Exterior Viewpoint 10

Exterior Viewpoint 11

Exterior Viewpoint 12

Exterior Viewpoint 13

Exterior Viewpoint 14

Exterior Viewpoint 15

Exterior Viewpoint 16

Exterior Viewpoint 17

Exterior Viewpoint 18

Exterior Viewpoint 19

Exterior Viewpoint 20

Exterior Viewpoint 21

Exterior Viewpoint 22

Exterior Viewpoint 23

Exterior Viewpoint 24

Exterior Viewpoint 25

Exterior Viewpoint 26

Exterior Viewpoint 27

Exterior Viewpoint 28

Exterior Viewpoint 29

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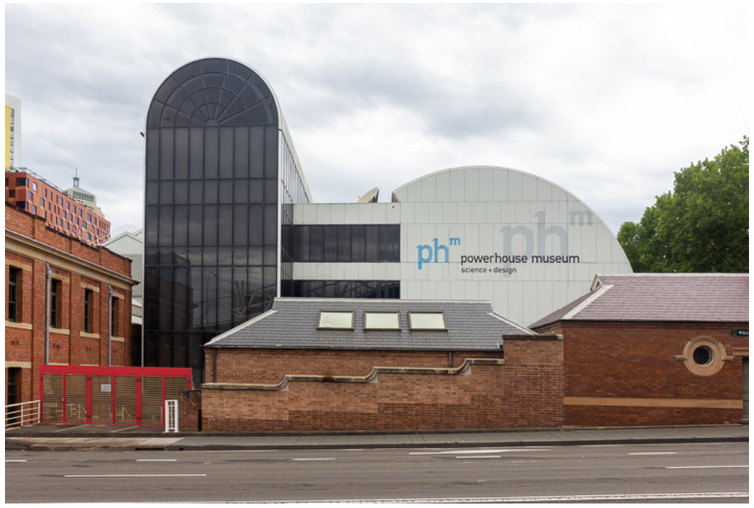
Exterior Viewpoint 37



Exterior Viewpoint 38

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Exterior Viewpoint 40

Exterior Viewpoint 41

Exterior Viewpoint 42

Exterior Viewpoint 43

Exterior Viewpoint 44

Exterior Viewpoint 45

Exterior Viewpoint 46

Exterior Viewpoint 47

Exterior Viewpoint 48

Exterior Viewpoint 49

Exterior Viewpoint 50

Exterior Viewpoint 51

Exterior Viewpoint 52

Exterior Viewpoint 53

Exterior Viewpoint 54

Exterior Viewpoint 55

Exterior Viewpoint 56

Exterior Viewpoint 57

Exterior Viewpoint 58

Exterior Viewpoint 59

Exterior Viewpoint 60

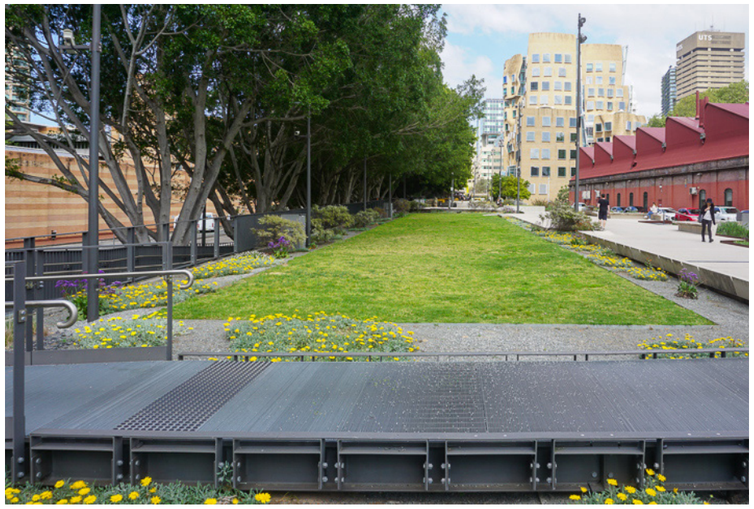
Exterior Viewpoint 61

Exterior Viewpoint 62

Exterior Viewpoint 63

Exterior Viewpoint 64

Exterior Viewpoint 65



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Exterior Viewpoint 67

Exterior Viewpoint 68

Exterior Viewpoint 69

APPENDIX B
Aboriginal Heritage Due Diligence Assessment Report (Curio 2020)

curio
PROJECTS

Aboriginal Heritage Due Diligence Assessment Report

Powerhouse Ultimo
Client: Create Infrastructure

FINAL – November 2020

Document Information

Citation

Curio Projects 2020, *Powerhouse Ultimo Aboriginal Heritage Due Diligence Assessment Report,* prepared for Create NSW.

Local Government Area

City of Sydney Council

Cover Image

Part of a sequence of photographs taken to record the construction of the markets, from ground clearing (October 1910) to completion (November 1911). Horses and carts working on the foundations with Darling Harbour Goods Line at rear and Ultimo Power Station in centre. November 1911, Trove

ISSUE No.	ISSUE DATE	VERSION	NOTES/COMMENTS	AUTHOR	REVIEWED
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This report has been prepared based on research by Curio Projects specialists. Historical sources and reference material used in the preparation of this report are acknowledged and referenced at the end of each section and/or in figure captions.

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Chippendale NSW 2008
Australia

Contents

Document Information 2

Executive Summary 5

1. Introduction 7

1.1. Purpose of this Report 7

1.2. Project Background 7

1.3. Site Identification 8

1.4. Statutory Controls 11

1.4.1. National Parks and Wildlife Act 1974 11

1.4.2. Environmental Planning & Assessment Act 1979 12

1.4.3. Native Title Act 1993 12

1.4.4. NSW Aboriginal Heritage Statutory Guidelines 13

1.5. Due Diligence Assessment Process 13

1.6. Limitations and Constraints 14

1.7. Authorship and Acknowledgements 14

2. Due Diligence Assessment 15

2.1. Will the proposed activity disturb the ground surface? 15

2.1.1. Proposed Development 15

2.2. Database Search 15

2.2.1. AHIMS Search 15

2.3. Environmental Context 21

2.3.1. Geology and Soils 21

2.3.2. Hydrology 22

2.3.3. Landscape and Landforms 23

2.3.4. Vegetation and Fauna 25

2.3.5. Modern Land Use and Disturbance 25

2.3.6. Summary of Environmental Context 37

2.4. Aboriginal Archaeological Context 37

2.4.1. KENS Site, Aboriginal Excavation – Steele 2006 37

2.4.2. Darling Quarter - Comber Consultants 2012 38

2.4.3. Wynyard Walk—GML 2015 38

2.4.4. Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP), Aboriginal Archaeological Excavation – Comber Consultants 2015 38
2.4.5. SICEEP "Haymarket" Aboriginal Excavations – Comber Consultants 2014 39
2.5. Archaeological Predictive Model and Potential 41
2.6. Summary of Desktop Assessment 41
3. Visual Inspection 44
4. Conclusions and Recommendations 48
4.1. Conclusions 48
4.2. Recommendations 49
5. References 51
APPENDIX A—Extensive AHIMS Search Results 53

Executive Summary

Curio Projects Pty Ltd was commissioned by Create NSW to prepare an Aboriginal Heritage Due Diligence Assessment Report (DD) for the Powerhouse Ultimo at 500 Harris Street, Ultimo, 2007 (the study area).

The purpose of this DD is to identify whether or not Aboriginal objects are, or are likely to be present within the study area, and whether or not the proposed development works would be likely to harm Aboriginal objects (if present), and therefore to determine whether the proposed activities would require consent in the form of an Aboriginal Heritage Impact Permit (AHIP), or not.

Currently there are three options under consideration for the redevelopment of the Powerhouse Ultimo study area, all of which include ground works that will disturb the ground surface. Therefore, all options will have potential to impact Aboriginal object and sites, should they be present within the study area.

Therefore, it is concluded that proposed work will disturb the ground surface, and therefore has the potential to cause disturbance of Aboriginal objects and sites.

Environmental and Archaeological Context

There are currently no registered Aboriginal archaeological sites within the study area. The registered AHIMS sites that are in closest proximity to the study area(AHIMS #45-5-2979 and AHIMS #45-2652), indicate a high potential for natural soil profiles (and hence PAD sites) to also exist within the Powerhouse Ultimo boundaries.

The study area sits within the soil landscape of Gymea, underlain by Hawkesbury Sandstone (medium to coarse grained quartz sandstone with minor shale and laminate lenses). While the study area is wholly on Gymea, the eastern border of the study area aligns approximately with the boundary between Gymea, and Deep Creek soil profiles (Figure 2.3). The Deep Creek soil profile, which is generally located along the eastern boundary of the study area, was subject to land reclamation in the late 1800s and early 1900s.

The study area is located 500m southwest of the southern shore of Darling Harbour. Originally known as Cockle Bay, the area has been well documented as being used by Aboriginal people for the foraging and consumption of shellfish and other marine faunal resources (Comber Consultants 2012). Before land reclamation in the area occurred, the study area was situated along the original shoreline of Cockle Bay.

The study area is located on the eastern edge of the Ultimo-Pyrmont Peninsula. The Ultimo-Pyrmont peninsula is oriented approximately north west/south-east. Mainly due to sandstone mining, major changes to the topography of the peninsula were undertaken prior to detailed mapping of the area.

Prior to European settlement and subsequent land clearing, the vegetation of the Pyrmont-Ultimo Peninsula would have generally comprised of low, dry sclerophyll open- woodland along ridges and upper slopes.

Historical activities at the site have resulted in moderate to high levels of ground disturbance, including significant impacts such as construction of buildings for the early town houses, Ultimo Power Station, bulk excavations for the Ultimo Power Station buildings, and the Wran Building, as well as landscape activities such as land clearance and two possible quarries.

While numerous Aboriginal archaeological excavations have taken place across this area of the Ultimo Pyrmont peninsula that have encountered significant Archaeological deposits, these investigations have also demonstrated that:

- It is unlikely that reclamation would have disturbed the natural soil profiles within the study area, which is located solely within the Gymea soil landscape.
- Resources available in the Pyrmont-Ultimo Peninsula area, such as reliable fresh water sources and seafood within the area, would have been attractive to Aboriginal occupation and use of the area.
- Aboriginal archaeological deposits, should they be present within or in the vicinity of the current study area, would be most likely to consist of PAD sites, stone artefact sites, shell midden sites, or a combination of both

Areas of the Powerhouse Ultimo site that have the highest potential for natural soils to be present (and corresponding potential for intact Aboriginal archaeological deposits), are areas where the lowest levels of historical development and excavation have been undertaken. These areas include beneath the Wran Building forecourt, north of the Wran building in space between Wran and the Post Office, south of the Boiler House, south of the Harwood Building, and carpark spaces along the eastern boundary of the study area.

Conclusions and Recommendations

Overall, this Due Diligence Heritage Assessment for the Powerhouse Ultimo site has found there to be **moderate to high potential** for in situ Aboriginal archaeological deposits to be present within the study area, where natural soil profiles remain intact,

Therefore, any future ground-disturbing activities that have potential to impact to a depth of the natural soil profiles across the study area, will have potential to impact Aboriginal archaeology, and therefore will require management and mitigation. Key management recommendations are summarised in the following section.

Future development works at the Powerhouse Ultimo study area will require the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR), prepared in accordance with relevant Heritage NSW statutory guidelines.

Any ground disturbing works with potential to encounter/impact natural soils profiles will require further Aboriginal archaeological assessment and possible test excavation, either under a Section 90 AHIP under the NPW Act, or as part of an approved ACHAR (including test excavation strategy/research design) as part of an SSD Approval.

Any substantial excavation works proposed for the site are likely to require Aboriginal archaeological test excavation to further investigate and confirm the nature of Aboriginal archaeological potential within the Powerhouse Ultimo study area.

1. Introduction

1.1. Purpose of this Report

Curio Projects Pty Ltd was commissioned by Create NSW to prepare an Aboriginal Heritage Due Diligence Assessment Report (DD) for Powerhouse Ultimo at 500 Harris Street, Ultimo (the study area).

The purpose of this DD is to identify whether or not Aboriginal objects are, or are likely to be present within the study area, and whether or not the proposed development works would be likely to harm Aboriginal objects (if present), and therefore to determine whether the proposed activities would require consent in the form of an Aboriginal Heritage Impact Permit (AHIP), or not.

This report has been prepared with reference to the following documents:

- DECCW 2010, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW.* (the Due Diligence Code of Practice)
- Australia ICOMOS, *Australia ICOMOS Charter for Places of Cultural Significance*, The Burra Charter, 2013.
- Curio Project 2020, *Heritage Assessment, Powerhouse Ultimo*, prepared for Create Infrastructure

1.2. Project Background

On 4 July 2020 the NSW Government announced that the Powerhouse Museum at Ultimo would be retained and renewed as the anchor of the Ultimo Creative Industries Precinct, complementing the future flagship Powerhouse Parramatta, Powerhouse Castle Hill, and the Sydney Observatory. The land is owned by the Museum of Applied Arts and Sciences Trust and includes the original Ultimo Power Station buildings; the "Wran" building (temporary exhibition hall opened in 1988); the Harwood building and the former Ultimo Post Office. Some components of the buildings on the site are heritage listed.

The Powerhouse is Australia's contemporary museum for the applied arts and sciences and industry development. The museum was established in 1881 in the Garden Palace which emerged from a history of 19th Century grand exhibition halls, including the Grand Palais in Paris. Powerhouse Ultimo has operated on the Ultimo site since 1988.

The Ultimo Creative Industries Precinct with the Powerhouse Museum Ultimo at its core sits within the context of the new Darling Harbour precinct and the Central Station renewal to the south, adjoining the late-night trading areas of Haymarket. It is in a unique position for renewal, contributing to the future of the Pyrmont Peninsula and supporting partnerships with creative, technology and innovation industries in inner Sydney.

The NSW Government through Create NSW and Powerhouse is working on a Business Case to inform options for the renewal of Powerhouse Ultimo as the anchor of the Ultimo Creative Industries Precinct, with the following Project Objectives:

- Create a vibrant and attractive precinct, that integrates with its surrounds
- Deliver international standard exhibition and cultural spaces congruent with the flagship Powerhouse Parramatta and the broader Powerhouse Program and Vision
- Grow creative industries and improve productivity through sustainable, timely and affordable infrastructure that supports clustering and collaboration
- Ensure effective and efficient coordination with other government initiatives and represent value for money.

The post July 2020 business case and accompanying analysis builds on previous advice for Create NSW, which was undertaken in the context of the development of options for renewal of the site as an arts and cultural and creative industries precinct. This report is part of a suite of work that forms the Ultimo Creative Industries Final Business Case.

1.3. Site Identification

The study area is located on the south eastern edge of the Ultimo-Pyrmont Peninsula, approximately 500m south west of Darling Harbour, and consists of a footprint of roughly 2.37 hectares (Figure 1.1). The study area is broadly defined by Harris Street, Omnibus Lane and a residential apartment block at 82 Mary Ann Street to the west; the William Henry Street Bridge to the north; The Goods Line to the east and Mary Ann Street to the south.

The Powerhouse Ultimo site comprises of an amalgamation of a number of earlier sites. The buildings within the study area that are mentioned in this report are the Harwood Building, Office Building, Pumphouse (Old Boiler House), Engine Hall, Turbine Hall, New Boiler House, Switch House, Post Office and Wran Building (Figure 1.2 and Figure 1.3.)

The Engine Room, Turbine Hall, New Boiler House, Office Building and Switch House form the principle remains of the former Ultimo Tramways Power House, remaining as the main group of interconnected buildings on the site (Figure 1.2 and Figure 1.3).

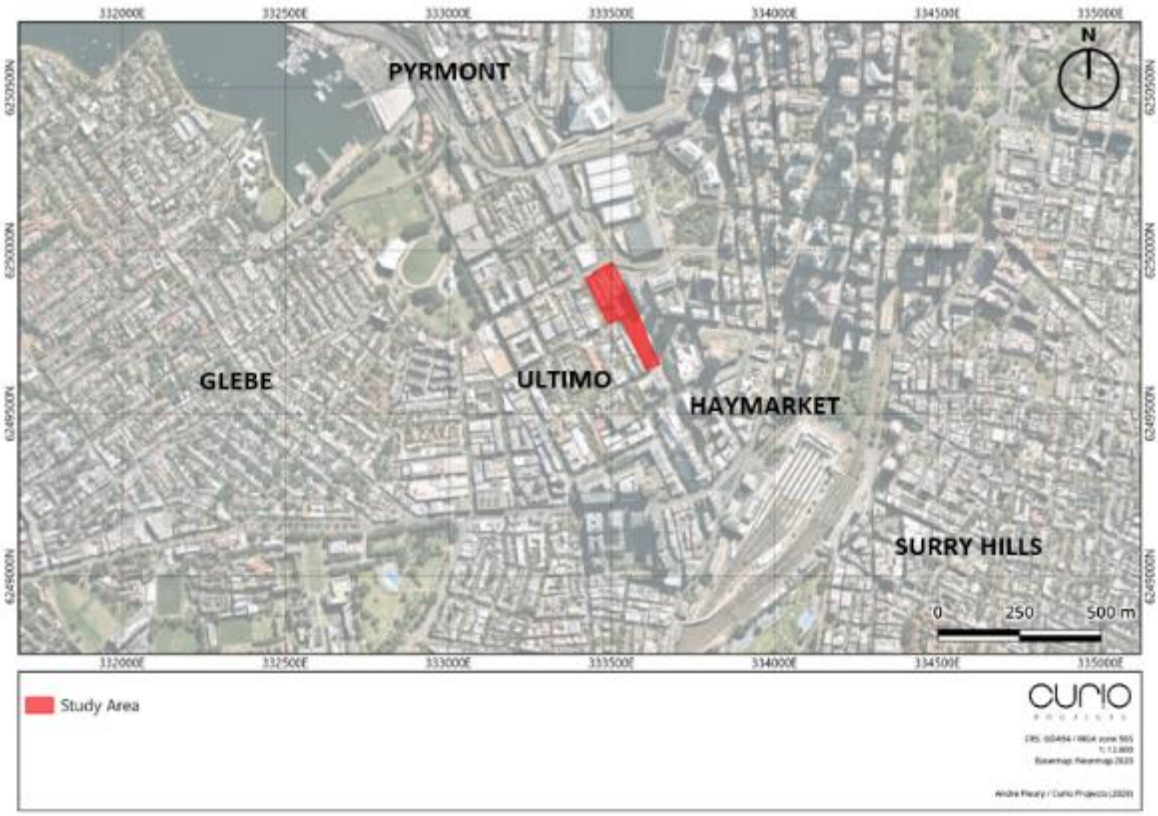

Figure 1.1: Regional Context (Source: Curio 2020)

Figure 1.2: Aerial View showing the key built elements of the site and its immediate surrounds
(Source: TKD Architects, 2018)

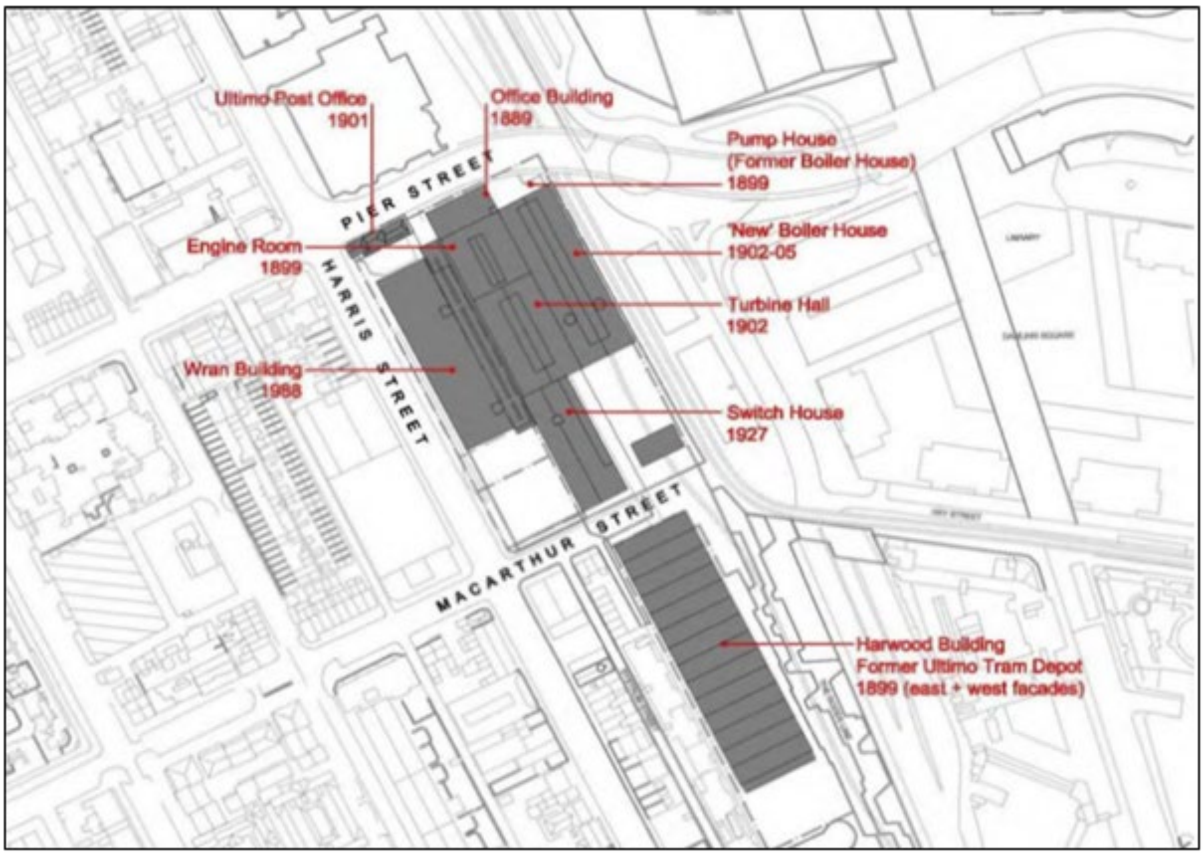

Figure 1.3: Plan of the study area showing key elements and their original date of construction
(Source: TKD Architects, Nov 2018)

1.4. Statutory Controls

Aboriginal cultural heritage is governed in NSW by two principles pieces of legislation:

- *National Parks and Wildlife Act 1974 (NSW)* (NPW Act); and
- *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act).

1.4.1. National Parks and Wildlife Act 1974

The NPW Act, administered by the Aboriginal Heritage Regulation Section, Heritage NSW, of the NSW Department of Premier and Cabinet (DPC) (formally known as the Office of Environment and Heritage (OEH), is the primary legislation that provides statutory protection for all 'Aboriginal objects' (Part 6, Section 90) and 'Aboriginal places' (Part 6, Section 84) within NSW.

An Aboriginal object is defined through the NPW Act as:

> *"any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises 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."*

The NPW Act provides the definition of 'harm' to Aboriginal objects and places as:

> *"...any act or omission that:*

(a) destroys, defaces or damages the object or place, or

(b) in relation to an object-moves the object from the land on which it had been situated, or

(c) is specified by the regulations, or

(d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c), (NPW Act 1974).

The NPW Act also establishes penalties for 'harm' to Aboriginal objects and declared Aboriginal places, as well as defences and exemptions for harm. One of the main defences against the harming of Aboriginal objects and cultural material is to seek an Aboriginal Heritage Impact Permit (AHIP) under Section 90 of the NPW Act, under which disturbance to Aboriginal objects could be undertaken, in accordance with the requirements of an approved AHIP.

1.4.2. Environmental Planning & Assessment Act 1979

The EP&A Act is an 'Act to institute a system of environmental planning and assessment for the state of NSW', administered by the NSW DPIE, and provides the legislative context for environmental planning instruments made to legislate and guide the processes of development and land use. Local heritage items, including known archaeological items, identified Aboriginal Places and heritage conservation areas are protected through listings on Local Environmental Plans (LEPs) or Regional Environmental Plans (REPs). The EP&A Act also requires that potential Aboriginal archaeological resources are adequately assessed and considered as part of the development process, in accordance with the requirements of the NPW Act.

Dependent upon which Part of the EP&A Act a project is to be assessed under, differing requirements and protocols for the assessment of associated Aboriginal cultural heritage may apply.

Part 4, Division 4.1 of the EP&A Act identifies and defines State Significant Development projects (SSD) as those declared under Section 89C of the EP&A Act. This Part of the EP&A Act provides for development with a capital investment of more than $30 million to be designated as a SSD or State Significant Infrastructure project (SSI), under State Environmental Planning Policy (State and Regional Development) 2011.

Where a project is assessed to be an SSD, the process of development approval differs, with certain approvals and legislation no longer applicable to the project. Of relevance to the assessment of Aboriginal heritage for a development, the requirement for an AHIP in accordance with Section 90 of the NPW Act is removed for SSD projects (EP&A Act, Section 89J).

1.4.3. Native Title Act 1993

The Native Title Act 1993 provides the legislative framework to recognise and protect native title, which recognises the traditional rights and interests to land and waters of Aboriginal and Torres Strait Islander people. Under the Native Title Act, native title claimants can make an application to the Federal Court to have their native title recognised by Australian law.

There are currently no native title claims or determinations in place for the Powerhouse Ultimo study area.

1.4.4. NSW Aboriginal Heritage Statutory Guidelines

In order to best implement and administer the protection afforded to Aboriginal objects and places as through the NPW Act and EP&A Act, the former OEH (now part of Heritage NSW under DPC) have prepared a series of best practice statutory guidelines with regards to Aboriginal heritage. These guidelines are designed to assist developers, landowners and archaeologists to better understand their statutory obligations with regards to Aboriginal heritage in NSW and implement best practice policies into their investigation of Aboriginal heritage values and archaeology in relation to their land and/or development. These guidelines include:

- DECCW 2010a, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW.* (the Due Diligence Code of Practice)
- OEH 2011a, *Guide to Investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW*. (the Guide to Investigating)
- DECCW 2010b, *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales*. (the Code of Practice)
- DECCW 2010c, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.* (the Consultation Guidelines)
- OEH 2011b, *Aboriginal Heritage Impact Permits, a Guide for Applicants*.

The purpose of the Due Diligence Code of Practice is to 'assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an AHIP' (DECCW 201a: 2). This current report has been prepared in accordance with the Due Diligence Code of Practice.

1.5. Due Diligence Assessment Process

The Due Diligence Assessment Process (in accordance with the OEH Due Diligence Code of Practice guidelines), is a step by step process that provides proponents with a reasonable method to follow to determine whether their proposed activity has the potential to harm Aboriginal objects, and to identify reasonable constraints and opportunities of the activity, relating to Aboriginal heritage in the activity location. The primary steps of the Due Diligence process are:

- Step 1—Determine whether the activity will disturb the ground surface or any cultural modified trees.
- Step 2a—Database Search of the OEH Aboriginal Heritage Information Management Services (AHIMS), and other known sources to determine whether any registered sites are located within/near the study area.
- Step 2b—Environmental/Landscape Assessment
- Step 3—Impact Avoidance Assessment

- Step 4—Desktop Assessment and Visual Inspection

Following this process, should the assessment determine that Aboriginal objects are likely to be present and have the potential to be impacted, the Due Diligence Code of Practice advises further investigation and impact assessment (Step 5). Should the assessment determine that Aboriginal objects are unlikely to be present/unlikely to be harmed through the proposed activity, then the activity may proceed with caution.

1.6. Limitations and Constraints

This report is a desktop assessment of environmental and Aboriginal archaeological context and potential only. No consultation with the local Aboriginal community has been undertaken as part of this assessment, and therefore no social or cultural assessment of Aboriginal heritage values has been undertaken at this time. The OEH Due Diligence Code of Practice states that 'consultation with the Aboriginal community is not a formal requirement of the due diligence process', however only Aboriginal people are able to provide information regarding the Aboriginal cultural and social nature and significance of a site or location.

1.7. Authorship and Acknowledgements

This report has been prepared by Mikhaila Chaplin, Graduate Archaeologist, and reviewed by Sam Cooling, Cultural Heritage Manager, of Curio Projects Pty Ltd. Maps and GIS prepared by Andre Fleury, Archaeologist and Historian, of Curio Projects Pty Ltd.

Due Diligence Assessment

2.1. Will the proposed activity disturb the ground surface?

2.1.1. Proposed Development

The proposed redevelopment of the Powerhouse Ultimo is currently in the early stages of planning and development. The redevelopment will be a renewal of the space that has held the Powerhouse Museum since 1988.

Currently there are three options under consideration for the redevelopment of the Powerhouse Ultimo study area, all of which include ground works that will disturb the ground surface. Therefore, all options will have potential to impact Aboriginal object and sites, should they be present within the study area.

Therefore, it is concluded that proposed work will disturb the ground surface, and therefore has the potential to cause disturbance of Aboriginal objects and sites.

2.2. Database Search

2.2.1. AHIMS Search

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken on 10 September 2020 across the City of Sydney, centred on the study area (with a buffer of 1km), and returned 66 results. The extensive AHIMS search is attached as Appendix A.

