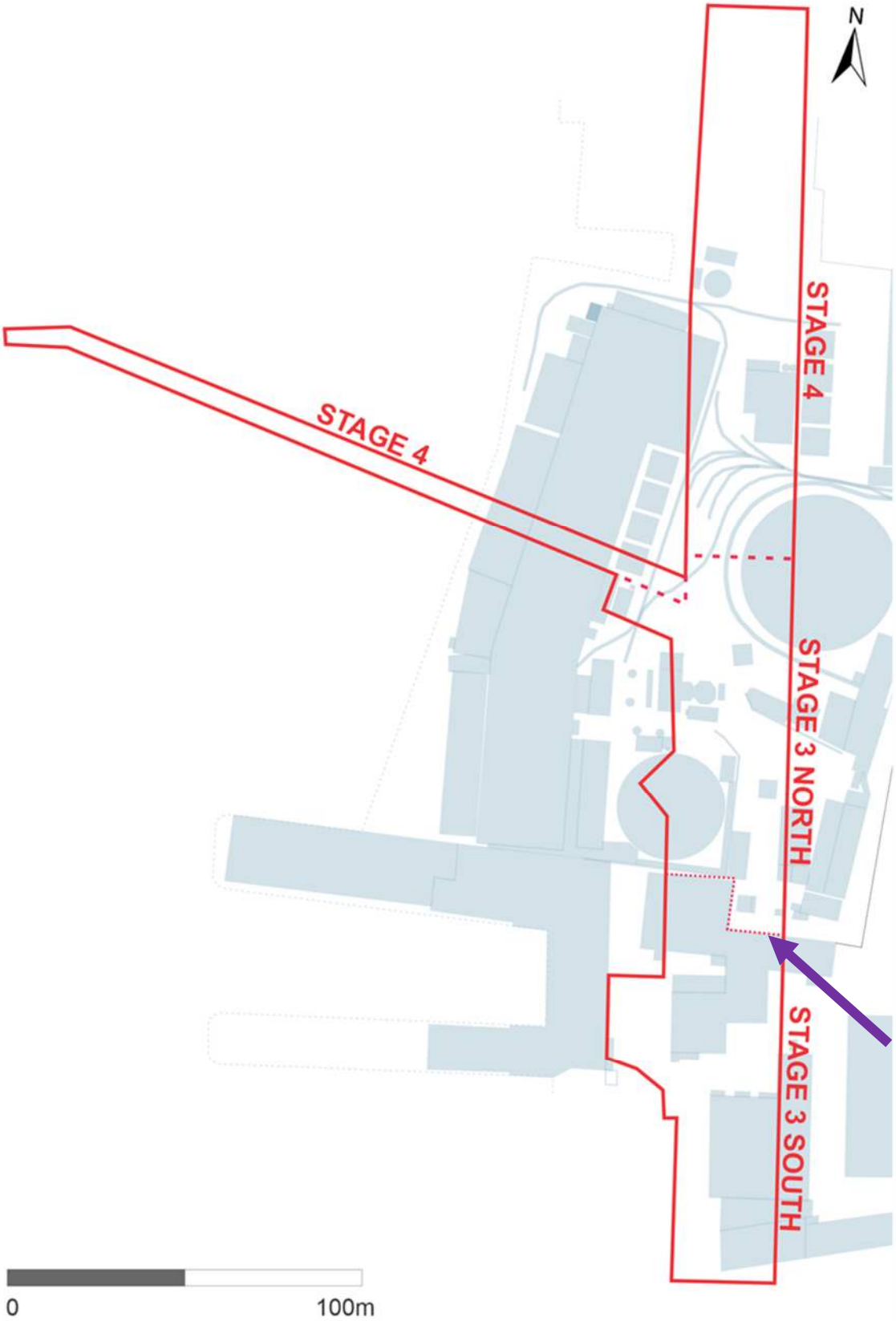

Figure 5.11: Historical overlay depicting the study area in 1911. The study area is outlined in red. The Gasworks and Grafton Bond Stores occupy most of the study area; a dashed line (arrowed) is included to delineate these two major enterprises. Developed using the 1911 plan titled '*Darling Harbour vested in the Sydney Harbour Trust Co.*', NSWSA, AO Map 374..

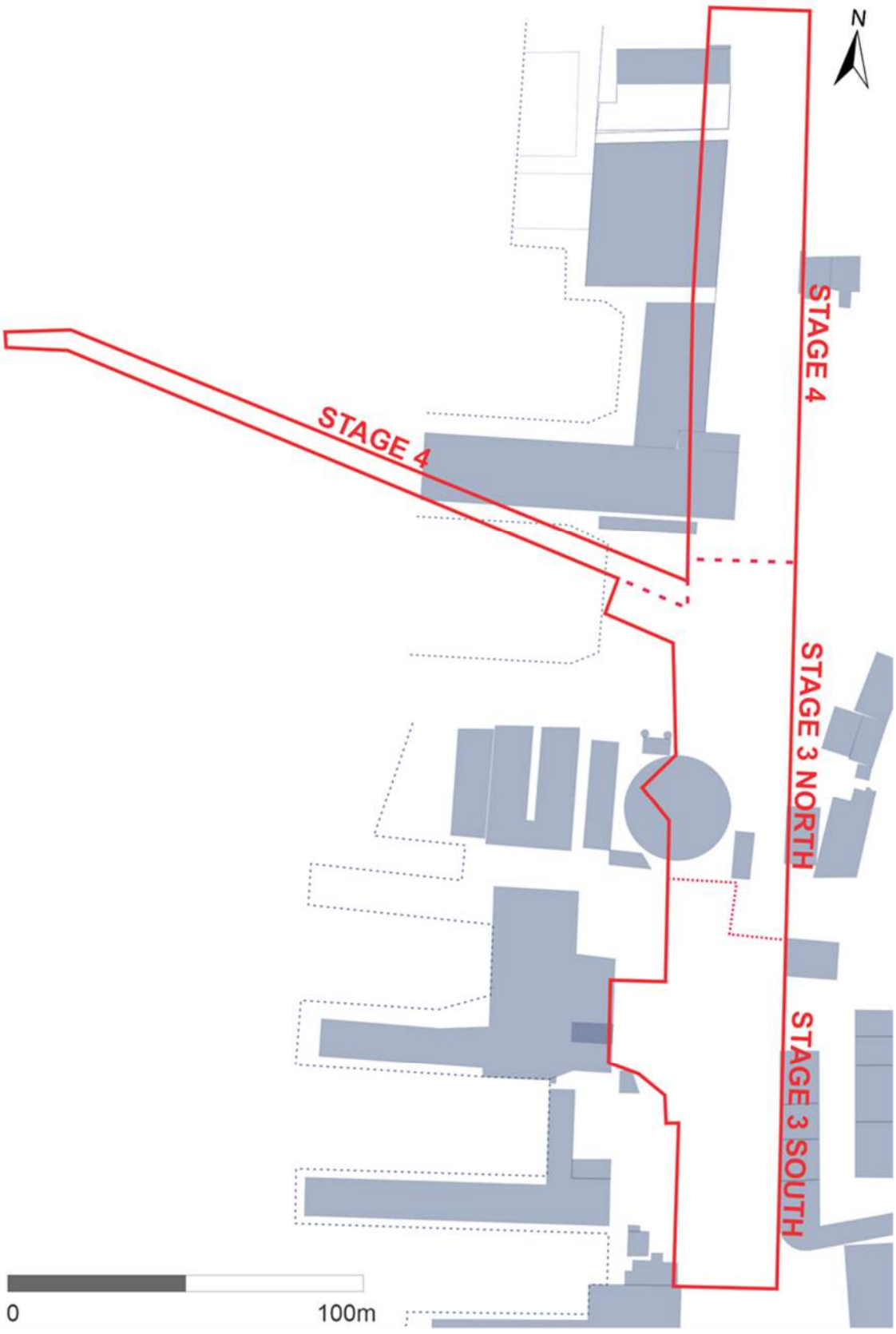

Figure 5.12: Historical overlay depicting the study area in 1920s following the construction of Hickson Road. The foreshore and wharves are indicated by the dashed line and the study area is outlined in red. Mapping developed from the undated (c.1920s) *City of Sydney detail survey maps 'Ignis et Aqua' Series*, Sheet 32 Vol 1, SLNSW ML, Fire Underwriters Association of NSW.

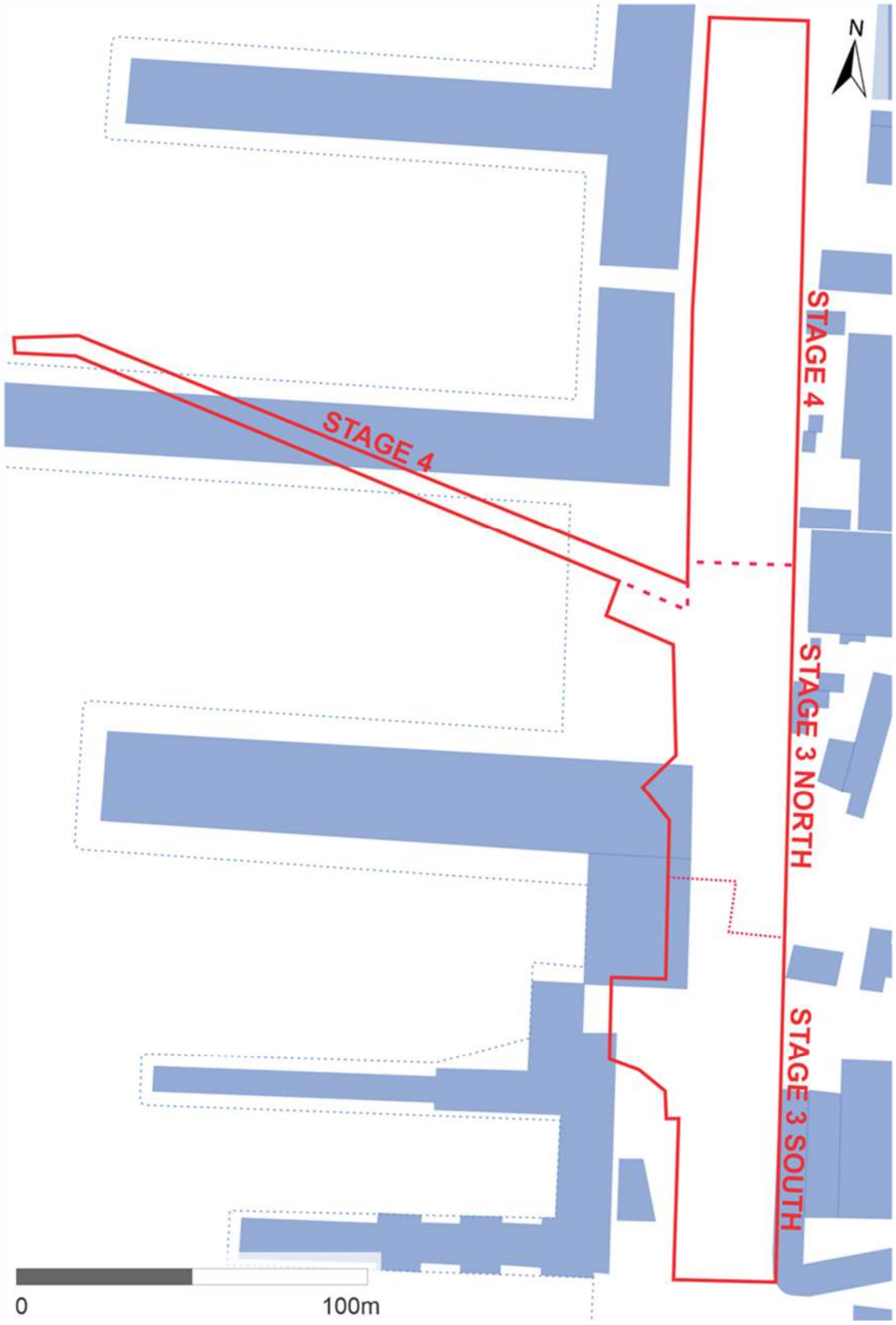

Figure 5.13: Historical overlay depicting the study area in 1948. The foreshore and wharves are indicated by the dashed line and the study area is outlined in red. Developed using the 1948 *Civic Survey*, Maps 6 and 7A, Historical Atlas of Sydney, CSA.

5.4.1 ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

As noted above, the study area has been divided into three sections based on the concurrent development of several small land grants and two major enterprises throughout the 19th century; the latter including the AGL Co Gasworks site in the central portion (1840s-1920s) and the Grafton Wharf and Bond Stores in the south (1850s-present) (Figure 5.5). The below mapping indicates the archaeological potential of the study area (Figure 5.14) and the pink line separates the north and south sections discussed below.

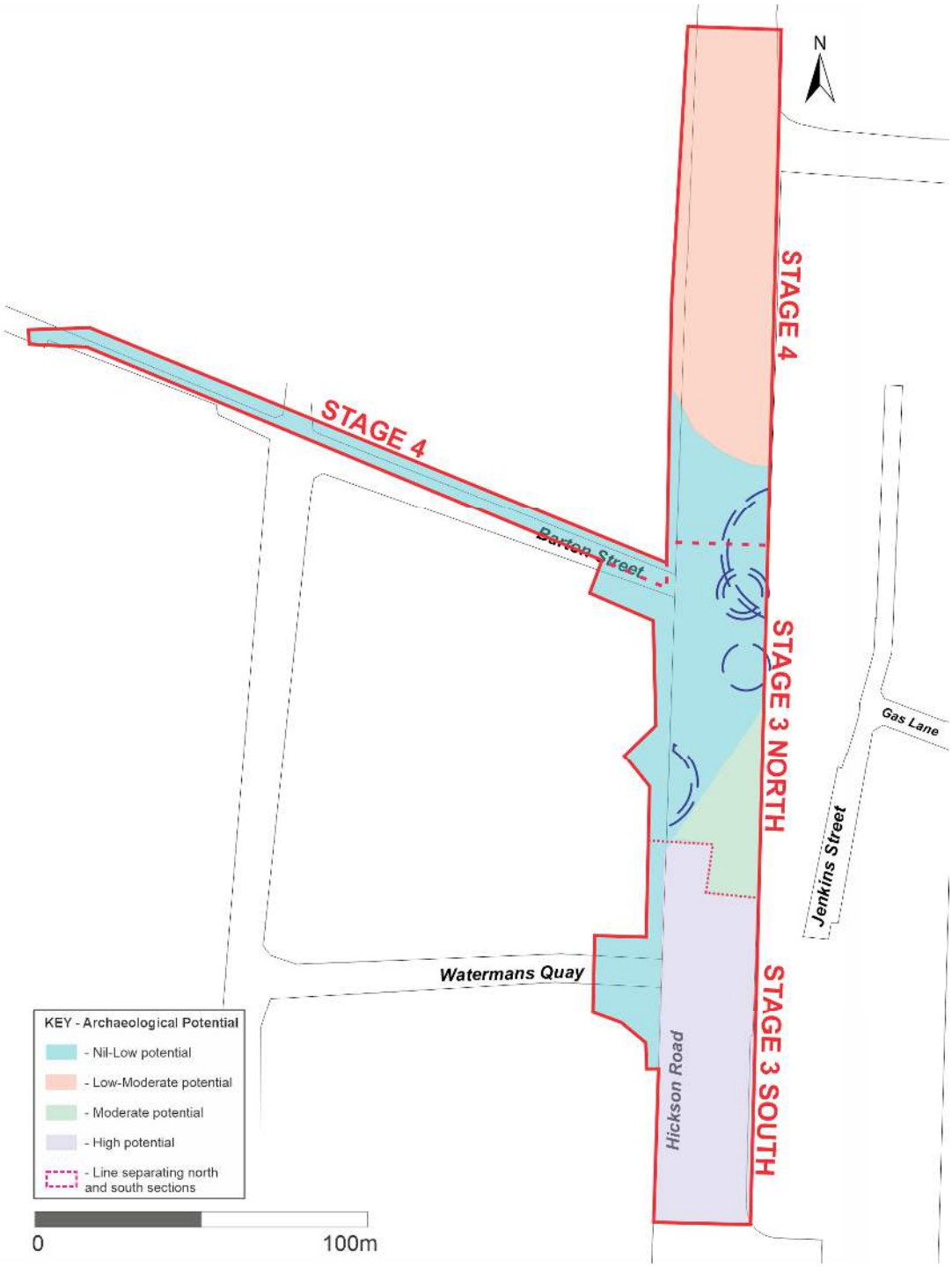

Figure 5.14: Map of archaeological potential showing the areas of nil-low (blue), low-moderate (orange), moderate (green) and high (purple). The pink dashed line indicates the boundary between the Gasworks and the Grafton Bond Stores. The position of the rock cut footprint of the gasholders and tar tank are marked in purple. Six Maps 2020.

5.4.1.1 STAGE 4

There is **Low-Moderate** potential for archaeological remains associated with 19th century occupation to survive within the northern portion of the Stage 4 works area (Figure 5.14). Historical photographs indicate the steep rocky landscape to the north of the Gasworks was dramatically altered through quarrying and excavation in the early-20th century, in preparation for the construction of Hickson Road. Previous archaeological investigations have revealed that limited remains of 19th century reclamation survive in the western portion of the present study area, at a depth of 1.4-1.5m (RL 1.29-1.43m) (see Section 4.1.4). However, further east, levelling fills beneath the modern road surface are directly above the modified sandstone bedrock, exposed at a depth of 0.85m (RL 1.84m). Based on the nature of early-19th-century occupation and the extensive landscape modifications undertaken in the early-20th century, any remaining archaeology in the northern part of Stage 4 would likely be limited to reclamation fills and associated structural features.

The southern portion of Stage 4 is situated within the area impacted by contamination and 21st century remediation of the former AGL Co. Gasworks site and is therefore assessed as having **Nil-Low potential** to contain archaeological remains or relics (Figure 5.14). Although remediation and development of the Gasworks site has required the removal of much of the archaeological resource of the former Gasworks, the cleaned negative interface of the 1882 gas annulus survives under Hickson Road, including through the south-east corner of the Stage 4 works area. Further, given the absence of any other major development in this area, beyond the gasholder annulus, other archaeological remains are not expected in this area. However, is it worth noting that the footprints of the gas annulus are considered 'works' rather than relics and are not protected under the *Heritage Act.*

The trunk drainage line extending along the northern side of Barton Street is also assessed as having **Nil-Low potential** to contain archaeological remains (Figure 5.14). The eastern portion of Barton Street is within the area of remediation works for the former Gasworks and the bulk excavation areas of Barangaroo South where no archaeological remains survive. Further west, this portion of the study area crosses the approximate former location of Berth 5, established in 1912 as part of early-20th-century upgrades to the wharfage along Darling Harbour. However, any remains of Berth 5 are expected to have been removed during 1970s reclamation associated with the establishment of a large concrete apron along the northern portion of the Barangaroo foreshore.

5.4.1.2 NORTHERN STAGE 3

There is **Nil-Low potential** for archaeological remains to be uncovered within the northern portion of Stage 3, due to the contamination and subsequent remediation of the AGL Co. Gasworks site (Figure 5.14). The extent of development across the former AGL Co. Gasworks has seen the archaeological resource removed from large areas of the site. However, after the remediation of the site, the cleaned negative interface of the 1882 gasholder annulus and tar tanks do survive under modern Hickson Road. While this would suggest that there is a **low** potential for remains to be discovered other than the rock cut gasholder footprints within this area, it is noted that these footprints are 'works' rather relics and are not protected under the Heritage Act. [205]

Extensions of the Stage 3 study area into Waterman's Quay and Barton Street both have **Nil potential** for archaeological remains to survive. Barton Street was within the area of remediation of the Gasworks and Watermans Quay was partially within the remediation area and partially excavated as part of the Barangaroo South excavations undertaken by Casey & Lowe.

[205] Casey & Lowe 2020a: 9.

However, in the southeast corner of the northern section, this area was considered to have no gasworks contamination and therefore did not require remediation, and therefore was outside the zone of completed remediation within the former Declaration Area (No. 21122) (Figure 5.1). Hence, no excavation of any historic fill material was undertaken there, as part of the remediation works. In addition, the area of Hickson Road, north of the existing Grafton Bond building (reconfigured in the 1920s) and possibly relating to this southeastern corner, was partially quarried at this time. Any area quarried in the 1920s would have little potential for archaeological remains, except perhaps a well or other deeper unexpected features. Therefore, there is a **moderate potential** for remains of buildings related to the Gasworks and potentially some of the Grafton Bond Stores to remain intact, as evident on plans up to the 1920s (Figure 5.8, Figure 5.9, Figure 5.10, Figure 5.11).