Summary descriptions of Aboriginal site features registered on AHIMS, as relevant to the study area, are presented in Table 2.1. The 66 registered sites from the AHIMS search included 17 different site types, some located in combination with each other, as summarised in Table 2.2.

AHIMS search results always require a certain amount of scrutiny in order to acknowledge and accommodate for things such as inconsistencies in the coordinates (differing datums between years of recording), the existence of, and impact to, registered sites (impact to a registered site technically requires the submission of an Aboriginal Site Impact Recording form to be submitted to the OEH, however these forms are not always submitted), and other database related difficulties. It should also be noted that AHIMS database is a record of archaeological work that has been undertaken and registered with AHIMS in the region.

The AHIMS database is therefore a reflection of recorded archaeological work, the need for which has likely been predominantly triggered by development, and not a representation of the actual archaeological potential of the search area. AHIMS searches should be used as a starting point for further research and not as a definitive, final set of data.

Therefore, the AHIMS search result has been synthesised as best possible within the scope of this current report to determine the most likely nature and location of previously registered sites in proximity to the current study area.

There are currently no registered Aboriginal archaeological sites within the study area. Three registered Aboriginal archaeological sites are located in close proximity to the study area (Figure 2.2). These include:

- AHIMS #45-6-2652, 'Ultimo PAD 1', a PAD site located 50m north of the study area
- AHIMS #45-5-2979, 'UTS PAD 1, 14-28 Ultimo Rd Syd', a PAD site located 60m south of the study area
- AHIMS #45-6-3217, 'Darling Central Midden', is a shell midden, artefact and Aboriginal Ceremony and Dreaming site 200m north east of the study area.

The most common site types in the area are Potential Archaeological Deposits (PADs) (n=26), followed by artefact sites (n=12), and shell midden and artefact sites (n=8). Ultimo PAD 1 (AHIMS #45-6-2652) was registered on the assessment areas of remnant soil may be present at this location at depth, buried below modern hard surfaces,, which have the potential to contain Aboriginal sites/objects. The Darling Central Midden (AHIMS #45-6-3217) reflects the potential for natural soil deposits to remain intact after modern buildings were constructed on site, a potential that was confirmed through later archaeological excavation works undertaken for the development in the area (see previous archaeological investigations section below for further detail). The UTS PAD 1 14-28 Ultimo Rd Syd (AHIMS #45-6-2979) indicated the PAD was recorded within a vacant lot used temporarily as an open carpark. The registered AHIMS sites that are in closest proximity to the study area(AHIMS #45-5-2979 and AHIMS #45-2652), indicate a high potential for natural soil profiles (and hence PAD sites) to also exist within the Powerhouse Ultimo boundaries.

The general distribution of sites from the AHIMS search around the study area are visible in Figure 2.1 and Figure 2.2. The relatively even dispersal of sites suggests that Aboriginal archaeological sites may exist across the entire Sydney CBD and Pyrmont Peninsula area, wherever conditions allow them to survive (i.e. incomplete levels of ground disturbance, along the edge of the original sandstone outcrops and geology, along water sources, and where natural soil profiles are still present.

Out of the 66 results from our AHIMS search, 10 of these sites are recorded on AHIMS as having been destroyed by previous activities. None of the sites recorded as having been destroyed at those close proximity to the study area. It is possible that other site results from this AHIMS search have already been subject to harm or have been destroyed under AHIPs or through authorised site works and have not been updated in AHIMS. However, as none of these sites are located within the current study area, this is not of a direct concern for this project, and the location of all sites, regardless of their current status, will inform the Aboriginal archaeological potential assessment for the current study area.

Table 2.1:Aboriginal site features referred to in this report

SITE FEATURE	DESCRIPTION/DEFINITION BY OEH 2012
Aboriginal Resource and Gathering	Related to everyday activities such as food gathering, hunting, or collection and manufacture of materials and goods for use or trade.
Art Site	Art is found in shelters, overhangs and across rock formations. Techniques include painting, drawing, scratching, carving, engraving, pitting, conjoining, abrading and the use of a range of binding agents and natural pigments obtained from clays, charcoal, and plants
Artefact Site (Open Camp Sites/artefact scatters/isolated finds)	Artefact sites consist of objects such as stone tools, and associated flaked material, spears, manuports, grindstones, discarded stone flakes, modified glass or shell demonstrating physical evidence of use of the area by Aboriginal people. Registered artefact sites can range from isolated finds, to large extensive open camp sites and artefact scatters. Artefacts can be located either on the ground surface or in a subsurface archaeological context.
Burials	A traditional or contemporary (post-contact) burial of an Aboriginal person, which may occur outside designated cemeteries and may not be marked, e.g. in caves, marked by stone cairns, in sand areas, along creek banks etc.
Grinding Groove	Grinding grooves are a groove in a rock surface resulting from manufacture of stone tools such as ground edge hatchets and spears, may also include rounded depressions resulting from grinding of seeds and grains.
Modified Tree	Trees which show the marks of modification as a result of cutting of bark from the trunk for use in the production of shields, canoes, boomerangs, burials shrouds, for medicinal purposes, foot holds etc, or alternately intentional carving of the heartwood of the tree to form a permanent marker to indicate ceremonial use/significance of a nearby area, again these carvings may also act as territorial or burial markers.
Potential Archaeological Deposit (PAD)	An area where Aboriginal cultural material such as stone artefacts, hearths, middens etc, may be present in a subsurface capacity.
Shell Midden	A shell midden site is an accumulation or deposit of shellfish resulting from Aboriginal gathering and consumption of shellfish from marine, estuarine or freshwater environments. A shell midden site may be found in association with other objects like stone tools, faunal remains such as fish or mammal bones, charcoal, fireplaces/hearths, and occasionally burials.

Table 2.2: Results of AHIMS Search

SITE TYPE	NUMBER OF SITES	% OF SITES
Aboriginal Ceremony & Dreaming and Artefact and Shell	2	3.03
Aboriginal Resource and Gathering	2	3.03
Art	4	6.06
Art and Artefact	1	1.52
Artefact	12	18.18
Artefact and PAD	2	3.03
Burial and Aboriginal Ceremony & Dreaming and Artefact	1	1.52
Grinding Groove	1	1.52
Hearth and PAD	1	1.52
Modified Tree	1	1.52
PAD	26	39.39
Shell Midden and Artefact	8	12.12
Shell Midden and Artefact and Art	1	1.52
Shell Midden and Artefact and PAD	1	1.52
Shell Midden and Burial	1	1.52
Shell Midden	1	1.52
Waterhole	1	1.52
TOTAL	**66**	**100%**

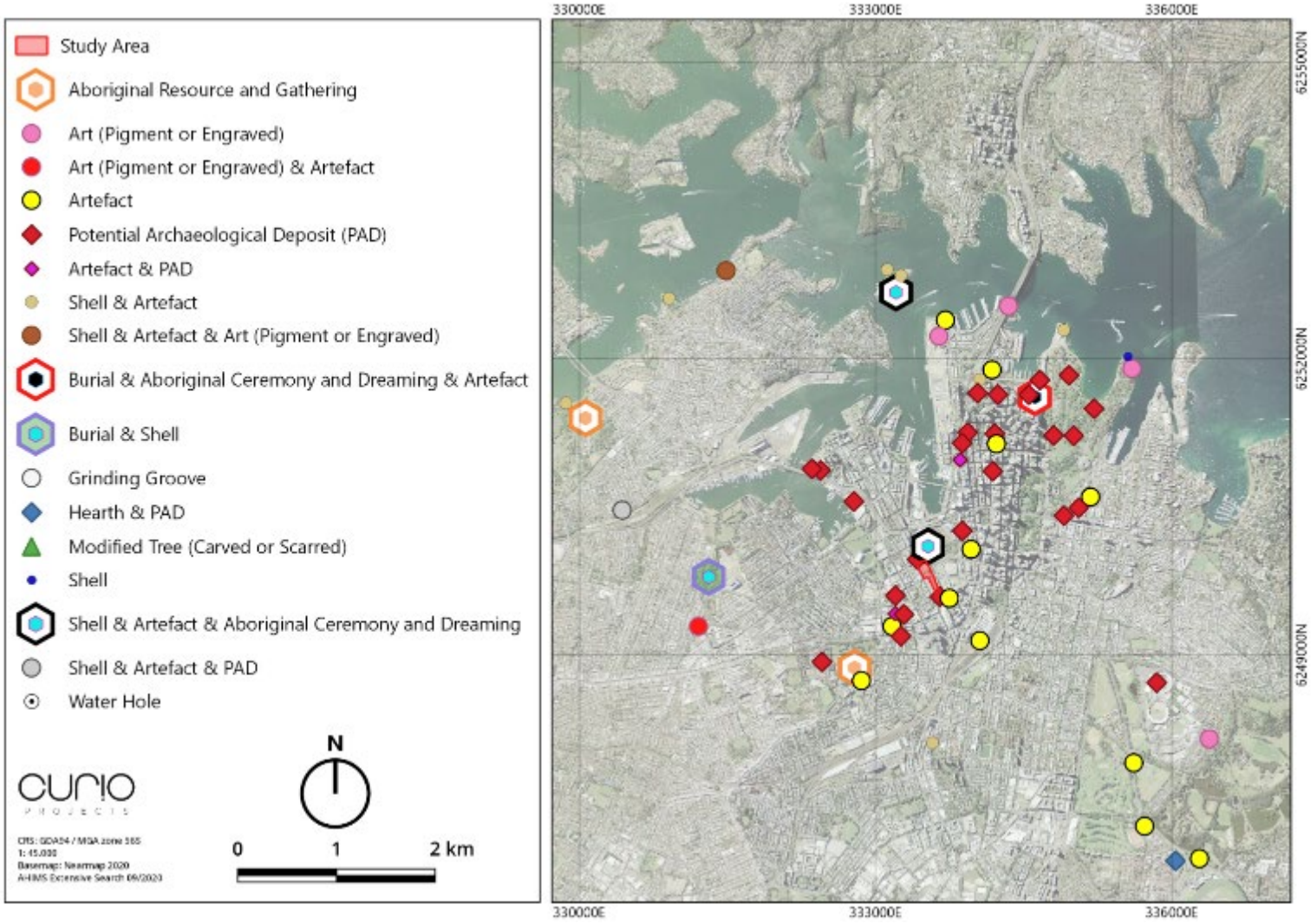

Figure 2.1: AHIMS Sites (Source: Curio 2020)

Figure 2.2: Close up of study area and surrounding AHIMS sites (Curio 2020)

2.3. Environmental Context

The physical setting of the study area, its natural resources, landforms, and wider landscape setting has a significant influence over the nature, location, and form of Aboriginal occupational and use patterns through their interactions with the land (tangible values and site). The environmental setting of a location can also providing meaningful landscape context for understanding intangible Aboriginal heritage values and connection to Country.

2.3.1. Geology and Soils

The geology and soils of a locale can provide information for the prediction and modelling of the nature and positioning of potential Aboriginal sites, for example, soil types capable of supporting vegetation/flora resources of importance to Aboriginal people (and the corresponding faunal resources that would utilise the vegetation), may provide clues to indicate Aboriginal use and occupation across a landscape.

The study area sits within the soil landscape of Gymea, underlain by Hawkesbury Sandstone (medium to coarse grained quartz sandstone with minor shale and laminate lenses). While the study area is wholly on Gymea, the eastern border of the study area aligns approximately with the boundary between Gymea, and Deep Creek soil profiles (Figure 2.3). The Deep Creek soil profile, which is generally located along the eastern boundary of the study area, was subject to land reclamation in the late 1800s and early 1900s.

The Disturbed Terrain soil profile would have been created through the extensive processes of land reclamation that involved the playing of man-made fill (dredged estuarine sand and mud, demolition rubble, industrial and household waste) over swamps and estuarine shores along the Sydney harbour foreshore. Further detail regarding land reclamation at the current study area is discussed in Section 2.3.5 below.

Figure 2.3: Soil map of study area and surrounds (Source: Curio 2020)

2.3.2. Hydrology

The hydrology of an area plays an important role in identifying not only areas of occupational, environmental, and archaeological potential, but also in understanding how deposits at a site are formed and/or impacted by hydrology. The effects of hydrology can range from the general availability of water in an area, through to flooding events. Hydrology can influence the original occupation of a space and associated deposition of cultural material, as well as play a part in post-depositional taphonomic processes.

The study area is located 500m southwest of the southern shore of Darling Harbour. Originally known as Cockle Bay, the area has been well documented as being used by Aboriginal people for the foraging and consumption of shellfish and other marine faunal resources (Comber Consultants 2012). Before land reclamation in the area occurred, the study area was situated along the original shoreline of Cockle Bay.

In addition to being in close proximity to the waters of Darling Harbour, the study area is located 1.3km southeast from what was known by European settlers as 'Tinkers Well', on the north western point of the Pyrmont Peninsula. This was a freshwater spring located in a large sandstone overhang where water trickled from between the sandstone and collected into a natural bowl in the sandstone floor of the overhand (Irish & Goward 2013). Although the shelter in which Tinkers Well was destroyed in the early 20th century, the water of the spring itself is still

present and accounts from early European settlers relate the use of the area and this spring by Aboriginal people into the 19th Century.

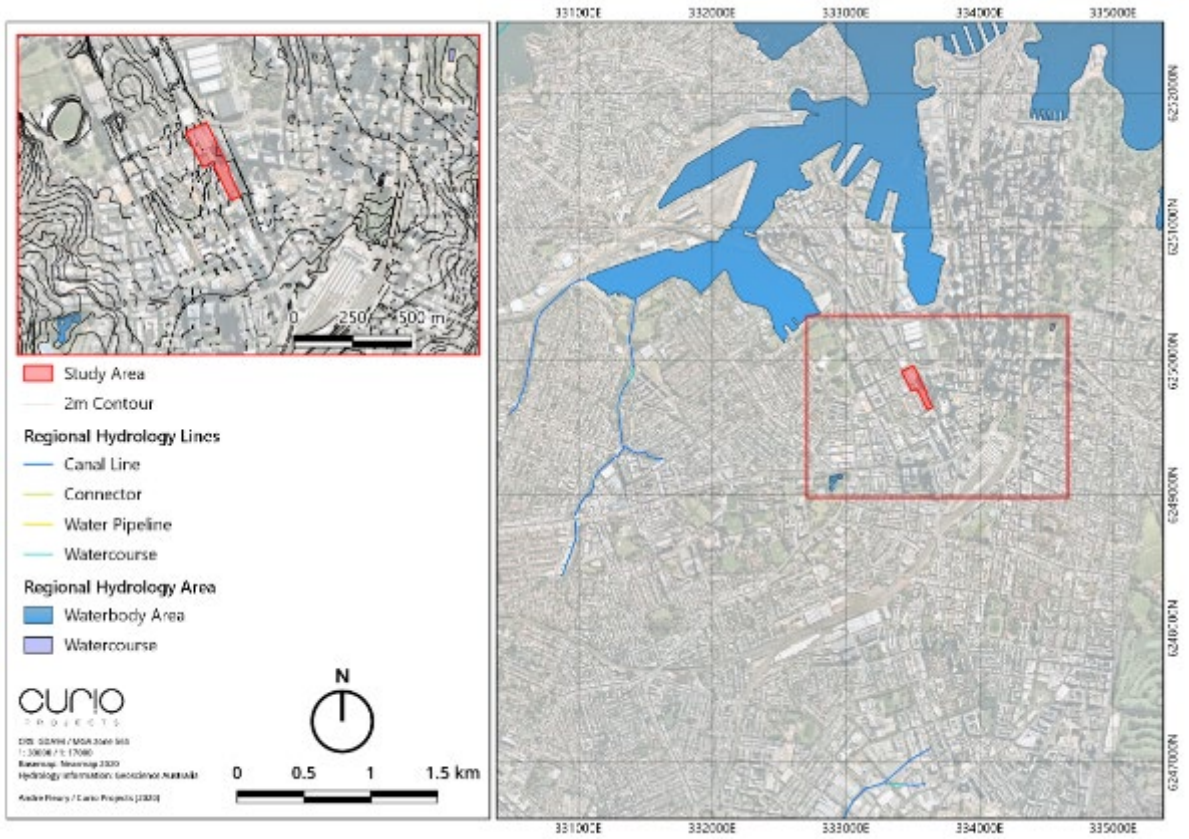

Figure 2.4: Hydrology and topography Map (Source: Curio 2020)

2.3.3. Landscape and Landforms

Darling Harbour is located in the central area of the Sydney basin, which is generally characterised by contrasting sandstone escarpments, and gently undulating shale hills (Herbert 1983). The study area is located 500m southwest of Darling Harbour and on the eastern edge of the Ultimo-Pyrmont Peninsula. The Ultimo-Pyrmont peninsula is oriented approximately north west/south-east. Mainly due to sandstone mining, major changes to the topography of the peninsula were undertaken prior to detailed mapping of the area. However, it is generally understood that the Pyrmont peninsula prior to 1788, generally consisted of sandstone rises and outcrops, grading down towards the water on all sides.

The study area is located on the sandstone topography of the Ultimo-Pyrmont Peninsula in close proximity to the original shoreline of Cockle Bay. The approximate location of the study area is highlighted in red in Figure 2.5 below. The location of the study area in relation to the original topography and landform of the peninsula is shown in Figure 2.6.

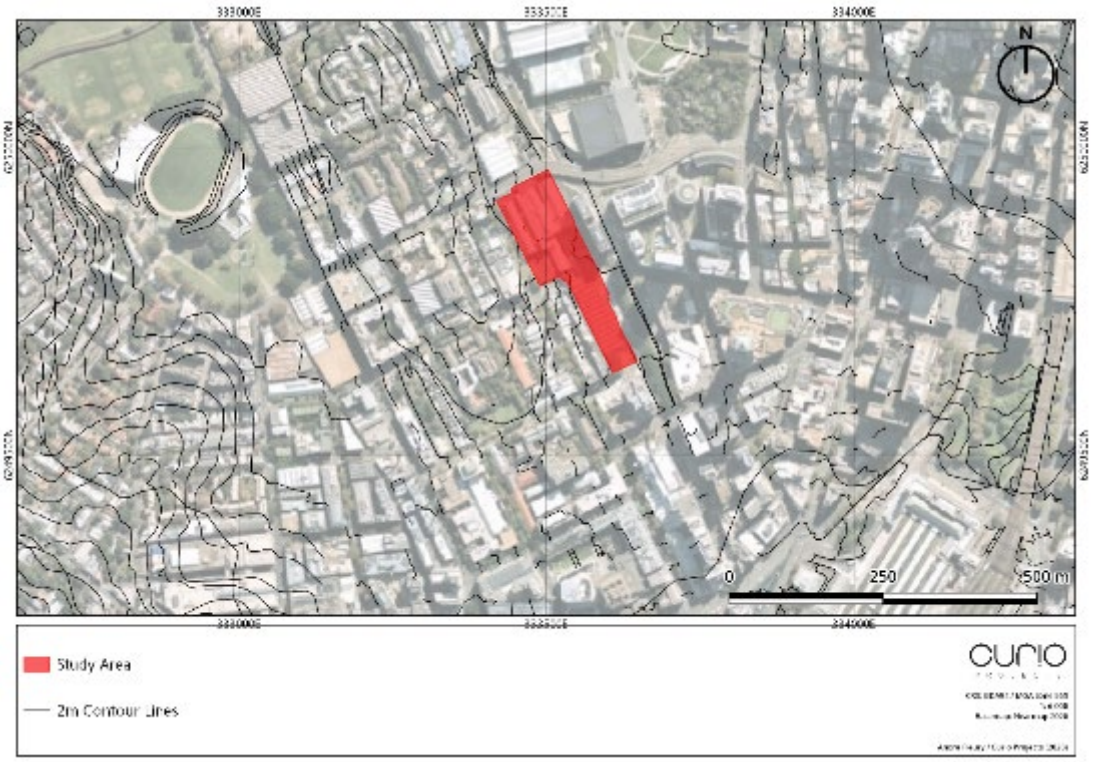

Figure 2.5: Land Contours of study area and surrounds (Source: Curio 2020)

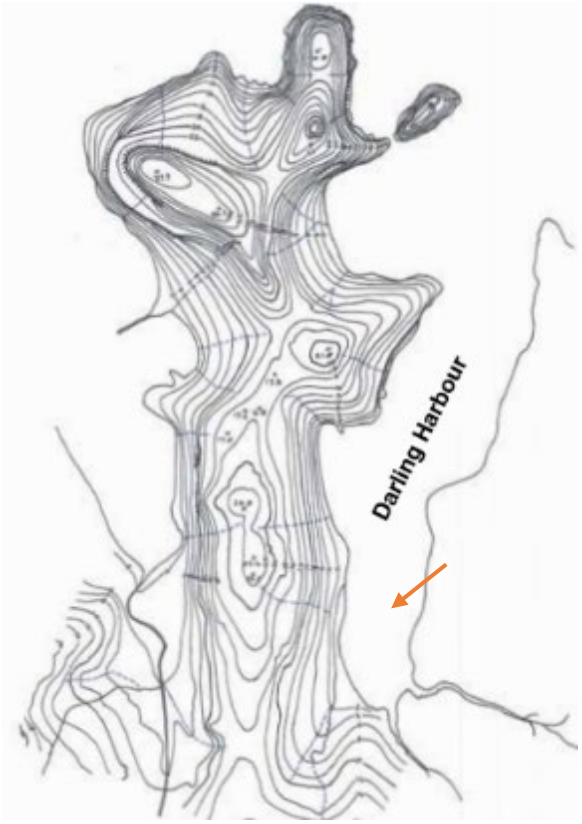

Figure 2.6: Topography and drainage of the Pyrmont peninsula in 1788. Orange arrow indicating general location of study area (Source: Broadbent. J, 2010, Transformations: Ecology of the Pyrmont Peninsula 1788-2008, Sydney. Figure 3.5: 54)

2.3.4. Vegetation and Fauna

An understanding of the original vegetation of an area provides information about the resources that such vegetation would have provided to Aboriginal people in the area, and would have influenced how different locations were accessed, used and visited. Vegetation can itself be a direct resource- such as tree bark for canoes, shield etc, or edible plants- or it can be an indirect resource, creating habitats for different animals such as possums, birds etc, available for hunting.

Prior to European settlement and subsequent land clearing, the vegetation of the Pyrmont-Ultimo Peninsula would have generally comprised of low, dry sclerophyll open- woodland along ridges and upper slopes, with species commonly present including Red Bloodwood *Eucalyptus gummifera*, Scribbly Gum *Eucalyptus haemastoma,* Brown Stringybark *Eucalyptus capitellata* and Old Man Banksia *Banksia serrata*. More sheltered slopes would have commonly supported Black Ash *Eucalyptus sieberi*, Sydney Peppermint *Eucalyptus piperita* and Sydney Red *Gum Angophora costata.* The understorey of these plant communities would have consisted of a variety of native shrubs (Chapman & Murphy 1989). However, the nature of the sandstone peninsula, water availability and drainage would have affected the growth of these various floral species.

While the diversity of flora would have supported a variety of fauna such a kangaroo, wallaby, wombat, echidna, flying fox, emus, quolls, various native rats and mice, snakes and lizards, this would also have been limited by the extent of the vegetation growth on the sandstone peninsula (Tench 1789).

The Darling Harbour area would have constituted a rich resource zone (both marine and land based), including a variety of vegetation, which would have in turn provided a diverse habitat for varied fauna, to be utilized by the Aboriginal people inhabiting the area prior to European arrival.

2.3.5. Modern Land Use and Disturbance

A summary of the modern development history of the study area, including its surrounds, disturbance and historical development, is discussed in this section in order to establish the effect that previous land use may have had on the preservation or destruction of potential Aboriginal archaeological remains at this location.

In summary, the main historical activities specific to the study area that would have impacted and/or removed natural soil profiles include:

- Initial European vegetation and land clearance that began in the early 19th century.
- Land reclamation activities in Darling Harbour occurred in close proximity to the eastern boundary of the study area during the late 19th century possibly altering soil profile in study area or surrounds.
- Two possible quarries within study area from 1844 bounded by Harris, Pyrmont, Macarthur and Mary Ann Streets and ceased to operate by at least 1899 (Figure 2.12).
- Construction of terrace houses (1840s and 1850s) within study area, (Figure 2.12) located at:

- 554 and 556 Harris Street (located below the Wran Building forecourt) (Figure 2.11);
- 519, 521,523 off Harris Street (south of the Boiler House Building);
- 137 William Henry Street (beneath the Office Building and Engine Hall, Wran Building and an area outside of the Office Building).

- Construction of the Ultimo Tram line along the eastern boundary of the study area in 1899.

- Construction of the Ultimo Power Station in the late 19th century and early 20th century which would have disturbed natural soil profiles to establish the structural foundations of the building, for basements, and installation of services. Buildings constructed during this period include the Office Building (1889), Pump House (1899), Harwood Building (1899), Engine Room (1899), Ultimo Post office (1901), 'New' Boiler House (1902-1905), Turbine Hall (1902) and Switch House (1927).
    - Excavation for basements occurred beneath, the Engine Room (3.5m-6.7m depth), New Boiler House (6m depth), Turbine Hall (3m depth), and Office Building (4m depth) (Figure 2.14 and Figure 2.15)

- Construction of the Exhibition "Wran" Building in 1988 as part of the redevelopment and adaptive reuse of Ultimo Power Station into The Powerhouse Museum would have disturbed natural soil profiles to establish structural foundations of the building, excavation for the existing basement, and installation of services. The depth of the Wran Building basement is approximately 4.5m depth along the western side of the building (Figure 2.14).

- Other levelling and grading activities for the construction of site features including the carpark and the Wran Building forecourt– which would likely have required cut and fill to establish the carpark surface, including some cutting of the natural topsoil (possibly disturbing soil profiles below ground surface within the footprint).

- Ongoing installation of utilities and services across site (trenching for sewer and water mains, electric easements etc) throughout all phases of historical use.

Figure 2.7: Map of Sydney and Suburbs 1855. Smith & Gardiner, Printers and Publishers. Study area location circled in red (Source: City of Sydney available from https://archives.cityofsydney.nsw.gov.au/nodes/view/1709399)

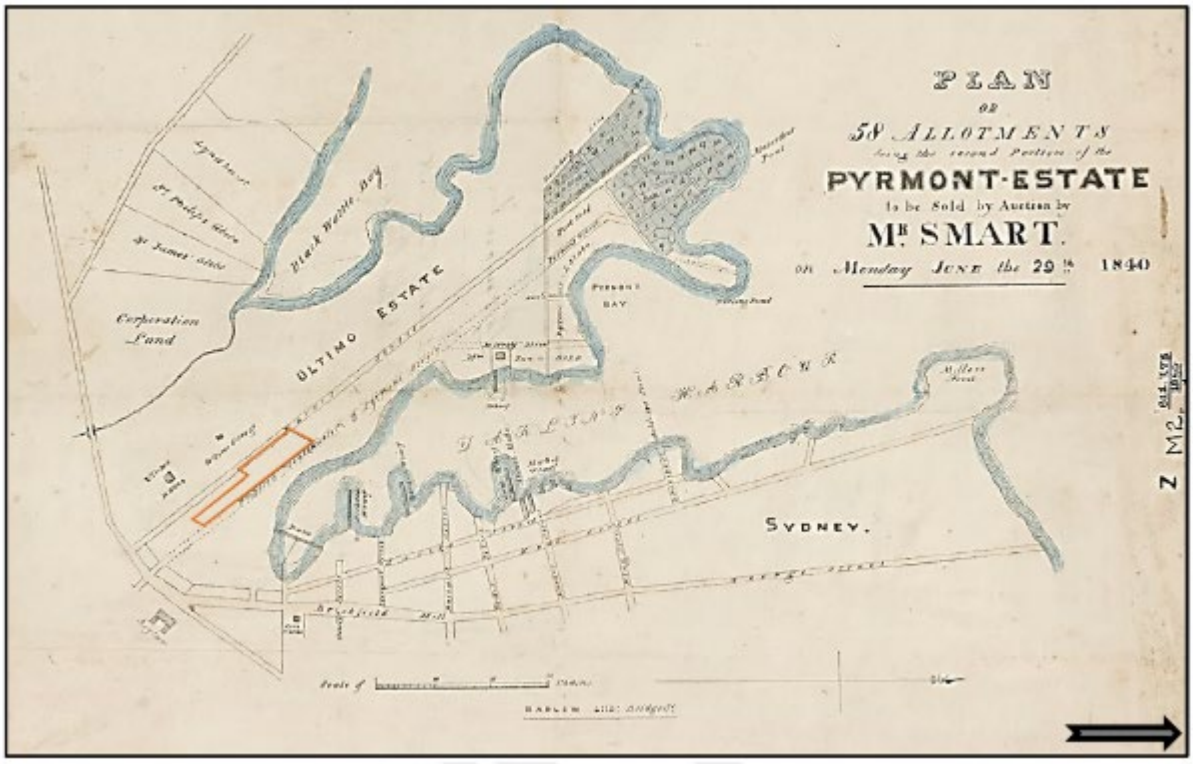

Figure 2.8: Plan of 58 allotments, being the second portion of the Pyrmont Estate to be sold at auction by Mr Smart on Monday 29 June 1840. Study area outlined in orange (Source: State Library of NSW digital collection)

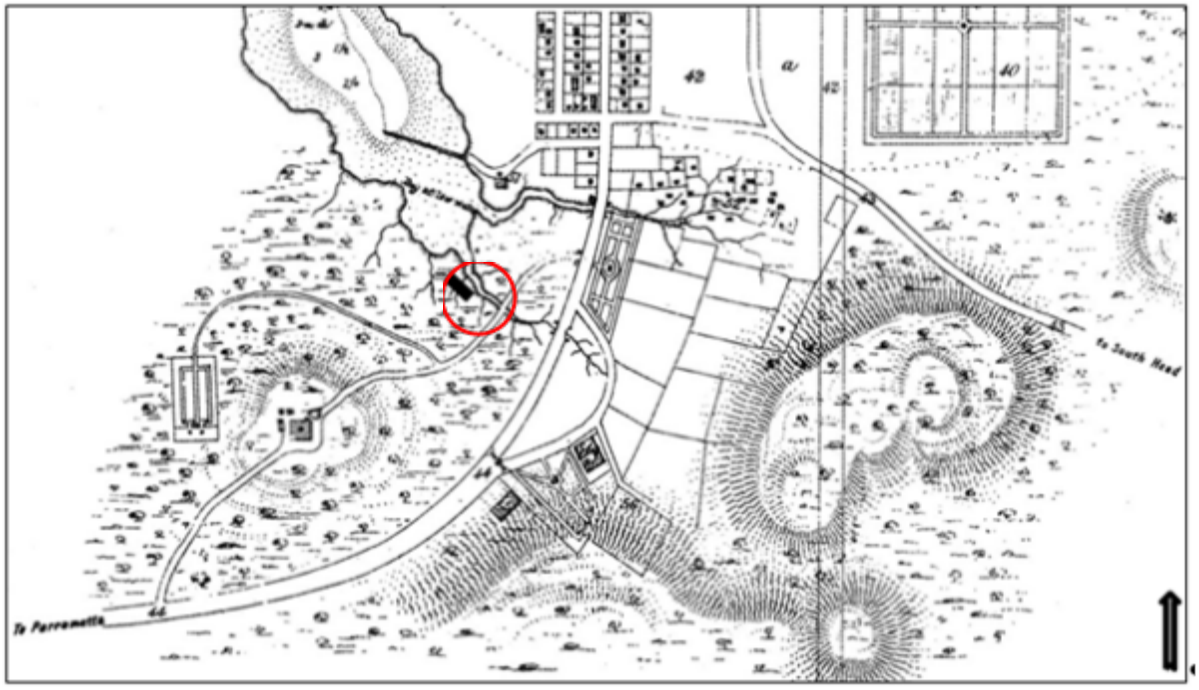

Figure 2.9: c.1822 showing the site prior to development, mostly swampy landscape surrounding the head of Cockle Bay. The approximate located of the study area is indicated in red. (Source: Ashton & Waterson 2000:19)

Figure 2.10: c.1867 Watercolour painted by Samuel Elvard, showing the view from Harris Street to Darling Harbour. (Source: Dixon Galleries, State Library of NSW, FL3268225)

Figure 2.11: The houses at 554-556 Harris Street on 28 July 1922 with the power house behind, before demolition (Source: City of Sydney Archives NSCA CRS 51/992).