5.4.1.3 SOUTHERN STAGE 3

There is **High potential** for intact archaeological remains in the southern section of the site related to the Grafton Bond Stores (Figure 5.14). There is **low potential** for remains of earlier structures, pre-1850s, to survive intact due to the extensive construction of the three-level Grafton Bond Stores basement within Hickson Road. The large-scale quarrying of bedrock undertaken in the 1880s for the construction of the Grafton Bonds stores and again in the 1920s to expand and construct Hickson Road together would have large impacts on any earlier structures or deposits within in this area. While possible, there is little to be preserved under extant foundations related to the Grafton Bond. It is noted that the realignment of Sussex Street and the construction of Hickson Road in the early 20th century most likely removed all earlier structures in the study area except the deeper remains of the Bond Stores basement.[206]

There is a **High potential** that the foundations of the demolished Grafton Bond buildings survive intact, including possible isolated artefact deposits. Several stores were either fully demolished or partly demolished and had new facades built to match the new Hickson Road alignment (Figure 3.61, Figure 5.15, Figure 5.16).[207] These included Stores A, B, C, E and part of F, as labelled on the 1911 plan of Darling Harbour and which are highlighted in Figure 5.17. The footings of these buildings or associated remains may potentially remain *in situ*, as evidenced in a surviving bond store wall (Store C) during the Barangaroo South excavations by Casey & Lowe (Figure 4.5).[208] The works on the Grafton Bond Stores and Hickson Road in the 1920s involved the excavation of bedrock when the stores were demolished. Excavation was required to prepare a level surface for the construction of the new Hickson Road. Any surviving remains may also be impacted by this early 20th-century road construction and the installation of buried services beneath the road. However, deeper archaeological features, such as wells and cesspits may also survive as they are features with deeper subsurface, which gives them a higher level of chance to survive 20th-century impacts.

[206] Casey & Lowe 2015d: 19.

[207] Casey & Lowe 2010b:60

[208] Casey & Lowe 2022a: 385.

Figure 5.15: Grafton Bond Store with horse-drawn wagon handling materials', photo dated 4/12/1923. Note the fence at the front of the building suggesting a road sloping up to the north of the building. SRNSW Photo Investigator, Digital ID: 9856_2017_2017000264.jpg.

Figure 5.16: Partial demolition of Grafton Bond Store F (yellow arrow), looking south. The western end of the store was demolished and remodelled to align with Hickson Road. The façade shown in Figure 5.13 was re-facaded onto the remnant structure. SLNSW Government Printing Office 1 – 19861, IE1873931.

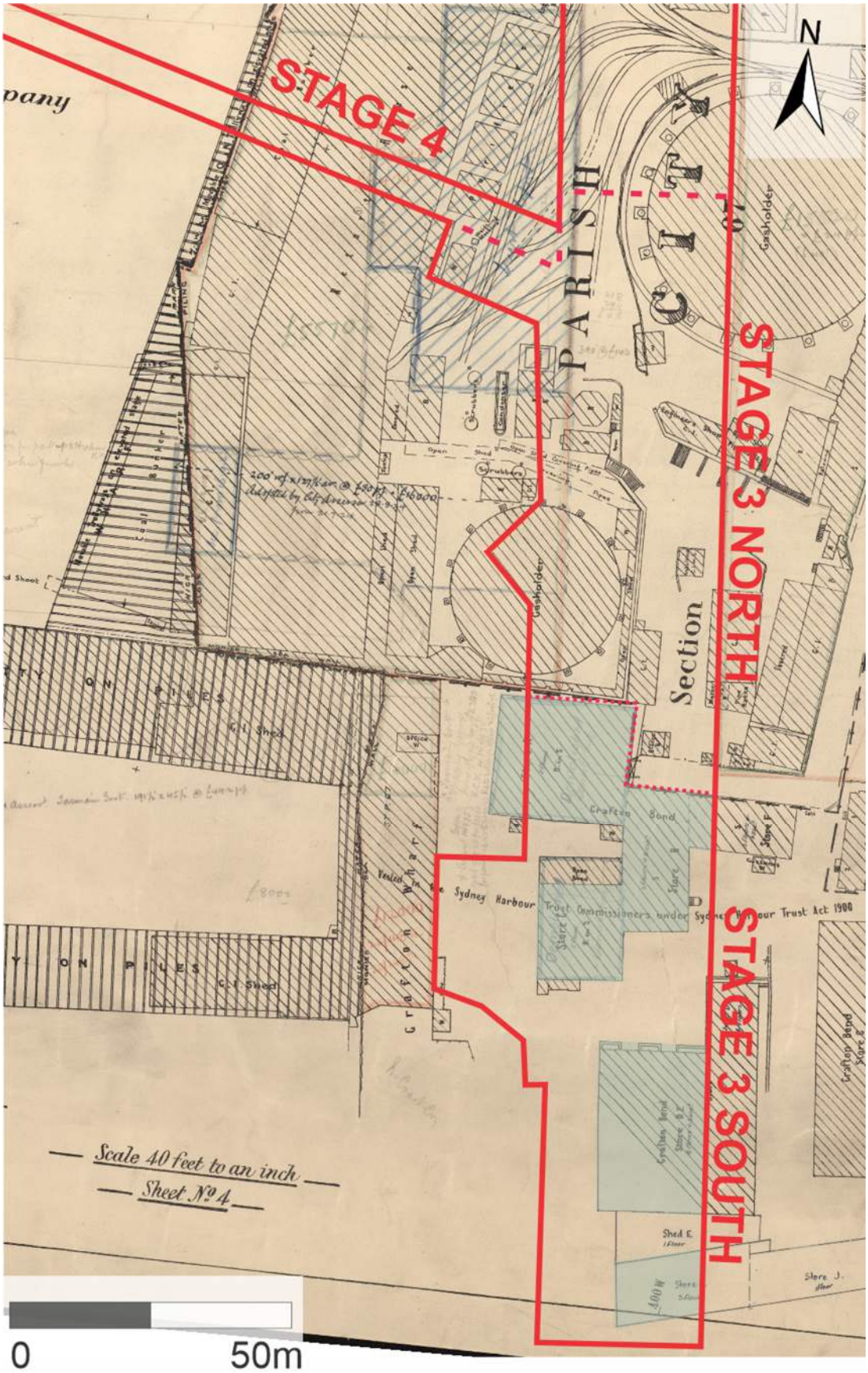

Figure 5.17: 1911 plan of Darling Harbour with the Grafton Bond stores highlighted that were either fully or partially demolished for the construction of Hickson Road. 'Darling Harbour vested in the Sydney Harbour Trust Co.'. AO Map 374, NSWSA.

5.4.1.4 EXISTING SERVICES

A large number of buried services presently exist beneath Hickson Road (Figure 5.18, Figure 5.19, Figure 5.20, Figure 5.21) and are listed in Table 5.1. The number and expanse of services below Hickson Road are extensive, although it appears that most of these services have been installed at shallow depths. Therefore, they are assessed as having low to moderate potential of impacting upon surviving archaeological remains within the study area.

Table 5.1: Existing services/utilities beneath Hickson Road in the study area

Utilities/Service	Pipe Diameter (mm)	Approx. Depth (mm)
Electrical	60, 125, 150	200-750
High Voltage Electrical	150	750
Communications	50	400
Optus	50	400
Telstra	100mm	-
Sewer	150, 225, 375, 450	>3000
Sewer Rising Main	-	-
Gas	110, 160	750
High Pressure Gas	150	1100
Water	100-150	600
Stormwater	225, 375, 600, 900	Varies – up to 3200mm

Figure 5.18: Existing and proposed services within northern Stage 4. Enspire Solutions Pty Ltd 2025, 240059-01-CC-C12.02.

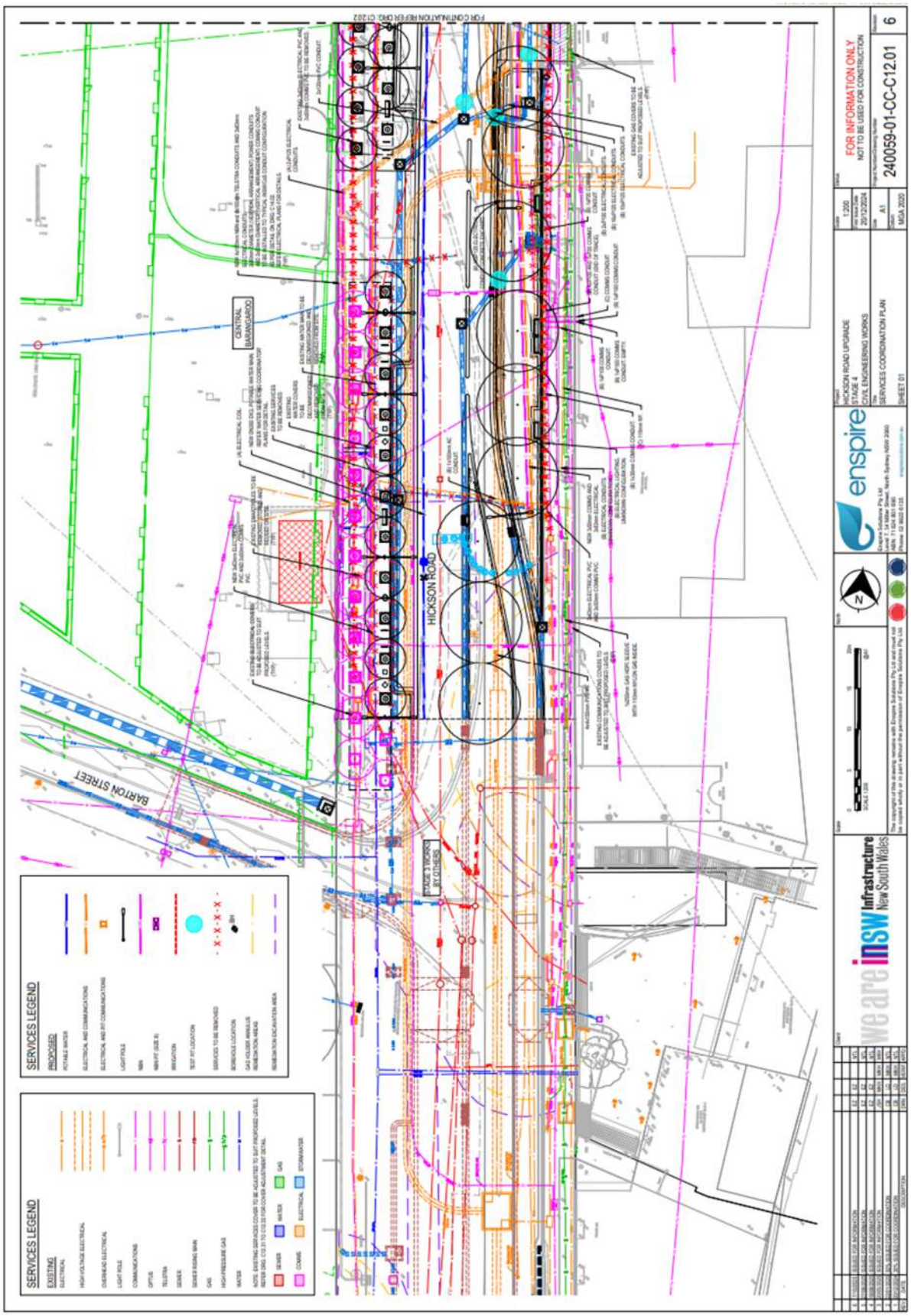

Figure 5.19: Existing and proposed services within southern Stage 4. Enspire Solutions Pty Ltd 2025, 240059-01-CC-C12.01.

Figure 5.20: Existing and proposed services within northern Stage 3. Enspire Solutions Pty Ltd 2025, B1D-CD2-600021.

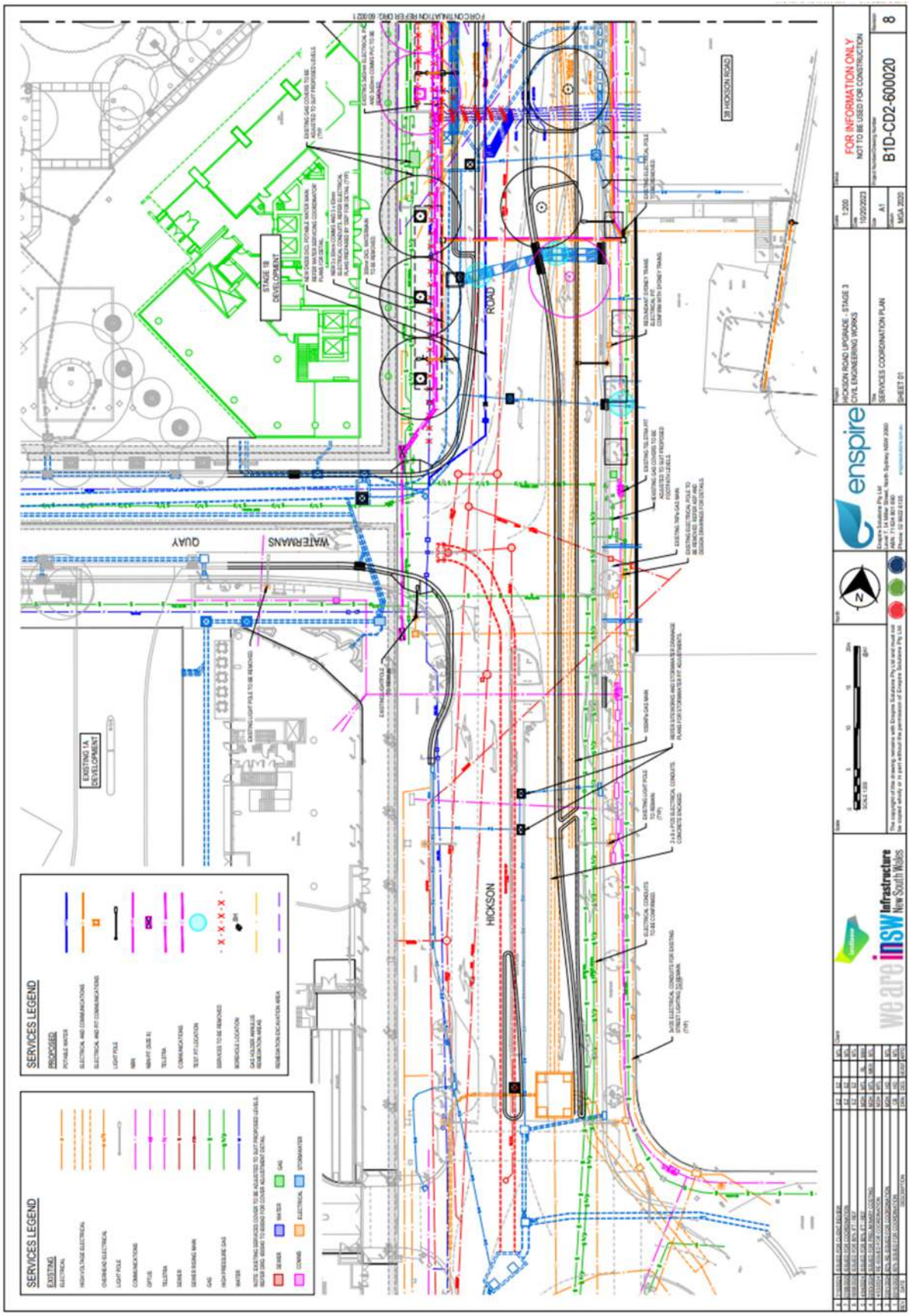

Figure 5.21: Existing and proposed services within southern Stage 3. Enspire Solutions Pty Ltd 2025, B1D-CD2-600020.

5.4.2 SUMMARY OF ARCHAEOLOGICAL POTENTIAL

Overall, the assessed archaeological potential within the study area is as follows:

- **High** potential for substantial footings and isolated artefact deposits associated with the demolished Grafton Bond Stores in the southern part of the study area (Southern Stage 3). Due to the demolition/partial demolition of the Stores in the 1920s and subsequent bedrock modification for the construction of Hickson Road, it is anticipated that remains may be present at a relatively shallow depth beneath the current road surface. There is also some limited potential for archaeological remains on the western side of Hickson Road in the southern section.
- **Moderate** potential for remains related to the 1840s-1920s AGL Co Gasworks are possible within the southeast corner of the former Gasworks site. Although remediation of this area was deemed unnecessary, 20th and 21st century impacts related to the establishment of Hickson Road and the installation of modern services have considerably reduced the potential for structural remains and occupation deposits to survive within this area.
- **Low-Moderate** potential for remains associated with 19th-century occupation to survive in the northern part of the study area (Stage 4) due to extensive bedrock modification undertaken as part of the construction of Hickson Road. Based on a previous investigation of this portion of the road, any surviving archaeology is likely to be present along the western side of the study area and would be limited to reclamation fills and associated features.
- **Nil-Low** potential for archaeological remains to survive within northern Stage 3, or the trunk drainage line along the northern side of Barton Street (Stage 4). Extensive remediation of the former AGL Co Gasworks site within northern Stage 3, has removed any evidence of the former industrial complex except the cleaned negative interface of several gasholder annuli and tar tanks, present beneath Hickson Road. The western portion of the proposed Barton Street drainage line was also impacted by 21st-century remediation works, with the remaining extent disturbed by 1970s reclamation. Evidence of any early-19th-century land clearance is also expected to have nil-low potential within Stage 3 of the study area, as these portions have likely been disturbed by subsequent development.
- There is nil potential for archaeological remains to survive in the portions of the study area that extend into Watermans Quay, as this area was excavated during archaeological investigations of Barangaroo South and was also partially within the area of remediation.
- Portions of Stage 4 and northern Stage 3 may contain contaminants - including tar and asbestos - at levels above or exceeding human health criteria. While much of the former Gasworks has been remediated, there is potential that contaminants may be found in the adjacent areas and those not yet investigated.

The identified historical archaeological potential for the study area is mapped below in Figure 5.14 and Figure 5.22.

5.5 MAPPING OF ARCHAEOLOGICAL POTENTIAL

Five main overlay images were prepared to illustrate the archaeological potential and location of structures within the study area. Some of the figures demonstrate the overall potential, while the others outline the location of buildings shown on selected historic plans as different coloured layers in relation to a recent satellite image:

- Figure 5.14 maps the predicted archaeological potential showing areas of nil-low (blue), moderate (green) and high (purple).
- Figure 5.22 maps the archaeological potential overlaying the 1891 with the AGL Co Gasworks and Grafton Bond Stores visible, showing areas of nil-low (blue), moderate (green) and high (purple).
- Figure 5.23 shows structures within the study area from the 1820s to 1850s. These early structures have a very low potential of surviving intact due to remediation, the basement in the Bond Stores and quarrying for Hickson Road.
- Figure 5.24 identifies structures from the later phases of occupation from the 1860s to 1900s. This period is largely dominated by the AGL Co Gasworks and the Grafton Bond Stores and Wharf.
- Figure 5.25 shows structures within the study area from the 1910s to 1950s. This map is crucial in understanding the structures and features that were removed due to quarrying for the construction of Hickson Road.

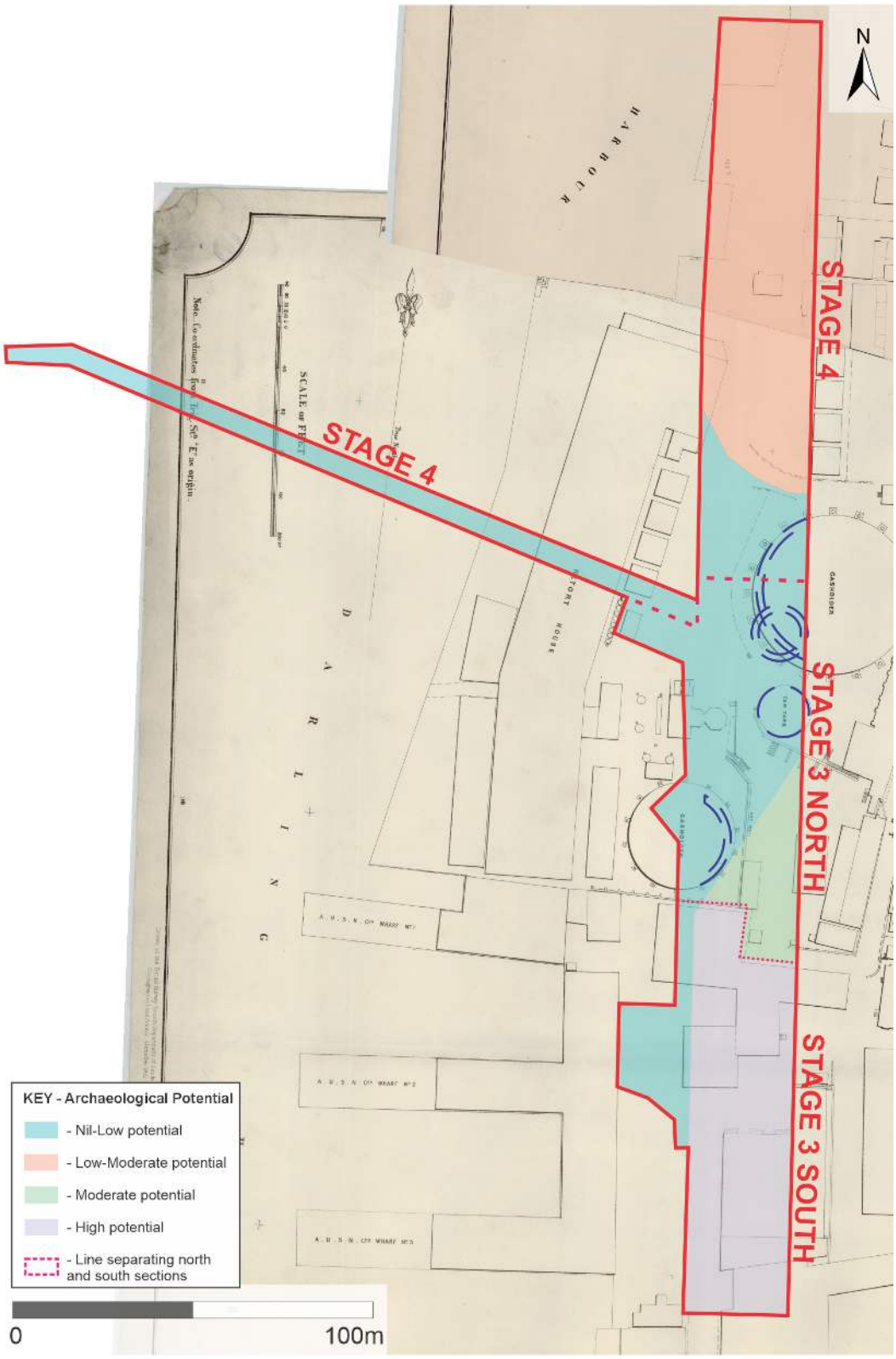

Figure 5.22: Map of archaeological potential overlaying the 1891 map with the AGL Co Gasworks and Grafton Bond Stores visible, showing areas of nil-low (blue), moderate (green) and high (purple). While the gasworks was mostly removed during remediation the footprint of the rock cut footprint of the gasholders survives in the ground (purple). The pink dashed line indicates the difference between the north and south sections. SLNSW, Metropolitan Detail Series, Section 67. ML M Ser 4 811.17/1.