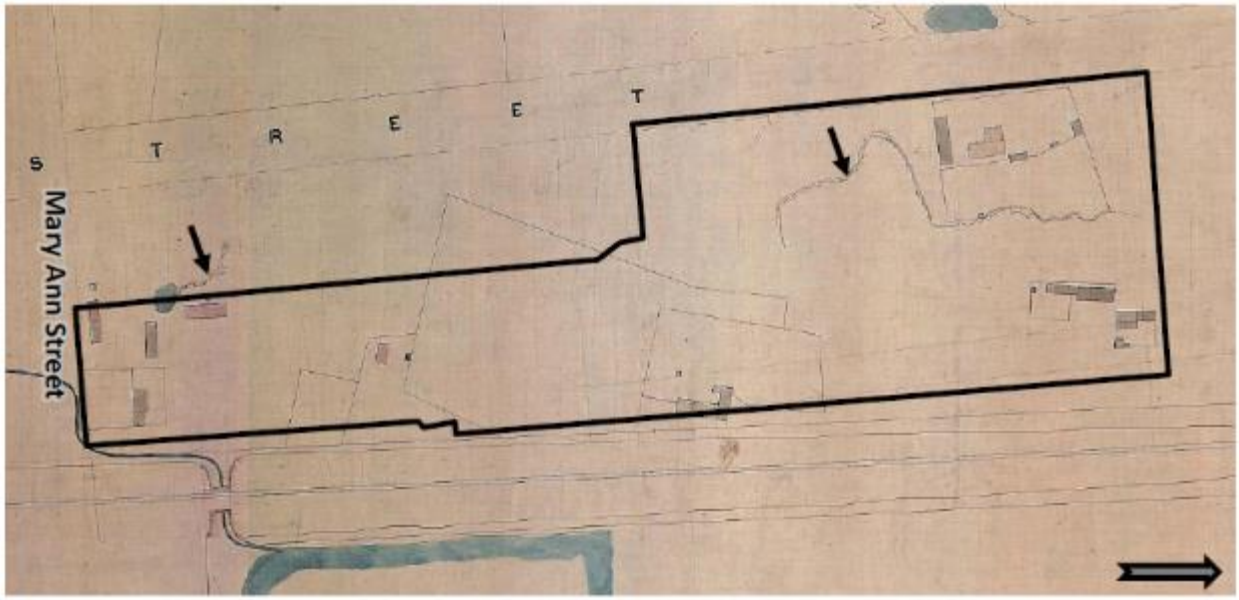

Figure 2.12: Detail of the Trigonometrical Survey of Sydney,1855-1865, showing a number of timber (grey), stone (yellow), brick (pink) and iron (blue) buildings within the study area indicated. Black arrows indicating possible quarry locations. (Source: http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-trigonometrical-survey-1855-1865-block-v1/ with AMBS additions 2018)

Figure 2.13: Aboriginal archaeological potential within study area. Expected historical archaeology of 1840s and 1850s houses (red), high Aboriginal archaeological potential (blue) (Source: AMBS 2018/ Curio 2020)

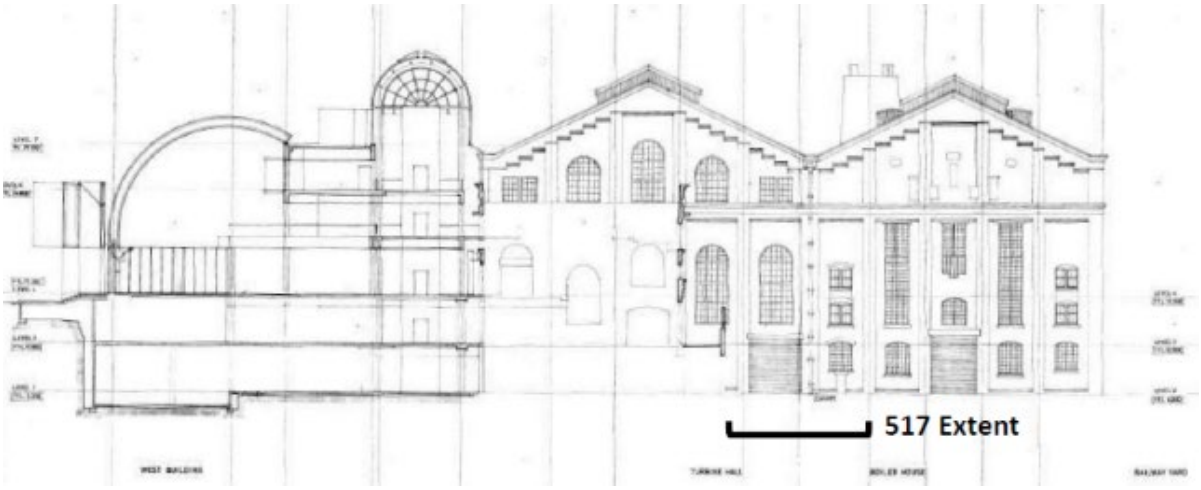

Figure 2.14: 1984 MAAS Stage 2 Construction plan. Section 11 faces south and illustrates the basements beneath the Wran Building, the Turbine Hall and the Boiler House (left to right).

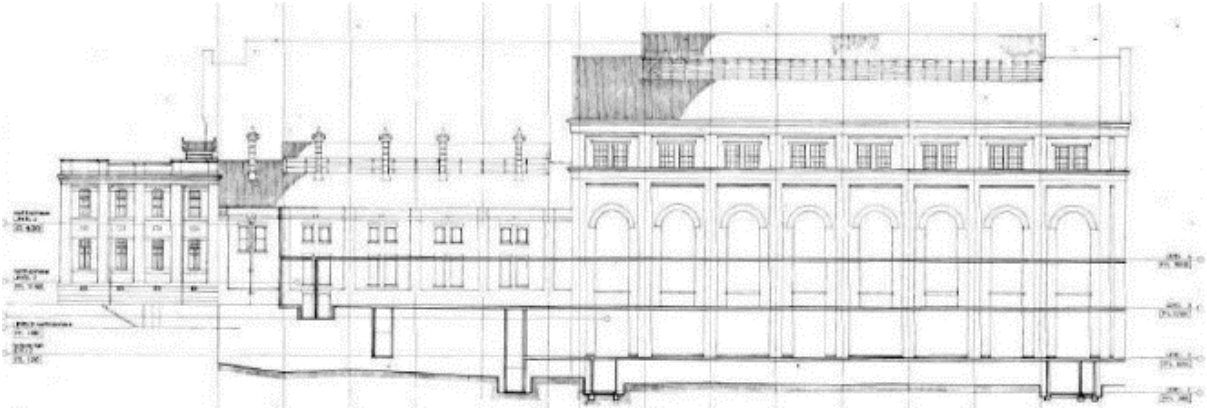

Figure 2.15: 1984 MAAS Construction plan. Section 14 faces west and pictures the North Annexe, Engine Hall and Turbine Hall (left to right). The basement of the Turbine Hall is 3.2m deep. (Source: AMBS 2018)

Land Reclamation

Most of the current shorelines of Sydney Harbour have been subject to land reclamation through the removal or filling of mudflats, wetlands, mangroves and saltmarshes. Land reclamation processes include the deposition of fill materials (commonly waste fill or previously contaminated sediments) over semi-submerged land, and draining of water from this land, in order to enable construction. Most of the modification of the Sydney shoreline has been undertaken for harbour construction, navigation, wharf, and shore development.

The land reclamation along the southern end of Darling Harbour took place in 1874 (with the exception of Darling Island, which was connected to the mainland of the peninsula earlier). Further land of reclamation within the head of Cockle Bay was undertaken in 1918. demonstrates a summary of the land reclamation across the Sydney estuary, with reclamation around the area of study area having taken place after 1854.

The study area is located in close proximity to the eastern boundary between what would have been the original shoreline of the southern end of Daring Harbour (pre-1788), and land reclaimed in the late 19th century (Figure 2.8, Figure 2.9). presents the map of the original

shoreline and land reclamation of Darling Harbour. Although the impacts from land reclamation occurred adjacent to the study area, it is likely the study area is located enough on the fringes of those land modifications to not have too much of an impact on the natural soils within.

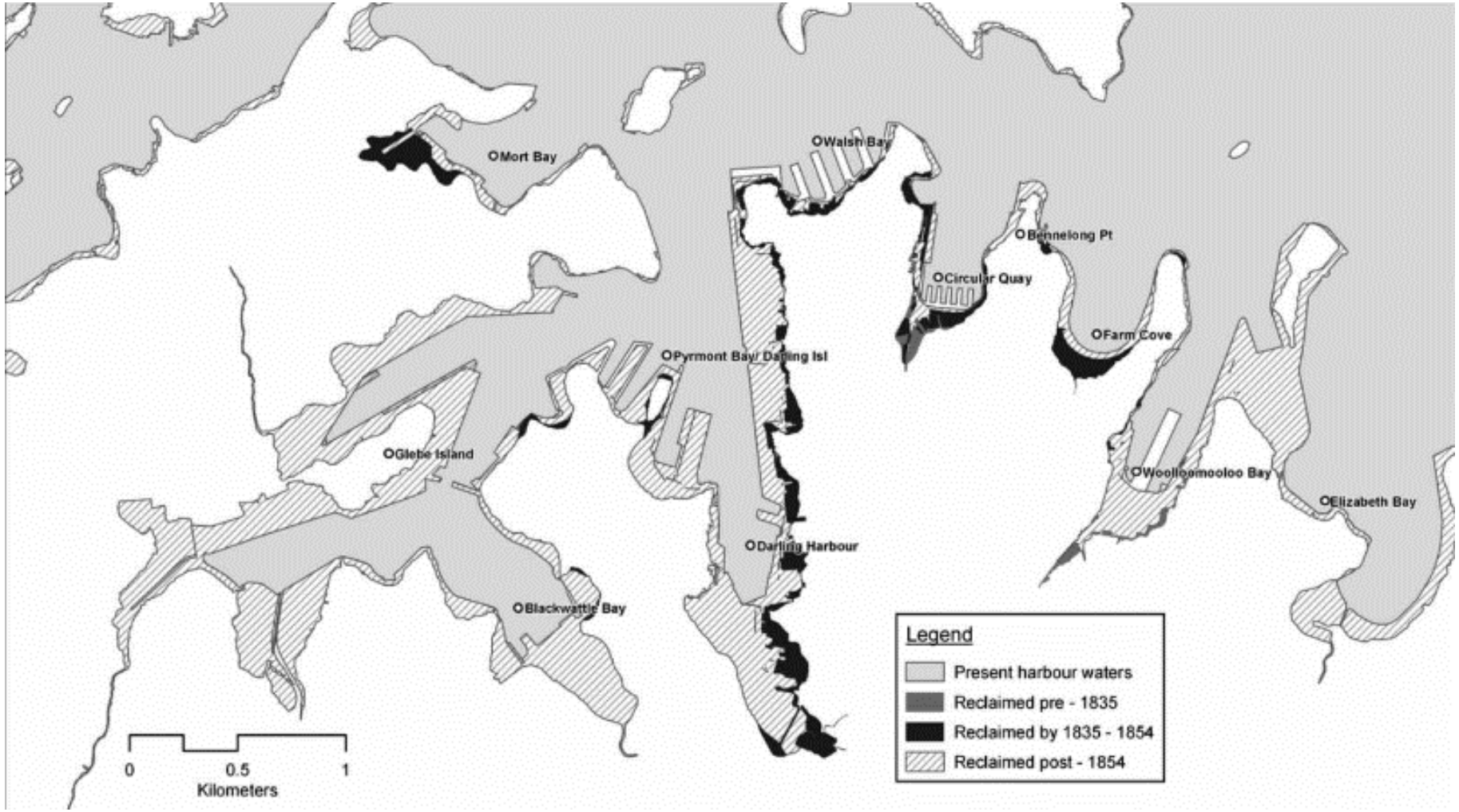

Figure 2.16: Summary of Land Reclamation across the Sydney Estuary including Darling Harbour. (Source: Birch et al., 2009: Figure 5,35)

Geotechnical Investigation

Geotechnical investigations provides ground truthing and further clarification of the nature of the sub-surface soil and disturbance present within the study area. A geotechnical investigation was undertaken within the study area in 2019, consisting of 11 geotechnical boreholes (Douglas Partners 2019), from which an inferred subsurface soil and geological profile has been developed for the Powerhouse Ultimo study area (Table 2.3). Generally, Hawkesbury Sandstone bedrock is located across the study area at depths between 1.5m-11.8m below the current ground level. Investigation works encountered ground water seepage during auguring within BH104 at 6m depth and BH105 at 3.80m depth. Any future excavation work at the site extending >1m depth, particularly in the south east of the study area, would be expected to encounter ground water

The soil stratigraphy within the study area as identified by geotechnical investigations consists of a concrete slab, brick pavers or asphalt surface over gravel, sand or clay fill with sandstone boulders (up to 0.25m to 4.5m), overlying silty clay, sandy clay and clay residual soil, over a layer of sandstone. Contact was made with sandstone bedrock at varying levels across the study area (up to 1.5m to 11m). Silty clay, silty sand and sandy clay alluvial soil was encountered in BH104 and BH105 only (i.e. in the west of the study area, further down slope towards Darling Harbour).

BH107 in the northwest of the study area encountered a void immediately underlying the concrete slab, likely part of the basement associated with the Power House buildings, that continued to at least 3.1m below ground.

Soil Units 2 and 3 as described by Douglas Partners are considered to be consistent with the natural soil profiles of the area.

Unit	Material/ Origin	Description	Approximate Thickness[1] (m)	Depth to Top of Unit[1] (m)	RL to Top of Unit[1] (m AHD)
1	Fill	Concrete slab or brick pavers over Gravel, Sand, Clay, and sandstone boulders	0.25 – 4.5	Ground Surface	3.5-15.6
2	Alluvial Soil	Silty Clay, Silty Sand and Sandy Clay, varying plasticity from low to high plasticity, fine to medium sand, soft to firm and loose sand, encountered in BH104 and BH105 only	0.5 – 2.3	3.5 – 4.5	1.3 – 2.7
3	Residual Soil	Silty Clay, Sandy Clay, and Clay, varying plasticity from low to high plasticity, stiff to hard.	0.5 – 5.0	1.5 – 6.8	-1.0 – 5.5
4a	Class V/IV[2] Sandstone	Sandstone, moderately weathered, very low to low strength.	0.3 – 0.9	1.5 – 11.8	-6.0 –14.1
4c	Class III[2] or Better Sandstone	Sandstone, slightly weathered to fresh, medium to high strength, a 0.5 m thick, very low to low strength layer was encountered at the bottom of BH202.	Not Penetrated	1.8 – >11.8	Below -6.0 – 13.8

Table 2.3: Douglas Partners, 2019, Report on Geotechnical Investigation, Ultimo Creative Industries Precinct, Table 2

Figure 2.17: 2019 Geotechnical Borehole Plan (Source: Douglas Partners: Appendix B)

2.3.6. Summary of Environmental Context

The study area is located in close proximity to the original foreshore of Darling Harbour. While the area was not developed extensively until the late 1800s (, Figure 2.10), early historical accounts provide evidence that extensive use was made of the shell middens that lined the bay to provide mortar in lime kilns for civic development programs for the early colony.

The Ultimo- Pyrmont Peninsula and Darling Harbour would have been a focus for Aboriginal occupation and habitation prior to 1788, likely including the current study area. While the study area has been historically subject to industrial uses associated with the Ultimo Power Station and Ultimo Tram Line, this does not mean that all natural soil profiles (i.e. the soil profiles capable of retaining an Aboriginal archaeological signature) have been removed. Environmentally, the study area is considered to have potential to retain an Aboriginal archaeological signature, supported with the geotechnical investigation of the study area and the alluvial/residual soils confirmed to be present (e.g. within BH104, BH106, BH202).

2.4. Aboriginal Archaeological Context

Review of relevant previous archaeological work is a highly informative and necessary step in identifying the likely nature of the potential archaeology that may be present in a location. The investigation of previous work undertaken in the region, on similar sites, and on similar landscape or landforms, can inform our understanding of a site by providing a proxy against which a newly investigated site can be measured (albeit with caution). That is to say, understanding the archaeological record at a general location can provide us with an indication of the nature and level of potential of archaeology that may be present at a site, prior to any subsurface investigation. As archaeology is by its very nature, a destructive discipline, it is important to acquire as much information and understanding of a site as possible prior to undertaking fieldwork (as once evidence has been excavated, its context is effectively destroyed), and also to avoid any unnecessary fieldwork at a site.

Research into archaeological investigations undertaken in proximity to the current study area indicate the types of archaeology that may survive in the area, and the environment that has allowed it to survive. A brief review of several relevant key reports undertaken in proximity to and/or including the current study area, has been presented below (Figure 2.18).

2.4.1. KENS Site, Aboriginal Excavation – Steele 2006

Aboriginal archaeological assessment and excavation was undertaken by Dominic Steel in 2003, of a large Aboriginal campsite, at the site that has come to be known as the KENS site (named for the streets which form the general boundaries of this site: Kent, Erskine, Napoleon and Sussex Streets). This Aboriginal campsite was uncovered as a result of the demolition of the present building and associated historical archaeological excavation at the site. Excavation of this site recovered around 1000 Aboriginal stone artefacts within buried remnant soil profiles, including backed artefact tools, other retouched tools, cores and numerous waste flakes, which have been relatively dated to be occupied in the last 3000 years. In addition, two Aboriginal artefacts

manufactured of glass were recovered from this site, demonstrating that the site was occupied by Aboriginal people of the area through to the post-contact period.

2.4.2. Darling Quarter - Comber Consultants 2012

Comber Consultants undertook a series of Aboriginal archaeological excavations in 2008 and 2009 for the redevelopment of Darling Quarter (formerly Darling Walk), Darling Harbour (in collaboration with Casey & Lowe who undertook the historical archaeological work for the project). The post excavation report for this work was prepared in 2012 .

The site was located along the original foreshore of Cockle Bay (Darling Harbour). Aboriginal test excavation identified the remains of a shell midden, including Aboriginal stone artefacts on an exposed area of bedrock (Area 5 of the excavation) in close proximity to the original shoreline. This area was expanded into an open area salvage excavation across the remainder of the sandstone outcrop in the south-east of the excavation area and recovered ten Aboriginal stone artefacts in association with the midden. It was determined that Aboriginal people would have used this location on the sandstone outcrop to cook and eat the shellfish that had been gathered from the surrounding environment. In addition, soil analyses undertaken as part of the project presented evidence of cooking fires in this location.

Of the ten stone artefacts recovered, all but two of them were manufactured of chert. There is no known local source of this rock type, and therefore the report suggests that the presence of this raw material type may have been the result of trading between the local Aboriginal people of the Cockle Bay area, and Aboriginal people that lived in the west, near Plumpton Ridge, a known source of chert for Western Sydney. It is also possible that other more local sources of chert were present around the Sydney CBD area prior to 1788 that remain unknown to archaeologists.

2.4.3. Wynyard Walk—GML 2015

GML Heritage undertook Aboriginal archaeological excavation of the Wynyard Walk, West Portal site in 2015. The potential Aboriginal archaeological deposit located at Wynyard Walk was assessed to be of moderate to high scientific significance primarily for its educative and research potential values. While disturbance at the site was considered likely, previous excavations in close proximity to the site such as the neighbouring KENS site, had illustrated that soil profiles capable of bearing archaeological deposits could be preserved in the area. Aboriginal archaeological excavation of this site required a two-staged approach due to the nature of the site below previous development and in association with the historical archaeology at the site.

Archaeolgoical excavation at Wynyard Walk recovered Aboriginal stone artefacts in association with the historical archaeology present at the site, as well as within surviving natural soil profiles.

2.4.4. Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP), Aboriginal Archaeological Excavation – Comber Consultants 2015

Comber Consultants undertook Aboriginal archaeological excavation within the Bayside/Darling Central Complex (i.e. the ICC and entertainment precinct) of the SICEEP in Darling Harbour, in

late 2013 and early 2014, in collaboration with Casey & Lowe, who undertook the Historical Archaeological Excavation.

Aboriginal excavation within this precinct included investigation within eleven separate open areas, identifying (AHIMS #45-5-3217 discussed above):

- A sequence of middens along the rocky original Darling Harbour foreshore (which could potentially be represent one continuous midden distributed along the foreshore), including 63 Aboriginal artefacts;
- Excavation of a discrete knapping floor on the edge of a midden from Open Area 2;
- Excavation of one in situ midden, dated to c300BP, between 1691 and c.1820;
- Evidence that Aboriginal people were still occupying and using this midden or sequence of middens during the early years of European occupation' and
- Predominantly silcrete artefacts, drawing the conclusion that it was likely that this material was traded with people from west of the harbour on the Cumberland Plain.

As a large proportion of this excavation took place underneath the (then existing) buildings of the former Sydney Entertainment and Exhibition Centres, this excavation successfully demonstrated the potential for intact Aboriginal archaeological deposits to be present beneath modern buildings and development, regardless of assumed impact.

2.4.5. SICEEP "Haymarket" Aboriginal Excavations – Comber Consultants 2014

Two Aboriginal archaeological test excavations were undertaken by Comber Consultants within the 'Haymarket' area of the SICEEP: within the 'South West Plot' (four trenches along the original shoreline, in the southwest corner of the lot bounded by Darling Drive in the west and Quay Street in the south), and 'Student Housing' (a 50m x 6m area between Darling Drive and the light rail) (Figure 2.18). Both these sites were selected for subsurface archaeological excavation due to their location within an area that formerly would have contained part of the original foreshore of Cockle Bay/Darling Harbour. However, following test excavation, neither site demonstrated any evidence of Aboriginal archaeology or occupation. The 'South West Plot' was assessed to have been previously disturbed by the installation of underground services, while the 'Student Housing' site simply revealing no remnant evidence of the original shoreline.

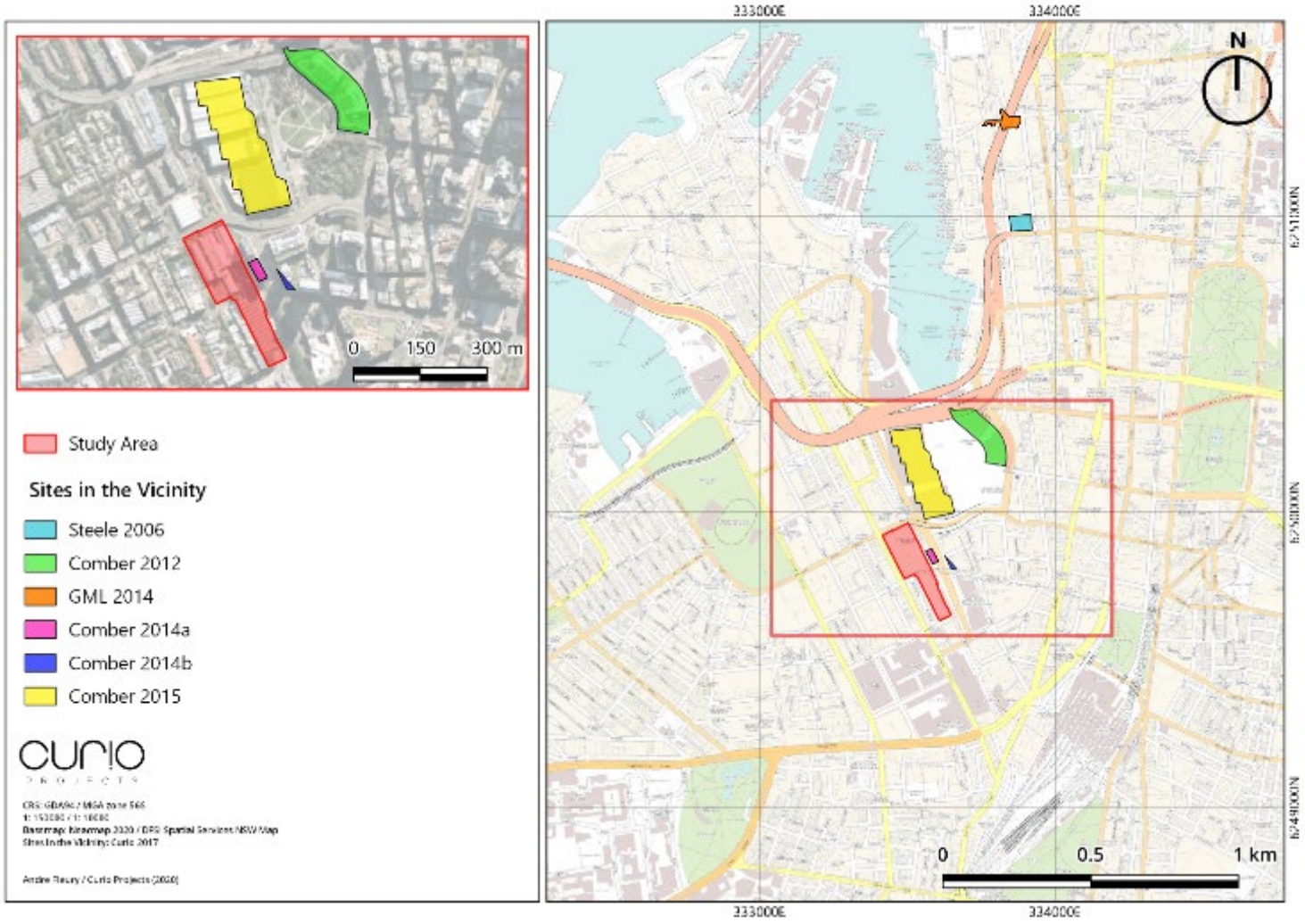

Figure 2.18: Location of Sites referenced Above (Source: Curio 2020)

2.5. Archaeological Predictive Model and Potential

Archaeological predictive modelling integrates information about environmental context, previous historical activities and ground disturbance, and known location surrounding sites (excavations and registered AHIMS sites), to assess and predict the nature of archaeology that may be present within the study area.