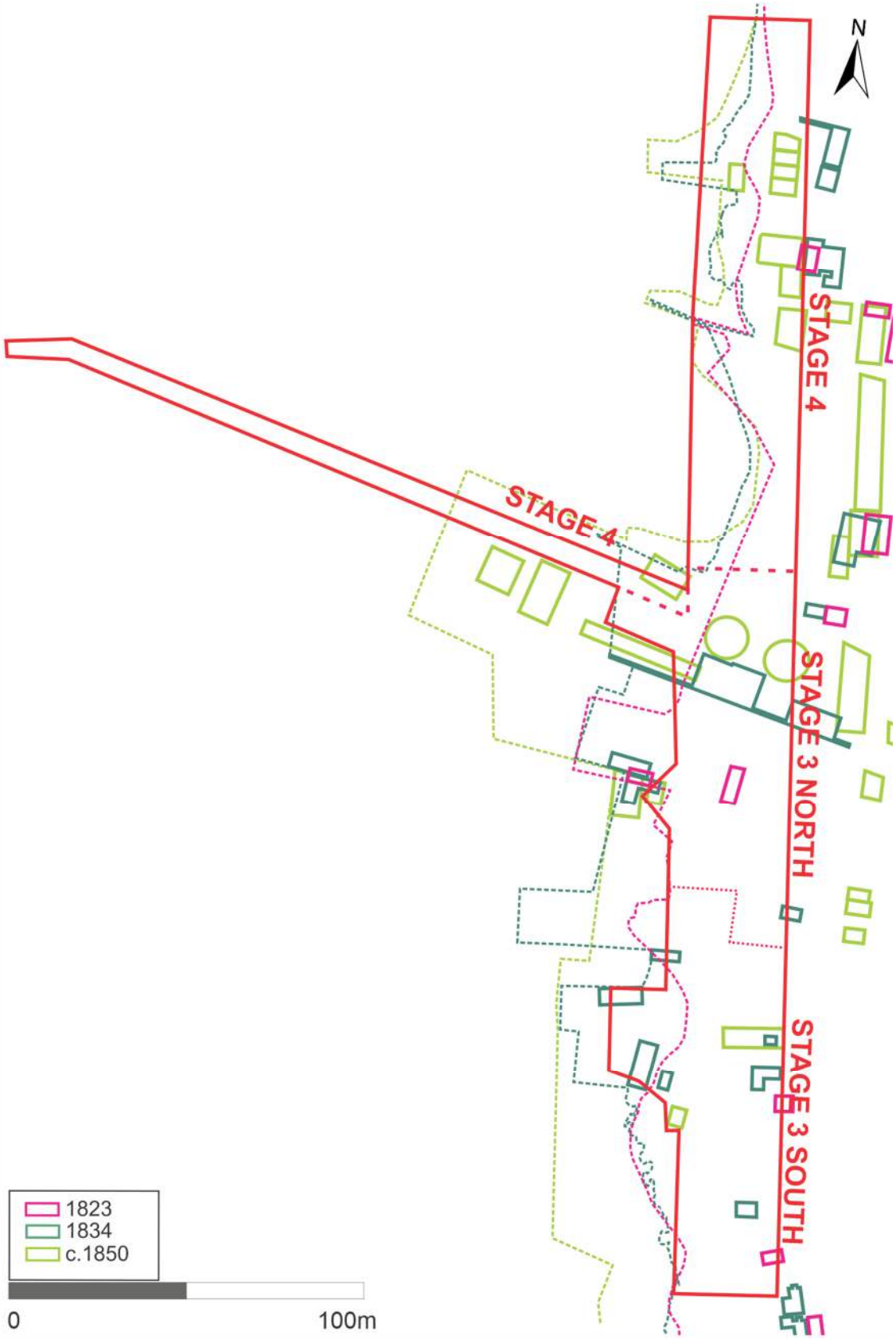

Figure 5.23: The study area with the location of structures present from the 1820s-1850s overlaid onto a current aerial photo showing the existing buildings. The colours are representative of tracing from particular maps: 1823 = pink, 1833 = dark green, c.1850 = light green. The study area is outlined in red.

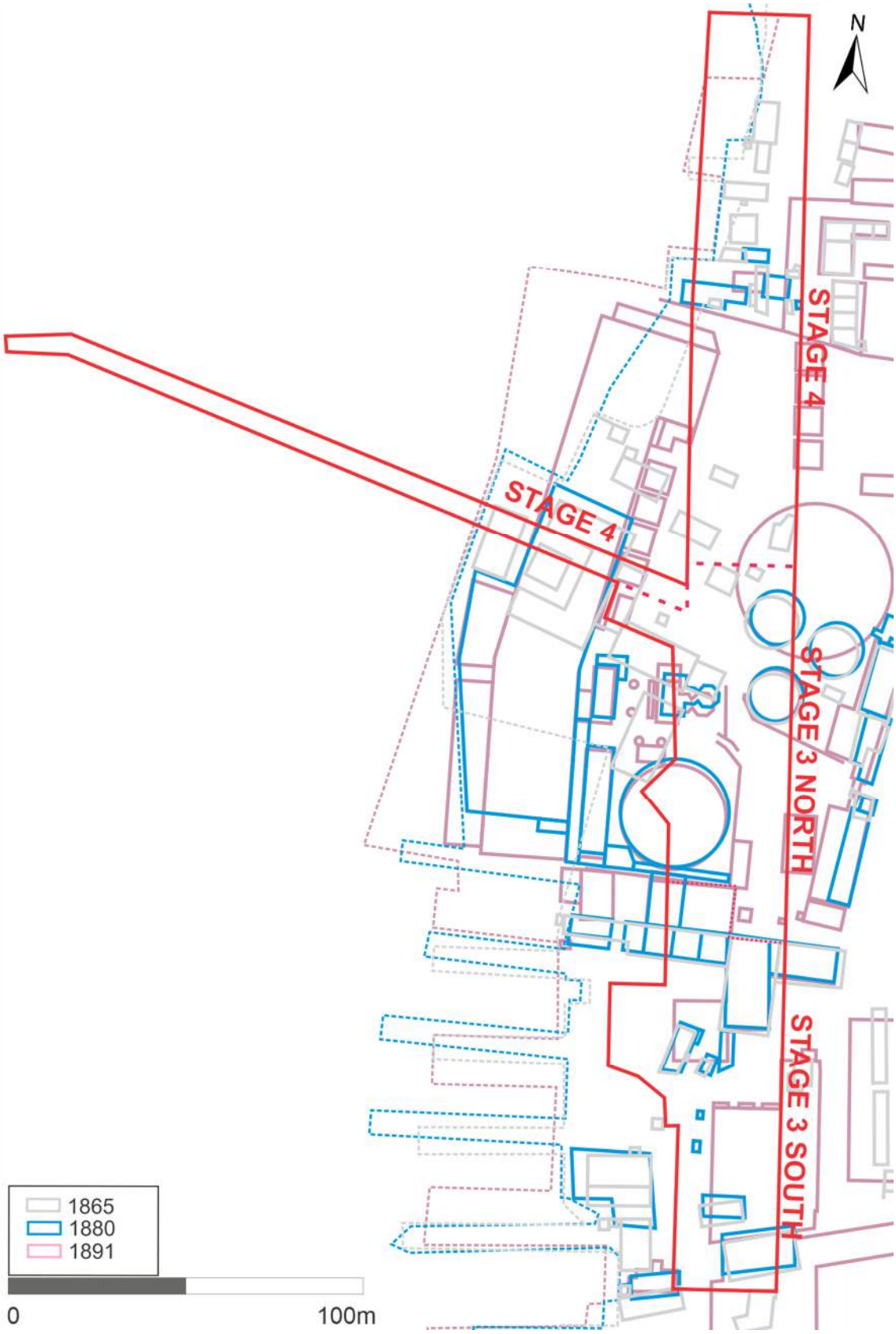

Figure 5.24: The study area with the location of structures present from the 1860s-1900s overlaid onto a current aerial photo showing the existing buildings. The colours are representative of tracing from particular maps: 1865 = grey, 1880 = blue, 1891 = pink. The Stage 3 study area is outlined in red.

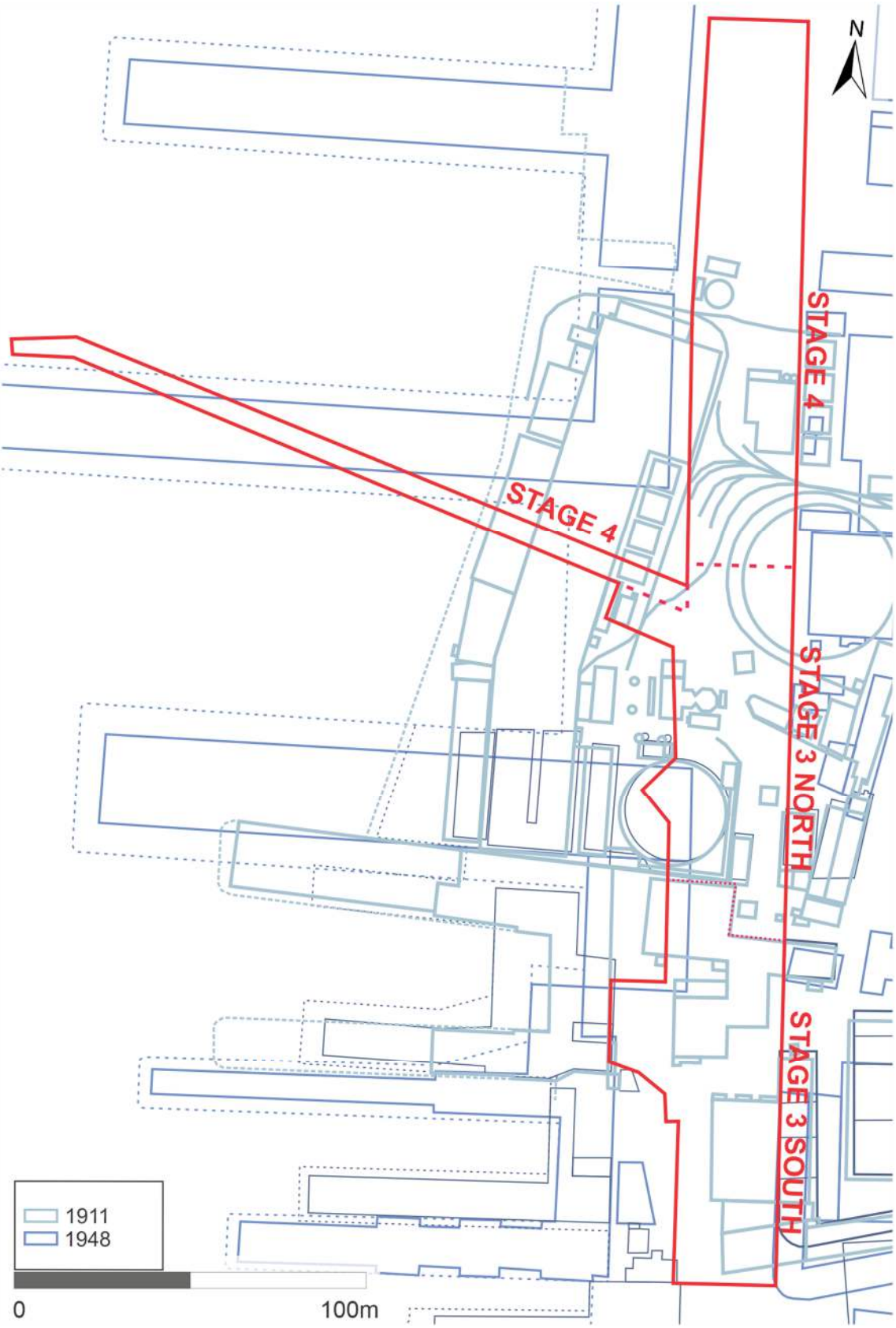

Figure 5.25: The study area with the location of structures present from the 1910s-1950s overlaid onto a current aerial photo showing the existing buildings. The colours are representative of tracing from particular maps: 1911 = light blue, 1948 = blue. The study area is outlined in red. This map is important as it shows the disappearance of buildings within the footprint of Hickson Road after the 1911 map.

6.0 HERITAGE SIGNIFICANCE

6.1 HERITAGE SIGNIFICANCE

Heritage significance is distinct from archaeological potential. The assessment of archaeological potential considers the probability of physical evidence from previous human activity to still exist on a site. Assessment of heritage significance for archaeological features considers the cultural values associated with those remains.[209] To identify the heritage significance of an archaeological site it is necessary to discuss and assess the significance of the study area. To be assessed as having heritage significance an item must:

- meet at least one of the seven significance criteria,
- retain the integrity of its key attributes.

The following assessment of archaeological heritage significance has been written to be in accordance with the Heritage Branch 2009 guidelines: *NSW Heritage Manual* and the *Archaeological Assessment Guidelines* and *Assessing Significance for Historical Archaeological Sites and 'Relics'*.[210]

6.2 DISCUSSION OF HERITAGE SIGNIFICANCE

CRITERION (A): HISTORIC SIGNIFICANCE – (EVOLUTION)

an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

In the early-19th century, the study area formed part of eleven allotments granted to numerous individuals, who established residential and commercial premises along the foreshore and high ground near Kent Street. Several wharfs and ship-building structures were erected along the foreshore in the vicinity of the study area during this period of private land ownership. However, the establishment of the large commercial operations of the Gasworks and Grafton Bond Stores have removed any evidence of early-19th-century development in the central and southern portion of the study area (Stage 3). The northern portion of the study area (Stage 4) was largely protected from any substantial redevelopments until the early 20th century, when substantial excavation of bedrock was undertaken throughout the steep rocky landscape, prior to the establishment of Hickson Road. As a result, there is limited potential for archaeological remains of early to mid-19th century occupation to survive within the wider study area, although any that do would be expected to meet the threshold for local significance for their ability to our contribute to our understanding of the development the eastern side of Darling Harbour.

The former footprint of the substantial Grafton Bond Stores, situated partially within the southern portion of the study area, claimed to be the biggest bond warehouse in Australia. The stores were designed by architect William Wardell and built of bricks brought as ballast from Newmarket-upon-Tyne in England. In the 1920s most of the stores were demolished and remodelled with new facades to accommodate the construction of Hickson Road (c.1925). Part of the Grafton Bond Store still survives to the east of the study area and is listed on the SHR. The works for the construction of the bond stores deep basement would have removed any earlier archaeology within its footprint but sections of the bond stores basement are likely to survive. This archaeology has potential to be of local significance.

[209] This distinction has long been recognised by historical archaeologists working in heritage management and was restated in *Practice Note – The Burra Charter and Archaeological Practice* (Australia ICOMOS 2013, p 7).

[210] NSW Heritage Office 1996 *Archaeological Assessments, Archaeological Assessment Guidelines,* Department of Urban Affairs and Planning, pp 25-27; NSW Heritage Office 2001 *Assessing Significance: a NSW Heritage Manual Update*; NSW Heritage Branch 2009.

The central portion of the study area formerly contained the AGL Co Gasworks, the first in Australia, which operated from 1839 to 1918. Between the 1860s and 1900 the gasworks expanded further north and south to accommodate the increasing demand for gas in public and domestic lighting in an expanding suburban Sydney. This sequence of ownership and physical changes reflects the historic evolution of the area. The area of the Gasworks within the development area reflects its early stages and it contained key technological works associated with manufacturing of gas, such as retorts or annulus, or tar tanks. The majority of the Gasworks archaeology was removed during remediation of the site between 2015 and 2019. Although limited archaeological remains of features cut into bedrock beneath Hickson Road survive, roughly 80 per cent of the archaeological resource of the Gasworks was removed during remediation, which has affected the integrity of the potential archaeological resource. It is likely the construction of Hickson Road also removed considerable evidence of the gasworks outside of the remediation area.

Overall, the present study area has some limited potential for archaeological remains of local significance to survive.

CRITERION (B): ASSOCIATIVE SIGNIFICANCE – (ASSOCIATION)

an item has strong or special association with the life or works of a person, or group of persons, or importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

The potential archaeological resource within the present study area would be associated with several small private landholders, as well as the enterprise of the Australian Gas Light Company. Given none of the former landholders are key individuals associated with the development of the colony of Sydney, and the latter represents a large enterprise instead of any particular individual, the study area is unlikely to meet the threshold for significance under this criterion.

CRITERION (C): AESTHETIC SIGNIFICANCE – (SCENIC QUALITIES / CREATIVE ACCOMPLISHMENTS)

an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the cultural or natural history of the local area);

The extant Grafton Bond building built of brick on a stone basement and having adopted the stepped gables of old English buildings is a skilled and picturesque design. The sandstone wall above the vertical cut bedrock aligning Hickson Road also provides aesthetic significance and both are State Heritage listed items. Other archaeological remains within the study area have little potential for aesthetic significance, although it is possible for all archaeological sites to have incidental aesthetic values, notably in relation to the process of ruination but this cannot be determined at this stage. While archaeological remains may have aesthetic value, mostly through their novelty and age, they are not 'important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW'. Their aesthetic value is more by accident than design and does not relate to the potential relics within the study area which would not meet the threshold for local significance.

The section of the Gasworks in Hickson Road was part of the first in NSW as well as the first in Australia. While there are impacts from later phases some archaeology associated with the original gasworks may survive. Most of the technical aspects of the Gasworks were removed during remediation. Further the site was substantially modified during its c.78 years of operation. Therefore, it is unlikely that significant technical achievements

survive within the study area. Therefore, remnant archaeology of the Gasworks does not meet this threshold for significance under this criterion.

CRITERION (D): SOCIAL SIGNIFICANCE – (CONTEMPORARY COMMUNITY ESTEEM)

an item has a strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons (or the cultural or natural history of the local area);

While no community consultation has been undertaken for the site's archaeological remains, the remains are likely to have considerable attraction for those who have an interest in the history and archaeology of the study area. On the basis of experience of other archaeological sites across Darling Harbour where the local community have demonstrated an interest in the maritime and industrial heritage and archaeology of Darling Harbour it is unlikely that surviving archaeological remains have social significance due to the limited integrity within the roadway.

Therefore, the potential archaeology does not meet the threshold of local significance under this criterion.

CRITERION (E): TECHNICAL/RESEARCH SIGNIFICANCE – (ARCHAEOLOGICAL, EDUCATIONAL, RESEARCH POTENTIAL AND SCIENTIFIC VALUES)

an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

The technical or research value of the study area lies in its potential to contribute to our understanding of a range of historic themes through archaeological excavation, recording, analysis and interpretation. Although sections of Hickson Road have been affected by 20th and 21st-century impacts associated with the establishment of the road and later remediation of the former AGL Co Gasworks site, the southern portion of the study area (southern Stage 3) is assessed as having high potential to contain archaeological remains. The potential archaeological resource within the study area includes:

- Limited evidence associated with 19th-century occupation along the foreshore in the northern part of the study area (Stage 4). Although considerable excavation of the bedrock landscape was undertaken for the construction of Hickson Road in this part of the study area, possible reclamation fills and associated features have previously been found beneath this portion of the road surface.
- Remains of the AGL Co. Gasworks site, primarily in the form of negative interfaces, the large gas annuli and tar tank. The site of the Gasworks has been heavily remediated due to contamination, and while little is likely to remain in the area, it is noted that the cleaned negative interfaces of the 1882 gasholder annulus and tar tanks do survive under the present Hickson Road. Other smaller buildings related to the Gasworks and situated outside of the remediation area to the southeast, have some limited potential to survive intact.
- Deeper basements associated with the Grafton Bond Stores and Wharf are likely to be present within the southern section of the Stage 3 study area. Remains of the demolished or partly demolished Stores A, B, C and E, may survive beneath Hickson Road, most likely as sandstone footings, basements and demolition deposits, with some limited potential for artefacts. Remains of the demolished stone store (Store F), built in c.1861 by Smith and Challis and modified in c.1925 for the construction of Hickson Road potentially survives in the study area. Potential evidence of this

building would include footings as well as modifications to the steep rocky landscape along with a former access road between Jenkins Street and the wharves.
- There is also low potential for archaeological remains of smaller structures associated with the Bond Stores to survive within the study area, based on historic plans.