While the eastern boundary of the Powerhouse Ultimo study area is in close proximity to where land reclamation occurred in the late 19th century, it is unlikely that reclamation would have disturbed the natural soil profiles within the study area, which is located solely within the Gymea soil landscape.

The study area is located along the original western shoreline of Cockle Bay. The resources available in the Pyrmont-Ultimo Peninsula area, such as reliable fresh water sources and seafood within the area, would have been attractive to Aboriginal occupation and use of the area. The study area is located along the original western shoreline of Cockle Bay. Based on the environmental and archaeological context for the study area, Aboriginal archaeological deposits, should they be present within or in the vicinity of the current study area, would be most likely to consist of PAD sites, stone artefact sites, shell midden sites, or a combination of both. Previous Aboriginal archaeological investigations and assessments in the surrounding area demonstrate the ability of natural soil profiles to remain intact underneath existing buildings.

Should an intact Aboriginal archaeological deposit be present within the study area, it would likely be of moderate to high archaeological significance for its ability to demonstrate and confirm the ability for sites such as this to retain an Aboriginal archaeological signature in an area subject to high levels of historical disturbance. Should isolated Aboriginal artefacts or shell middens be present in a disturbed context, these site types would be of limited archaeological significance, however would still be protected under the NPW Act 1974, and would likely still be of significance to the local Aboriginal community.

This DD report only includes an assessment of archaeological potential and significance of any potential Aboriginal archaeological deposit, and has not to date included consultation with the local Aboriginal community, as would be required to determine the cultural and social significance of any potential deposit. An Aboriginal archaeological deposit, should it be present, would likely be of high cultural and social significance, however this would require future consultation with the local Aboriginal community (i.e. the Metropolitan Local Aboriginal Land Council) to confirm and expand upon further.

2.6. Summary of Desktop Assessment

The study area is located in the south east of the Ultimo-Pyrmont peninsula, directly along the original western shoreline of Darling Harbour before land reclamation took place in the late 19th century. Named by European settlers as Cockle Bay, while the area was not developed extensively until the late 1800s, early historical accounts provide evidence that extensive use was made of shell middens that lined the bay to provide mortar in lime kilns for civic development programs for the early colony.

The study area is adjacent to the original shoreline and reclaimed land (part of extensive land reclamation processes that were undertaken across the Sydney estuary in the 1800s to enable development of harbours, wharfage, and associated industries). In addition, the study area was subject to extensive industrial use from the 1850s following the construction of the rail lines into Pyrmont, the development of the Ultimo Power Station and neighbouring industrial services and yards.

For Aboriginal archaeological deposits to be present in situ, they would require the retention of natural soil profiles in the area that would be extant from 1788. There is **moderate to high potential** for natural intact soil profiles to be retained in this area. The soil landscape mapping in the region indicates that though the study area is in close proximity to where land reclamation took place, the study area is solely within the Gymea soil profile. If industrial development along the western shoreline of Darling Harbour from the 1850s to the 1970s has disturbed natural soil profiles within the study area, it is likely that only the eastern boundary of the study area would have been impacted.

Numerous archaeological assessments and Aboriginal archaeological excavations in the Sydney CBD and Darling Harbour area have demonstrated the potential for Aboriginal archaeological deposits to remain in situ, particularly along the original shoreline of Darling Harbour, dependent of the level of historical disturbance that the area has been subject to. The presence of existing buildings or development at a location, cannot be generally used as a factor to confirm that any soils with the potential to retain intact Aboriginal archaeological deposits have been highly disturbed or removed. In fact, numerous Aboriginal archaeological excavations have demonstrated the ability for in situ Aboriginal archaeological deposits to be present and relatively undisturbed beneath existing buildings (Wynyard Walk, SICEEP excavations beneath the Convention Centre).

Based on the environmental and archaeological context for the study area, Aboriginal archaeological deposits, should they be present within or in the vicinity of the current study area, would be most likely to consist of stone artefact sites, shell midden sites, or a combination of both.

Areas of the Powerhouse Ultimo site that have the highest potential for natural soils to be present (and corresponding potential for intact Aboriginal archaeological deposits), are areas where the lowest levels of historical development and excavation have been undertaken. These areas include beneath the Wran Building forecourt, north of the Wran building in space between Wran and the Post Office, south of the Boiler House, south of the Harwood Building, and carpark spaces along the eastern boundary of the study area. Although building foundations of early houses may be present within some of these areas of higher Aboriginal archaeological potential, natural soil deposits are likely to still be present since extensive excavation works have not been undertaken for basement construction (Figure 2.10). The presence of existing basements within the Engine Room (3.5m-6.7m depth), Boiler House (6m depth), Turbine Hall (3m depth), Office Building (4m depth) and Wran Building (4.5m depth) (Figure 2.14, Figure 2.15), indicate that these areas are likely to have low Aboriginal archaeological potential, depending on the location of

each building and the depth of the basement, in relation to the overall depth of natural soils based on landform positioning.

The Geotechnical Report determined that alluvial soils were present within boreholes BH104 and BH202, both of which are located south of the Harwood Building, supporting assessment of high potential for intact natural soil profiles to be present in this part of the study area. BH105 located to the east of the Harwood Building also confirmed the presence of alluvial soils in this part of the study area, while boreholes along the eastern boundary of the site generally hit concrete within the first metre. No boreholes were completed within the Wran Building forecourt area.

These results further confirm the presence of natural soil profiles beneath existing buildings and development across the study area, and therefore the potential for Aboriginal archaeological deposits to be present in a sub-surface capacity within the study area.

Visual Inspection

A visual inspection of the site was undertaken by Curio Projects on 15 September 2020, in order to gain a better understanding of physical and landform context of the study area.

The study area is located on the Ultimo-Pyrmont Peninsula and 500m south off the southern edge of Darling Harbour. The Wran Building and forecourt can be seen along the western boundary of the study area protected by Macarthur Street and Harris Street (Figure 3.1 Northern view of the Wran Building, forecourt, and Switch House from Harris Street, Figure 3.2, Figure 3.4). As seen in Figure 3.1, there is a moderate slope from Harris Street which continues until the end of Macarthur Street. The northern end of the Wran Building abuts the Post Office on the corner of Harris Street and Pier Street (Figure 3.5, Figure 3.6). Pier Street curves around the Post Office, Office Building and Pump House along the northern boundary of the study area (Figure 3.6, Figure 3.7, Figure 3.8). Figure 3.8 and Figure 3.9 displays the New Boiler House building abutting the Tram line tracks along the northern border of the study area and Pier Street.

The study area possesses a popular pedestrian thoroughfare down Macarthur Street through to Darling Drive (Figure 3.11, Figure 3.12, Figure 3.13, Figure 3.20). A carpark is found at the end of Macarthur Street and continues along the eastern edge of the Harwood Building. The Goods Line Park abuts the study area along its eastern boundary after the Tram line and continues south beyond the study area (Figure 3.15, Figure 3.16). The southern border of the study area is protected by Mary Ann Street, an open courtyard with trees, seating and a carpark area is visible to the east of the Harwood Building which is protected by a fence (Figure 3.17, Figure 3.18).

The Harwood Building abuts a residential area along its western boundary (Figure 3.18, Figure 3.19) which then connects with Omnibus Lane (Figure 3.14).

Figure 3.1 Northern view of the Wran Building, forecourt, and Switch House from Harris Street

Figure 3.2 Northern view of the Wran Building from the southern edge of the forecourt

Figure 3.3: South western view of the forecourt, Harris Street and Macarthur Street

Figure 3.4: Eastern view of the Wran Building, Switch house and forecourt

Figure 3.5: Northern view of the Wran Building with the Post Office building in the background

Figure 3.6: South eastern view of the Post Office, Wran Building and Office Building at the corner of Pier and Harris Street

Figure 3.7: Western view of the Office Building and Pump House along Pier Street

Figure 3.8: Western view of the Office Building and Pump House along Pier Street with the Tram Tracks in view along the northern boundary of the Pump House building

Figure 3.9: Southern view of the Tram line abutting the northern boundary of the Pump House

Figure 3.10: Northern view of the 'New' Boiler House, Switch House, and Tram line along the northern boundary of the study area

Figure 3.11: North western view of the Harwood Building, Switch House and carpark from The Good Yards Park

Figure 3.12: Eastern view of the carpark, pedestrian thurofare, Harwood Building and Switch House from Macarthur Street

Figure 3.13: Western view of Macarthur Street, Hardwood Building, and Switch House from the carpark on Macarthur Street

Figure 3.14: Southern view of Macarthur Street, Omnibus Lane and the Hardwood Building

Figure 3.15: Southern View of the Harwood Building, The Goods Line Park along the northern boundary of the study area

Figure 3.16: North western view of the Harwood Building and northern boundary of the study area from The Goods Line Park

Figure 3.17: North western view of the southern end of the Harwood Building and Mary Ann Street

Figure 3.18: Northern view of the southern end of the Harwood Building abutting a residential area

Figure 3.19: Northern view of the southern end of the Harwood Building abutting a residential area

Figure 3.20: Western view of Macarthur Street, Switch House and the Wran Building forecourt from the Harwood Building

Conclusions and Recommendations

4.1. Conclusions

- The Powerhouse Ultimo study area land would have been used, and likely have been of significance to Aboriginal people, due to its proximity to food and other resources, as well as providing good conditions for camping.
- The Powerhouse Ultimo study area does not contain any previously registered Aboriginal sites.
- The study area is located along the original western shoreline of Darling Harbour/Cockle Bay on the Gymea soil profile.
- The study area and surrounds were historically an integral part of the industrial use of Darling Harbour from the 1850s through to the 1970s and are part of the Ultimo Power Station and Ultimo Tram line.
- The study area is located wholly across the soil profile of 'Gymea' soil landscape profile and is unlikely to have been significantly disturbed by land reclamation works to Darling Harbour/Cockle Bay in the late 19th century.
- Due to the lack of development in the Ultimo area until quite late in the 1880s, there is still potential for Aboriginal sites to exist within the study area, within discrete pockets of natural soil profiles and/or mixed in with contact, or post- European contact sites. Such resources may exist either within a stratified context or imported as un-stratified fill.
- Areas of the study area with higher levels of potential for Aboriginal archaeological deposits to be present include: within the Harwood building south courtyard; Wran Building forecourt; north of Wran Building between the Wran Building and the Ultimo Post Office; and south of the Boiler House.
- Areas of low to moderate potential include the Ultimo Power Station, Wran Building and the Harwood Building
- Locations with deep existing basements (i.e. beneath the Engine Room, New Boiler House, Turbine Hall, Office Building, and Wran Building, are likely to have low Aboriginal archaeological potential resulting from significant excavation works into natural soils. Although this depends on the location and depth of each basement, in relation to the overall depth of natural soils- which can vary with landform positioning.
- Where previous historical development has occurred without significant basement excavation (e.g. areas with potential for historical archaeology in the Wran Building forecourt and at the southern end of the Harwood Building), Aboriginal archaeological deposits still have potential to be present within natural soil profiles (and in disturbed context within historical archaeological deposits, regardless of the context of pre-existing structures.

- Previous Aboriginal archaeological assessments and excavations in the area have constantly demonstrated the ability for natural soil profiles to remain intact beneath existing buildings.

Overall, this Due Diligence Heritage Assessment for the Powerhouse Ultimo site has found there to be **moderate to high potential** for in situ Aboriginal archaeological deposits to be present within the study area, where natural soil profiles remain intact,

Therefore, any future ground-disturbing activities that have potential to impact to a depth of the natural soil profiles across the study area, will have potential to impact Aboriginal archaeology, and therefore will require management and mitigation. Key management recommendations are summarised in the following section.

4.2. Recommendations

- Future development works at the Powerhouse Ultimo study area will require the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR), prepared in accordance with relevant Heritage NSW statutory guidelines.
- Any ground disturbing works with potential to encounter/impact natural soils profiles will require further Aboriginal archaeological assessment and possible test excavation, either under a Section 90 AHIP under the NPW Act, or as part of an approved ACHAR (including test excavation strategy/research design) as part of an SSD Approval.
- Any substantial excavation works proposed for the site are likely to require Aboriginal archaeological test excavation to further investigate and confirm the nature of Aboriginal archaeological potential within the Powerhouse Ultimo study area.
- While Aboriginal archaeological test excavation is usually possible at a site without an AHIP (if undertaken in accordance with the provisions of statutory guidelines *Code of Practice for Archaeological Investigation of Aboriginal Object in NSW 2010* (the Code of Practice)), this will not be possible for the Powerhouse Ultimo study area, due to the nature of the site as a developed urban site that also has potential for historical archaeology to be present. Therefore, any future Aboriginal archaeological test excavation at the study area would either require approval under a Section 90 AHIP, or under an approved SSDA.
    - Should development consent for future works be sought under the SSD provisions of the EP&A Act (which switches off the need for an AHIP once SSD Approval has been granted), any proposed Aboriginal archaeological investigation works should be guided by the research, design and methodology developed in an ACHAR, to be submitted as supporting documentation with any SSD Application.
- It is important to note that while an approval of project as SSD removes the requirement for an AHIP under Section 90 of the NPW Act for a project, this is only the case once an SSD project has been determined and granted consent. Provision of SEARs for a project is not sufficient to remove the provisions of the NPW Act, therefore any early or investigative works proposed prior to SSD Approval, will remain subject to the provisions of the NPW Act (i.e. will

require an approved AHIP for any activities likely to encounter/impact natural soil/ areas of Aboriginal archaeological potential).

- A process of Aboriginal community consultation should be initiated for the Powerhouse Ultimo site in order to seek information regarding the social and cultural values of the study area, as well as in order to engage the local Aboriginal community in any proposed program of Aboriginal archaeological excavation/mitigation at the site. Consultation should particularly include the Metropolitan Local Aboriginal Land Council (MLALC), as well as in be undertaken accordance with the requirements of statutory guidelines *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.*

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APPENDIX A—Extensive AHIMS Search Results

AHIMS Web Services (AWS)

Your Ref/PO Number : Powerhouse Ultimo

Client Service ID : 534406

Note: This Excel report shows the sites found in AHIMS on the 10/09/2020. If this date is not the same as the original date of the Search Results letter obtained during the Basic Search, then the search results might be different. The PDF version of this report will always coincide with the Basic Search Results letter.

Site ID	Site name	Datum	Zone	Easting	Northing	Context	Site status	Primary contact	Site features	Site types	Recorders	Reports	Permits	Longitude GDA94	Latitude GDA94
45-6-2597	Wynyard St Midden	AGD	56	333469	6247920	Open site	Valid		Shell : -, Artefact : -	Midden	Mr.D Coe	102494,102763,102765		151.20	-33.89
45-6-2382	Goat Island 2	AGD	56	333100	6252480	Closed sit	Valid		Artefact : -, Shell : -, Aboriginal Ceremony and D		Klim Gollan			151.20	-33.85
45-6-2278	Lilyfield Cave	GDA	56	330433	6250467	Closed sit	Valid		Shell : -, Artefact : -, Po	Shelter with Midden	Michael Guider,Extent H	102201		151.17	-33.87
45-6-2299	First Government Hous	GDA	56	334612	6251612	Open site	Valid		Burial : -, Aboriginal Cer	Burial/s,Historic Place	Michael Guider,Watkin `	102494,102763,102765	4552	151.21	-33.86
45-6-0519	Moores Wharf	AGD	56	333600	6252200	Open site	Valid		Artefact : -	Open Camp Site	R Lampert	808		151.20	-33.86
45-6-0283	Rozelle Hospital 1;Roze	AGD	56	329760	6251360	Closed sit	Valid		Shell : -, Artefact : -	Shelter with Midden	Val Attenbrow			151.16	-33.86
45-6-1900	White Horse Pt.	AGD	56	330800	6252420	Open site	Valid		Shell : -, Artefact : -	Midden	Michael Guider			151.17	-33.85
45-6-1481	Rozelle Hospital 3	AGD	56	329902	6251129	Open site	Valid		Shell : -, Artefact : -	Midden	Val Attenbrow,Michael Guider			151.16	-33.86
45-6-0647	Centennial Park	AGD	56	336273	6247961	Open site	Valid		Art (Pigment or Engrave	Rock Engraving	ASRSYS			151.23	-33.89
45-6-2580	Junction Lane	AGD	56	335070	6250410	Open site	Valid		Artefact : -	Open Camp Site	Helen Brayshaw	102494,102763,102765	894,902,903	151.22	-33.87
45-6-2581	Angel Place	GDA	56	334223	6251138	Open site	Valid		Artefact : -	Open Camp Site	Dominic Steele Archaec	97963,102494,102763, `	918	151.21	-33.87
45-6-1939	MSB Tower;	GDA	56	333640	6252227	Open site	Destroyed		Art (Pigment or Engrave	Rock Engraving	Michael Guider	102763		151.20	-33.86
45-6-1615	Bennelong Point	AGD	56	334800	6252100	Open site	Destroyed		Shell : -, Artefact : -	Midden	ASRSYS	102763		151.22	-33.86
45-6-1957	Goat Island Cave;	AGD	56	333010	6252710	Closed sit	Valid		Shell : -, Artefact : -	Shelter with Midden	Michael Guider			151.20	-33.85
45-6-1809	Birchgrove	AGD	56	331380	6252700	Closed sit	Valid		Shell : -, Artefact : -, Art	Midden,Shelter with Art	Michael Guider			151.18	-33.85
45-6-1853	Lilyvale	AGD	56	333950	6251600	Open site	Valid		Shell : -, Artefact : -	Midden	Val Attenbrow,Andrew F	102763		151.21	-33.86
45-6-0030	Dawes Point;Dawes Po	GDA	56	334345	6252534	Open site	Destroyed		Art (Pigment or Engrave	Rock Engraving	Michael Guider			151.21	-33.85
45-6-2629	Broadway 1	AGD	56	333060	6249100	Open site	Valid		Artefact : -		Dominic Steele Archaec	102494,102763,102765	1299	151.20	-33.88
45-6-2637	George street 1	AGD	56	333860	6249880	Open site	Valid		Artefact : -		Dominic Steele Archaec	98238,102494,102763, `	1369	151.20	-33.88
45-6-2651	William St PAD	AGD	56	334800	6250220	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Mr.Neville Baker	102494,102763,102765	1589,1670	151.21	-33.87
45-6-2647	KENS Site 1	AGD	56	333750	6250785	Open site	Valid		Artefact : -, Potential Archaeological Deposit (PA		Dominic Steele Archaec	99857,100494,102494, `	1428,1700	151.20	-33.87
45-6-2652	Ultimo PAD 1	GDA	56	333419	6249969	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Jim Wheeler,Mr.Matthe	102494,102763,102765	1598	151.20	-33.88
45-6-0811	Goat Island;Parramatta	AGD	56	333150	6252650	Open site	Valid		Artefact : -, Shell : -	Midden,Open Camp Site	Elizabeth Rich			151.20	-33.85
45-6-2676	Johnstons Creek	AGD	56	331100	6249100	Closed sit	Valid		Art (Pigment or Engraved) : 2, Artefact : 5		Michael Guider	102142,102763		151.17	-33.88
45-6-2666	Wattle Street PAD 1	GDA	56	333200	6249602	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Dominic Steele Archaec	102494,102763,102765	1738	151.20	-33.88
45-6-2663	Mountain Street Ultimo	GDA	56	333199	6249418	Open site	Valid		Artefact : -, Potential Archaeological Deposit (PA		Mary Dallas Consulting	102494,102763,102765	1719	151.20	-33.88
45-6-2680	Broadway Picture Thea	AGD	56	333150	6249000	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Jim Wheeler	102142,102494,102763	1854	151.20	-33.88
45-6-2687	Crown Street PAD 1	AGD	56	334950	6250300	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Dominic Steele Archaec	102494,102763,102765	2017	151.22	-33.87
45-6-2742	171-193 Gloucester Str	AGD	56	333926	6251461	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Jim Wheeler	102763	2143,2342,2766	151.21	-33.86
45-6-2745	University of Sydney La	AGD	56	332350	6248740	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Doctor.Jo McDonald	102201,102494,102763	2153,2320,2443	151.19	-33.89
45-6-2783	PAD Central Royal Bota	AGD	56	334900	6251030	Open site	Valid	T Russell	Potential Archaeological Deposit (PAD) : -		Haglund and Associates	102494,102763,102765	2364	151.22	-33.87
45-6-2767	Tent Embassy	AGD	56	332680	6248680	Open site	Valid	T Russell	Aboriginal Resource and Gathering : 1		Bill Lord	102494,102763,102765		151.19	-33.89
45-6-2796	320-328 George St PAI	AGD	56	334100	6251050	Open site	Valid	T Russell	Potential Archaeological Deposit (PAD) : -		Mr.Dominic Steele	102494,102763,102765	2415	151.21	-33.87
45-6-2822	USYD: Central	AGD	56	332750	6248550	Open site	Valid		Artefact : -		Jo McDonald Cultural H	100302,102494,102763	2554	151.19	-33.89
45-6-2838	420 George Street PAI	AGD	56	334080	6250670	Open site	Not a Site		Potential Archaeological Deposit (PAD) : -		Doctor.Tim Owen	102494,102763,102765	2654	151.21	-33.87
45-6-2934	Yurong Cave	GDA	56	335595	6251900	Closed sit	Valid		Art (Pigment or Engraved) : -		Michael Guider,Mr.Paul	102763		151.22	-33.86
45-6-2935	Yurong 1	GDA	56	335555	6252020	Open site	Valid		Shell : 6		Michael Guider,Mr.Paul	Irish		151.22	-33.86
45-6-2960	Jackson Landing Shelte	GDA	56	332442	6250870	Closed sit	Valid		Potential Archaeological Deposit (PAD) : -		Mary Dallas Consulting	102494,102763,102765		151.19	-33.87
45-6-2979	UTS PAD 1 14-28 Ultim	GDA	56	333650	6249590	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Dominic Steele Archaec	102494,102763,102765	3458	151.20	-33.88
45-6-3071	445-473 Wattle Street F	GDA	56	333285	6249412	Open site	Valid		Potential Archaeological Deposit (PAD) : 1		Biosis Pty Ltd - Sydney			151.20	-33.88
45-6-3081	200 George Street	GDA	56	334237	6251637	Open site	Not a Site		Potential Archaeological Deposit (PAD) : 1		Ms.Sally MacLennan	103114	3577,3934,4239	151.21	-33.86
45-6-2987	Poultry Market 1	GDA	56	333746	6249575	Open site	Valid		Artefact : 1		Ms.Samantha Higgs,Bic	102494,102763	3506	151.20	-33.88
45-6-3064	445-473 WATTLE ST F	GDA	56	333285	6249412	Open site	Valid		Potential Archaeological Deposit (PAD) : 1		Biosis Pty Ltd - Sydney	102763		151.20	-33.88
45-6-3152	168-190 Day Street, Sy	GDA	56	333877	6250257	Open site	Not a Site		Potential Archaeological Deposit (PAD) : -		Mr.Josh Symons,Mr.Alex	Timms	3789	151.20	-33.87
45-6-3116	Wynyard Walk PAD	GDA	56	333931	6251252	Open site	Destroyed		Potential Archaeological Deposit (PAD) : 1		GML Heritage Pty Ltd +	Context - Surry Hills,GM	3670	151.20	-33.87
45-6-3155	Moore Park AS1	GDA	56	335613	6247909	Open site	Valid		Artefact : -		Artefact - Cultural Heritage Management - Pyrm		4019	151.22	-33.90
45-6-3217	Darling Central Midden	GDA	56	333530	6250101	Open site	Valid		Aboriginal Ceremony and Dreaming : 1, Artefact		Comber Consultants Pty Limited,Ms.Tory Stening			151.20	-33.88
45-6-3324	RBG PAD 1	GDA	56	334802	6251224	Open site	Valid		Potential Archaeological Deposit (PAD) : 1		AMAC Group P/L,Mr.Benjamin Streat			151.21	-33.87
45-6-3325	RBG PAD 2	GDA	56	335212	6251494	Open site	Valid		Potential Archaeological Deposit (PAD) : 1		AMAC Group P/L,Mr.Benjamin Streat			151.22	-33.86
45-6-3327	RBG PAD 3	GDA	56	334957	6251832	Open site	Valid		Potential Archaeological Deposit (PAD) : 1		AMAC Group P/L,Mr.Benjamin Streat			151.22	-33.86
45-6-3245	DoncasterAve PAD	GDA	56	336037	6246916	Open site	Destroyed		Hearth : -, Potential Archaeological Deposit (PAI		GML Heritage Pty Ltd +	Context - Surry Hills,GM	4188	151.23	-33.91
45-6-3338	The Bays Precinct PAD	GDA	56	332354	6250885	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Artefact - Cultural Heritage Management - Pyrmont,Mr.Michael Lever			151.19	-33.87
45-6-3339	The Bays Precinct PAD	GDA	56	332779	6250555	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Artefact - Cultural Heritage Management - Pyrmont,Artefact - Cultural He			151.19	-33.87
45-6-3502	Loftus PAD 01	GDA	56	334551	6251635	Open site	Valid		Potential Archaeological Deposit (PAD) : -		Artefact - Cultural Heritage Management - Pyrm		4292	151.21	-33.86
45-6-3645	SFS-PAD	GDA	56	335846	6248721	Open site	Valid		Potential Archaeological Deposit (PAD) : 1		Miss.Sam Cooling,Curio Projects Pty Ltd			151.22	-33.89
45-6-3552	Smith Hogan and Spinc	GDA	56	331309	6249791	Open site	Not a Site		Shell : -, Burial : -		Mr.Mark Simon	104371		151.18	-33.88
45-6-3654	CRS AS 01 (Central Ra	GDA	56	334055	6249146	Open site	Valid		Artefact : -		Artefact - Cultural Heritage Management - Pyrm		4639	151.21	-33.88
45-6-3446	71 Macquarie Street PA	GDA	56	334663	6251783	Open site	Valid		Potential Archaeological Deposit (PAD) : -		GML Heritage Pty Ltd +	Context - Surry Hills,Ms	4285	151.21	-33.86
45-6-3704	Tay Reserve Artefact	GDA	56	335723	6247268	Open site	Valid		Artefact : -		Artefact - Cultural Heritage Management - Pyrmont,Mr.Michael Lever			151.22	-33.90
45-6-3705	Kent and Erskine St PA	GDA	56	333876	6251145	Open site	Valid		Potential Archaeological Deposit (PAD) : -		GML Heritage Pty Ltd +	Context - Surry Hills,Ms.Jodi Cameron		151.20	-33.87
45-6-3693	Callan Park Scared Tre	GDA	56	330004	6251406	Open site	Valid		Modified Tree (Carved or Scarred) : -		GML Heritage Pty Ltd +	Context - Surry Hills,Doctor.Tim Owen		151.16	-33.86
45-6-3694	Callan Park Waterhole	GDA	56	330060	6251377	Open site	Valid		Water Hole : -		GML Heritage Pty Ltd +	Context - Surry Hills,Doctor.Tim Owen		151.16	-33.86
45-6-3695	Callan Park Grinding G	GDA	56	330080	6251407	Open site	Valid		Grinding Groove : -		GML Heritage Pty Ltd +	Context - Surry Hills,Doctor.Tim Owen		151.16	-33.86
45-6-3696	Callan Park Cultural Tre	GDA	56	330061	6251398	Open site	Valid		Aboriginal Resource and Gathering : -		GML Heritage Pty Ltd +	Context - Surry Hills,Doctor.Tim Owen		151.16	-33.86
45-6-3762	Harrington IFS01	GDA	56	334178	6251888	Open site	Destroyed		Artefact : 1		AMAC Group P/L,Mr.Benjamin Streat			151.21	-33.86
45-6-3812	FZ 23 artefact scatter	GDA	56	336278	6246940	Open site	Valid		Artefact : -		Artefact - Cultural Heritage Management - Pyrmont,Mr.ryan taddeucci			151.23	-33.91

Report generated by AHIMS Web Service on 10/09/2020 for Mikhaila Chaplin for the following area at Lat, Long From : -33.8966, 151.1715 - Lat, Long To : -33.8606, 151.2286 with a Buffer of 1000 meters. Additional Info : Desktop Assessment for DD report. Number of Aboriginal sites and Aboriginal objects found is 66

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APPENDIX C
Historical Archaeological Assessment (AMBS 2018)

Ultimo Creative Industries Precinct: Historical Archaeological Assessment

Prepared by AMBS Ecology & Heritage
for Tanner Kibble Denton Architects

Second Draft

November 2018

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Contents

Executive Summary VI

1 Introduction 1

1.1 Site Description 1
1.2 Statutory Controls 1
1.3 Methodology & Authorship 1

2 Historic Context 3

2.1 Early Land Grants 3
2.1.1 Macarthur Estate *3*
2.1.2 The Ultimo Estate *4*
2.1.3 Early Development *6*
2.2 Block U3: William Henry – Macarthur Streets 9
2.2.1 Ultimo Post Office – 1901-present *13*
2.2.2 The Sydney Glass & Tile Company - 496-560 Harris Street *14*
2.3 Block V3: Macarthur – Mary Ann Streets 16
2.4 The Ultimo Power House & Tram Depot 20
2.5 The Powerhouse Museum of Applied Arts & Sciences 24

3 Evaluation of the Archaeological Potential 25

3.1 Comparative Archaeological Sites 25
3.2 Archaeological Potential & Integrity of the Resource 31
3.2.1 Block U3: William Henry – Macarthur Streets *31*
3.2.2 Block V3: Macarthur – Mary Ann Streets *35*
3.3 Research Potential 37

4 Archaeological Significance 39

4.1 Assessment of Archaeological Significance 39
4.2 Statement of Archaeological Significance 41

5 Managing the Archaeological Resource 42

Bibliography 43

Appendix A 45

Tabulated Sands Directory and City of Sydney Rates Assessment Books Information 1845-1948. 45

Figures

Figure 1.1 The Ultimo Creative Industries Precinct within its local environment (https://maps.six.nsw.gov.au/). 2

Figure 2.1 Plan of 58 allotments, being the second portion of the Pyrmont Estate to be sold at auction by Mr Smart on Monday 29 June 1840. There are no buildings indicated within the study area, approximate location indicated (Source: State Library of NSW digital collection). 4

Figure 2.2 Ultimo Place, with Cockle Bay by Edward Mason, c. 1821-1823, with MacArthur's windmill in the background (Source: State Library of NSW, Manuscript Collection, PXC 459, a1080067). 5

Figure 2.3 Detail from the Plan of the Town and Suburbs of Sydney August 1822 showing the swampy landscape around the head of Cockle Bay. The sand flats at the head of the bay are described as *Dry at low tide*. The approximate location of the study area is boxed in black (Source: Ashton & Waterson 2000:19). 8

Figure 2.4 Detail of a c.1853 plan showing the area that was resumed for the Darling Harbour goods line with buildings within the study area, which comprises parts of Lots 16, 17, 18 and 19. The likely line of the quarry is arrowed (Source: State Records Authority of NSW, AO Map 6381). 8

Figure 2.5 Detail of the Trigonometrical Survey of Sydney, 1855-1865, showing a number of timber (grey), stone (yellow), brick (pink) and iron (blue) buildings within the approximate location of the study area as indicated. Possible quarry is arrowed (Source: http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-trigonometrical-survey-1855-1865-block-v1/). 9

Figure 2.6 Watercolour painted in 1867 by Samuel Elyard of the view from a rural Harris Street to an industrial Darling Harbour (http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE3268219&_ga=2.256801355.1174455750.1541292434-1476070944.1480216908). 10
Figure 2.7 Detail from 1886 Sydney Water Plan, annotated with house numbers (left), and detail from the 1888 Metropolitan Detail Series Pyrmont (right). There is no change in the settlement pattern (PWDS1544-S206 and Sheet U3_SLNSW_a1367611h). 11
Figure 2.8 Detail from Sydney Water plan of the Devonshire St to Darling Harbour, dated 1880. The section between Mary Ann and William Henry Streets is bracketed (Archive plan 0089123). ..11
Figure 2.9 The houses at 554-556 Harris Street on 28 July 1922 with the power house behind, before demolition (Source: City of Sydney Archives NSCA CRS 51/992). 12
Figure 2.10 Photograph of the Ultimo Post office c.1903. Note the roof visible between the post office and power station as arrowed. This is most likely 137 William Henry Street, later removed for the construction of the Tramway Instruction Room (https://www.records.nsw.gov.au/image/4481_a026_000513). 12
Figure 2.11 Photograph taken in 1878 from the Town Hall Tower by Nicholas Caire, Harris Street running left to right in the background. The Omnibus stables and houses at 554-556 Harris Street are arrowed. Note the quarry behind the row of houses described as 'off Harris Street' and the sparse occupation in the vicinity of Harris Street and the University of Sydney main quadrangle in the background right (http://archival.sl.nsw.gov.au/Details/archive/110317833). 13
Figure 2.12 Map of the City of Sydney NSW 1903 with the Power House site identified and the house at 137 William Street evident in the northern section of the study area (arrowed), but the Ultimo Post Office has not yet been built (http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-1903/city-of-sydney-1903-single-sheet/). 13
Figure 2.13 Photograph taken on 28 January 1964 showing the Post Office (arrowed), Herman Haege Pty Ltd at 492-542 Harris Street, and the Ampol Service Station, 544-550 Harris Street (Source: City of Sydney Archives NSCA CRS 47/2346). 15
Figure 2.14 City of Sydney Building Surveyor's Detail Sheet 10, 1949-1972 with the approximate location of the study area indicated. The Post Office appears on the adjacent map (Sheet 9) (Source: http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-building-surveyors-detail-sheets-1949-1972/ city-of-sydney-building-surveyors-detail-sheets-1949-1972-sheet-10-central/). 16
Figure 2.15 Detail from Woolcott & Clarke's 1854 map of Sydney with the approximate location of the study area outlined. The creek line beneath the goods line and the edge of the quarry are arrowed (http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-1854/city-of-sydney-1854-single-sheet/). 18
Figure 2.16 A Sydney Tramway & Omnibus Company horse-drawn omnibus, 1897 (https://nla.gov.au/nla.obj-138205476/view). 18
Figure 2.17 Detail from 1886 Sydney Water Plan, annotated with the blacksmith's property (left), and detail from the 1888 Metropolitan Detail Series Pyrmont (right). There is no change in the settlement pattern (PWDS1544-S209 and Sheet V3_SLNSW_a1367614h). 19
Figure 2.18 1893 auction map of the southern Block V3 (Source: http://nla.gov.au/nla.obj-230507113). 19
Figure 2.19 Two photographs taken in August 1898 of the Power House chimney, under construction (left) and completed (right) (https://www.records.nsw.gov.au/image/4481_a026_000883 and https://www.records.nsw.gov.au/image/4481_a026_000873). 22
Figure 2.20 Two photographs taken in August 1898 of the construction of the Power House. The image, right, is erroneously identified as the Tram Shed chimney (https://www.records.nsw.gov.au/image/4481_a026_000880 and https://www.records.nsw.gov.au /image/4481_a026_000884#expanded). 22
Figure 2.21 Two photographs taken July 1898 of the Tram Sheds under construction. The image, right, is erroneaously identified as the Power House (https://www.records.nsw.gov.au/image/4481_a026_000882 and https://www.records.nsw.gov.au/image/4481_a026_000874). 23
Figure 2.22 Layout of the original 1899 power house (left), and the 1902 extension(right) (Godden et.al. 1984:98, 115) 23

Figure 2.23 1963 plan of the Ultimo Power Station (left) and 1908-1953 plan of the Ultimo Tram Sheds, with associated facilities between Sistrum Street and Omnibus Lane, including arrestor pits (Sydney Water archive plan DS3725(2) and BLKWTL3723_EXT). 24
Figure 3.1 City of Sydney 1930 plan showing the study area and archaeological excavation sites in the vicinity. They are as follows: 1) Study area, 2) 14-28 Ultimo Road, 3) Bullecourt Place, 4) Paddy's Markets, 5) 24-50 Mary Ann Street, 6) 50-72 Union Street, and 7) CSR Site. 25
Figure 3.2 The earliest phase on the site with the 1840s cottage in good condition arrowed. Note the red river gum sections laid out across the swamp sands configured to align with the property boundaries (AMC 2015:44, Figure 3.9). 26
Figure 3.3 Archaeological features overlain on the 1865 Trigonometrical Survey Plan for Block VI (AMC 2015:57, Figure 3.24). 27
Figure 3.4 Detail from Sydeny Water map of Block R3 between William Henry and Quarry Streets. Trench 2 is boxed (Sydney Water archive plan DS3724). 28
Figure 3.5 Final plan of Trench 2 containing houses 428–436 Harris Street (GML 2001:41, Figure 3.2). 28
Figure 3.6 The existing buildings in the study area; the buildings associated with the former Ultimo Power Station are also labelled. Approximate study area indicated (TKD Architecture, 2018). 31
Figure 3.7 Sydney Water 1886 U3 plan (see Figure 2.7 above) overlain on the current aerial of the Ultimo Powerhouse and Post Office site (https://maps.six.nsw.gov.au/). 33
Figure 3.8 1984 MAAS Stage 2 Construction plan (Section 3) facing West, illustrating the basements beneath the North Annexe (the Office Building), the Engine Hall and the Turbine Hall (left to right). The basement of the Office Building is 4.28m and that of the Engine Hall is 6.75m at its deepest, and 2.48m in the shallower section. The approximate extent of 137 William Henry Street is marked. 34
Figure 3.9 1984 MAAS Stage 2 Construction plan. Section 11 faces South, and illustrates the basements beneath the West Building (the Wran Building), the Turbine Hall and the Boiler House (left to right). The approximate extent of 517 off Harris Street has been marked. 34
Figure 3.10 1984 MAAS Stage 2 Construction plan with the extent of 517 off Harris Street marked. Section 14 faces West and pictures the North Annexe, Engine Hall and Turbine Hall (left to right). The basement of the Turbine Hall is 3.2m deep. The approximate location has been marked. 34
Figure 3.11 1984 MAAS Stage 2 Construction plan. Section 15 (bottom) faces East and depicts part of the Switch House, the Boiler House and North-East Court. The basement of the Boiler House is 6m deep. The approximate extent of 517 off Harris Street has been marked. 35
Figure 3.12 The 1886 Sydney Water V3 Plan overlaying an aerial of the study area. 36
Figure 3.13 Detail from Figure 2.17, the 1886 Sydney Water V3 Plan overlaying a detail from Figure 2.5, the Trigonometrical Survey of Sydney, 1865. 36
Figure 3.14 Detail of the south eastern corner of the overlay of the 1865 Trigonometrical Survey and 1886 Sydney Water within the footprint of the City Carrying Co. stables. Note the construction materials are indicated: timber (grey), stone (yellow) and brick (pink). 36
Figure 3.15 Aerial view of the Power House and Tram Sheds, 15 March 1932, glass negative taken by Baden H. Mullaney. The locations of the Bullecourt Place site, to the north of the Ultimo Creative Industries Precinct, and the 14-28 Ultimo Road sites, to the south, are indicated (http://nla.gov.au/nla.obj-161864278/view). 38
Figure 5.1 Aerial with overlay of the Sydney Water 1886 plan of Block U3 (left) and the plan of Block V3 (right) with areas of potentially state significant archaeological sensitivity shaded red. It should be noted that the archaeological resource in Block V3 relating to the City Carrying Co. has the potential to be locally significant; however, should physical evidence of the earlier houses be revealed within the footprint of the former stables this resource is assessed as state significant (refer to Figure 2.7, Figure 2.17, Figure 3.13 and Figure 3.14 above). 42

Executive Summary

AMBS Ecology & Heritage (AMBS) has been commissioned by Tanner Kibble Denton Architects (TKD Architects), to prepare an Archaeological Assessment for the Ultimo Creative Industries Precinct (UCIP) (Museum of Applied Arts and Sciences' [MAAS] Powerhouse Museum site).

This assessment has identified that the survival and integrity of the archaeological resources in the Ultimo Creative Industries Precinct are likely to be variable.

Construction of the Ultimo Power House and replacement of the Sydney Tramway and Omnibus Company (STOC) stables by the Tram Depot for stabling electric trams in 1899 will have completely altered the local landform having had a significant impact on the underlying archaeology. However, archaeological resources associated with 1840s and later houses, if present with good integrity across the northern and southern areas of the precinct would have the potential to contribute to an understanding of the development and social interactions within a discrete group of early houses. Analysis of previous archaeological excavations undertaken within the vicinity of the UCIP Precinct, particularly the adjacent Bullecourt Place and 14-28 Ultimo Road (UTS) sites, indicates that the archaeological resource in the study area has the potential to contribute to research themes associated with the development of Sydney's urban environment from the early to mid-nineteenth century

If present with good integrity, the archaeological resources within the footprint of the Ultimo Creative Industries Precinct have been assessed as having local and may meet the requirements for state significance and as such should be managed in accordance with the requirements of the *Heritage Act 1977*.

It is understood that concepts for the future use and configuration of the Precinct are at an early stage and that there are no proposals to excavate beneath the current ground or basement levels with the exception of the Harris Street south site. Retention of archaeological resources in situ where it can contribute to future, new research questions, is the preferred management strategy

However, should excavation ultimately be required within any of the areas identified as being archaeologically sensitive, an application for an Excavation Permit under Section 140 of the *Heritage Act 1977* must be lodged with the Heritage Council of NSW. The application will need to include a Research Design which includes the information contained in this report as well as detailed research questions, excavation methodology and excavation director, who will comply with the Heritage Council Excavation Director Assessment Criteria for a state significant historical archaeological site

1 Introduction

AMBS Ecology & Heritage (AMBS) has been commissioned by Tanner Kibble Denton Architects (TKD Architects), to prepare an Archaeological Assessment for the Ultimo Creative Industries Precinct (Museum of Applied Arts and Sciences' [MAAS] Powerhouse Museum site).

In April 2018, the NSW Government announced that the MAAS Powerhouse Museum was to be relocated from Ultimo to Parramatta. The Government also approved retention of a cultural presence at the Powerhouse Museum site, to include a fashion and design museum showcasing the MAAS collection; and a 1,500 seat Broadway-style (Lyric) theatre to feature major international musicals, performances, film, music, festivals and touring shows, to be built and run by the private sector.

1.1 Site Description

The site is bounded by Harris Street, Omnibus Lane and a large residential apartment block at 82 Mary Ann Street to the west; the William Henry Street Bridge to the north; The Goods Line to the east; and Mary Ann Street to the south. The site has combined the following earlier sites:

- Ultimo Post Office (Lot 1 DP 770031) on the corner of Harris Street and William Henry Street;
- Ultimo Power House (Lot 1 DP 631345), adjacent to the Darling Harbour Goods Line, between the William Henry Street Bridge and MacArthur Street;
- Warehouse buildings (Lot 1 DP 781732) on Harris Street between the Ultimo Post Office and MacArthur Street; and
- Ultimo Tram Depot (Lot 3 DP 216854), adjacent to the Darling Harbour Goods Line, between MacArthur Street and Mary Ann Street (Figure 1.1).

There is up to nine metres difference in the ground level between Harris Street and the Darling Harbour Goods Line, with the existing buildings cut into the slope to form several different floor levels and platforms throughout the site.

1.2 Statutory Controls

The site is within the City of Sydney Local Government Area (LGA). The former Ultimo Power House, the former Ultimo Post Office and the vault of the Wran building are identified as local heritage items in Schedule 5 of Sydney Local Environmental Plan (LEP) 2012. The Ultimo Post Office is also listed on the State Heritage Register (SHR Item#00502).

There are no identified historical archaeological items or sites within the Ultimo Creative Industries Precinct footprint on the LEP or the SHR.

1.3 Methodology & Authorship

This report is consistent with the principles and guidelines of the *Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013*. It has been prepared in accordance with current best-practice guidelines as identified in the *NSW Heritage Manual* (1996), published by the Heritage Office and Department of Urban Affairs and Planning (now the Heritage Division, Office of Environment and Heritage), and associated supplementary publications in particular *Assessing Significance for Historical Archaeological Sites and 'Relics'* (2009).

The report has been prepared by Jennie Lindbergh, AMBS Director Historic Heritage with assistance and input by Victoria Cottle AMBS Heritage Consultant and Jenna Weston, Heritage Consultant. The report has been reviewed by Lian Flannery, AMBS Senior Heritage Consultant.

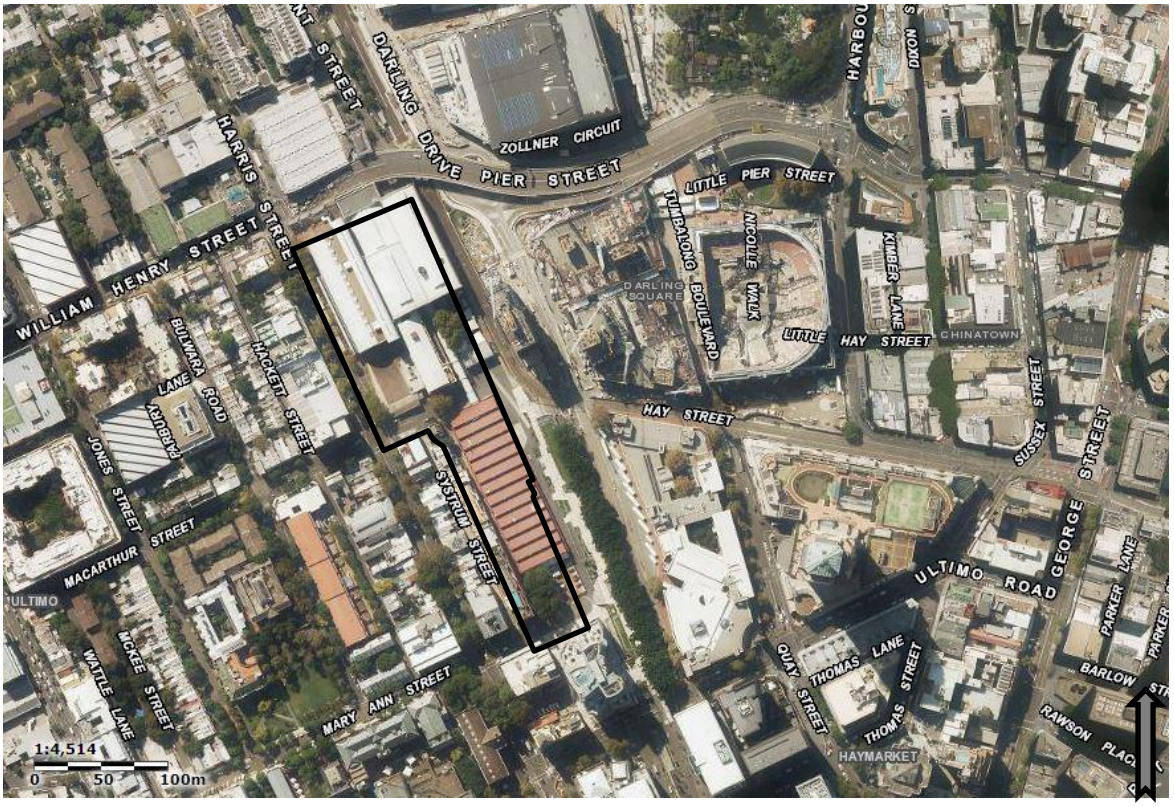

Figure 1.1 The Ultimo Creative Industries Precinct within its local environment (https://maps.six.nsw.gov.au/).

2 Historic Context

From its humble beginnings as the inaccessible, inhospitable, swampy, stony headland neighbouring the settlement of Sydney Cove, in 220 years the Pyrmont-Ultimo peninsula has seen wide scale environmental transformation and periods of great social, cultural and economic change. It developed from unmodified bushland to pockets of small-scale subsistence agriculture, before developing during the nineteenth century into a patchwork of industrial, commercial and residential pursuits (Godden Mackay Pty Ltd [Godden Mackay] 1993:31).

2.1 Early Land Grants

Prior to European development, the area surrounding Cockle Bay (later Blackwattle Bay) was reportedly swamp-like and marshy with fertile alluvial soil, and was punctuated by multiple small freshwater creeks that attracted waterfowl and other game (Steele 2012:18). Aboriginal inhabitants probably maintained a mixed food economy based on resources from the waters surrounding the peninsula, on hunting terrestrial animals and on collecting and processing plant materials. Although a smallpox epidemic was partially responsible for the loss of approximately half of Port Jackson's Indigenous population in 1789, the Pyrmont peninsula continued to sustain Aboriginal populations well into the early nineteenth century. By the mid-1830s, European activity on the peninsula began driving Aboriginal inhabitants further south to camp in Ultimo and particularly in the partially cleared landscapes of John Harris' land grants surrounding Ultimo Estate. Cockles were reportedly still being harvested from Blackwattle Bay in the middle of the nineteenth century (Fitzgerald & Golder 1994:24). However, the area had been largely cleared of native vegetation and was becoming increasingly polluted and silted up as a result of European settlement. By the 1850s, the traditional food sources of Aboriginal people had disappeared and the landscape was transformed.

The first land grants on the Pyrmont-Ultimo peninsula were made by Lieutenant Governor Francis Grose on 10 December 1794. On the western bank of Cockle Bay (later Darling Harbour) 24 acres were granted to John Malone, and an adjacent 18 acres granted to William Mitchell. In 1795, 55 acres in the north-eastern portion of the peninsula were granted to Private Thomas Jones of the NSW Corp. These grants were reputedly common in the years 1792-1795 when the colony was headed by Corps officers, who handed out small parcels of land to lesser officers to supplement their meagre pay (Fitzgerald & Golder 1994:13). Such land parcels were granted on the condition that grantees build on and reside within, as well as cultivate and improve, their land. However, these conditions were not met and deed titles often transferred between hands. In many cases these lands were initially sub-let as market gardens for a nominal fee. It is also clear that the land around the Cockle Bay head remained swampy.

2.1.1 Macarthur Estate

Jones sold his grant on the tip of the peninsula, known as Jones' Farm, to Sergeant Obadiah Ikin in 1796, who later sold it to John Macarthur, reportedly, for £10 worth of rum. It later became known as the Pyrmont Estate, and was eventually exploited for its natural resources and as an industrial site. The estate was substantially logged from 1807, and the timber sold as firewood and building material to the inhabitants of Sydney. Macarthur also established a salt works and manufactured salt, constructed a post windmill on Pyrmont Point between 1807 and 1808, and used local Pyrmont stone to build a mill for grinding grain on the junctions of Church, Mill and Point Streets (Fitzgerald & Golder 1994:15). This mill continued to operate despite Macarthur being exiled to London for his role in the Rum Rebellion. Customers brought their grain across Cockle Bay by boat, briefly drawing the headland into commercial activity (Casey & Lowe 2010:19). The mill was unable to compete with Dickson's and Barker's more efficient steam-powered mills across the harbour, and so it became neglected. Later, Macarthur had also planned to build a large stone mansion in

Pyrmont from local stone, but although the stone was quarried no such dwelling eventuated (Casey & Lowe 2010:19). Instead the stone was transported to Parramatta, and Macarthur's seemingly grand visions for the Pyrmont peninsula were abandoned.

With the death of John Macarthur in 1834 the estate passed to his son, Edward, who made plans to subdivide the land into villa-sized residential lots with spaces devoted for a church, harbour fortifications and a wharf. A vision to create a middle-class suburb dictated Macarthur's requirement that each allotment have only one house on it (Fitzgerald & Golder 1994:25). Given the lack of investment in Edward Macarthur's first attempts at subdivision, the plans were deemed unsuitable and a second allotment plan was drawn up in 1839. The Macarthur Estate was sold by auction in December 1839 and July 1840 (Figure 2.1), of which just over two thirds were successfully sold (Broadbent 2010:435). By 1843, most lots south of John Street and some to the north had been sold or leased and developed for residential use, whilst others were further subdivided or consolidated, developed and auctioned. John William Russell, a shipbuilder, purchased two lots fronting Pyrmont Bay and constructed a shipyard, whilst shipbuilder Thomas Chowne leased lots fronting Johnstons Bay. The sale of Macarthur's Pyrmont Estate continued in the 1850s and 1860s, but the process of urbanisation up to this point was slow.

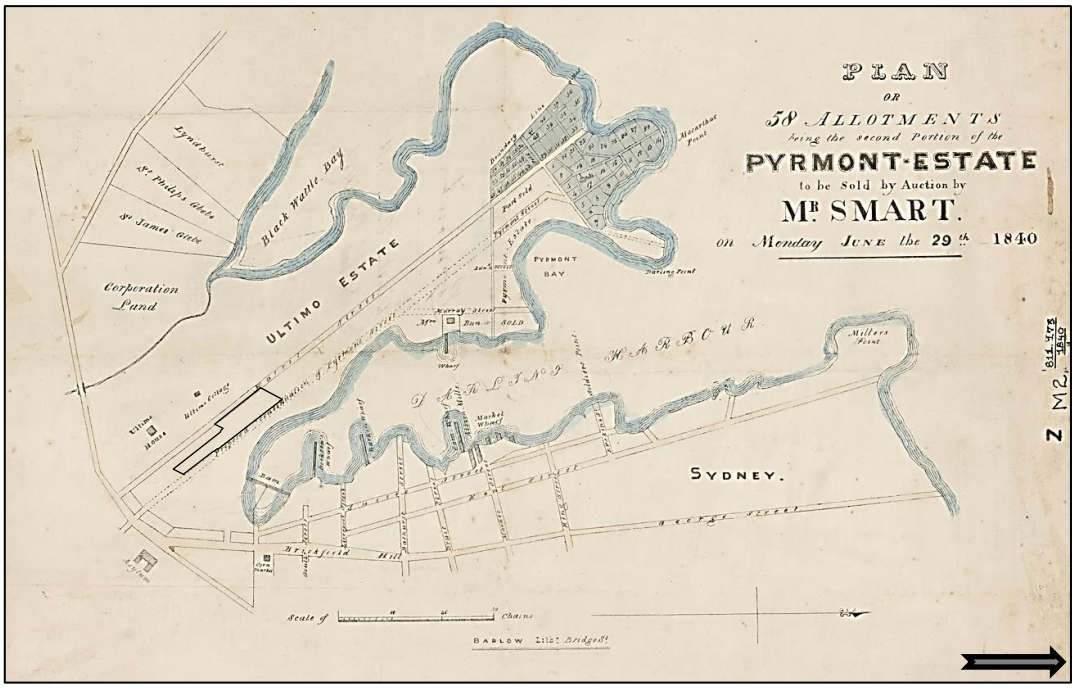

Figure 2.1 Plan of 58 allotments, being the second portion of the Pyrmont Estate to be sold at auction by Mr Smart on Monday 29 June 1840. There are no buildings indicated within the study area, approximate location indicated (Source: State Library of NSW digital collection).

2.1.2 The Ultimo Estate

In 1803, Surgeon John Harris of the NSW Corps was conditionally granted a 35 acre portion of land at the base of the Pyrmont peninsula *between the Church Land [Glebe] and the ground used as a brickfield* which he named the Ultimo Estate (Fitzgerald & Golder 1994:17). As one of the few grantees to observe the conditions of their grant, Harris cleared and cultivated portions of the land and in 1804, constructed Ultimo House a two storey Georgian mansion with a wide veranda on a sandstone ridge overlooking Blackwattle Creek and Cockle Bay (Broadbent 2010:14). In 1806 Harris was granted a further 9¼ acres between his estate and Parramatta Road, along with a 135 acre grant in the north-western corner of the Pyrmont peninsula. Harris also purchased the farms originally granted to John Malone and William Mitchell; and when Harris was granted 12¾ acres

between George Street and the head of Cockle Bay he effectively acquired the whole peninsula except for Macarthur's estate.

At the time of his death in 1838, Harris had no children and had predeceased his wife, Eliza (Matthews 1982:14). Harris' will stipulated that the Ultimo Estate and surrounding properties were to be divided equally and bequeathed to his brothers George and William Harris, who were to collect rent and manage properties from tenants (Casey & Lowe 2000:44). Following the deaths of George and William, the estate was bequeathed to John Harris, son of George Harris, and John Harris, son of William Harris, together with their descendants. To facilitate division Harris' estate was divided into 70 lots, for which each John Harris received 35 lots. Lots were then allotted by ballot to each of the family members (Godden Mackay 1994:16). From the 1860s, both sides of the family set about the rapid development of their lands, and in 1874, the eldest son George Harris told a parliamentary enquiry that they had *laid out £20,000 in buildings and* [had] *not a vacant house on the estate* (Broadbent 2010:439). Despite these developments, the Ultimo Estate was still considered largely rural at this time.

However, it would appear that, at least initially, John Harris' estate was not intensively cleared. The land surrounding Ultimo House was gradually cleared and utilised as a deer park and for grazing sheep and cattle (Godden Mackay 1994:15). A sketch of the Ultimo Estate by Edward Mason shows Ultimo House and Cottage looking northwest towards the tip of the Pyrmont peninsula (Figure 2.2). The land surrounding Ultimo House has been cleared to imitate English parkland with sparsely planted trees up to the foot of Cockle Bay. In the foreground between Macarthur's windmill and Ultimo Cottage dense forest can be seen. It was reported that Harris intentionally retained native vegetation to provide ground coverage for deer and guinea-fowl, thereby enhancing the hunt (Broadbent 2010:393).

In 1814, the colonial architect Francis Greenway was commissioned to extend Ultimo House, creating a semi-circular hall with a spiralling stone staircase and a central dome to let in natural light. John and his wife Eliza resided in Ultimo House until 1821 when they moved to Shane's Park at South Creek, near St Marys. When visiting Sydney, Harris stayed in the neighbouring Ultimo Cottage, but otherwise the dwellings and their gardens were leased to tenants. Little is known about the precise location and frequency of occupation areas on the Ultimo Estate between the 1820s and 1830s.

Figure 2.2 Ultimo Place, with Cockle Bay by Edward Mason, c. 1821-1823, with MacArthur's windmill in the background (Source: State Library of NSW, Manuscript Collection, PXC 459, a1080067).