If archaeological remains of the Gasworks, the Grafton Bond Stores or 19th-century reclamation and foreshore development survive in the study area, these are likely to be relics and would generally be considered of **local** significance for their research potential and value. However, it is noted that the Bond Store basements would offer limited ability to address substantive research questions. Further, the negative interface of the gas annuli and tar tanks are not considered works and whilst not protected under the *Heritage Act, 1977,* they are considered of **local** significance for their heritage value.

CRITERION (F): RARITY

an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Over the last 10 to 15 years, numerous archaeological investigations undertaken as part of the redevelopment of Darling Harbour and Barangaroo, have uncovered evidence of 19th-century wharfage, reclamation and industrial development along the foreshore. Much of the area in the vicinity of the present site has been subject to previous archaeological salvage, with only limited areas, such as on the Barangaroo Headland, having been retained *in situ.* Given the archaeological resource of this foreshore area has been heavily compromised by more than 130 years of redevelopment, any substantial remains of early-19th-century structures within the study area could meet the threshold for **local** significance for their rarity.

CRITERION (G): REPRESENTATIVENESS

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).

While intact and recognisable remains associated with the former AGL Co Gasworks and Grafton Bond Stores would be highly representative of the development of 19th-century commercial enterprises in Sydney, such remains are unlikely to have survived within the study area. Substantial remains of the Bond Store basements are anticipated to survive within the southern portion of the study area, however these would not be considered especially representative when an intact basement and building associated with this former complex is extant nearby. The principal technology and archaeological features of the highly contaminated Gasworks site have been largely removed by 21st-century remediation, hence this portion of the study area no longer contains any surviving characteristics of the significant former enterprise, beyond the negative interface of the former gas holders. Based on this, archaeological remains within the present study area are **unlikely** to meet the threshold for local significance under this criterion.

INTEGRITY OF THE ARCHAEOLOGY

The integrity of the site is thought to be a mixture of low to moderate and moderate to high archaeological potential (Figure 5.14):

- There is limited potential for the survival of early 19th-century remains throughout the study area due to impacts from the AGL Co. Gasworks, Grafton Bond Stores and the cutting back of bedrock in the early-20th-century for the construction of

Hickson Road. Despite these works and impacts from modern services, previous investigations in the northern part of the study area (Stage 4) indicated some evidence of early-19th-century reclamation survived at a depth of 1.4-1.5m beneath the road surface.

- Archaeological remains of the Gasworks were largely removed during the 2015-2019 remediation of the site, and as a result of this and any remnant contamination, the archaeological potential of the central portion of the study area is low. Cleaned interfaces of the gasholders and tar tanks remain beneath the present surface of Hickson Road, however these are considered works, not relics.
- There is moderate potential for post-1860s remains to be retained, particularly in the central portion of the study area where there were no late 20th century structures and it was outside the remediation zone. Such remains are mostly limited to the basement of the Grafton Bond Stores
- There is high potential for footings and demolition deposits associated with the Grafton Bond Stores that were demolished for the construction of Hickson Road.

6.3 STATEMENT OF HERITAGE SIGNIFICANCE

Where and if any archaeological resource survives within the study area, it would be considered significant at a local level for its historic significance and potential research values. Archaeological remains associated with 19th century reclamation and development along the foreshore of the study, as well as evidence of the basements from several of the Grafton Bond Store's are expected to survive beneath the modern configuration of Hickson Road. While contamination of the former AGL Co Gasworks site, and the 2015-2019 remediation has resulted in the removal of technologically important sections of the site, some limited remains of ancillary structures, such as the gas annuli and tar tanks, also remain. Quarrying and bedrock modifications are also expected to survive in areas of the site, associated with substantial 20th-century reconfigurations of the landscape. Any substantial archaeological evidence representing 19th or early-20th-century occupation of the study area would contribute to our understanding of the gradual development of both small and large-scale commercial enterprises as well as wharf-building and reclamation activities on Darling Harbour.

7.0 PROPOSED IMPACTS & MITIGATION

7.1 DESCRIPTION OF PROPOSED WORKS

The Hickson Road South (refer Locality Plan – Hickson Road South 240059-00-REF-C01.31, Figure 1.1) upgrade and refurbishment design comprises of the upgrade of Hickson Road from the northern side of the Napolean Street intersection connecting to the existing road upgrade north of the High Street Steps, along with utility upgrades running adjacent to Barton Street and intersection upgrades.

The works are outlined in more detail below to inform the assessment of impacts on the archaeology, and is based on an analysis of the plans below prepared by Enspire Solutions Pty Ltd and Hassell (Figure 7.1-Figure 7.13).

7.1.1 DEMOLITION

The proposed demolition scope for Stages 3 and 4 consists of the following key activities:

- Removal of existing road surfaces.
- Removal of some existing trees.
- Removal of existing concrete medians, kerbs and kerb ramps.
- Removal of existing lightpoles.
- Removal of existing signage, including wayfinding which is to be reinstated later.
- Removal of existing concrete driveways along eastern side of Hickson Road.
- Removal of existing pedestrian crossings.
- Removal of Stage 3 temporary works at the southern end of the Stage 4 area.
- Existing concrete jersey barriers to be removed and handed over to INSW.

7.1.2 ROADWORKS

The proposed roadworks scope for Stages 3 and 4 consists of the following key activities:

- Bulk excavation and fill to be undertaken across the study area as part of road surface preparation. Road and portions of footpaths to be regraded along the western side of the road reserve to match R3 building levels, although existing levels will generally be maintained along the eastern side of the road in Stage 3. However, the establishment of the road carriageway in Stage 4 will require excavation of up to 500mm of material along the central and western portion of the road and footpath, with some localised areas involving excavation to a depth of 1m (Figure 7.1, Figure 7.2).
- New concrete kerbs, median islands and kerb ramps, which tie in with existing stone kerbs.
- Two new un-signalised pedestrian crossings to be installed in multiple locations.
- Raised pedestrian threshold and refuge island at chainage 345.00 to connect R3 building to 30 The Bond.
- New short term parking bays to be installed along western side of Hickson Road Stage 4.
- Two-way cycleway to be installed along eastern edge or roadway with associated medians.
- New signage to facilitate the proposed works.
- New asphaltic concrete pavement within road carriageway.
- Pavement linemarking to delineate road lanes, pedestrian crossing locations, restrictions and cycleway.
- City of Sydney granite pavers on concrete slab in footpath areas.
- New wayfinding signage.

- Works to tie into Watermans Quay ultimate design (currently under construction), including upgrades to an existing pedestrian crossing and installation of a slip lane from the north-bound approach on Hickson Road.
- Works to tie into existing Barton Street including upgrades to an existing pedestrian crossing.

7.1.3 UTILITIES

The proposed utilities scope for Stages 3 and 4 consists of the following key items (Figure 7.3, Figure 7.4, Figure 7.5, Figure 7.6):

- Removal of existing potable watermain on western side of Hickson Road Stage 3, between Watermans Quay and Barton Street, and subsequent installation of new 300 diameter main within the road reserve.
- Portions of existing electrical, communications, stormwater and water service lines to be removed.
- Adjustment of existing water hydrants and stop valves.
- Installation of new NBN and Telstra conduits along the western boundary of the study area, as well as new NBN pits in various locations. The depths of these services is generally not anticipated to exceed 600mm.
- New smart poles in Stage 3 including new electrical and communications cabling and footings.
- Installation of low-voltage electrical and communications conduits along beneath the roadway and eastern footpath.
- Reuse of existing smartpoles in Stage 4.
- Extension of existing gas main from existing gas pit at chainage 280 north to Central Barangaroo.
- Installation of two new gas lines, including one high-pressure line, along the western boundary of Stage 3. The high-pressure gas line is expected to reach approximately 1.1m in depth, however the other proposed gas service is not expected to exceed a 750mm in depth.
- New irrigation line servicing tree pits in western footpath and for future connection to Central Barangaroo.
- Adjustment to existing sewer manholes, electrical pit lids and gas covers in road and footpath to suit revised levels.

7.1.4 STORMWATER DRAINAGE

The proposed stormwater drainage scope for Stages 3 and 4 consists of the following key activities:

- Removal of multiple existing stormwater pits.
- New stormwater inlet and junction pits at various locations throughout both stages.
- New stormwater drainage to be installed throughout the study area, including a new trunk drainage line adjacent to the northern side of Barton Street (Figure 7.7). Trenching for the new stormwater line is expected to measure up to 1.5m wide and generally between 1.5m and 3.2m deep, except the portion along Barton Street which is expected to reach a maximum depth of 3.7m towards the western extent.
- Adjustments to existing stormwater drainage pits to suit revised road levels
- Subsoil drainage behind kerbs and in landscaped medians.

7.1.5 LANDSCAPING

The proposed landscape scope for Stages 3 and 4 consists of the following key activities:

- New tree pits are to be installed along the eastern and western verge of Hickson Road throughout Stages 3 and 4. The tree pits will measure 3m wide and 1.2m in

depth, however with the inclusion of drainage at the base of the pits, the anticipated depth of impacts for this element of the works is up to 2m (Figure 7.8, Figure 7.9, Figure 7.10, Figure 7.11, Figure 7.12, Figure 7.13).
- Street furniture including bench seats and rubbish/recycle bins.
- Low-median landscape planting between the eastern edge of the road and eastern footpath.
- Installation of additional medium sized trees along the eastern and western footpaths and within the landscape medians.
- Installation of pedestrian fencing and tactile pavement markers.

7.1.6 MISCELLANEOUS

Miscellaneous items for Stages 3 and 4 consist of the following key activities:

- Traffic and pedestrian management during construction
- Interface works with R3 and Hickson Park.
- Existing trees along Stage 4 to be protected and maintained.

Figure 7.1: Proposed cut and fill works to level the northern portion of Stage 4. Green shaded areas represent locations where fill is to be introduced to raise the ground surface. Red shaded areas indicate where material is to be excavated to reduce the ground level, with the dark brown requiring the removal of up to 750mm. Previous archaeological investigations in this area have indicated the archaeological resource is unless excavation exceeds 1.5m. Enspire Solutions Pty Ltd 2025, 240059-01-CC-C04.02.

Figure 7.2: Proposed cut and fill works to level the southern portion of Stage 4. Green shaded areas represent locations where fill is to be introduced to raise the ground surface. Red shaded areas indicate where material is to be excavated to reduce the ground level, with orange areas requiring the removal of up to 1m. Previous archaeological investigations in this area have indicated the archaeological resource is unless excavation exceeds 1.5m. Enspire Solutions Pty Ltd 2025, 240059-01-CC-C04.01.

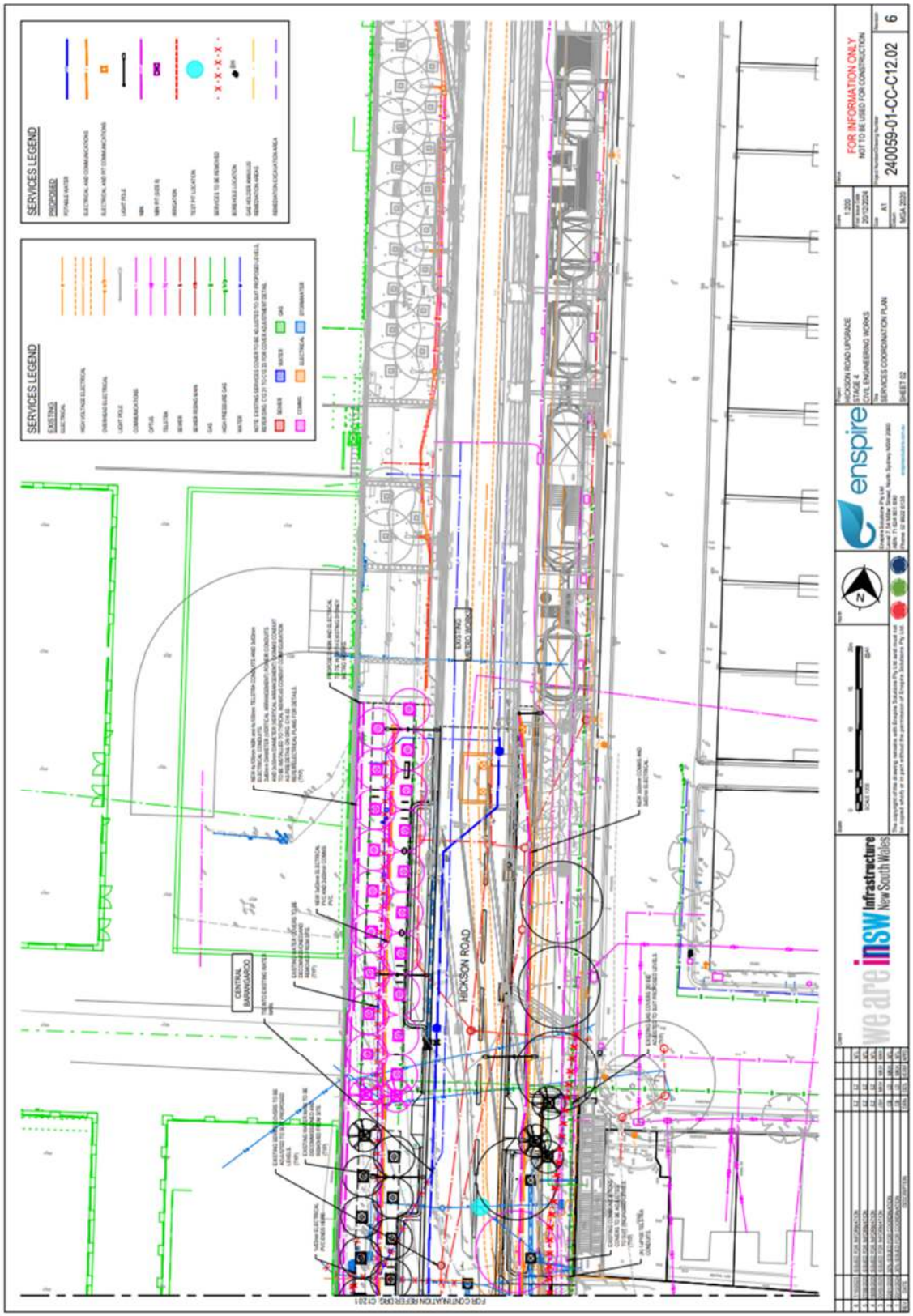

Figure 7.3: Proposed services within northern Stage 4. The new large stormwater line is indicated by a thick checked blue line. Previous archaeological investigation of this northern portion of the study area has indicated that structural remains of early to mid-19th-century private wharfs survive beneath the current ground surface. As a result, substantial works in this area have the potential to impact the archaeological resource. Enspire Solutions Pty Ltd 2025, 240059-01-CC-C12.02.

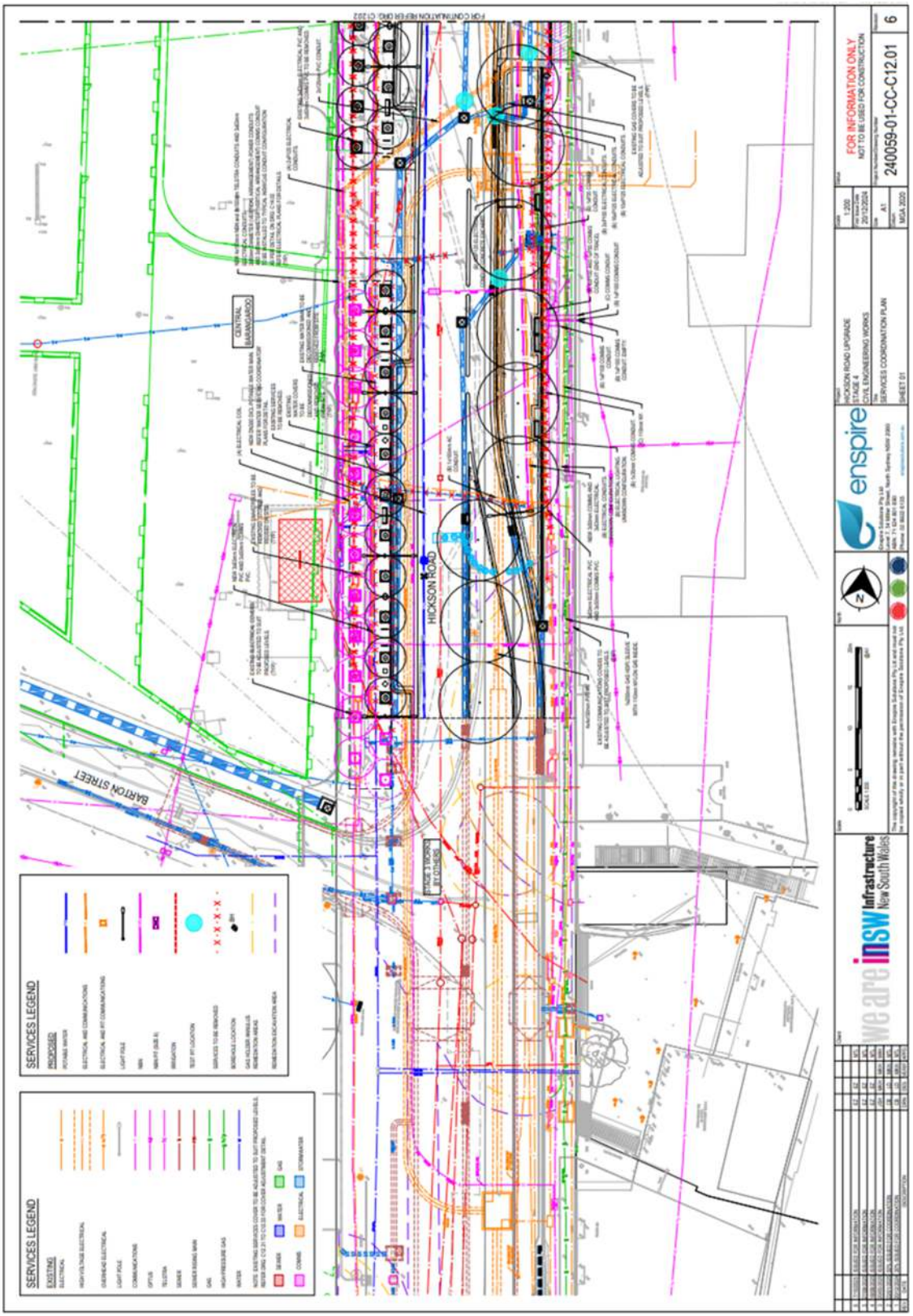

Figure 7.4: Proposed services within southern Stage 4. The new large stormwater line is indicated by a thick checked blue line and includes the trunk drainage line along Barton Street. This portion of the study area is within the late-19th-century footprint of the former Gasworks and works may impact the negative interfaces of the gasholder annuli and some areas where remediation was not required. Enspire Solutions Pty Ltd 2025, 240059-01-CC-C12.01.

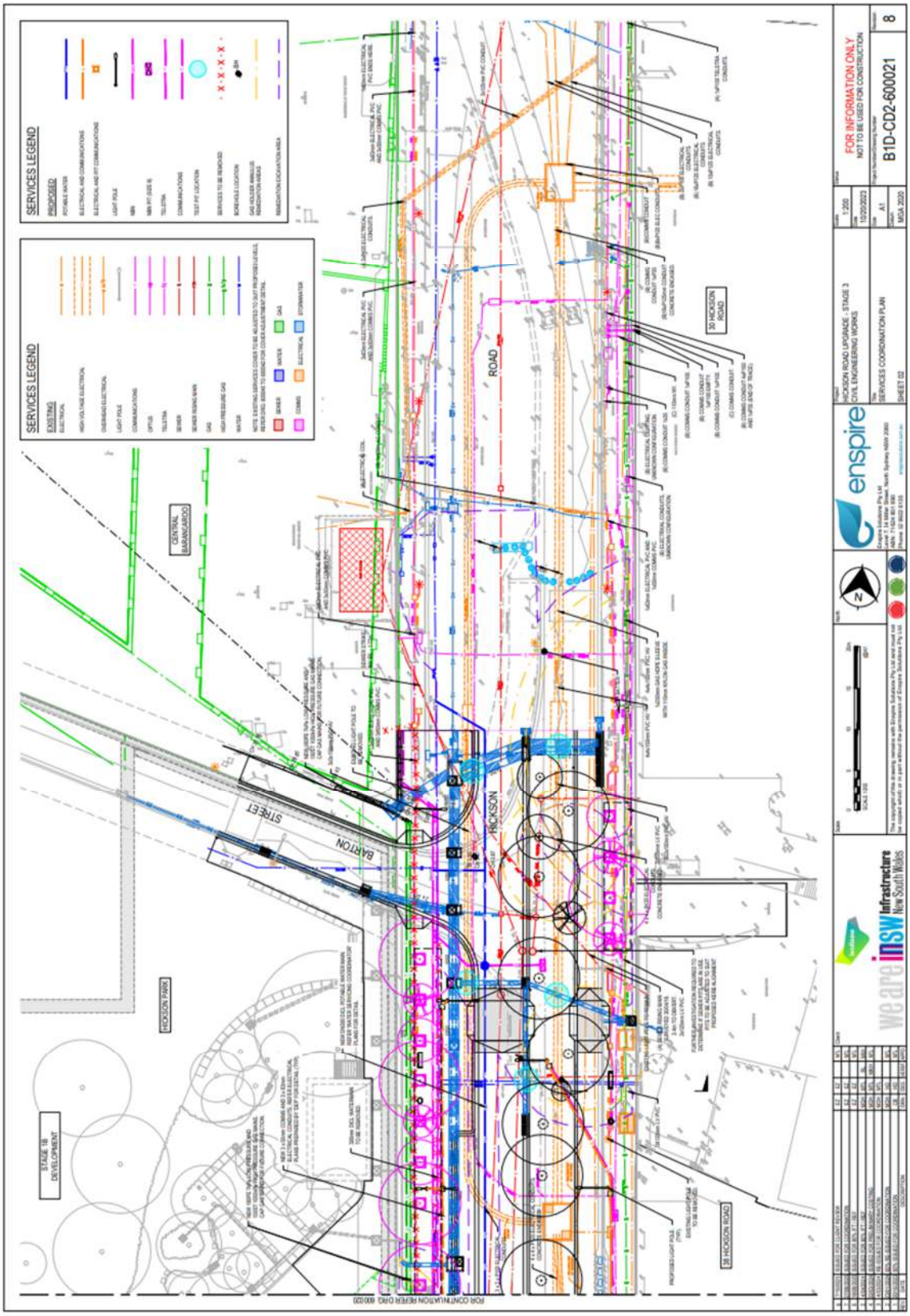

Figure 7.5: Proposed services within northern Stage 3. The new large stormwater line is indicated by a thick checked blue line. This central section of the study area is within the footprint of the old Gasworks and these works may impact on the negative interfaces of the gasholder annuli and potentially areas where no remediation was undertaken and would therefore have a low impact. Enspire Solutions Pty Ltd 2025, B1D-CD2-600021.

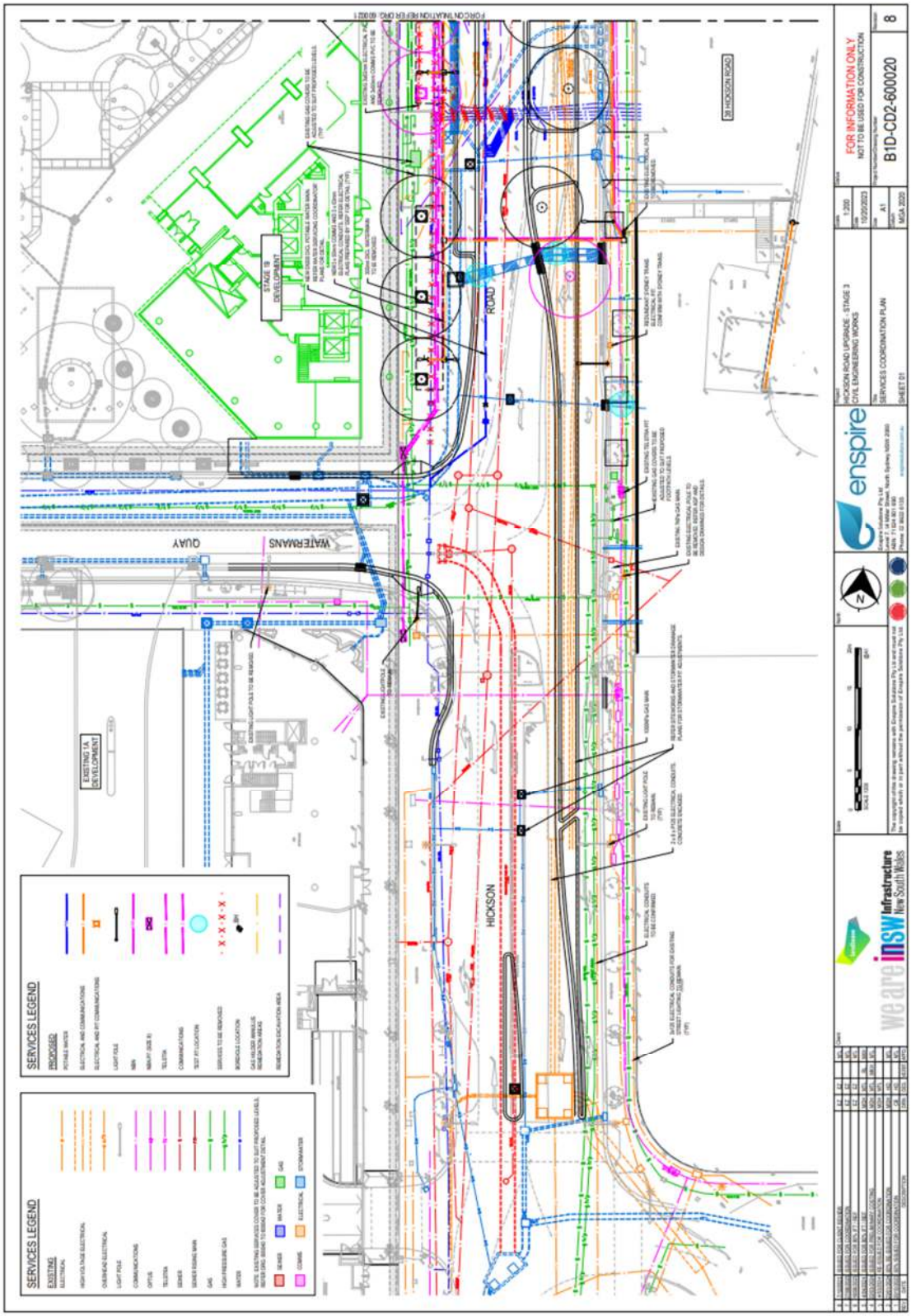

Figure 7.6: Proposed new services within southern Stage 3. The new large stormwater line is indicated by a thick checked blue line. This central part of the study area is partially within the footprint of the former Gasworks and the Grafton Bond Stores. Portions of the proposed services will likely impact the negative interfaces of the gasholder annuli and areas although would have low impact potential on remaining areas of the Gasworks. There is the potential that it will have a medium impact on any surviving remains of the Grafton Bond Stores. Enspire Solutions Pty Ltd 2025, B1D-CD2-600020.

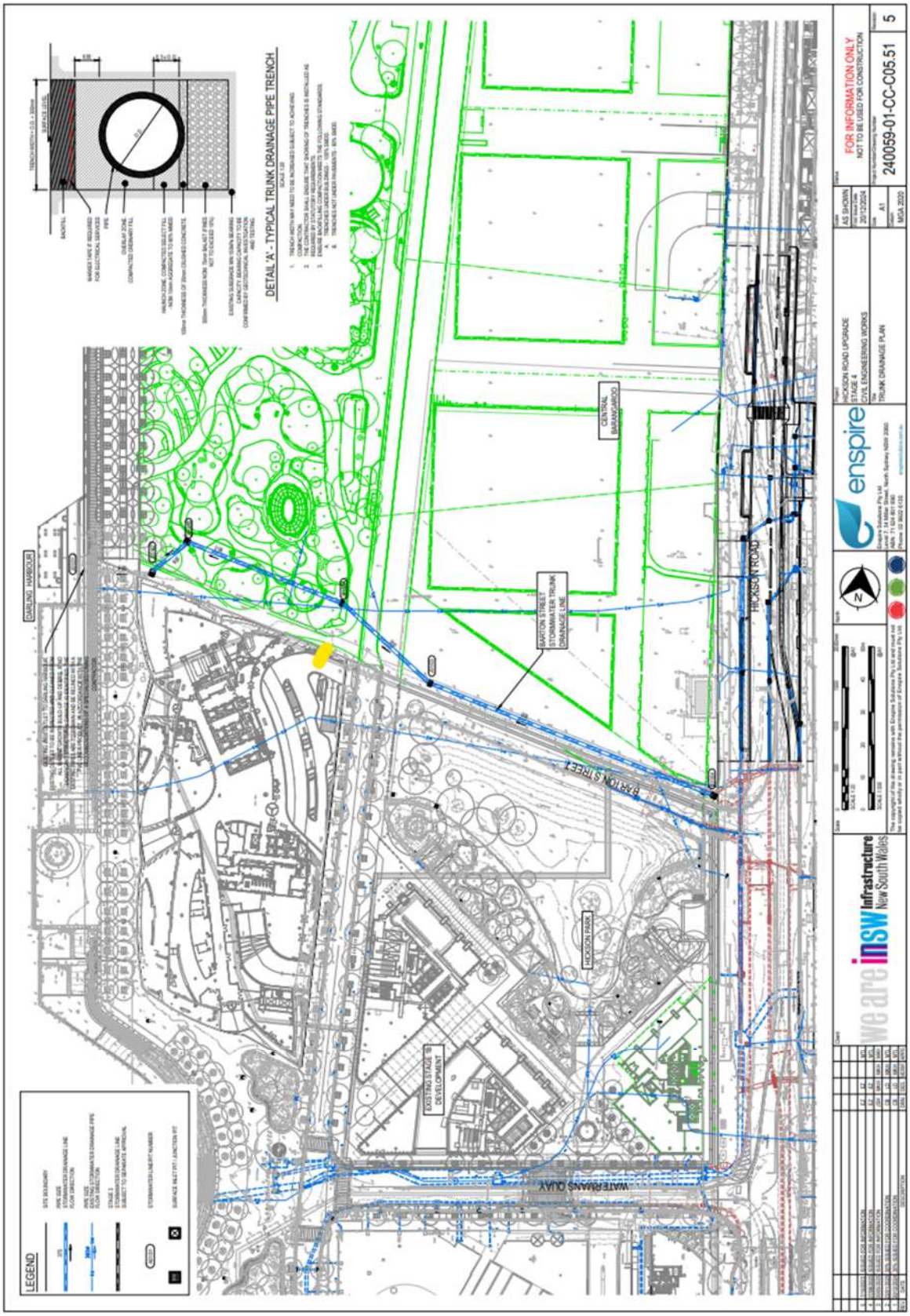

Figure 7.7: Proposed Stage 4 trunk stormwater line along the northern side of Barton Street. The stormwater line is represented by a checked blue line, and the Barton Street portion is indicated by a scalloped red line. Enspire Solutions Pty Ltd 2025, 240059-01-CC-C05.51.

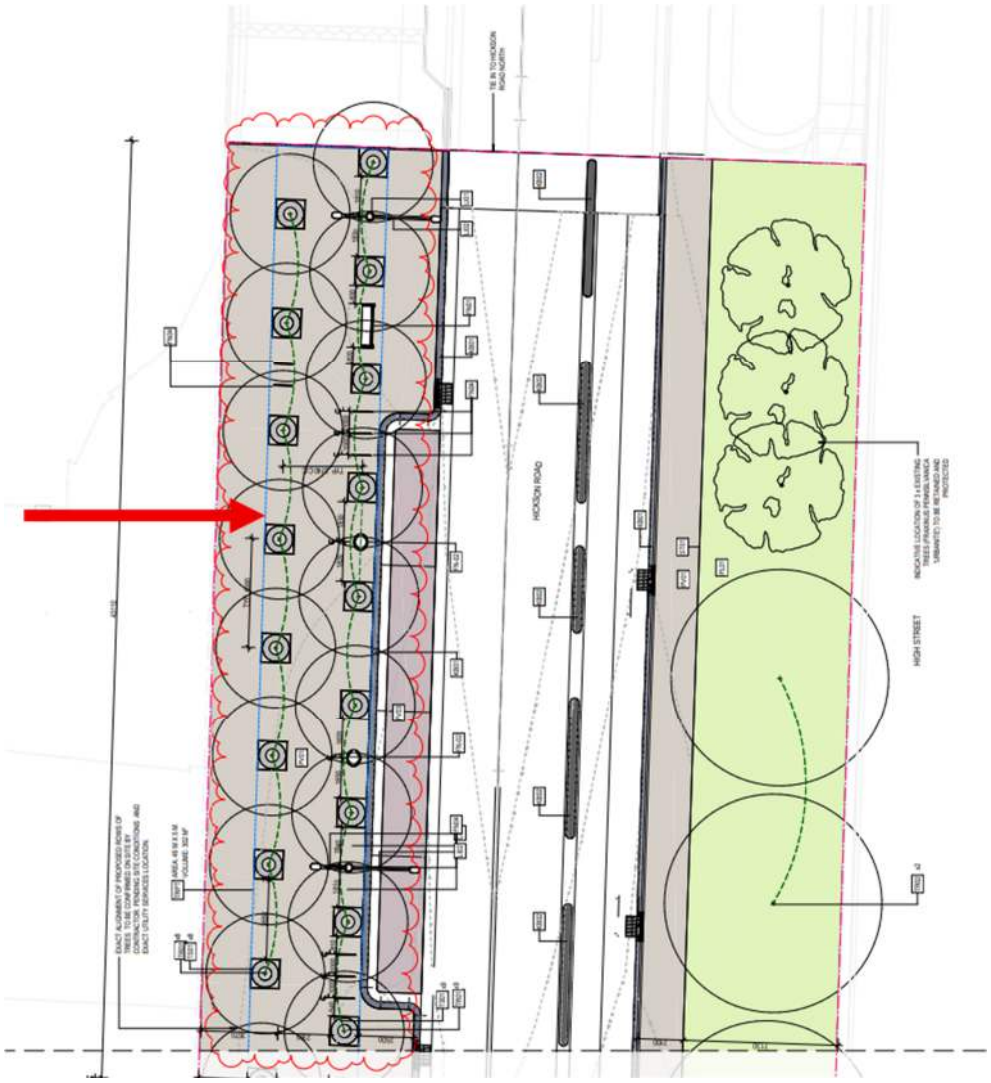

Figure 7.8: Location of proposed tree pits in northern Stage 4, as indicated by dashed blue lines (arrowed). The circles indicate new trees to be planted, with two rows of trees proposed along the western side of Hickson Road in the Stage 4 works area. This portion of the study area is within the SHR curtilage for the Millers Point & Dawes Point Village Precinct and is generally assessed as having low-moderate potential to contain archaeological remains (Figure 5.22). Hassell 2025, Stage 4 – Landscape Design, L_1003.

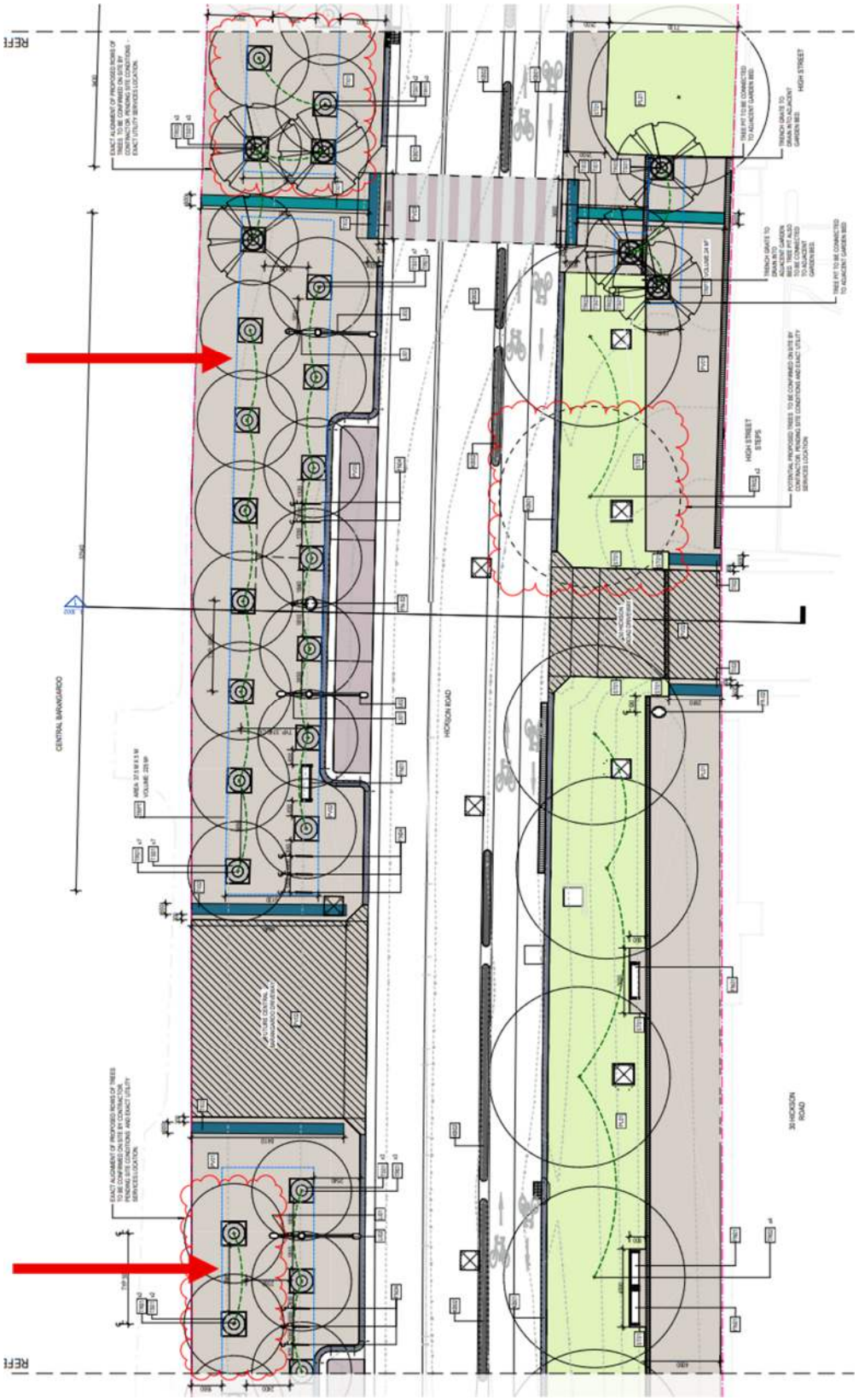

Figure 7.9: Location of proposed tree pits in central Stage 4, as indicated by dashed blue lines (arrowed). The circles indicate new trees to be planted, with two rows of trees proposed along the western side of Hickson Road in the Stage 4 works area. This portion of the study area is partially within the SHR curtilage for the Millers Point & Dawes Point Village Precinct and is generally assessed as having low-moderate potential to contain archaeological remains (Figure 5.22). Hassell 2025, Stage 4 – Landscape Design, L_1002.

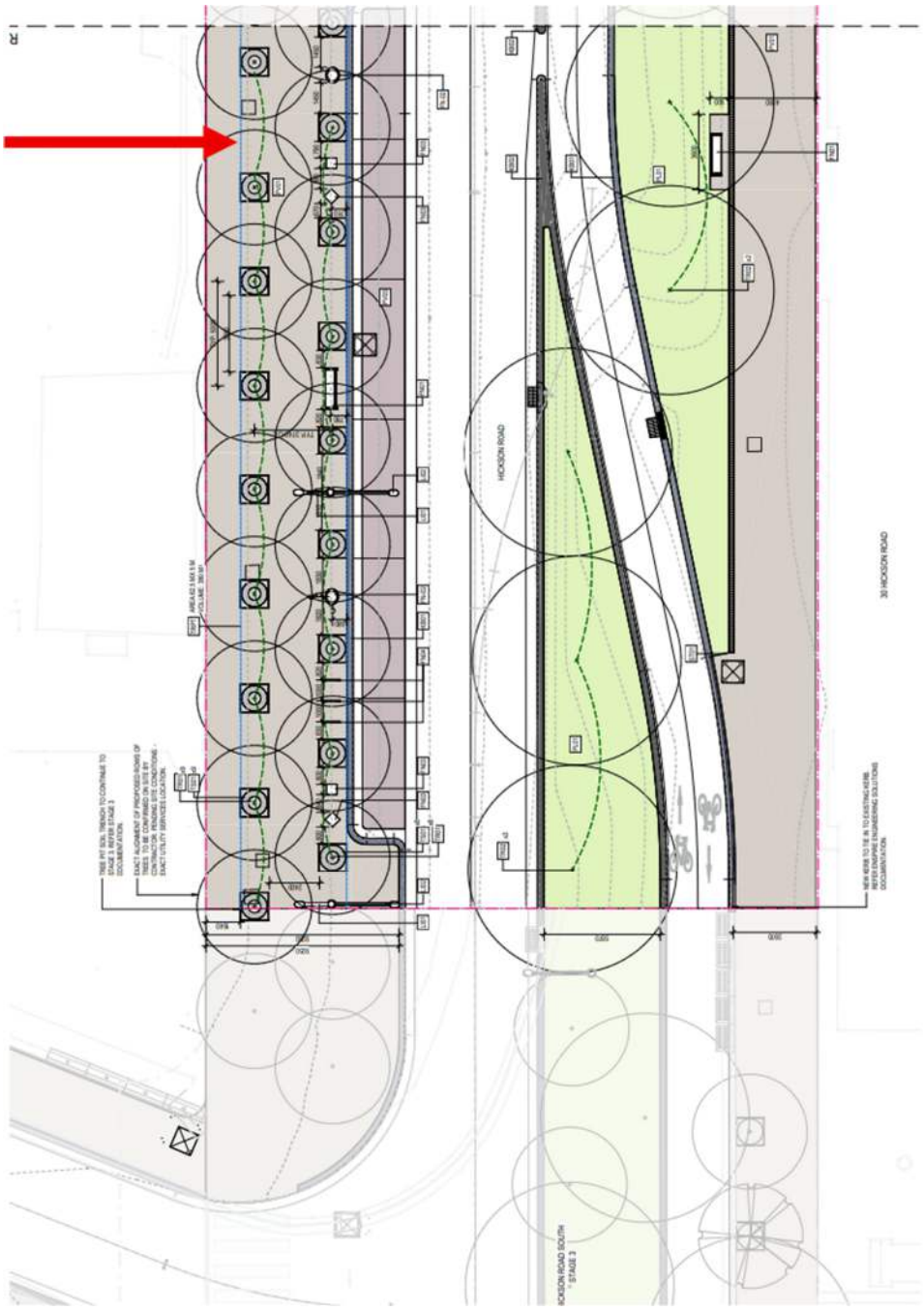

Figure 7.10: Location of proposed tree pits in southern Stage 4 near Barton Street, as indicated by dashed blue lines (arrowed). The circles indicate new trees to be planted, with two rows of trees proposed along the western side of Hickson Road in the Stage 4 works area. This portion of the study area is generally assessed as having low-moderate potential to contain archaeological remains (Figure 5.22). Hassell 2025, Stage 4 – Landscape Design, L_1001.