2.1.3 Early Development

On the whole, very little information has been recorded in respect to those portions of Harris' estate to the east of Harris Street. It is likely that the Harris family was not attracted to this portion of the estate because of the low-lying natural topography and the unsuitability of the marshy land for development (Godden Mackay 1994:41). Furthermore, the head of Darling Harbour was reportedly becoming silted up and water from nearby creeks travelled slowly into the harbour or remained stagnant. Rubbish, including waste from the surrounding industries, could not be carried away and so the area became known as a 'noxious swamp' (Fitzgerald & Golder 1994:35, 42). A series of creeks across the area formed a delta of swampy land around which the study area was situated. Fitzgerald & Golder speculate that visitors to Ultimo House could chance the drive that *skirted the swamp* north of Ultimo Road (1994:20). This landscape would remain unchanged at least until the late 1830s. A survey of the Ultimo Estate in 1837 shows the extent of the swampy wetland at the head of Cockle Bay, as well as areas of land use and some building locations (Figure 2.3). Also illustrated are multiple tracts of land that were functioning as gardens, as well as a brick ground. A hut, two stables and five other unidentified buildings are represented, yet the study area appears to have been undeveloped at this time. Harris Street was present by around 1836 (Broadbent 2010:399).

In 1837, 'upwards of 1,000,000 cubic feet of material' was cut from Brickfield Hill and dumped at the head of Cockle Bay, when stone, large quantities of silt, refuse, mud and clay dredged from the harbour or excavated from around the foreshores and from higher blocks were used as fill (Fitzgerald & Golder 1994:26; Godden Mackay 1993:44). Swampy land at the south-west headwaters of the harbour was reclaimed by the 1840s and Dickson's Mill pond, to the south-east was infilled by 1855. These actions altered the shoreline to create a reasonably level yet undeveloped site; however, apparently the underlying ground water continued to percolate up through the fill (Godden Mackay 1993:41). However, it seems that the study area may have remained unreclaimed swampland. This is suggested by the late date of reclamation of the block to the south of the study area which was not reclaimed until 1884 (Australian Museum Consulting 2015:24).

In addition, in September 1853, the Government proclaimed the Darling Harbour Goods Line, to transport goods between the harbour and the Central markets, and approved the resumption of land provided neighbouring landowners were adequately compensated (Figure 2.4). In all 15 acres 3 roods and 39 perches were acquired, of which about 7½ acres of land was acquired from the Ultimo Estate. However, the line divided the peninsula and largely alienated the Darling Harbour shoreline from Harris Street. Streets were dissected and effectively cut off from the waterfront. Those properties within the footprint of the Line were resumed, and its construction also had a detrimental effect on adjacent properties. That the embankment was constructed without retaining walls, proved to not only cause problems with washdown of soils, it was also something of a scandal (Broadbent 2010:503). Construction of the embankment required massive amounts of soil which was largely derived from the construction of the Sydney to Parramatta Railway, but a Select Committee investigation of 1864 was told that it *seemed all to waste in the water* (ibid). During wet weather, the lands adjacent to the goods line were awash with run-off and soils, which also clogged culverts, compounding the problem for adjacent lands. The dispute between the railway and Harris for compensation for his land was resolved when Harris was paid £25,000 and granted a portion of land that had recently been reclaimed between the railway and Hay Street. This land is identified as part of a *wholesale reclamation* undertaken in 1860s at the head of Darling Harbour (Fitzgerald & Golder 1994:40-41). There is however, no evidence to suggest that Harris was inspired to similarly improve the lands of his estate (see Section 3.1 below).

Despite the neatly subdivided allotments along the north side of the Parramatta Road and at the northern end of the peninsula, the Ultimo Estate does not appear to have been systematically

subdivided and urbanised (see for example Figure 2.1 above). Instead, Harris leased the arable and fertile tracts of land around the headwaters of Darling Harbour, Blackwattle Bay and other unspecified areas within the estate to tenant farmers (Godden Mackay 1994:15). The Phillip Ward Rate Assessment Book of 1845 lists 54 one and two room huts dotted all over Harris' estate in 'Ultimo', of which, the majority were constructed by the tenants from fairly primitive materials (wood, slab, wattle and daub with bark or shingled roofs), and while some tenants conducted small scale enterprises from their allotments, the majority gleaned subsistence living from the animals and garden plots around their homes (1994:15).

Unfortunately, most of the allotments are not depicted in historic plans and their precise locations are difficult to identify. It is therefore difficult to gauge from historic sources whether the site was occupied by tenant farmers before the 1840s; however, the Phillip Ward Rate Assessment Book of 1845 does identify that Thomas Halloran lived in a wattle hut with a detached room, on an acre of ground in Ultimo owned by John Harris. Council Rates Assessment Books and Sands Directory entries from later years seem to identify that Thomas Halloran/ O'Halloran/O'Hallaran (or Mrs Margaret O'Hallaron) lived in the study area, between Harris, William Henry, Macarthur and Pyrmont Streets (the latter formerly extended along the western side of the Darling Harbour railway/goods line). In 1855, the Rates Assessment notes his property as including a cornfield, with the house having been upgraded to plaster. Council Rates Assessment Books and Sands Directory entries also indicate that John Gorman lived within the study area from at least 1855, the stone house and grounds being owned by Mrs Harris (as was Halloran's by this time). Later Sands Directory entries identify Gorman as a dairyman, and Mrs O'Halloran as having a dairy, so the area seems to have remained largely rural. Further, on 21 April 1855 all vacant land in the Ultimo Estate was leased to Thomas Cardwell for the sum of £1 per week, to graze cattle (Godden Mackay 1994:15).

The locations of these structures seem to roughly correspond to the six structures indicated standing on irregular shaped allotments on the c.1853 and 1865 maps (Figure 2.5). The 1865 Trigonometric survey map shows a timber bridge or culvert carrying the Darling Harbour Goods Line over the watercourse and that William Henry, Macarthur, Mary Ann and Systrum Streets and Omnibus Lane had not been formed. The 1880 Sands Directory indicates that Mary Ann and Macarthur Streets remain unformed between Harris Street and Pyrmont Street/the goods line until after 1880.

The 1865 Trigonometrical Survey map also indicates areas of possible quarrying (Figure 2.5 refer also to Figure 2.11 below). Low's Directory of 1844 refers to the Ultimo Quarries, with at least one known quarrymaster, John Cowsley, which seems to confirm that the earliest quarry on the peninsula may have been on the Ultimo Estate (Broadbent 2010:409, 411). Broadbent suggests that it is likely that there were at least two, if not more, quarries on the Harris Estate in 1854 to provide ballast for the Darling Harbour goods line. In particular, there was a quarry bounded by Harris, Pyrmont, Macarthur and Mary Ann Streets, and had obviously ceased to operate at least by 1899 when the Power Station was constructed (Broadbent 2010:412, 413). The quarry is not indicated in Sands Directories nor Rates Assessment Books, nor are any of the tenants occupying adjacent housing identified as having any association with the quarry.

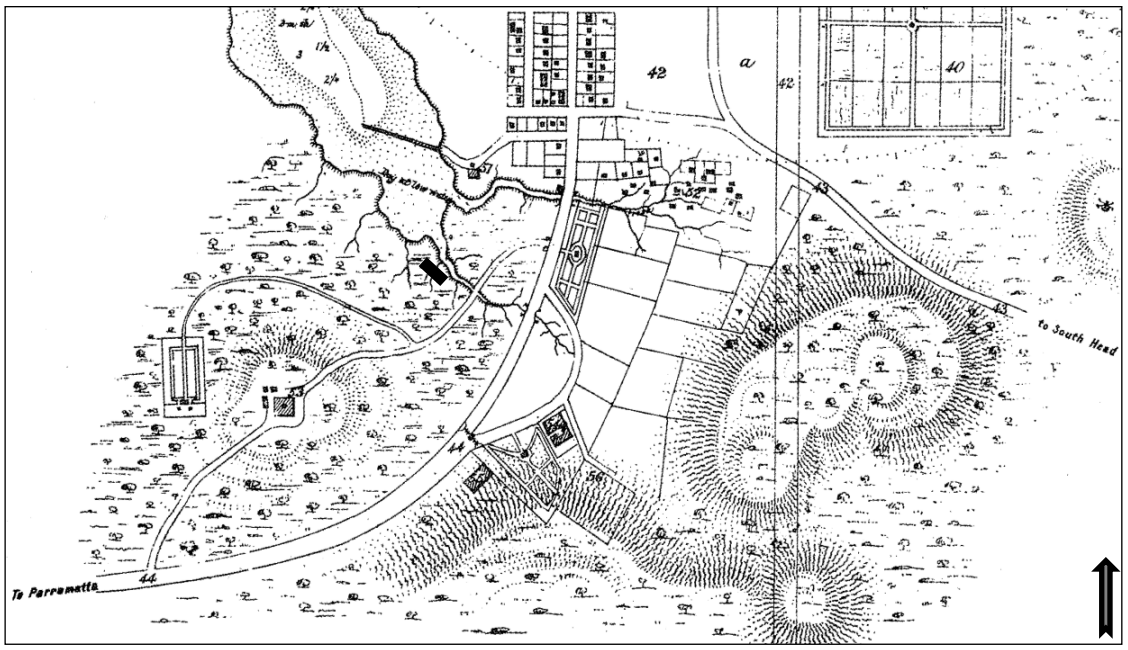

Figure 2.3 Detail from the Plan of the Town and Suburbs of Sydney August 1822 showing the swampy landscape around the head of Cockle Bay. The sand flats at the head of the bay are described as *Dry at low tide*. The approximate location of the study area is boxed in black (Source: Ashton & Waterson 2000:19).

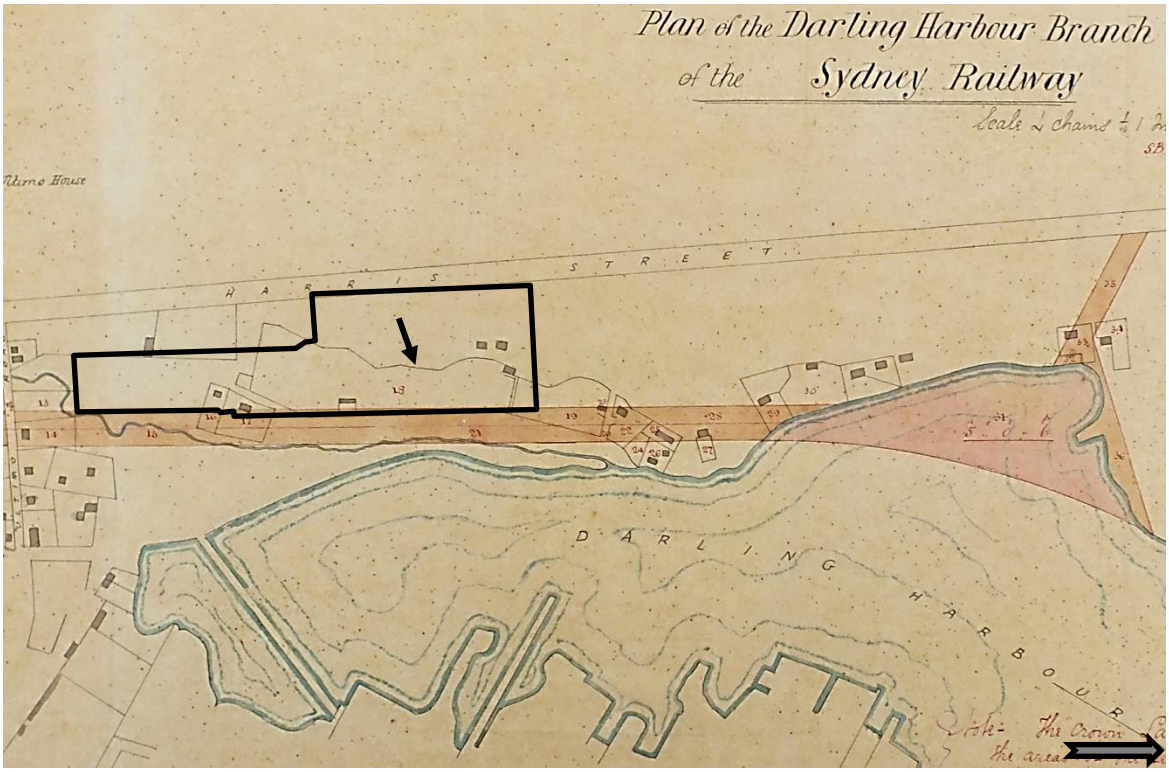

Figure 2.4 Detail of a c.1853 plan showing the area that was resumed for the Darling Harbour goods line with buildings within the study area, which comprises parts of Lots 16, 17, 18 and 19. The likely line of the quarry is arrowed (Source: State Records Authority of NSW, AO Map 6381).

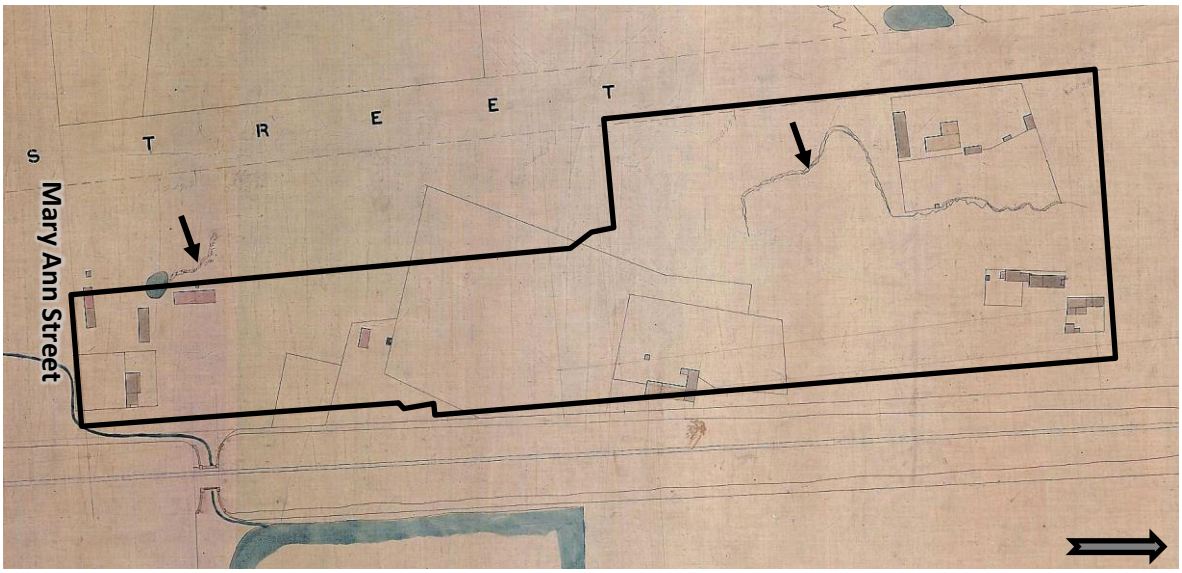

Figure 2.5 Detail of the Trigonometrical Survey of Sydney, 1855-1865, showing a number of timber (grey), stone (yellow), brick (pink) and iron (blue) buildings within the approximate location of the study area as indicated. Possible quarry is arrowed (Source: http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-trigonometrical-survey-1855-1865-block-v1/).

2.2 Block U3: William Henry – Macarthur Streets

The northern block, between William Henry and Macarthur Streets is later occupied by the Ultimo Power Station is identified on the Sydney Water plans as U3, while the southern block to Mary Ann Street, later occupied by the Ultimo Tram Depot as V3.

The sparse scatter of cottages between the goods line and Harris Street continue into the later nineteenth century. It seems that the land to the west of the goods line remained largely isolated and undeveloped, whilst lands to the east of the line became increasingly industrialised (Figure 2.6). Although water had been reticulated through most of Sydney by the 1860s, water was not reticulated to this area until later. Development to the north of Jones Street was thriving, likely as a result of council's decision to lay a main along Harris Street to Pyrmont. However, only some of John Harris' tenants on Harris Street were connected and residents living off Harris Street in poor circumstances were denied connection (Figure 2.7), (Fitzgerald & Golder 1994:42). It is also likely that the Harris Estate houses were not connected to the sewer until after the Devonshire Street Sewer from the Sydney Terminal to Darling Harbour was laid in 1881 (Figure 2.8).

An increase in the local population is indicated in the Sands Directory and Council Rates Assessment Books from 1871. It is not possible to correlate cottages shown on the Trigonometric Survey plan with housing depicted on later plans, though some tenants continue in occupation from 1855. Continuing occupants are the Mahers, O'Hallorans and Browns, while C O'Keeffe has replaced Gorman. There are two empty single storey 4-5 roomed timber houses with shingled roofs. A semi-detached pair of single storey 6-roomed brick houses with shingled roofs are now present on Harris Street to the north of Macarthur Street: number 472 (later renumbered to 518, then 554) and 474 (later renumbered 520, then 556) (Figure 2.9). Each house was valued at £40 and were leased to William Henry Harris and William Cope. A group of four houses identified as 'off Harris Street' rather than having a street number, with the two empty houses and Martin Brown's house identified respectively as 1, 2 and 3 'off 474 Harris Street'. Another property is identified as '4 off 474 Harris Street', comprising a two-storey, four-room timber warehouse, with wooden roof, valued at £40 and tenanted by John Woods (Figure 2.11). The 1877 Council Rates Assessment Book identifies another two houses 'off Harris Street' between William Henry and Macarthur Streets - a total of 11 tenanted houses; in 1880 there are 12; but in 1882 and 1891 there

are only seven. However, these houses are identified as numbering 517-523 on the 1886 Sydney Water, which may indicate that John Woods is living at number 523.

The 1888 Metropolitan Detail Series map for the block also confirms that there is little change in the occupation density, as do contemporary photographs (refer Figure 2.7 and Figure 2.11). By 1873 a house is present at 137 William Henry Street, leased from the Harris family by Thomas Bladen, an iron moulder/smelter/manufacturer/engineer. The 1877 Council Rates Assessment Book identifies it as a two storey brick and stone house, with a shingled roof and 8 rooms, valued at £52, and the 1896 and 1901 Council Rates Assessment Books identify stables on the property as well, there is a house is present on this site until 1913/4 whereby the house and land was resumed for the NSW railway (for construction of the Tramway Instruction Room). The 1911 Council Rates Assessment Book then identifies the house as a single storey house constructed of wood with an iron roof. Tenants included William Carroll, a butcher (1882-1889); William McCaffrey, a drayman (1890-1896); Mrs Henrietta Meikle and James O'Grady (a butcher; 1897-1899); Thomas Love (1900-1901); George Taylor (1904-1905); and finally, Charles Lacey (1906-1913).

By the turn of the century, the major part of the block had been resumed for construction of the Pyrmont Power Station. The only extant houses appear to be those at 137 William Henry Street and 554-556 Harris Street (these latter two occupied respectively by Mrs Mary Black and Mrs Agnes Dooley from 1896, and cab proprietor John Lowe from 1879) (Figure 2.12 and Figure 2.10).

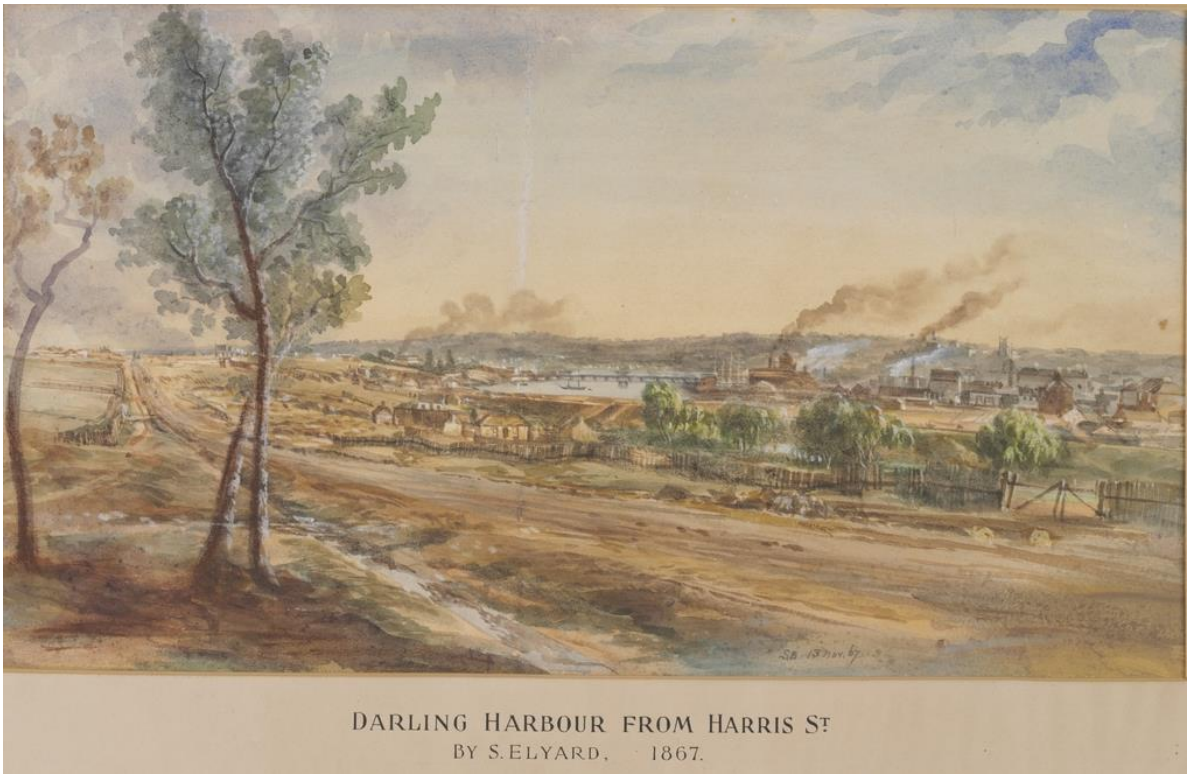

Figure 2.6 Watercolour painted in 1867 by Samuel Elyard of the view from a rural Harris Street to an industrial Darling Harbour (http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?embedded=true&toolbar=false&dps_pid=IE3268219&_ga=2.256801355.1174455750.1541292434-1476070944.1480216908).

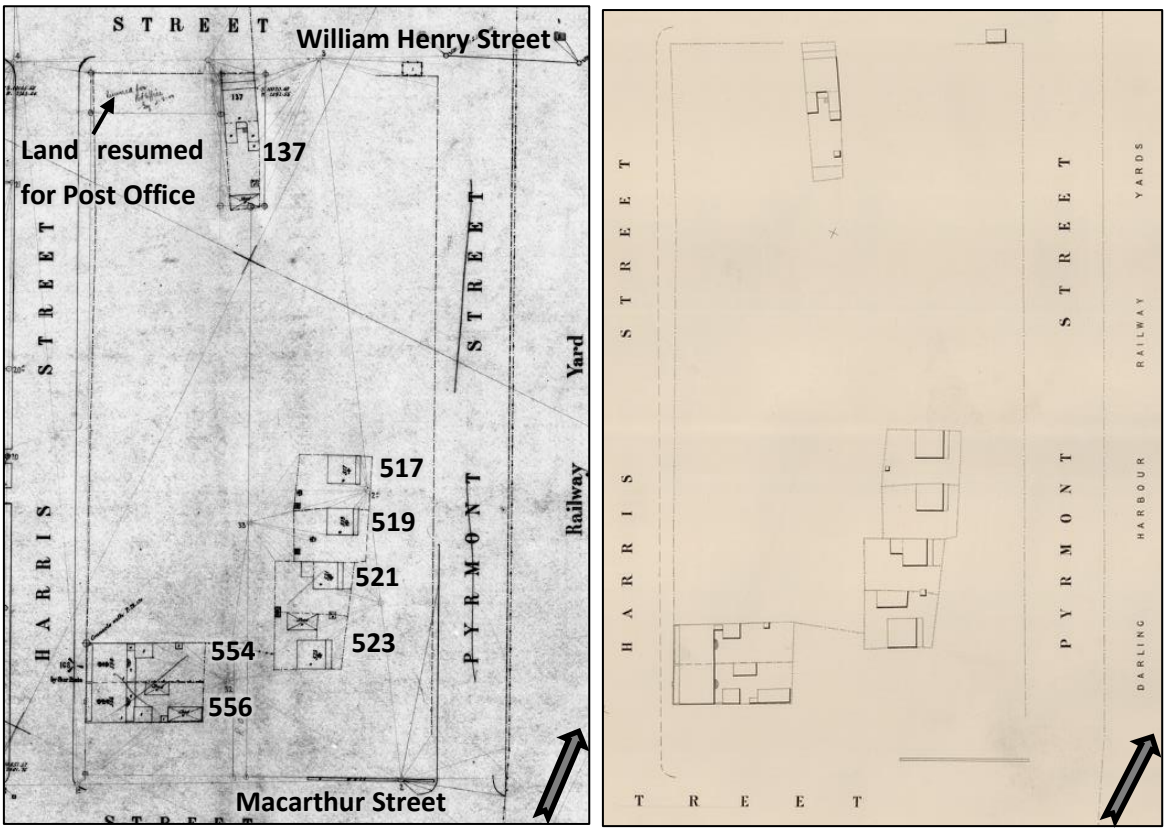

Figure 2.7 Detail from 1886 Sydney Water Plan, annotated with house numbers (left), and detail from the 1888 Metropolitan Detail Series Pyrmont (right). There is no change in the settlement pattern (PWDS1544-S206 and Sheet U3_SLNSW_a1367611h).

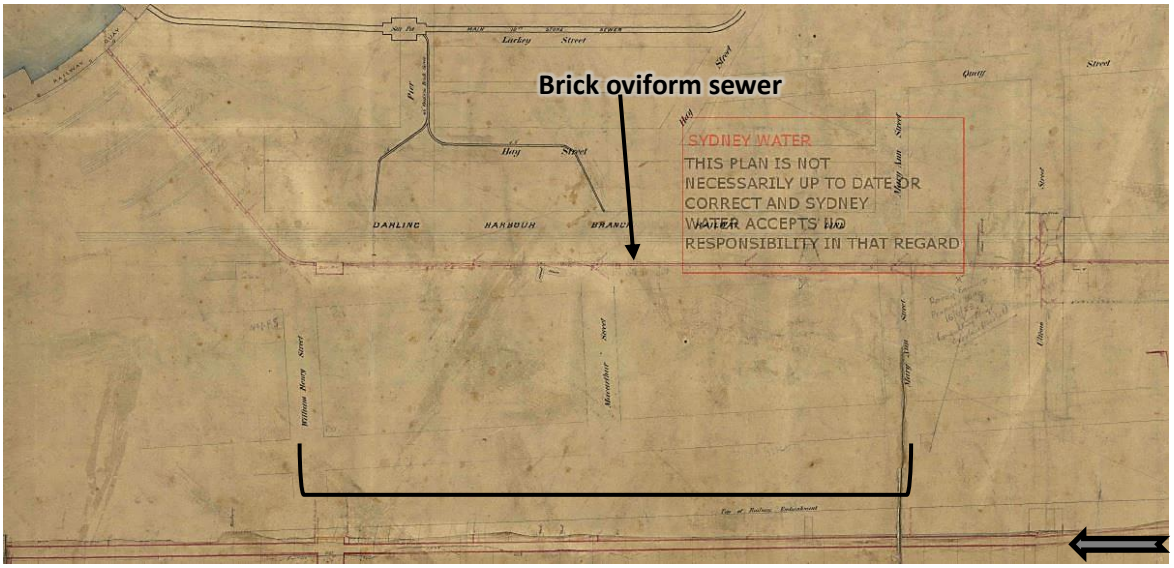

Figure 2.8 Detail from Sydney Water plan of the Devonshire St to Darling Harbour, dated 1880. The section between Mary Ann and William Henry Streets is bracketed (Archive plan 0089123).

Figure 2.9 The houses at 554-556 Harris Street on 28 July 1922 with the power house behind, before demolition (Source: City of Sydney Archives NSCA CRS 51/992).

Figure 2.10 Photograph of the Ultimo Post office c.1903. Note the roof visible between the post office and power station as arrowed. This is most likely 137 William Henry Street, later removed for the construction of the Tramway Instruction Room (https://www.records.nsw.gov.au/image/4481_a026_000513).

Figure 2.11 Photograph taken in 1878 from the Town Hall Tower by Nicholas Caire, Harris Street running left to right in the background. The Omnibus stables and houses at 554-556 Harris Street are arrowed. Note the quarry behind the row of houses described as 'off Harris Street' and the sparse occupation in the vicinity of Harris Street and the University of Sydney main quadrangle in the background right (http://archival.sl.nsw.gov.au/Details/archive/110317833).