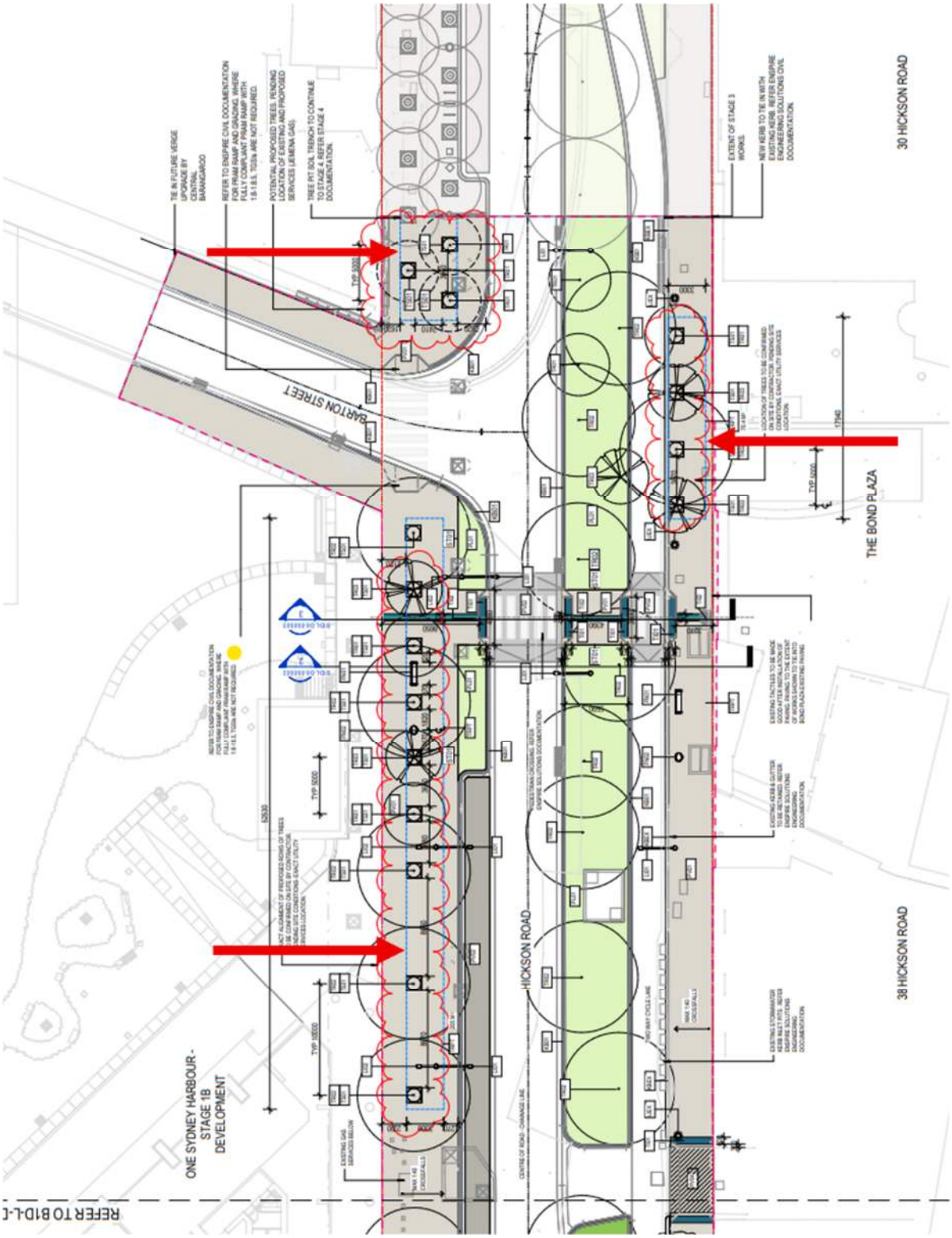

Figure 7.11: Location of proposed tree pits near Barton Street in northern Stage 3, as indicated by dashed blue lines (arrowed). The circles indicate new trees to be planted. This portion of the study area is within the footprint of the remediated Gasworks site, hence most of this area is assessed as having nil-low potential (Figure 5.22). Hassell 2025, Stage 3 – Landscape Design, B1D-L-D-2-00-00-03.

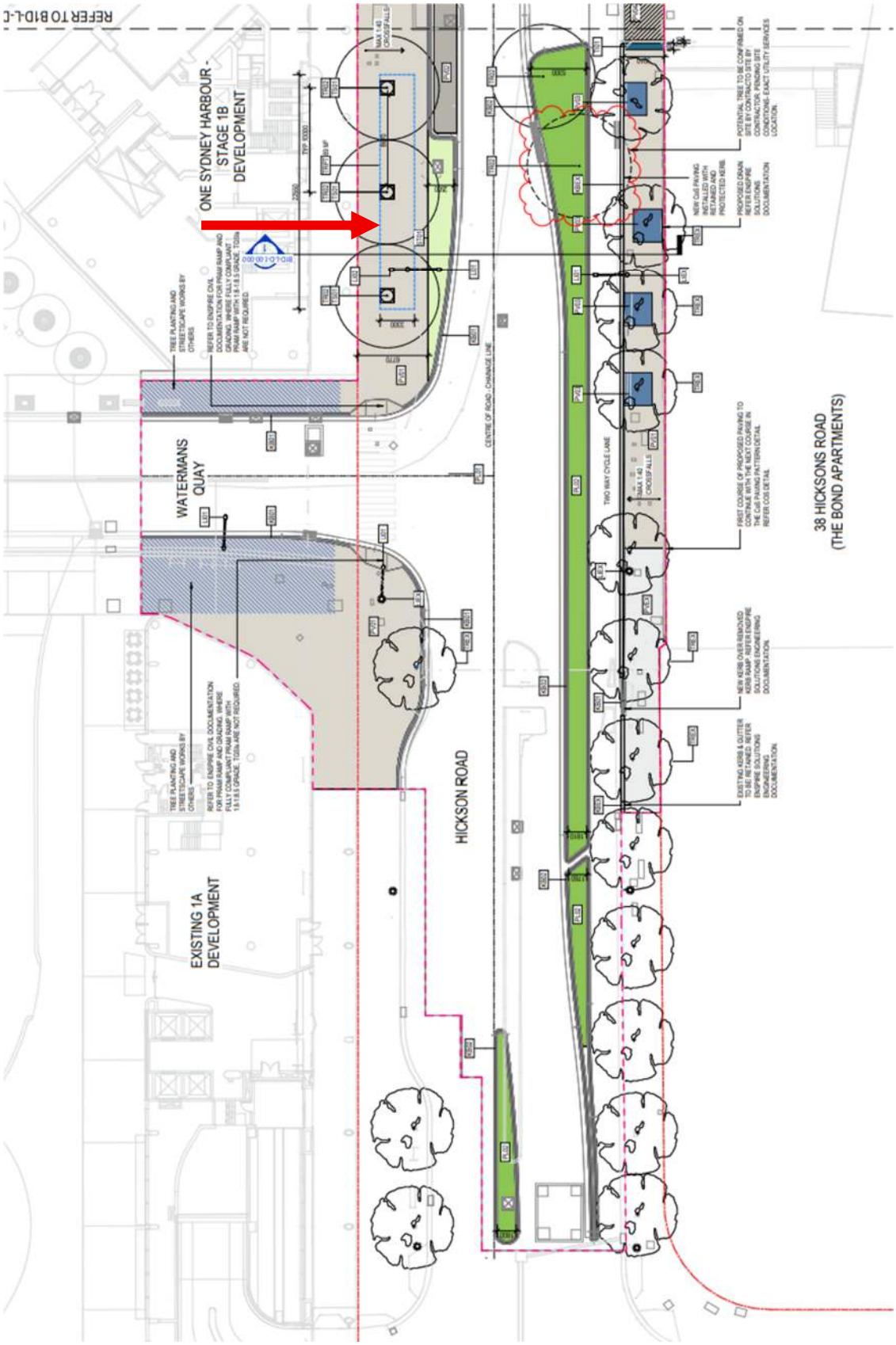

Figure 7.12: Location of proposed tree pit near Watermans Quay in southern Stage 3, as indicated by dashed blue line (arrowed). Circles represent new trees to be planted. This southern portion of the Stage 3 works is within the footprint of the Grafton Bond Stores and excavation in this area will potentially impact on the predicted footings within Hickson Road (Figure 5.10). Hassell 2025, Stage 3 – Landscape Design, B1D-L-D-2-00-00-02.

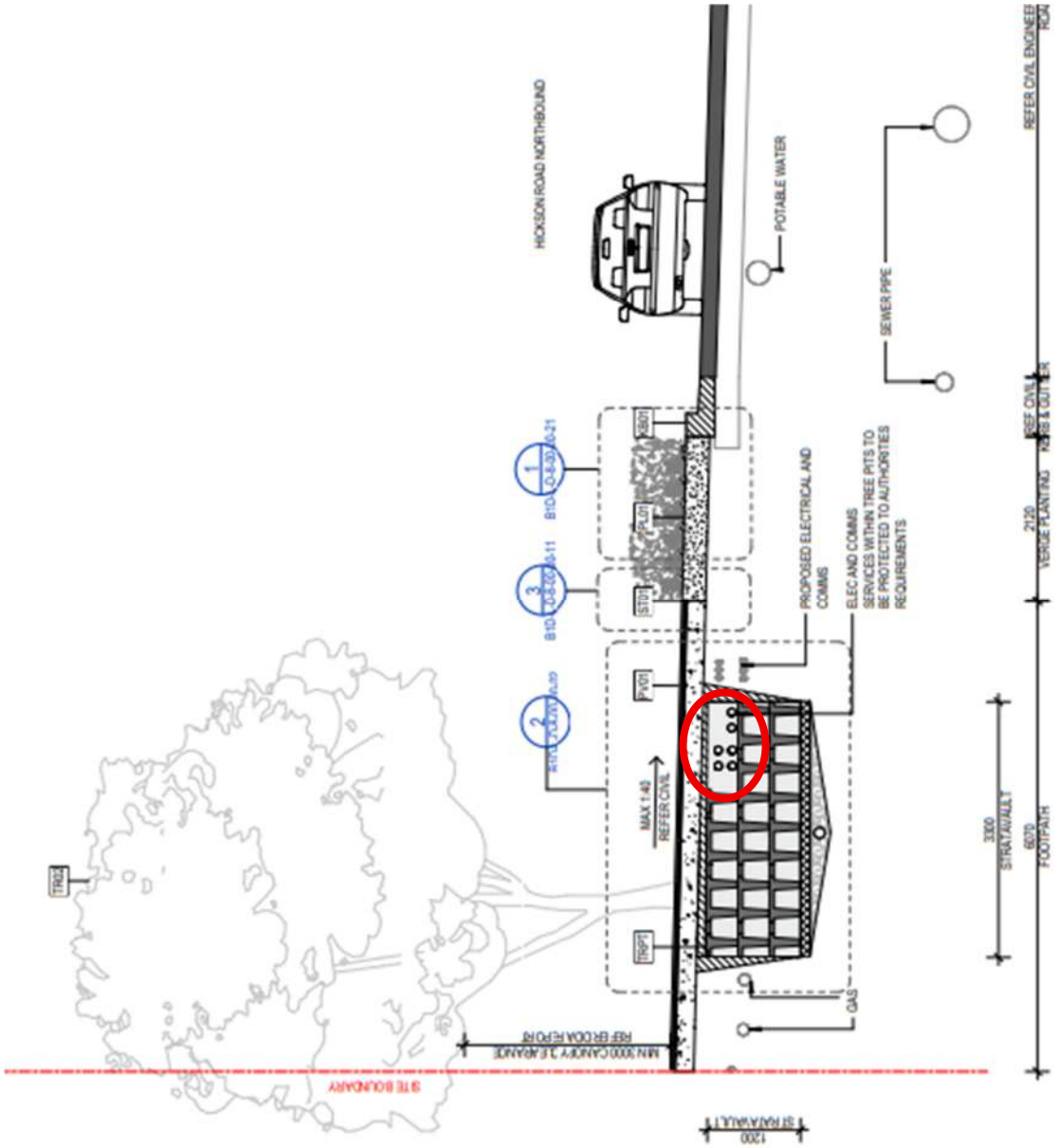

Figure 7.13: Example section through the western road verge in Stage 3 showing the proposed extent of the tree pits and select services. Electrical and communications conduits (circled) are visible along the eastern side of the tree pit and will partially utilise the tree pit as a trench. Hassall 2025, B1D-L-D-5-00-00-01.

7.2 IMPACTS ON THE ARCHAEOLOGY & MITIGATION

The impacts of the proposed road upgrades on the archaeological resource differ across the three main sections of the study area (Figure 5.5), due to the varying extent of historical development and subsequent disturbance from remediation, road establishment and upgrades. A full assessment of the impacts on the archaeological resource and heritage significance, as well as proposed mitigation strategies are outlined in Table 7.1.

The northern portion of the study area (Stage 4) is assessed as having only low-moderate potential to contain remains of the 19th century reclamation and foreshore activity, as

considerable excavation of the bedrock for the construction of Hickson Road has drastically changed the landscape of this area. The southern portion of the study area (Southern Stage 3) has high potential to contain foundations and artefact deposits associated with the demolished Grafton Bond buildings. Therefore, proposed works in these areas may impact any surviving remains of the archaeological resource.

There is nil to low potential for any structures to survive in the northern portion of Stage 3 due to the extensive remediation required for the former AGL Co Gasworks site. The exception to this is limited to the footprint of the rock cut gasholders and tar tank, which are considered to be "works" under the *Heritage Act, 1977* rather than relics. Therefore, any impacts in the central portion of the study area should be minimal.

The removal of old/redundant services and excavation for new services will likely cause some impact on the extant relics, particularly the excavation for the new stormwater to a maximum depth of 3.7m. The landscaping works also involve considerable excavation for a series of tree pits along either side of Hickson Road. The trenches for the tree pits will vary in length, measuring between 25m and 65m, and will measure 3.2m wide where a single tree is to be installed, or 5m wide where two are to be installed. Although the individual tree pits only measure 1.2m deep, sub-surface impacts for this element of the works is expected to reach up to 2m in depth, to incorporate drainage beneath the pits. Both the stormwater and the new tree pits are proposed within areas assessed as having low-moderate or high potential to contain archaeological relics, especially the southern portion of Stage 3.

Ground raising and bulk excavation as part of the preparation of the ground surface of Hickson Road is largely assessed as having little to no impact on any surviving archaeology. Material will be introduced across the majority of the study area and as a result, these works are unlikely to have any appreciable impact on archaeological remains beneath the road. A small area of bulk excavation is proposed in the eastern portion of Stage 4 and will generally remove between 500 and 750mm of fill, with one localised area with impacts up to a depth of 1m. Previous archaeological investigations within Stage 4 have indicated that any archaeological remains are expected at a depth of 1.4-1.5m in this area. Given these works will largely remove modern fills beneath the road surface, the impacts of bulk excavation on the archaeological resource are expected to be minor.

Parts of the proposed works that would be considered to have minor potential for impact to the archaeological resource include the removal of existing traffic islands and other parts of the existing kerb. Although these works involve the reduction of the level in the places where the traffic island or kerb is being removed, they are unlikely to further disturb significant relics/archaeological remains in those locations, provided that any excavation does not extend to a much greater depth than the modern road features being removed. In addition, several existing services are to be removed in the study area, including water, communications and electrical, however their removal is likely to cause only minimal impact on relics.

Table 7.1: Description of proposed design works and analysis of proposed impacts on archaeological significance from these works.

Proposed Impact	Proposed Design, Design Mitigation & Management Measures	Archaeological Impact Assessment	Impact on Significance	Archaeological Mitigation Measures	Drawing Ref
Bulk earthworks & surface preparation	Proposed roadworks include the raising of the road level, signage, and new kerbs, etc. Western portions of the study area will be raised by up to 500-600mm to match the level of the surrounding buildings and development. Within Stage 4, the ground surface across the road and eastern portion is to be levelled through the bulk excavation of up to 750mm of fill. Localised parts of this excavation will have impacts up to a depth of 1m.	For the most part, roadworks across the study area are generally anticipated to affect only upper modern fills related to previous road upgrade works. As most of the road levelling and surface preparation will be undertaken following the installation of services which largely coincide with areas of deeper bulk excavation, impacts to the archaeological resource associated with this portion of the works are expected to be minimal.	As the road level is proposed to be raised, it is likely that most roadworks will have no or minor impacts on any relics/archaeology or their significance.	None required.	B1D-CD2-200050* B1D-CD2-200051* Figure 7.1 Figure 7.2
Excavation of tree pits	Large rectangular trenches will be excavated along both sides of Hickson Road for the installation of a series of new tree pits. The length will vary depending on the number and arrangement of trees, however, will generally measure between 25 and 65m in length. Where one row of trees is proposed throughout Stage 3, trenches will measure 3.2m wide. Two rows are proposed along the western side of Stage 4, the trenches for which will measured 5m in width.	Excavation for the tree pits is expected to have varying impacts on the archaeological resource in each part of the study area. Southern Stage 3 is assessed as having high potential for archaeological remains of the Grafton Bond Stores to survive. Stage 4 has low-moderate potential to contain remains of 19th century foreshore reclamation and development. Substantive excavation for installation of the tree pits in these area would likely impact archaeological relics.	High potential for impact on the significance of potential archaeology, especially in southern Stage 3 where remains of the Grafton Bond Stores are expected to survive. Limited potential for impact on the significance of potential archaeology in northern Stage 3 as this area has largely been remediated. However, there may be some disturbance to the negative interfaces of the gasholders, cleaned as part of remediation. These are considered 'works' rather than relics and are therefore not protected under the Heritage Act, 1977, although as they	A program of archaeological testing is recommended under a S60 approval in the northern part of Stage 4within the SHR curtilage; and under a S140 permit for the remaining portions of the study area, outside of the SHR curtilage. In the case of unexpected finds, a procedure should be in place that works stop immediately and an archaeologist be contacted. If substantial archaeology is found, then work must cease in the area and archaeological excavation and recording will be undertaken.	B1D-CD2-200041*, B1D-CD2-200042*, B1D-CD2-200043*, B1D-CD2-600051*, B1D-CD2-700003*, Figure 7.8, Figure 7.9, Figure 7.10 Figure 7.11, Figure 7.12, Figure 7.13,

Proposed Impact	Proposed Design, Design Mitigation & Management Measures	Archaeological Impact Assessment	Impact on Significance	Archaeological Mitigation Measures	Drawing Ref
	The tree pits themselves are expected to be 1.2m deep by 3.3m wide. However, as drainage will be included beneath each pit, the total depth of anticipated impacts associated with the tree pits will be up to 2m.	Northern Stage 3 has been extensively remediated and is assessed has having low potential for archaeological relics to survive. As a result, excavation in this area is unlikely to impact archaeological remains.	represent key remaining elements of Australia's first gasworks they do still possess heritage value and are of local significance. Impacts should be avoided if possible.	Heritage induction is to be provided for the construction team to provide information on the significance of the site and requirements to manage the archaeology. This is to be included in all inductions for the works team.	
Stormwater upgrades	Portions of the existing stormwater lines will be removed, and excavation and installation of a new extensive stormwater system undertaken. New portions of the stormwater line are largely located within Stage 4 and northern Stage 3, with a trunk drainage line also proposed along Barton Street. Generally, the new stormwater system will involve excavation of trenches between 1.5m and 3.2m in depth; only the trunk line would exceed this, reaching up to 3.7m in depth at its western extent. A portion of the Stage 3 stormwater line consists of a pipe 1.06m in diameter, which would require excavation of a service trench approximately 1.5m wide. Most of the remaining stormwater system is expected to consist of pipes 375mm in diameter, hence the trenching will generally be narrower.	Excavation of trenches for the new stormwater line are expected to have varying impacts on the archaeological resource in each part of the study area. Southern Stage 3 especially is assessed as having high potential for archaeological remains of the Grafton Bond Stores to survive. Stage 4 has low-moderate potential to contain remains of 19th century foreshore reclamation and development. Given the depth of the stormwater line, archaeological remains in both of these areas will likely be affected. Northern Stage 3 and part of Stage 4 has been extensively remediated and therefore stormwater trenching in this area would not impact directly on any *in situ* archaeology.	High probability for impact on the significance of potential archaeology, especially in southern Stage 3 where remains of the Grafton Bond Stores are expected to survive. Limited likelihood for impact on the significance of potential archaeology in northern Stage 3 as this area has largely been remediated. However, there may be some disturbance to the negative interfaces of the gasholders, cleaned as part of remediation. These are considered 'works' rather than relics and are therefore not protected under the Heritage Act, 1977, although as they represent key surviving elements of Australia's first gasworks they do still possess heritage value and are of local significance. Impacts should be avoided if possible.	A program of archaeological monitoring is recommended under a S60 approval in the northern part of Stage 4 within the SHR curtilage; and under a S140 permit for the remaining portions of the study area, outside of the SHR curtilage. In the case of unexpected finds, a procedure should be in place that works stop immediately and an archaeologist be contacted. If substantial archaeology is found, then work must cease in the area and archaeological excavation and recording will be undertaken. Heritage induction is to be provided for the construction team to provide information on the significance of the site and requirements to manage the archaeology. This is to be included in all inductions for the works team.	B1D-CD2-200041*, B1D-CD2-200042*, B1D-CD2-200043*, B1D-CD2-200044*, 240059-01-CC-C12.01*, 240059-01-CC-C12.02*, Figure 7.3 Figure 7.4 Figure 7.5, Figure 7.6

Proposed Impact	Proposed Design, Design Mitigation & Management Measures	Archaeological Impact Assessment	Impact on Significance	Archaeological Mitigation Measures	Drawing Ref
Replacement of potable water main	As part of both Stage 3 and Stage 4 of upgrades, existing potable water mains along the western side of Hickson Road will be removed and replaced by new pipes 300mm diameter. The maximum depth of trenching for the potable water is expected to reach an approximate maximum depth of 1.2m.	Excavation for new potable water services may impact the archaeological resource in southern Stage 3, where there is high potential for remains of the Grafton Bond Stores to survive intact at a relatively shallow level. However, any potential archaeological remains in Stage 4 are unlikely to be impacted by this element of the works, as previous investigations suggest any reclamation fills and associated features are present at a depth of 1.4-1.5m. Impacts are also expected to be minimal within the remediation area in northern Stage 3.	Possibility this element of works will impact locally significant archaeological remains of the Grafton Bond Stores, however these are expected to be minimal.	A program of archaeological monitoring is recommended under a S60 approval within the SHR curtilage; and under a S140 permit for the remaining portions of the study area, outside of the SHR curtilage. In the case of unexpected finds, a procedure should be in place that works stop immediately and an archaeologist be contacted. If substantial archaeology is found, then work must cease in the area and archaeological excavation and recording will be undertaken.	B1D-CD2-200000*, B1D-CD2-200001*, 240059-01-CC-C02.01*, 240059-01-CC-C02.02*, Figure 7.3 Figure 7.4 Figure 7.5, Figure 7.6

Proposed Impact	Proposed Design, Design Mitigation & Management Measures	Archaeological Impact Assessment	Impact on Significance	Archaeological Mitigation Measures	Drawing Ref
Replacement and/or installation of electrical and communications services/ conduits	Existing electrical and communications lines are to be removed from the western verge of Hickson Road. New electrical and communications conduits (including Telstra and NBN) are to be installed along both sides and beneath Hickson Road. New services along the western side of the road will be partially within the tree pits, whereas the rest will be beneath the roadway or footpaths. The depths of these are not anticipated to exceed 600mm.	Removal and installation of electrical and communication services in new locations is unlikely to impact archaeological remains within the study area, due to the limited depth of impacts beneath the existing surface.	Limited potential for impact on the archaeology/relics or their significance.	In the case of unexpected finds, a procedure should be in place that works stop immediately and the nominated archaeologist contacted. If substantial archaeology is found then works will need to cease in that area and archaeological excavation and recording undertaken.	B1D-CD2-200000*, B1D-CD2-200001*, 240059-01-CC-C02.01*, 240059-01-CC-C02.02*, Figure 7.3 Figure 7.4 Figure 7.5, Figure 7.6
New low- and high-pressure gas service lines	New gas lines will be installed along the western side of Hickson Road Stage 3, between Barton Street and Waterman's Quay. High pressure: 150mm diameter x 1100mm depth. Low pressure: 160mm diameter x 750mm depth.	The installation of new low- and high-pressure gas lines is unlikely to impact on archaeological remains, due to their proposed location mostly in the northern section of the site which has largely been remediated and is considered of low archaeological potential.	Limited potential for new gas services to impact on the significance of potential archaeology in northern Stage 3 as this area has largely been remediated. However, there may be some disturbance to the negative interfaces of the gasholders, cleaned as part of remediation. These are considered 'works' and not relics and are therefore not protected under the Heritage Act, 1977, although as they represent key remaining elements of Australia's first gasworks they do still possess heritage value.	In the case of unexpected finds, a procedure should be in place that works stop immediately and the nominated archaeologist contacted. If substantial archaeology is found, then work must cease in the area and archaeological excavation and recording will be undertaken.	B1D-CD2-200042*, B1D-CD2-200043*, Figure 7.5, Figure 7.6

*Indicates drawing revision issued on 27/08/2025 for coordination purposes.

7.3 IMPACT ON HERITAGE SIGNIFICANCE

As outlined in Section 5.4 and Table 7.1, the northern and southern portions of the study area (Southern Stage 3 and Stage 4) have the potential to contain archaeological relics, albeit this is more limited in areas where extensive landscape modification has been undertaken for the construction of Hickson Road. Elements of the proposed works involving substantial excavation, especially the installation of tree pits and new stormwater lines, are expected to impact locally significant archaeological relics. To manage the impact on the archaeological resource, a program of archaeological testing and monitoring under both a S60 and S140 excavation permit approval is recommended. All potential relics within the study area would be of local significance. There is no potential for State significant relics.

The central portion (Northern Stage 3) has been remediated as part of the former Gasworks site and is therefore assessed as having **nil-low** potential for archaeological remains, therefore the proposed works would have little to no impact on relics. However, there may be some disturbance to the negative interfaces of the gasholders, cleaned as part of remediation. These are considered 'works' and not relics and are therefore not protected under the *Heritage Act 1977*, although as they represent key remaining elements of Australia's first gasworks they do still possess local heritage value.

7.4 SUMMARY OF IMPACTS & MITIGATION

Overall, the key strategies to mitigate the impacts of the proposed works on the archaeological resource are:

- Works within the study area will require an application for an approval under a S60 approval and an excavation permit under S140 of the *Heritage Act, 1977*, following determination of the REF. This will need to be approved by the Heritage Council of NSW or its delegate. This would also require the preparation of an Archaeological Research Design to support the application.
- A program of archaeological testing and monitoring is to be undertaken prior to or alongside any substantive excavation works, supervised by a suitably qualified archaeologist under the approved S60 and S140 excavation permit and in accordance with an Archaeological Research Design.
- Preparation of an Archaeological Research Design that outlines the appropriate archaeological methodology to be used for investigating, recording and reporting on any finds. This ARD should also include a procedure for unexpected finds.
- A compulsory Heritage Induction provided to all members of the construction team to inform them of the significance of the potential archaeological relics and requirements to manage the archaeology.

The mitigation measures recommended to manage the potential archaeological resource throughout Stages 3 and 4 of the current development, are dependent on the assessed archaeological potential and extent of proposed impacts; summarised below in Table 7.2.

Table 7.2. Summary of impacts and recommended mitigation measures.

Archaeological Mitigation Strategy	Archaeological Approvals	Assessed Archaeological potential	Proposed development works
Archaeological Testing	S60 approval	Low-Moderate	Works within the SHR curtilage: • Excavation of tree pits
	S140 permit	High Low-Moderate	Works outside the SHR curtilage: • Excavation of tree pits
Archaeological Monitoring	S60 approval	Low-Moderate	Works within the SHR curtilage: • Stormwater upgrades
	S140 permit	High Moderate Low-Moderate	Works outside the SHR curtilage: • Stormwater upgrades • Replacement of potable water main
Unexpected finds procedure	-	Nil-Low	Works outside the SHR curtilage: • Replacement/installation of electrical and communications services or conduits, • Installation of gas works
No mitigation required	-	Across study area	Bulk earthworks & surface preparation

8.0 RESULTS AND RECOMMENDATIONS

8.1 RESULTS

The key results from this analysis are as follows:

- The northern portion of the study area is within the Stage Heritage Register Conservation Area for the 'Millers Point & Dawes Point Village Precinct' (**SHR 01682**). Although the study area does not contain any other specifically listed heritage items, several listed on either the State Heritage Register or under the Sydney LEP 2012 are situated nearby.
- Historically, the northern portion of the study area (Stage 4) contained part of several small waterfront allotments, the lower slopes of which frequently included wharfs or reclaimed land associated with small shipyards.
- The central portion of the study area (parts Stage 3 and Stage 4) was the location of the former AGL Co Gasworks, established in the 1840s and representing the first of its kind in Australia.
- The southern portion of the site (Southern Stage 3) is associated with the Grafton Bond Stores and Wharf, a complex established in the late-19th century and leased to various companies involved in shipping and commercial markets.
- Construction of Hickson Road through the study area in the 1910s to 1920s, resulted in the demolition of many structures and features associated with the Gasworks and Grafton Bond Store. These works included substantial modifications to the underlying sandstone bedrock and wider landscape, especially in the northern portion of the study area (Stage 4), where previous impacts and landscape modification had been relatively minor.
- Between 2015 and 2021, portions of the present study area (Northern Stage 3 and Stage 4) were subject to a substantial remediation program to clear the site of contamination from the former AGL Co Gasworks.
- Extensive archaeological investigation has been undertaken in the vicinity of the present study area, including for the following projects: Barangaroo South, Barangaroo Station, Barangaroo Station - Construction Only Package, Barangaroo Headland, Gasworks Remediation, Barangaroo South and Hickson Road, and the KENS site. Results of these investigations inform the potential and significance of any remnant archaeology within the study area.
- Overall, the assessed archaeological potential of the study area is as follows:
    - **High** potential for substantial footings and isolated artefact deposits associated with the demolished Grafton Bond Stores in the southern part of the site (Southern Stage 3).
    - **Moderate** potential for remains within the southeast corner of the former Gasworks site. Although remediation of this area was deemed unnecessary, 20th and 21st-century impacts related to the establishment of Hickson Road and the installation of modern services have considerably reduced the potential for structural remains and occupation deposits to survive within this area.
    - **Low-Moderate** potential for remains associated with 19th-century occupation to survive in the northern part of the study area (Stage 4). Any archaeology in this area would likely be limited to reclamation fills and associated structural features.
    - **Nil-Low** potential for archaeological remains within northern Stage 3, or the trunk drainage line along the northern side of Barton Street (Stage 4). Evidence of any early-19th-century land clearance is also expected to have nil-low potential within Stage 3 of the study area, as these portions have likely been disturbed by subsequent development. Extensive remediation of the former AGL Co Gasworks site within northern Stage 3, has removed any evidence of

the former industrial complex except the cleaned negative interface of several gasholder annuli and tar tanks, present beneath Hickson Road. It is worth noting that the footprints of the gas annulus are considered 'works' rather than relics and are not protected under the *Heritage Act 1977.*

  - There is **nil** potential for archaeological remains to survive in the portions of the study area that extend into Watermans Quay, as this area was excavated during archaeological investigations of Barangaroo South and was also partially within the area of remediation.
  - Portions of Stage 4 and northern Stage 3 may contain contaminants - including tar and asbestos - at levels above or exceeding human health criteria. While much of the former Gasworks has been remediated, there is potential that contaminants may be found in the adjacent areas and those not yet investigated.

- The archaeological resource within the study area would be considered significant at a **local** level for its historic significance and potential research values.
- Most of the proposed road works, including regrading and resurfacing, landscaping, and the installation of new services are expected to be relatively shallow, except for proposed tree pits, as well as new stormwater and potable water services. These two proposed elements are present throughout various portions of the study area and the depth of impacts are generally anticipated to be between 1.2m and 3.5m.
- There is no known or predicted potential for State significant relics to survive within the study area.

8.2 RECOMMENDATIONS

1. As there is the potential for impacts on archaeological relics by deeper subsurface works, an application for both a S60 approval and S140 excavation permit under the *Heritage Act, 1977* should be made to the Heritage Council of NSW or its delegate. The S60 permit would cover impacts in the portion of the study area within the SHR curtilage for the 'Millers Point & Dawes Point Village Precinct' (**SHR 01682**), whereas the S140 permit would apply to the remainder of the study area.
2. Applications for both a S60 and S140 excavation permit require the writing of an Archaeological Research Design and Excavation Methodology (ARD&EM) outlining the proposed excavation methodology and research questions. The ARD and this Archaeological Assessment must be provided as part of the S60 and S140 applications. These applications will also need to identify a suitably qualified Excavation Director to undertake the archaeological works. The applications will take approximately 6 to 8 weeks to be processed.
3. Any change to the proposed design requires this report to be updated prior to lodging the S60 and S140 applications.
4. Archaeological test excavation and monitoring will need to be undertaken by a qualified archaeologist to record any potential relics. Testing will involve investigation of any areas of extensive subsurface impacts, especially associated with the proposed tree pits and stormwater. Monitoring involves initial inspections of deeper sub-surface works with anticipated to confirm the model of archaeological potential for the site, the likely survival of relics and requirements for further archaeological investigation and recording.
5. The archaeological testing and monitoring program will need to be undertaken in accordance with both the S60 and S140 Conditions of Consent and the ARD.
6. If any *in situ* artefact deposits are found, then they will need to be collected for cataloguing and reporting.
7. An excavation report presenting the results of the archaeological program will be prepared at the end of the testing and monitoring program. The final report needs

to comply with both the S60 and S140 Conditions of Consent. A copy of the final report must be supplied to Heritage NSW.

8. Artefacts collected and retained from the site will need to be catalogued and analysed by appropriate specialists and the results included in the final report.
9. A repository, storage in perpetuity, for the artefacts recovered from the site, will need to be provided by the proponents. The purpose of the repository is to provide opportunities for further research on these artefacts. The owner of the site is the responsible owner of such artefacts.

9.0 REFERENCES

9.1 PRIMARY SOURCES

9.1.1 PLANS AND MAPS

1802 'Plan de la ville de Sydney: Capitale des colonies Anglaises aux Terres Australes, levé par M.r Lesueur & assujetti aux relévemens de M.r Boullanger' November, 1802. SLNSW, /M Ser 4 000/1 Mss 4530 map 3. Available at: https://collection.sl.nsw.gov.au/record/74Vv0ZlMdRJy/lMvkqZZxAZKq.

1807 'Plan of the town of Sydney in New South Wales', y Jas. Meehan, assistant surveyor of Lands by order of His Excellency Governor Bligh, 31st October 1807. NLA, MAP F 105B. Available at: https://nla.gov.au/nla.obj-229911438/view.

1821 'A Sketch of the Town of Sydney'. SLNSW, ML Z/M4 811.16/1821/. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE3701564, viewed Nov 2019.

c.1822 [Survey of Sydney, Rough original with buildings etc., 1 of 3], Surveyor William Harper, n.d. NSW State Archives (NSWSA), Map SZ 434 (S.268).

c.1823 'Plan of the Allotments of Ground in Sydney', prepared from S.268 Surveyor William Harper, drawn by Surveyor G.C. Stewart. NSWSA, Map SZ 469 (S.No.13).

1831 'Plan of 8 allotments of land in Sydney the property of the Honourable J Macarthur, M.C. for sale by Mr. Bodenham on 16th Nov. 1831'. SLNSW ML, M Z/M2 811.171/1831/1, File no. FL3711202. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE3711196, viewed Nov 2019.

1833 City of Sydney Archives NSCA CRS 955, City Section Survey Plans 1833-1880, Section 67. Available at: https://archives.cityofsydney.nsw.gov.au/nodes/view/1709245?keywords=&type=all&lsk=d6f066bc8935d6309f02d43e25c2e12.

1834 [City of Sydney Section 67, bounded by Darling Harbour, and Kent Street North], by 'Robert Russell, 18 November 1834. Surveyor General's Crown Plan S.45.684, NSWSA, AO Map 5421.

1839 Part of Mr. F. Girard's estate, Sydney: to be sold by auction by Mr. S. Lyons, on Wednesday Feb, 12th 1840 / John Armstrong, surveyor, Mitchell Library Maps Collection (Maps 0121).

1843 'To the Mayor, aldermen, councillors & citizens this map of the City of Sydney is most respectfully dedicated by their obed. & humble servt. William Henry Wells, Candidate for the Office of City Surveyor'. SLNSW, 811.17/1842/1. Available at: https://collection.sl.nsw.gov.au/record/74VKwKkpzrGO.

1850 'This plan of the City of Sydney, including the environs of Pyrmont, Balmain, Redfern, Chippendale, the Glebe, Surry Hills, Paddington & c.', William Henry Wells. SLNSW Z/M4 811.17gbbd/1850/1, Sheet 2. Available at: https://collection.sl.nsw.gov.au/record/74VveVa3wNN3/MpNeJmQdOxGbK.

1851 'Map of area between Kent Street and Darling Harbour', Section 67, Map F 745, NLA.

1854 'Woolcott & Clarke's map of the City of Sydney: with the environs of Balmain and Glebe, Chippendale Redfern, Paddington &c / W H Baron Del.; Engd. by J. Carmichael. Sydney'. NLA, MAP NK 3963. Available at: https://nla.gov.au/nla.obj-230681967/view.

1855 'City of Sydney – Detail Plans': Sheet No 2A, City of Sydney Archives, Historical Atlas of Sydney. Available at: https://archives.cityofsydney.nsw.gov.au/nodes/view/1709091, viewed May 2020.

1855-65'Trigonometrical Survey of the City of Sydney (1855-1865): Section C2-1, City of Sydney, Historical Atlas of Sydney. Available at: https://archives.cityofsydney.nsw.gov.au/nodes/view/1709306, viewed May 2020.

1870 'Australian Gas Light Company Sydney plan of [gas] mains'. SLNSW ML, M Z/MT4 811.17/1870/1, File no. FL3740455. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE3740374, viewed Nov 2019.

1875 'Darling Harbour Frontage, Sections Nos 1 and 2', CH Wansbrough. Crown Plan P.26.574, NSW State Archives AO Map 4775 and 4774.

1880 'Plan of Sydney (Doves): Sheets 17 and 19 (Map 24 – Block 58A, Map 26 - Block 60A), Surveyor H. Percy Dove, City of Sydney, Historical Atlas of Sydney. Available at: https://atlas.cityofsydney.nsw.gov.au/maps/plans-of-sydney-doves-1880/, viewed Nov 2019.

1889 [Subdivision Plans for city of Sydney, 1888-1889], City and Suburban Publishing Co. SLNSW M F981.11/C, File No. FL3775988. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE3775975, viewed Nov 2019.

1891 'City of Sydney / Metropolitan Detail Series: Section 67'. SLNSW M Ser 4 811.17/1, File No. FL4378654. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE4378602&_ga=2.232402463.1621866561.1574053489-1667302503.1572214735, viewed Nov 2019.

1894 'Sydney Bonded and Free Store Plans', G Mahlstedt. ML MAX 811.17/1894/1.

1901-37 'Structural plans of the City of Sydney Ignis et Aqua series, vol.1 / by F. Oliver Jones, Civil Engineer & Surveyor'. SLNSW, Z/MAXX 811.17/1892/1. Available at: https://collection.sl.nsw.gov.au/record/74VKD3RpaRZM/ZP7ABdB5gjJV6

1911 'Darling Harbour vested in the Sydney Harbour Trust Co.', 25 January 1911. NSW State Archives, AO Map 374.

1915 'Plan showing lands extending along East Darling Harbour and bound by Erskine St to the south, Kent St along the East & Hickson Rd at Walsh Bay', Government Plan which accompanies the Commissioners letter of the 3rd December 1915 to the Town Clerk, City of Sydney Archives, CSA 085293, G2-49/2.

1948 'City of Sydney Civic Survey', Map 6 - Circular Quay, Dawes Point 1948. City of Sydney Archives, Historical Atlas, [A-00880366]. Available at: https://archives.cityofsydney.nsw.gov.au/nodes/view/1709293

9.1.2 PHOTOGRAPHS AND ILLUSTRATIONS

c.1860 'Panorama of Darling Harbour from Balmain - No.3' (dated here to c.1860s based on structures identified at the Gasworks), from the album "Photographs of Sydney between 1860 and 1880". NSW State Archives, NRS-15344_a044_000017. Available at: https://www.records.nsw.gov.au/image/15344_a044_000017, viewed 26/02/2024.