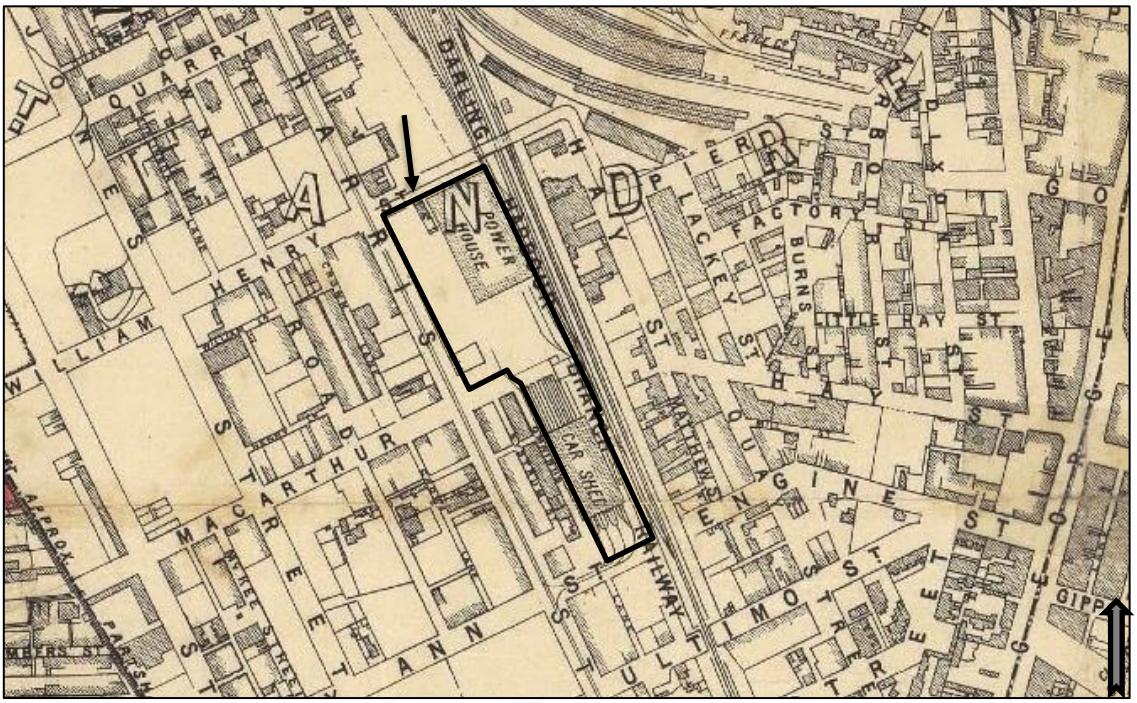

Figure 2.12 Map of the City of Sydney NSW 1903 with the Power House site identified and the house at 137 William Street evident in the northern section of the study area (arrowed), but the Ultimo Post Office has not yet been built (http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-1903/city-of-sydney-1903-single-sheet/).

2.2.1 Ultimo Post Office – 1901-present

In 1881, as a direct result of subdivision of the Harris and Macarthur Estates, a post and telegraph office was established in Ultimo to provide for residents' needs. The Sands Directories records that it was initially located in rented premises at 484 Harris Street. Government funds to construct a building were finally obtained in 1900, and the Ultimo Post & Telegraph Office at 494 Harris Street, on the corner of William Henry Street opened on 16 July 1901. The site had been resumed in 1900 from Dr John Harris's descendant Margaret Harris, who was paid £600. The construction of the Post Office reflects the degree of development and consolidation of Ultimo as a predominantly industrial and warehouse precinct by the turn of the century (OEH 2018b; TKD Architects 2018:13).

The Post Office was designed by Government Architect WL Vernon, with characteristics of Federation Classical and Federation Romanesque architectural styles and became an important

local landmark as the key point of communication as well as a meeting place for residents. The Sands Directories note that it had a public phone and housed a Commonwealth Savings Bank from c.1914 until at least 1932, when the Sands Directories cease. It was the site of several notorious robberies in the nineteenth century, and a car crashed into the corner pillar in 1944, requiring it to be rebuilt. The building continued to operate as a post office until 1980s, but was converted into a childcare centre in 1992; however, the 21-year lease expired in 2010 and the building is now vacant (OEH 2018b; TKD Architects 2018:13).

2.2.2 The Sydney Glass & Tile Company - 496-560 Harris Street

From 1902, until at least the final Council Rates Assessment Book in 1948, the Sands Directories and Council Rates Assessment Books identify that the Sydney Glass & Tile Company (or the Sydney Glass Co. Ltd. from 1922/Sydney Glass Co. Pty. Ltd. from 1933) occupied 496-504 Harris Street, next to the Post Office (Figure 2.13 and Figure 2.14). The 1911 Council Rates Assessment Book identifies that Margaret Harris leased this property and the adjacent land (506-550 Harris Street, as identified on the Sands Directories/ Council Rates Assessment Books from 1931 onwards) to the Sydney Glass & Tile Company. The land was valued at £112; the Company's building was identified as a double-storey, two-room stone workshop & offices, valued at £464. By 1948 the building is identified as a two-storey brick 3 + 5 roomed factory and offices with a basement and iron roof, valued at £585. This is the only mention of a basement during the whole of the Company's occupation of this site, so it is uncertain whether it is accurate. It seems that Sydney Glass Co. Ltd. had purchased the properties at 496-550 Harris Street from Margaret Harris by 1924, as it is from this time that the Company is identified as the owner in the Council Rates Assessment Books. The final issue of the Council Rates Assessment Book in 1948 identifies the land at 544-550 Harris Street as owned by the NSW Government Railway Commissioner, but still leased by the Sydney Glass Co.

From 1908, fuel merchant Wright Sheard is identified as operating on the 'land' portion of the property. The 1911 Council Rates Assessment Book identifies his operation as comprising a single storey, one-room timber wood and coal yard with an iron roof, valued at £66. From 1918 this is identified as a timber yard and stables, now operated by fuel merchant Henry/Harry Chapman. By 1924 this has changed to a yard and offices made of brick. Chapman is last listed on the site in 1928.

By the turn of the century the houses at 554-556 Harris Street had been occupied respectively by Mrs Mary Black and Mrs Agnes Dooley from 1896, until 1911, and cab proprietor John Lowe from 1879, until 1909. John Black seems to replace Mrs Black from 1912-1915, with Leo O'Connor also identified as living in the house in 1914. Evidently Mrs Dooley then lives alone in the house from 1916-1922. The 1910 Sands Directory identifies that Miss L Lowe lived at 556 Harris Street that year, with John Connolly being the next tenant, until 1914, followed by William Houston (1915-1918; Mrs Annie Houston also listed in 1918), William E Russell (1919) and James Clapson (1920-1922). The 1914 Council Rates Assessment Book identifies a Railway Commissioners single storey, single room iron workshop with an iron roof, valued at £52, next to the houses at 554-556 Harris Street. This is the only reference to such a workshop, so it is uncertain whether it was present very briefly on the vacant land between 556 Harris Street and Macarthur Street, or whether the entry is referring to one of the power station buildings further along Macarthur Street. Both houses were demolished in 1922 and a public weighbridge (No. 552 or 31) is identified on the site from 1924-1928. The 1927 Council Rates Assessment Book identifies this as a brick shed and weighbridge.

By 1929, only the Sydney Glass Co. remains on the site, with the 1930 Council Rates Assessment Book identifying that their land was adjacent to more land. Margaret Harris ceased to be identified as the owner of the houses at 554-556 Harris Street after 1914; from 1918 Maurice Newstadt/Newstead is identified as the owner, and following demolition, Newstead is also identified as the owner of the vacant land (identified as 552-560 Harris Street from 1931). This land

seems to be purchased by Maize Products Pty. Ltd. sometime between 1933 and 1936 (Figure 2.14; see also Figure 2.9 above). The 1936-1948 Council Rates Assessment Books identify the company's building as a brick warehouse with a roof of cement sheets, containing two rooms across one floor and a basement. This basement is likely to have removed evidence of the houses formerly at 554-556 Harris Street, the weighbridge, and the 1914 Railway Commissioners workshop (if it was at this location).

Herman Haege Pty Ltd, paper merchant acquired the Sydney Glass Co. portion of the site sometime in January 1954, and Ampol leased a portion for a service station in December 1957 was also present to the south of the Herman Haege building in 1963 (Figure 2.13 and Figure 2.14).

Figure 2.13 Photograph taken on 28 January 1964 showing the Post Office (arrowed), Herman Haege Pty Ltd at 492-542 Harris Street, and the Ampol Service Station, 544-550 Harris Street (Source: City of Sydney Archives NSCA CRS 47/2346).

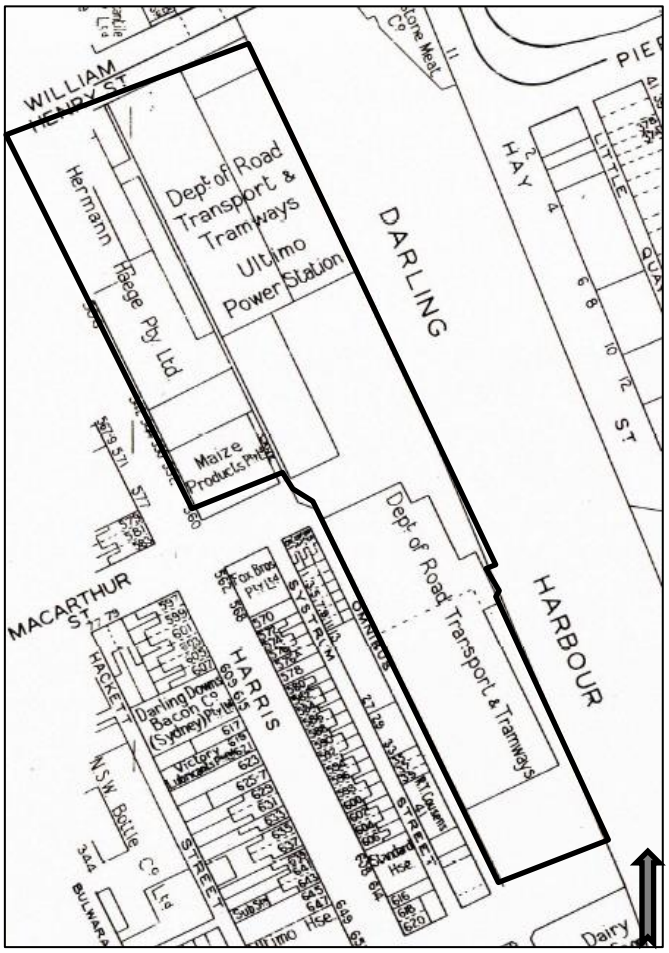

Figure 2.14 City of Sydney Building Surveyor's Detail Sheet 10, 1949-1972 with the approximate location of the study area indicated. The Post Office appears on the adjacent map (Sheet 9) (Source: http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-building-surveyors-detail-sheets-1949-1972/city-of-sydney-building-surveyors-detail-sheets-1949-1972-sheet-10-central/).

2.3 Block V3: Macarthur – Mary Ann Streets

There is little evidence of development along the eastern side of the block between Macarthur and Mary Ann Streets after the appearance of the sparse scatter of cottages in the 1840s (Figure 2.15).

From 1882, the Rates Assessments identifies three buildings on Macarthur Street: a two-storeyed 4-roomed brick shop with iron roof valued at £46 at No. 117, and two two-storeyed, four-roomed brick houses with iron roofs each valued at £39 at numbers 119 and 121. All four buildings are owned by Martin Systrum, perhaps the origin of Systrum Street, which has not yet been formed at this time. Three of the buildings continue to stand at 81–85 Macarthur Street. Systrum Street does not appear in the Rates Assessments until 1901, when the six houses at numbers 1–11 are owned by the New South Wales Mortgage Land and Agency Company Limited (Lessee). The two-storey four-roomed brick houses are extant today. In 1901 the houses are each valued at £16, which by 1911 has increased to £21 and they are identified as being owned by the New South Wales Mortgage Land and Agency Company Limited.

Despite opening in 1855, the railway to Parramatta did not extend into the city centre until 1901, and public transport was a horse-drawn tramway along Pitt Street between Circular Quay and the Central station, which opened in 1861, providing the link between maritime and rail transportation routes (Figure 2.16). However, the tram rails were above road level, which was unpopular with the horses and pedestrians; so, the line was closed and the rails lifted in 1866 (Rowland 1955:115). The city's largest omnibus company was the Sydney Tramway & Omnibus Company (STOC),

incorporated on 9 August 1872. The Company serviced most of the eastern suburbs, and also ran services through the city centre and out to Glebe, Forest Lodge, Newtown, Stanmore, Marrickville, St Peters, Cook's River and Queen's Wharf by 1876. Each bus could seat 24 passengers, usually pulled by two horses; although four horses were used at peak times or up steeper hills, such as William Street to Kings Cross (MAAS 2018). However, within a few years of operation, an increase in suburban populations led to demands for more extensive bus services. The STOC was resistant as it would require many more horses and the cost of feed was high at the time (SMH 28 December 1876).

In 1879, it was announced that the International Exhibition would take place in Sydney's Palace Gardens. It was clear that the horse-drawn buses would not cope with the anticipated large numbers of visitors, so the government authorised a tramline to be constructed along Elizabeth Street, between Redfern Station and Hunter Street. There was still strong opposition to tramways in Sydney so it was intended that after the Exhibition the tramway would be lifted and the railway extended from Redfern into the city. However, it proved so successful that at least five more lines were constructed in the next two years; to Cleveland Street, Bondi Junction, Moore Park/Randwick Racecourse, Woollahra Council Chambers and Marrickville (Rowland 1955:115-117).

The trams were initially horse-drawn, and seated 36 people in each double-decker car (18 on each deck). American steam cars were also ordered for use during the Exhibition, but were shipped late, arriving after the Exhibition had opened. Nevertheless, horse-drawn trams seemed to be the most popular version for at least 20-30 years: steam tramcars did not replace horse-drawn buses on the St Peters-Newtown line until 1898; and the Manly-Curl Curl line, while opened as a steam tramway in 1903, soon switched over to horses, steam cars not being brought back into use until 1907 (Rowland 1955:117-118). The use of electricity to power a tram was first tested in Sydney in 1890:

> *In Sydney proper, the first lines to be electrified were those along George Street to Ultimo and the Railway, as this work could then be extended to the western suburban lines. By April, 1900, the line to Dulwich Hill and St Peters had been changed over to electricity. The Glebe line followed in December, 1900; Leichhardt in March, 1901; Balmain and Forest Lodge in August, 1902; and the branch line to Abbotsford in April, 1905* (Rowland 1955:120).

From 1873, the Sands Directories and Council Rates Assessment Books identify stables belonging to the Sydney United Omnibus Company (SUOC) between Omnibus Lane and the goods line; however, the 1886 Sydney Water map identifies two stables, the northern as belonging to the Sydney Tramway and Omnibus Company (STOC) and the southern to the City Carrying Co. (Figure 2.17). John Woods, who lived in a house on Block U3 perhaps at house 523 off Harris Street (see above Section 2.2), was a director of the SUOC (SMH 28 December 1876). In 1880, J Woods & Co.'s Depot is also identified in this location, though as 542 Harris Street. John Free is recorded living next to the stables in 1873-1875, replaced by Charles Hunt in 1876-1877, and William Townsend in 1880. The 1880 Rates Assessment Book identifies Townsend's house as a single storey 4-roomed timber residence with an iron roof, valued at £36. This may have been demolished by 1886 as no further mention of it is made in Sands Directories nor Council Rates Assessment Books after 1880.

Edward Hanna's (or Hannah) blacksmith and farrier business is identified as next to the SUOC stables from at least 1873-1882, and his property is described as comprising a single storey, single room, iron roofed house and stables/farrier's shop, and a brick workshop. However, after 1887 the stables is the only entity mentioned in the Sands Directories and Rates Assessment Books. It seems likely that SUOC may have bought out the City Carrying Co. stables and Hanna's blacksmith and workshops and taken them for their own use, as the building configuration shown on the 1893 auction map) is roughly the same as that shown on the 1886 maps (compare Figure 2.17 and Figure 2.18). The auction map also notes that the east side of Omnibus Lane belongs to United Omnibus Company Limited.

The SUOC stables appear in the Sands Directories and Rates Assessment Books for the period 1873–1897. The 1877 Rates Assessment Book identifies that there were stalls for 200 horses in the wooden stables, and that there was also a brick house with an iron roof; the property was valued at £300. In 1880, the property is identified as a single storey, six-room brick chaff store with an iron roof; a single storey, single room New Forge made of iron with an iron roof; and a single storey, single room Old Forge made of wood with a shingled roof; all valued at £289. However, the Assessment Book also notes 'pulled down', and there is no further mention of these buildings in subsequent Rates Assessment Books.

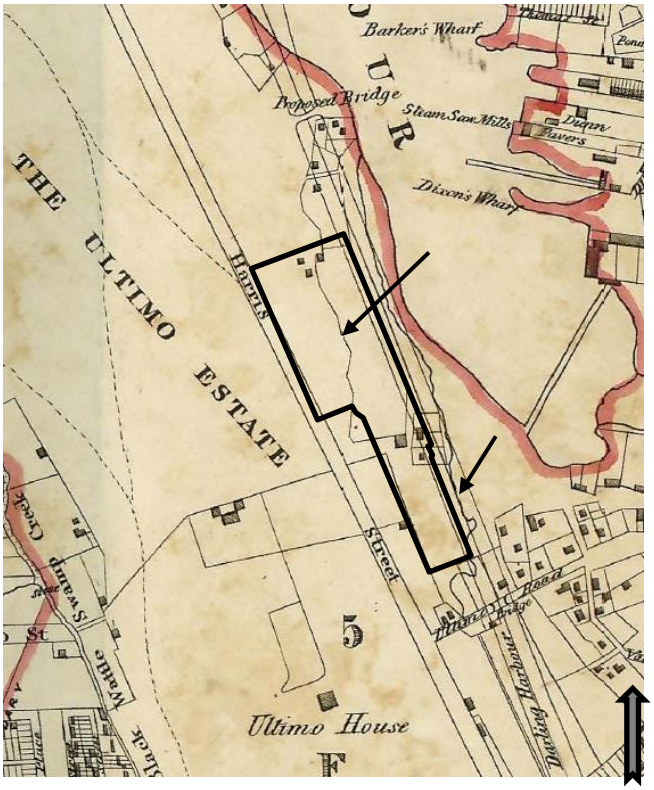

Figure 2.15 Detail from Woolcott & Clarke's 1854 map of Sydney with the approximate location of the study area outlined. The creek line beneath the goods line and the edge of the quarry are arrowed (http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-1854/city-of-sydney-1854-single-sheet/).

Figure 2.16 A Sydney Tramway & Omnibus Company horse-drawn omnibus, 1897 (https://nla.gov.au/nla.obj-138205476/view).

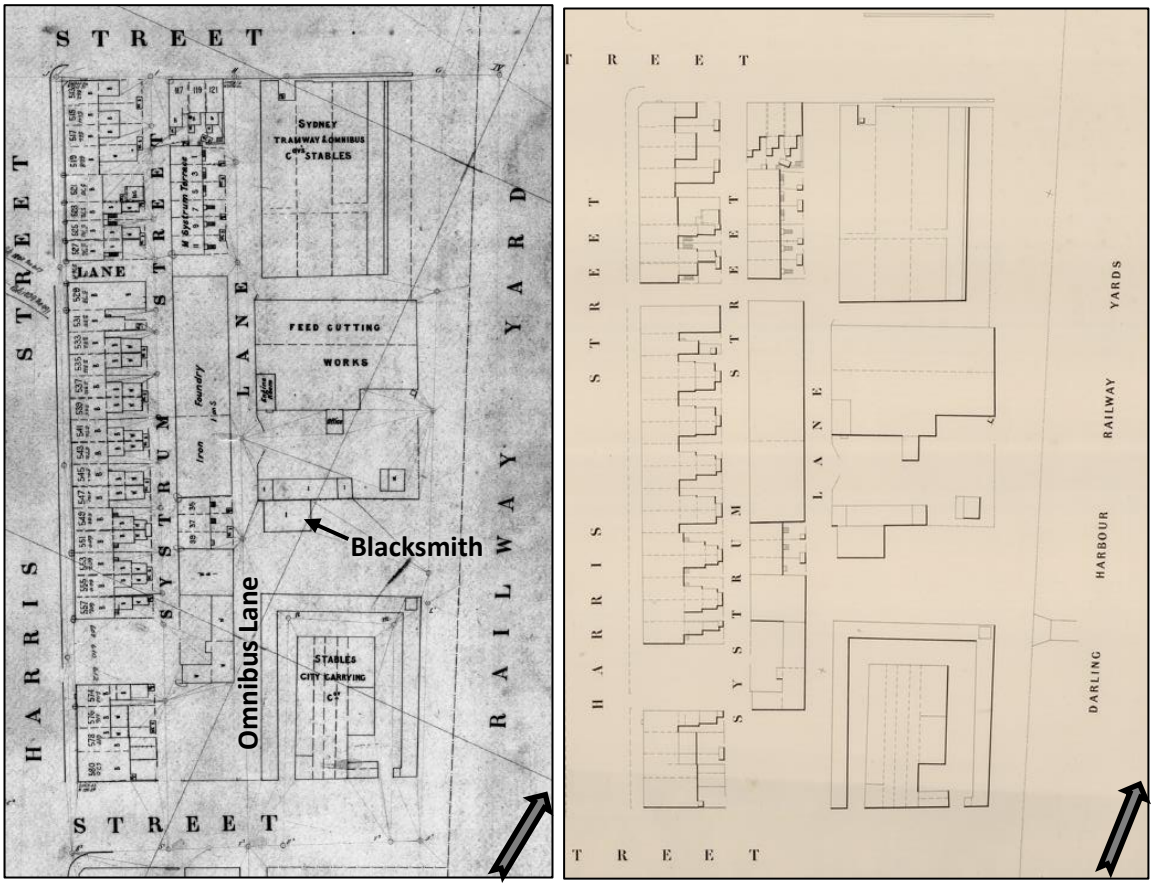

Figure 2.17 Detail from 1886 Sydney Water Plan, annotated with the blacksmith's property (left), and detail from the 1888 Metropolitan Detail Series Pyrmont (right). There is no change in the settlement pattern (PWDS1544-S209 and Sheet V3_SLNSW_a1367614h).

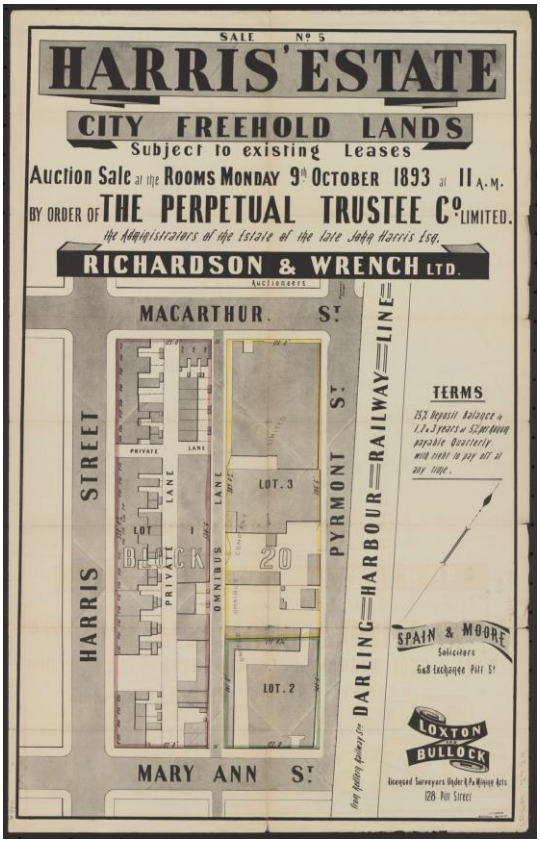

Figure 2.18 1893 auction map of the southern Block V3 (Source: http://nla.gov.au/nla.obj-230507113).

2.4 The Ultimo Power House & Tram Depot

The use of electrical power was introduced in the late 1870s, primarily for lighting; however, production costs were high and efficiency was low. By the 1890s, there were a number of small private companies, as well some council-owned stations providing light and power. From the mid-1890s, the electricity powering the tramways was generated from the cable engine house at Rushcutters Bay (Wilkenfeld & Spearitt 2004:10). In 1896, approval was given to the Sydney Municipal Council (SMC) to electrify Sydney. The first application was to power public transport, and to this end the site on Harris Street Ultimo was proposed, after a failed attempt to construct a power house in the Rocks, intrinsically linking the power house and the tram depo. In 1897, the two blocks between Mary Ann and William Henry Streets were resumed for the 'Ultimo Car House', and a power station large enough to supply the requirements of the expanding tramway system. The factors contributing to the determination of the Ultimo site were:

1. Distribution of electric current,
2. Coal supply and disposal of ash,
3. Water supply,
4. Space for future expansion,
5. Cost of land,
6. Character of foundations, and
7. Availability of labour force (Godden et.al. 1984:27.

Ultimo was a central part of the tramway system and was conveniently located for delivery of coal, disposal of ash and the supply of water for condensing. In 1898, construction of the 200-ft high chimney began. It used 890,000 bricks, and quickly became a key landmark of the area. The original complex was finally completed in December 1899. Initially the power house comprised four reciprocating steam engines driving 850 kW direct current generators and in 1902, alternating current generators operating at 25 cycles were added and turboalternators from 1905 (https://portal.engineersaustralia.org.au/heritage/ultimo-power-house-1899-1963). However, apparently the stability of the local soils had not been tested adequately. It was not until design and planning were well underway that substantial foundations and concrete piers would be required for the buildings. In particular concrete settings for the plant had to be sunk 14' (12' in excess of expectations) and at least 1,000 cubic yards of additional excavation had to be completed for wall footings (Godden et.al. 1984:29); (Figure 2.19–Figure 2.21). It is possible that the lack of stability of the soils was as a result of the poor quality of reclamation fills used across the site following cessation of quarrying. However, that the stability of the soils was not understood indicates that the quarry had closed and reclamation had occurred some years prior to 1899.

Following construction of the power house in 1899, there was a rapid growth in the tramway system, threatening to exceed capacity. By 1904, nearly 106 million passengers were using the trams per year and to further alleviate this pressure, it was determined that electrification of the railways should be considered, as well as an electrified underground system for the city to accommodate the increased patronage of the railways (Wilkenfeld & Spearitt 2004:11). The Ultimo power house was extended in 1902, three years after opening. In 1904, the Pyrmont power station began operating less than a mile away, and plans were proposed for another power house at White Bay, constructed from 1912 (Broadbent 2010:496-7, GML 2002:6-7). The 1902 extension was constructed at the southern ends of the boiler hall and engine room. The extension to the engine room, (subsequently called the turbine hall), was a single storey infill between two rooflines. The boiler house extension was completed in two phases as it was essential that the original fourteen boilers be kept in service until some of the new boilers could be commissioned. In the first phase a two-storey extension which ran the full length of, and had a common wall with the new turbine hall was completed (Godden et.al. 1984:63) (Figure 2.22). It is also presumably at this time that the Tram Depot expands to occupy part of the land between Omnibus Lane and Systrum Street as

indicated by the presence of an Arrestor Pit (the text on plan is indistinct; compare Figure 2.17 and Figure 2.23).

When it was built, the power house occupied the northern part of the site had an engine room, the boiler hall and pump room, pump-room, and offices, and illustrated some early uses of steel truss roof construction and concrete formwork. Part of the floor of the engine room was formed on rolled corrugated iron permanent formwork over which the concrete was laid (Godden et.al. 1984:44). The components of the power house were:

- the Office Building (North Annex), which originally accommodated foreman, line repairers and greasers in the basement; a testing room, chemical laboratory, officer's quarters and storeroom on the first floor; and accumulators on the second floor.
- an Engine House with 30-tonne overhead travelling cranes, which housed the first electricity generators.
- a single-storey Boiler House extending from the front wall of the Office Building (North Annex) to the south wall of the Engine House. It contained 14 boilers, all of which were fed by hand apart from two, which were mechanically fired;
- The Engine Room Extension/Turbine Hall built in 1922, making this the largest generating power station in the Southern Hemisphere and the first place in Australia to use this new technology.
- 1922-1926 the Switch House was built, with transformer banks, a new control room and an entire set of high-tension switch gear, to accommodate a major upgrade to the switching gear for the Sydney tramway network.
- 1923, the state's first pulverised coal fired boilers commissioned.
- 1929-1931 extensive modernisation program installed two new 20,000 watt turbo-alternators in the Turbine Hall, and a pneumatic coal and ash handling plant and coal bunkers. Replaced the 60 water tube boilers with 6 large single drum boilers designed to burn pulverised coal.
- 1941, two additional drum boilers and an additional turbo-alternator were installed.
- By 1942, capacity of the station had grown to 79.5 megawatts.
- 1949 a second-hand turbo-alternator from the White Bay Power Station was installed. At this time the boilers were also converted to burn furnace oil, due to coal shortages (TKD 2018:6,9). (TKD 2018:5-12).

Ultimo Tram Shed (now the Harwood Building) was originally named the Ultimo Car House, it was the first all-electric tram car shed, servicing the Sydney tramway system. This Tram Depot did not use the goods line; rather, Mary Ann Street and Harris Street provided access between the Depot and the tram system. Although it operated independently of the Ultimo Power House, in later times one track (No.10) extended into the Turbine Hall to provide rail access to the equipment within that building. It should be noted that excavation for the basement in the 1980s also removed most of the original depot floor, although a small section of track remains under the suspended floor at the south end. The house at 137 William Henry Street was demolished c. 1913 to make way for the Tramway Instruction Room. A sizable single storey brick building with asbestos shingle roof running between the post office and the Office and Accommodation Block fronting William Henry Street (NSW Department of Works 1994).