1862-73[Looking into Darling Harbour from Millers Point], Views of Sydney 1862-1873, watercolour by Samuel Elyard. SLNSW DGD 5, File No. FL650476. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE650340&_ga=2.264791695.1621866561.1574053489-1667302503.1572214735, viewed 26/02/2024.

1870 'Australian Gas Works, Jenkins Street, Sydney'. SLNSW, SPF/955, FL1230620. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE1230612&_ga=2.239708867.1127945623.1580173505-1667302503.1572214735, viewed 26/02/2024.

1870 'View of Miller's Point and Darling Harbour, ca. 1870', artist unknown. SLNSW ML, DG 392. Available at: https://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE1150897&_gl=1*105s8e8*_ga*NDE3MDUxMjg2LjE2Nzk0NTI5NDc.*_ga_CYHFMM592Q*MTcwODkyNTE0Ny4yNS4xLjE3MDg5MjUzMTYuMjAuMC4w&_ga=2.128275466.781908386.1708925148-417051286.1679452947, viewed 26/02/2024.

1870-1875 'Australian Gas Light Company, Jenkins Street, Sydney'. SLNSW, ON 4 Box 58 No 284, IE1240813. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=FL1240822&embedded=true&toolbar=false, viewed 26/02/2024.

1870-75 'Paddle steamer and steamship at the engineering depot, Pyrmont, looking across Darling Harbour to Observatory Hill, Sydney', American & Australasian Photographic Co. SLNSW ML, ON 4 Box 60 No 356.

c.1873 'Gas works, Millers Point', Views of Sydney 1862-1873, watercolour by Samuel Elyard. SLNSW DGD 5, File No. FL650473. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE650340&_ga=2.264791695.1621866561.1574053489-1667302503.1572214735, viewed 26/02/2024.

1879 'Sydney, New South Wales' from Supplement to the Special Edition of the 'Illustrated News Sydney' in. *Volume 111: Macarthur family miscellaneous plans, ca. 1855-1883*. SLNSW ML D 187, File No. FL9731102.

1883 'The Grafton Wharf, Sydney'. *Illustrated Sydney News*, 29 September 1883, p 13.

c.1890s 'View of the reconstruction of Darling Harbour from Millers Point showing Dalgetys [sic] Wharf No.1 partly completed. The sailing ship 'Macquarie' is shown being unrigged before being reborn as the coal hulk 'Fortuna''. Glass Negatives [Maritime Service Board], NSWSA, NRS-9856-3-19-MSBL451, Digital ID 9856_a017_A017000007. Available at: https://search.records.nsw.gov.au/primo-explore/fulldisplay?docid=ADLIB_RNSW113581144&context=L&vid=61SRA&lang=en_US&search_scope=Everything&adaptor=Local%20Search%20Engine&tab=default_tab&query=any,contains,Darling%20Harbour&facet=tlevel,include,Digitally_Available&offset=0, viewed 26/02/2024.

c.1899-1903 'Views of Sydney Streets. 11. Sussex St. at Grafton Bond', Kerry & Co. SLNSW, PXA 449.

1912 [Old Sydney Gasworks, Hickson Rd, prior to conversion for use as Sydney Harbour Trust Main Store], 01. Jan 1912, Maritime Service Board Glass Negative. NSWSA Glass negatives 3203 to 3296, Digital ID 9856_2017_2017000207. Available at: https://www.records.nsw.gov.au/image/9856_2017_2017000207, viewed 26/02/2024.

c.1920 'Gas works at the end of Hickson Road'. SLNSW Government Printing Office 1 – 24734, File No. FL1901403. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE1901395&_ga=2.37880611.1621866561.1574053489-1667302503.1572214735, viewed 26/02/2024.

c.1920 'Alterations to Grafton Bond and Free Store'. SLNSW, Government Printing Office 1 – 19861.

1923 'Grafton Bond Stores from Hickson Road'. NSWSA, NRS-9856-2-113-6335. Available at: https://search.records.nsw.gov.au/primo-explore/fulldisplay?docid=ADLIB_RNSW115768619&context=L&vid=61SRA&lang=en

_US&search_scope=Everything&adaptor=Local%20Search%20Engine&tab=default_tab&query=any,contains,grafton%20bond%20from%20napoleon%20street&offset=0, viewed 26/02/2024.

1923 'Grafton Bond Stores from Napoleon Street. Hickson Road is at lower left.' NSWSA, NRS-9856-2-113-6334. Available at: https://search.records.nsw.gov.au/primo-explore/fulldisplay?docid=ADLIB_RNSW115768618&context=L&vid=61SRA&lang=en_US&search_scope=Everything&adaptor=Local%20Search%20Engine&tab=default_tab&query=any,contains,grafton%20bond%20from%20napoleon%20street&offset=0, viewed 26/02/2024.

1923 'Hickson Road old and new. At left old Sydney Gas Works, then Grafton Bond (1881).' NSWSA Glass plate negative, NRS-9856-2-142-6454. Available at: https://search.records.nsw.gov.au/primo-explore/fulldisplay?docid=ADLIB_RNSW115795987&context=L&vid=61SRA&lang=en_US&search_scope=Everything&adaptor=Local%20Search%20Engine&tab=default_tab&query=any,contains,9856-2-142-6454&offset=0, viewed 26/02/2024.

1923 'Grafton Bond Store from the south. Note truck with solid tyres at left'. NSWSA, NRS-9856-2-111-6293. Available at: https://search.records.nsw.gov.au/primo-explore/fulldisplay?docid=ADLIB_RNSW115768577&context=L&vid=61SRA&lang=en_US&search_scope=Everything&adaptor=Local%20Search%20Engine&tab=default_tab&query=any,contains,grafton%20bond%20from%20napoleon%20street&offset=0, viewed 26/02/2024.

1924 [Hickson Road is being extended to the south with the modern finger wharf building under construction. That for the Union Steamship Co at the right]. CSA, 086/086897. Available at: http://www.photosau.com.au/Cos/scripts/home.asp, viewed 26/02/2024.

1928 'Hickson Rd, the main port roadway through the old gas works site'. SLNSW GPO 1 – 19641, File No. FL1868549. Available at: http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE1868543&_ga=2.265349775.1621866561.1574053489-1667302503.1572214735, viewed 26/02/2024.

9.1.3 PRINTED SOURCES

AGL Co. Minutes.

Baxter, C.M. ed., *1999. General Muster List of New South Wales, 1823, 1824, 1825,* Australian Biographical & Genealogical Record for the Society of Australian Genealogists, Sydney.

Collins, David 1798 (1975) An account of the English colony in New South Wales, Brian Fletcher (ed.), in association with the Royal Australian Historical Society and A. H. & A. W. Reed, Sydney, vol 1.

Ginswick Papers.

Lukey, R. J. 1897. *Australian Gas-Light Company, Sydney, New South Wales: an Historical Sketch issued on Completion of its Diamond Jubilee, 1837-1897.* W. E. Smith, Sydney.

Maritime Services Board of NSW, Annual Reports.

New South Wales Government Gazette.

Sydney Harbour Trust Annual Reports.

Ure, A., 1843. *Dictionary of Arts, Manufactures, and Mines: Comprising a Clear Exposition of their Principles and Practice*. 3rd ed., Longman, Brown, Green & Longmans.

Land and Property Information

Land & Property Management Authority (NSW) [a predecessor to the LPI]

Manuscript Sources – Sydney City Council Archive
Rates Assessment Books
Sands Directories

State Records NSW
Various, as cited in text

Newspapers
Illustrated Sydney News
Sydney Gazette
Sydney Monitor
Sydney Morning Herald
Sydney Herald
The Australian

9.2 SECONDARY SOURCES

Abbott, M. 2016. *The Economics of the Gas Supply Industry.* Routledge; Abingdon, Oxon/New York, NY.

AMBS Ecology & Heritage 2024. *Barangaroo Station COP – Archaeological Excavation Report,* prepared for BesixWatpac.

AMBS Ecology & Heritage, 2017, *High Street Cutting, Millers Point, Statement of Heritage Impact*, for John Holland CPB Ghella Joint Venture, July 2017.

Archaeology & Heritage 2003a. *Archaeological recording and excavation, former AGL Site 38 Hickson Road, Sydney*, *Rock Shelf at Rear*, report to Bovis Lend Lease.

Archaeology & Heritage 2003b. *Archaeological Investigations at Site of 1a High St Millers Point, Former AGL Site 30-38 Hickson Road, Sydney*, report to Bovis Lend Lease. Based on an archaeological Assessment prepared by GML (June 1999).

Archaeology & Heritage 2004. *Archaeological recording of the Annulus of 1882 gasholder and details of the 19th century gasmaking, part of former AGL Site 30-34 Hickson Road, Sydney*, report to Bovis Lend Lease.

Austral Archaeology 2009. *Barangaroo Archaeological Strategy, Final Report,* report to Barangaroo Delivery Authority.

Austral Archaeology 2010. *Barangaroo Archaeological Assessment & Management Plan,* report to Barangaroo Delivery Authority.

Austral Archaeology 2012. *Archaeological Research Design, Main Works Phase, Barangaroo, Northern Headland*, October 2012.

Austral Archaeology 2016. *Barangaroo Headland Park, Historical Archaeological Excavation, Sydney, Final Report*, report to Lend Lease, prepared by Alan Hay, December 2016.

Balint, E. 1987. *Record of commercial buildings constructed in the Victorian era in NSW.* School of Building, University of New South Wales, Kensignton.

Broomham, R. 1987. *First Light, 150 years of gas*, Hale & Iremonger, Marrickville, Sydney.

Broomham, R. 2007. *Land at Millers Point, ownership and usage*.

'Burnicle, Elizabeth (1797–1874)'. *People Australia, ADB*, National Centre of Biography, ANU, available online: http://peopleaustralia.anu.edu.au/biography/burnicle-elizabeth-27999, viewed 23/2/2024.

Casey & Lowe 2010a. *Archaeological Research Design and Management Strategy, Barangaroo Stage 1,* report to Lend Lease (Millers Point), May 2010.

Casey & Lowe 2010b. *Non-indigenous Archaeological Assessment, Barangaroo Stage 1 (Barangaroo South),* report to Lend Lease (Millers Point), July 2010.

Casey & Lowe 2010c. *Non-Indigenous Archaeological Testing, Barangaroo South*, report to Lend Lease Development, prepared by Casey & Lowe, November 2010.

Casey & Lowe 2011. *Non-indigenous Archaeology, Heritage Impact Statement & Research Design, Stormwater Diversion, Hickson Road, Barangaroo South*, report to Bovis Lend Lease for Sydney Water, April 2011.

Casey & Lowe 2012a. *Statement of Heritage Impact, Proposed Temporary Pedestrian Bridge, Sussex Street and Napoleon Street, Barangaroo South*, report to Lend Lease, Project Management and Construction, May 2012.

Casey & Lowe 2012b. *Archaeological Monitoring & Recording, Stormwater Upgrades, High Street, Millers Point,* report to McLachlan Lister Pty Ltd on behalf of Department of Finance and Services, prepared by Casey & Lowe, September 2012.

Casey & Lowe 2012c. *Archaeological Excavation, Barangaroo South, Preliminary Results*, report to Lend Lease (Millers Point), prepared by Casey & Lowe, October 2012.

Casey & Lowe 2012d. *Results of Archaeological Investigation, 2-8 Weston Street, Balmain East*, report to Leichhardt Municipal Council, November 2012.

Casey & Lowe 2013a. *Barangaroo Stormwater Diversion, Record and Interpretation of Archaeological Site Visit on 25/03/13 at Shelley Street Pit A5 (West Side),* March 2013.

Casey & Lowe 2013b. *Heritage Impact Statement, SSD 5897-2013 Remediation Development Application, Block 4 EPA Declaration Area 21122 and Stage 1b Basement Area, Non-Indigenous Archaeology, Block 4, Block 4, Barangaroo South,* report to Lend Lease Millers Point, prepared by Mary Casey, original report March 2011, updated August 2013.

Casey & Lowe 2014a. *Preliminary Advice – Archaeology Issues Barangaroo Central,* February 2014.

Casey & Lowe 2014b. *Heritage Impact Statement, SSD 6533-2014 Remediation Development Application, EPA Declaration Area 21122, Non-Indigenous Archaeology, Block 5, Barangaroo Central,* report to Lend Lease Millers Point (Draft Update 4, June 2014).

Casey & Lowe 2014c. *Non-Indigenous Archaeological Impact Statement, Proposed Road Works, Sussex Street & Hickson Road Barangaroo South, Sydney*, report to Lend Lease, July 2014.

Casey & Lowe 2014d. *Baseline Archaeological Assessment, Gas Diversion, Sussex Street, Barangaroo South*, report to Lend Lease, prepared by Amanda Dusting, August 2014.

Casey & Lowe 2015a. *Statement of Heritage Impact and S139(4) Exception Application, Napoleon Street, Barangaroo South*, report to Lend Lease, prepared by Mary Casey, January 2015.

Casey & Lowe 2015b. *Heritage Impact Statement, SSD 6617-2014 Remediation Development Application, EPA Declaration Area 21122, Non-Indigenous Archaeology, Hickson Road, Millers Point,* report to Lend Lease Millers Point (Updated August 2015).

Casey & Lowe 2015c. *Non-Indigenous Archaeological Research Design & Management Strategy, Declaration Area: Block 4 and Block 5, Barangaroo South*, report to Lend Lease, prepared by Mary Casey, September 2015.

Casey & Lowe 2015d. *Non-Indigenous Archaeological Impact Statement, Proposed Road Works, Sussex Street & Hickson Road, Barangaroo South, Sydney*, report to Lend Lease, August 2015.

Casey & Lowe 2017. *Declaration Area, Hickson Road, Barangaroo South, SSD 6617, EPA Declaration Ara 2112, Archaeological Research Design & Management Strategy*, report to Lendlease Pty Ltd.

Casey & Lowe 2019. *Sydney Metro City & Southwest – TSE Works Barangaroo Station, SSI15_7400, Preliminary Report, report to John Holland CPB Ghella JV*, prepared by Francesca McMaster and Mike Hincks, January 2019.

Casey & Lowe 2020a. *The History and Archaeology of the Australian Gas Light Company, Millers Point, Australian Gas Light Company, Millers Point Gasworks Site, Barangaroo,* report to Lendlease Millers Point and Infrastructure NSW.

Casey & Lowe 2020b. *Historical Archaeological Assessment, Impact Statement & Research Design, Grafton Bond, 201 Kent Street, Sydney (draft),* report to Investa Australia Pty Ltd, prepared by Jill Miskella, March 2020.

Casey & Lowe 2022a. *Archaeological Investigation, Barangaroo South, Barangaroo,* report to Lendlease (Millers Point) Pty Ltd, prepared by Jill Miskella, July 2022.

Casey & Lowe 2022b. *Archaeological Investigation, Sydney Metro City & Southwest – TSE Works Barangaroo Station*, report to Sydney Metro, prepared by Holly Winter, July 2022.

Casey & Lowe 2022c. *Trench Report – Area L, Barangaroo South, Barangaroo*, report to Lendlease (Millers Point) Pty Ltd, prepared by Ronan Mc Eleney and Rhian Jones.

Casey & Lowe 2022d. *Trench Report – Area P, Barangaroo South, Barangaroo*, report to Lendlease (Millers Point) Pty Ltd, prepared by Mike Hincks.

Coffey 2013. *Specialists Desktop Geotechnical Report to accompany Development Application SSD 5897-2013 Remediation and Landforming Works: Barangaroo – Block 4,* report to Lend Lease (Millers Point) Pty Ltd.

Coffey 2023. *Hickson Road Upgrade Works Stage 3 – Barangaroo, Geotechnical Desk Study,* prepared for Lend Lease Construction Pty Ltd.

Coffey 2024. *Hickson Road Upgrade Works – Stage 3 (HRUW3) – Geotechnical Factual Report and Preliminary Waste Classification Assessment,* prepared for Lendlease Construction Pty Ltd.

Dunlop, E. W. 1966. 'Blaxcell, Garnham (1778–1817)', ADB, National Centre of Biography, ANU, available online: http://adb.anu.edu.au/biography/blaxcell-garnham-1794/text2029.

Environmental Protection Authority 2020. *Notice to amend Declaration of Significantly Contaminated Land and Management Order, Section 44.*

Everard, S. 1992. *The History of the Gas Light and Coke Company, 1812-1949*. A. & C. Black, London.

Fifer, D. E. 1992. 'The Sydney Merchants and the Wool Trade, 1821-1851', *Journal of the Royal Australian Historical Society* 78 (1-2): 92-112.

Find a Grave 2024. John Newlands Wark. https://www.findagrave.com/memorial/49603783/john-newlands-wark, viewed on 23/2/2024.

Fitzgerald, S. 1987. *Rising Damp: Sydney 1870-1890*. Oxford University Press, Melbourne.

Fitzgerald, S. 2008. 'Millers Point', Dictionary of Sydney, https://dictionaryofsydney.org/entry/millers_point#ref-uuid=6a58d9ef-674a-31d1-d520-5a2e5429f603, viewed 23/2/2024.

Godden Mackay Logan 1999. *Archaeological Assessment, Former AGL Site, Hickson Road*, report to Delmo Pty Ltd.

Godden Mackay Logan 2000. *Archaeological Research Design, 30-38 Hickson Road, Sydney (former AGL Site),* report to Delmo Pty Ltd.

Godden Mackay Logan 2001. *Conservation Management Plan, 30-38 Hickson Road, Sydney*, for Delmo Pty Ltd.

Godden Mackay Logan 2012. *Barangaroo Central Waterfront, Promenade and Interim Public Domain, Archaeological Assessment,* report to Baulderstone, October 2012. EIS, Appendix 17.

Godden Mackay Logan 2012. *Barangaroo Central Waterfront, Promenade and Interim Public Domain, Interpretation Strategy*, report to Baulderstone, November 2012. EIS, Appendix 18.

Godden Mackay Logan 2014. *Central Barangaroo Modification 9 Application, Heritage Impact Statement,* report to Barangaroo Delivery Authority, November 2014.

Hainsworth, D. R. 1982. *The Sydney Traders: Simeon Lord and his Contemporaries, 1788-1821*. Melbourne University Press, Carlton, 2nd ed.

Heritage NSW 2022a. *Relics of local heritage significance: a guide to minor works with limited impacts*, Heritage NSW Information Sheet 2022.1, Sept. 2022.

Heritage NSW 2022b. *Relics of local heritage significance: a guide for archaeological test excavation*, Heritage NSW Information Sheet 2022.2, Sept. 2022.

Heritage NSW 2022c. *Relics of local heritage significance: a guide for archaeological monitoring*, Heritage NSW Information Sheet 2022.3, Sept. 2022.

'Jenkins, James (1777–1835)'. *People Australia,* National Centre of Biography, ANU, available online: http://peopleaustralia.anu.edu.au/biography/jenkins-james-27997/text35730.

'Mansfield, George Allen (1834–1908)', *Obituaries Australia*, National Centre of Biography, ANU, available online: http://oa.anu.edu.au/obituary/mansfield-george-allen-29099/text36299.

Matthews, M. R. 1982. *Pyrmont & Ultimo: History.* Pyrmont Ultimo History Project, Ultimo.

McCormick, Tim (ed.) 1987. *First views of Australia, 1788-1825*. David Ell Press and Longueville Publications, Sydney.

Monument Australia n.d. *Thomas Rowntree*, available online: https://monumentaustralia.org.au/display/20144-thomas-rowntree, viewed 23/2/2024.

Murray-Smith, S. 'Selfe, Norman (1839–1911)', *ADB* National Centre of Biography, ANU, available online: http://adb.anu.edu.au/biography/selfe-norman-4554/text7469.

NSW Heritage Office 1996. *Archaeological Assessments, Archaeological Assessment Guidelines,* Department of Urban Affairs and Planning.

NSW Heritage Office 2001. *Assessing Significance: a NSW Heritage Manual Update.*

Paton, J. 1879. 'Gas and Gas-Lighting', *Encyclopedia Britannica*, 9th ed., Black, Edinburgh. Vol.10, pp.87-102.

Ryan, R. J. (ed.), 1981. *Land Grants, 1788-1809.* Australian Documents Library, Sydney.

Sainty, M and K. Johnson (eds.) 1985. *Census of New South Wales, November 1828.* Library of Australian History, Sydney.

Smith, K. V. 2001. *Bennelong: The coming in of the Eora, Sydney Cove 1788-1792*. Kangaroo Press/Simon & Schuster.

Steven, M. 1967. 'Macarthur, John (1767–1834)', ADB, National Centre of Biography, ANU, available online: http://adb.anu.edu.au/biography/macarthur-john-2390/text3153.

Turnball, A. 2011. 'Tamworth, the electricity town: A report from the Powerhouse Museum's Movable Heritage Fellow for 2011', *Museum of Applied Arts & Science*, available at: https://maas.museum/inside-the-collection/2011/10/21/powerhouse-moveable-heritage-fellowship-for-2011-2/, viewed 23/2/2024.

Walsh, H. D. 1911 (2000). 'Notes on Harbour Engineering', *Journal and abstract of proceedings of the Sydney University Engineering Society,* 12: 73-84.

Walsh, G. P. 1976 'Rowntree, Thomas Stephenson (1818–1902)', ADB, National Centre of Biography, ANU, available online: https://adb.anu.edu.au/biography/rowntree-thomas-stephenson-4518/text7393.