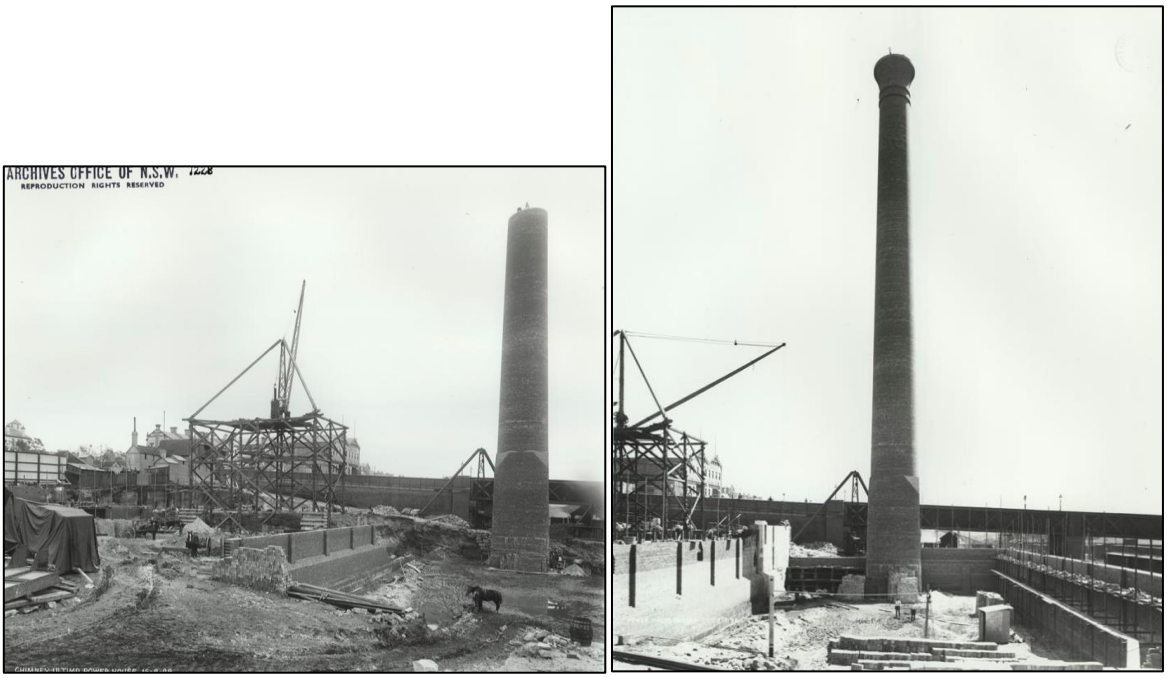

Figure 2.19 Two photographs taken in August 1898 of the Power House chimney, under construction (left) and completed (right) (https://www.records.nsw.gov.au/image/4481_a026_000883 and https://www.records.nsw.gov.au/image/4481_a026_000873).

Figure 2.20 Two photographs taken in August 1898 of the construction of the Power House. The image, right, is erroneously identified as the Tram Shed chimney (https://www.records.nsw.gov.au/image/4481_a026_000880 and https://www.records.nsw.gov.au /image/4481_a026_000884#expanded).

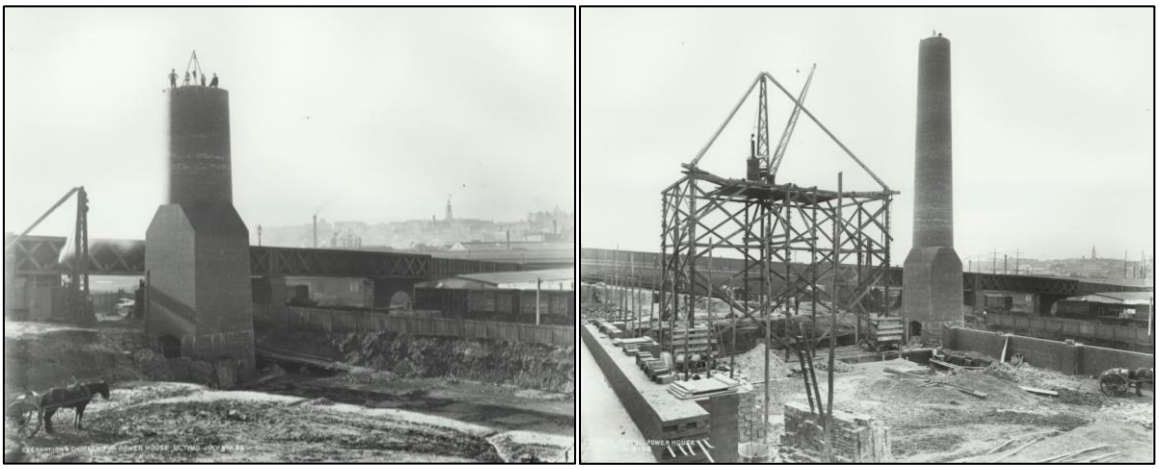

Figure 2.21 Two photographs taken July 1898 of the Tram Sheds under construction. The image, right, is erroneaously identified as the Power House (https://www.records.nsw.gov.au/image/4481_a026_000882 and https://www.records.nsw.gov.au/image/4481_a026_000874).

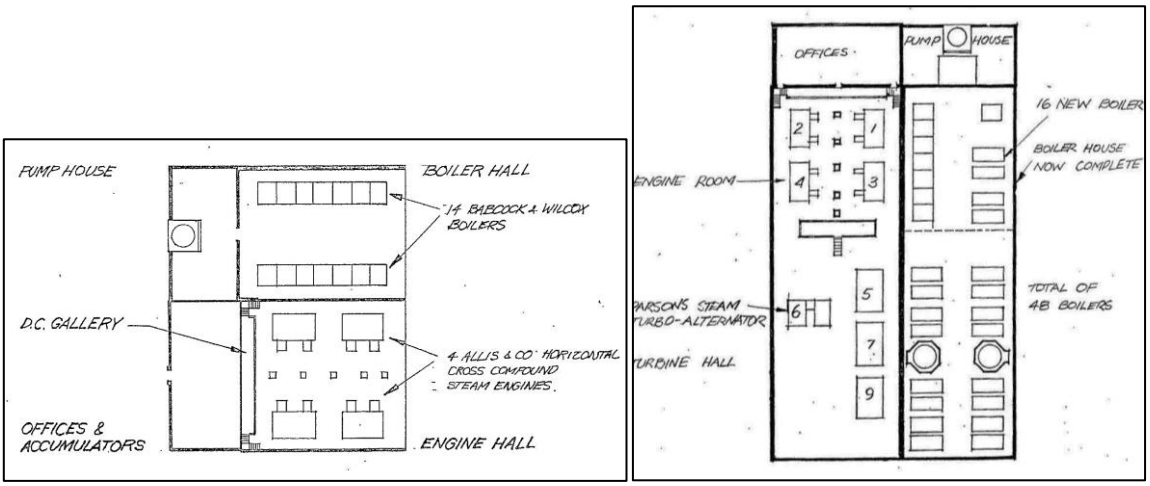

Figure 2.22 Layout of the original 1899 power house (left), and the 1902 extension(right) (Godden et.al. 1984:98, 115)

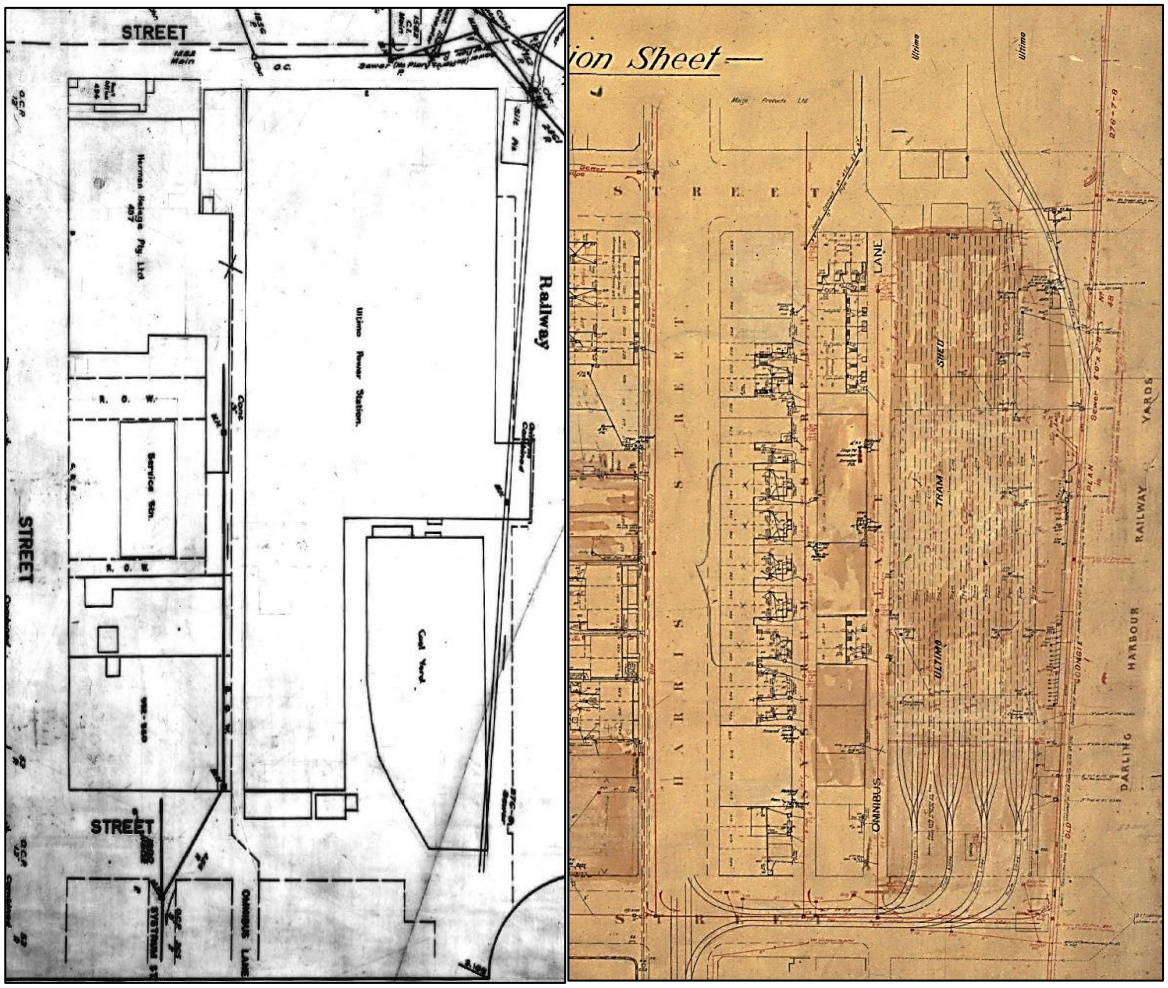

Figure 2.23 1963 plan of the Ultimo Power Station (left) and 1908-1953 plan of the Ultimo Tram Sheds, with associated facilities between Sistrum Street and Omnibus Lane, including arrestor pits (Sydney Water archive plan DS3725(2) and BLKWTL3723_EXT).

2.5 The Powerhouse Museum of Applied Arts & Sciences

In 1953, control of the power house passed from the NSW Government Railways to the Electricity Commission of NSW, which had been formed to respond to post-war power shortages. With construction of new power stations and an expanded interconnected network, the outdated plant and city location of the Ultimo Power House made it increasingly redundant. In addition, from the 1950s the tramway system began to be phased out in favour of buses and the Tram Depot closed. The power house was decommissioned in 1963, most of the chimney stack was demolished. In 1967 the William Henry Street Bridge was widened and the remainder of the chimney was removed. In the mid-1970s the other two chimneys were demolished to just below the Boiler House roofline and are extant. By 1976, most of the remaining plant and equipment was removed, and from 1985 the power house buildings were adapted to accommodate the Powerhouse Museum. The Wran Building was constructed in 1988, and the Powerhouse Museum (formerly the Museum of Applied Arts & Sciences) opened to the public in that year (OEH 2018a; TKD 2018:7,10).

3 Evaluation of the Archaeological Potential

3.1 Comparative Archaeological Sites

The archaeological excavations within the vicinity of the study area are as follows (see Figure 3.1):

- 14-28 Ultimo Road, Ultimo, excavated in 2011-2012 by Australian Museum Consulting (AMC).
- Bullecourt Place, 287 Pyrmont Street, Ultimo, excavated in 2002 by GML.
- Paddy's Markets, 9-13 Hay Street, Haymarket, excavated in 1990 by Godden Mackay Logan Pty Ltd (GML).
- 24-50 Mary Ann Street, Ultimo, excavated in 1993 by GML
- 50-72 Union Street, Pyrmont, excavated in 2003 by Casey & Lowe.
- CSR Site (Jacksons Landing), Bowman Street, Pyrmont, excavated in 1996 by Casey & Lowe.

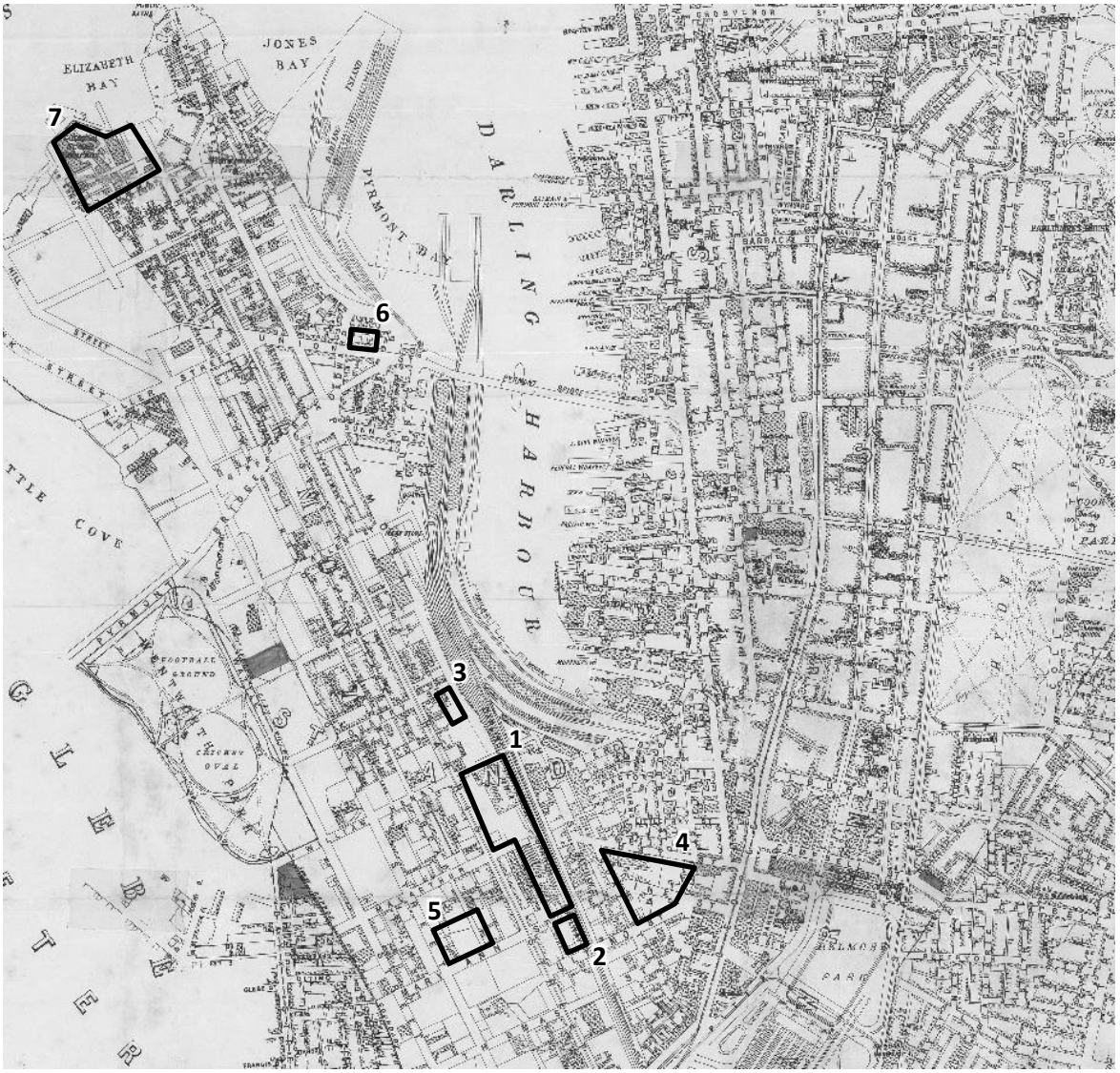

Figure 3.1 City of Sydney 1930 plan showing the study area and archaeological excavation sites in the vicinity. They are as follows: 1) Study area, 2) 14-28 Ultimo Road, 3) Bullecourt Place, 4) Paddy's Markets, 5) 24-50 Mary Ann Street, 6) 50-72 Union Street, and 7) CSR Site.

14-28 Ultimo Road, Ultimo

Australian Museum Consulting excavated the 14-28 Ultimo Road site (UTS site), in 2011-2012 for the University of Technology, Sydney prior to construction of the Dr Chau Chak Wing Building (encompassing four timber cottages, early industrial activity and a terrace row). The northern part

of the site had been occupied since the 1870s by the NSW Shale & Oil Company and could only be mechanically monitored for safety reasons. From the 1950s the entire site had been the Dairy Farmer's Depot, which had destroyed the NSW Shale & Oil Company's manger's residence in the south-eastern corner.

The terrace of three houses in the southern part of the site were assessed as having low archaeological potential due to their late construction date of 1874 (Casey & Lowe, 2011). However, underfloor deposits and three phases of yard surfaces, the latest above the 1884 reclamation were identified. An insight into land use practices of the late nineteenth century, particularly the continual building up of the yard surfaces to rise above the swamp in which the houses had been constructed. There was also a large quantity of artefacts found from underfloor deposits, reflecting activity areas in each room, for example, recreational and personal items were located around the hearths (AMC, 2015:68). Each terrace house had a cess pit in the earliest yard phase, which were never used and were sealed beneath the ensuing yard phase. The lack of use was no doubt due to the swampy environment. The site remained un-improved until the late nineteenth century; it was reclaimed in 1884 with a 0.5m deposit comprising clays and industrial material and included a discrete deposit of discarded ginger beer bottles and kiln waste from the nearby Thomas Field and Sons Pottery.

Beneath the terrace row were the remains of four 1840s-1860s cottages, some of which had been destroyed by the terrace construction. There was no evidence of associated cesspits, and there was no specific evidence found to indicate family structures or room functions. Beneath the cottages, large sections of red river gums had been laid out across the swamp sands in a pattern reflecting property boundaries (Figure 3.2).

The final depth was over 2m below road level and the excavation exceeded expectations and the archaeological resources were re-assessed as being of state significance (AMC, 2015: 79).

It is possible that the archaeology of the Ultimo Creative Industries Precinct will include features that are similar to the early houses and landscape modifications, including reclamation, to those exposed at the UTS site.

Figure 3.2 The earliest phase on the site with the 1840s cottage in good condition arrowed. Note the red river gum sections laid out across the swamp sands configured to align with the property boundaries (AMC 2015:44, Figure 3.9).

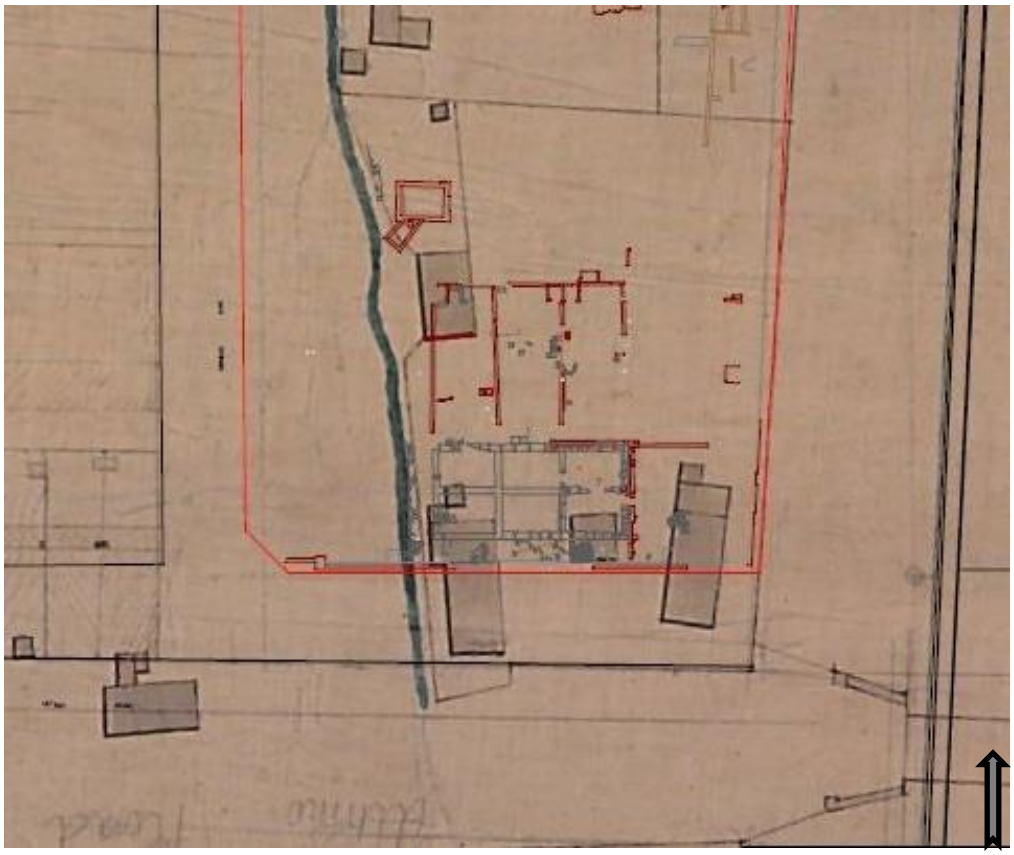

Figure 3.3 Archaeological features overlain on the 1865 Trigonometrical Survey Plan for Block VI (AMC 2015:57, Figure 3.24).

Bullecourt Place, 287 Pyrmont Street, Ultimo

The excavation of Bullecourt Place was undertaken by GML from May-June 2002. It focused on the trade/industrial aspects of the occupation of the site, rather than residential aspects. It was also hoped that information regarding the activity pre-dating its construction phase in the 1870s and 1880s, when the site was associated with Ultimo House as garden and grazing lands, would be revealed. It was anticipated that there was a low potential for survival of the sites earlier use by the original Aboriginal occupants; the presence of oyster shells was the only possible evidence discovered.

The site contained terraces and woolstores. The terraces on Harris and Quarry Streets were built between 1876 and 1882, and the occupiers (particularly fronting Harris Street) conducted small scale trades from home and one site (438 Harris Street) operated as a factory (Walls Machinery Store), and another (448 Harris Street) contained a possible workshop at the rear. The early 1880s saw the arrival of woolstores in the area, and subsequently the introduction of large-scale mercantile enterprise, linking the site to the nation's largest worldwide export industry.

Perhaps the most interesting results were from Trench 2, where although the archaeological resources had been impacted by later developments and there were no underfloor deposits, the level of survival of structural elements was good (Figure 3.4 and Figure 3.5). By the time of their construction, flooring was tongue-and-groove, municipal garbage collection was in operation and a large fire and modifications of the site in 1992 had destroyed the rear yards, as well as all four woolstores (GML, 2004: 107). Despite this, the excavation provided an insight into the nature of production and the economy within the occupation period.

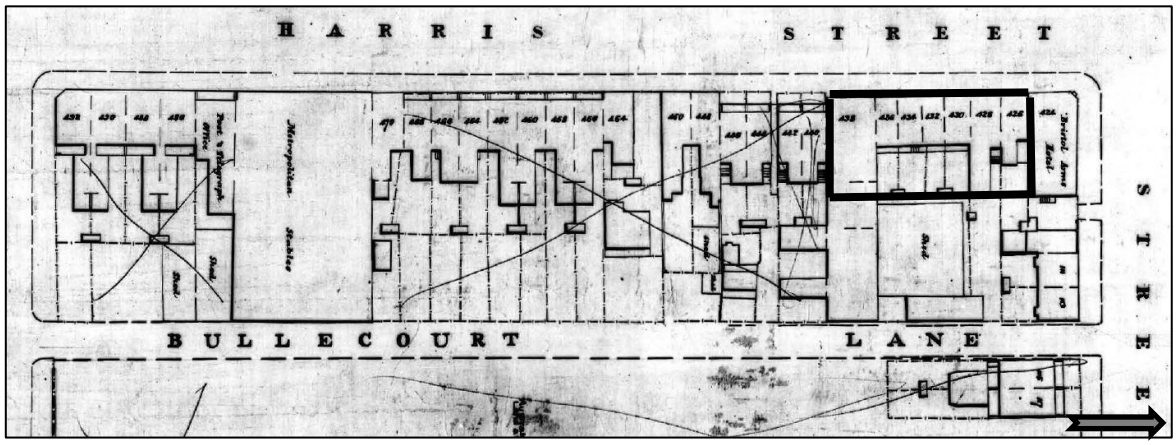

Figure 3.4 Detail from Sydeny Water map of Block R3 between William Henry and Quarry Streets. Trench 2 is boxed (Sydney Water archive plan DS3724).

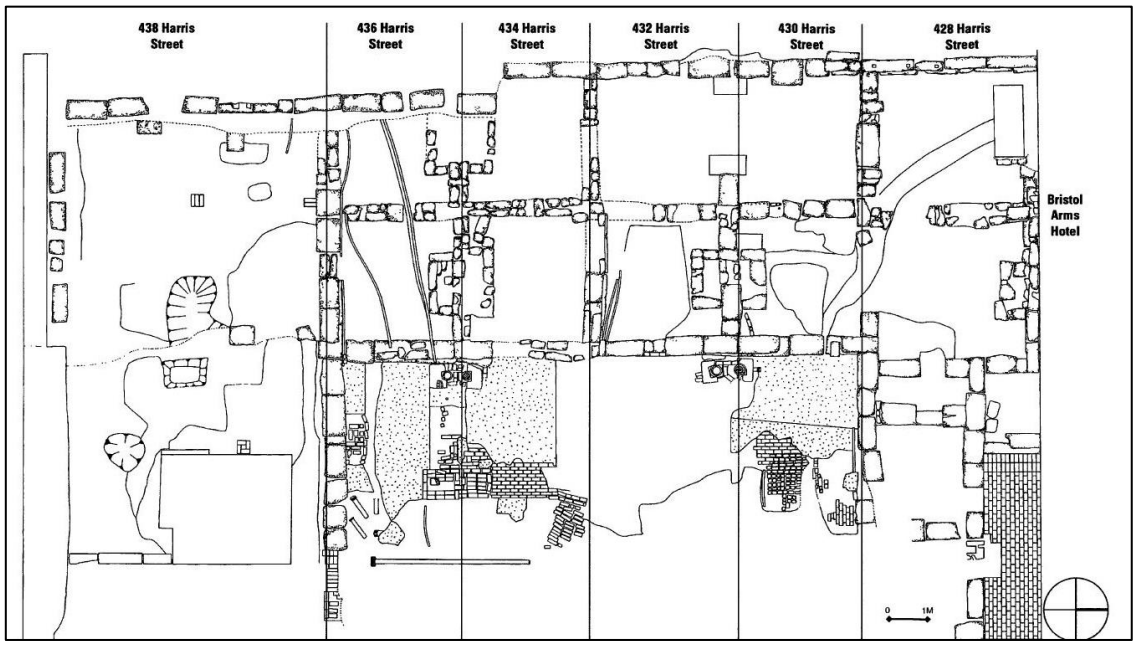

Figure 3.5 Final plan of Trench 2 containing houses 428–436 Harris Street (GML 2001:41, Figure 3.2).

Paddy's Markets, 9-13 Hay Street, Haymarket

In 1990, the Paddys Markets site was excavated by GML for the Market City development. The site had been occupied prior to construction of the City Market Buildings on the site in 1909-1910, which had required the removal of the earlier residential and industrial structures on the site. Market area 2 was anticipated to be archaeologically sterile, and Market area 1 and Engine Street were expected to contain substantial remains and deposits from the late nineteenth century occupation.

The excavation exposed brick and sandstone residential and industrial structural remains. The first known buildings on the site were associated with the Victoria Steam Mill (later Pemmell's Mill). The remains of the two storey sandstock brick house at 16 Engine Street reflected domestic life in the later 1840s and 1850s. The 1860s to early 1880s involved an increase in density of the occupation of the site, that was reflected in the physical remains, with terraces on Engine Street constructed at this time. The second half of the nineteenth century saw the block transform into an industrial centre, with a mill, brewery, engineering works and an assortment of other factories being established. A large quantity of artefacts were recovered that provided an insight into the local mid-nineteenth century community.

24-50 Mary Ann Street, Ultimo

GML excavated the site located at 24-50 Mary Ann Street Ultimo in November 1993. The site was part of the former Harris Estate gardens and had been occupied by Scrutton's Pty Ltd. RL Scrutton & Co began operation in the early 1890s, and expanded their factory c.1910. The excavations recovered extensive archaeology relating to the various phases of the Scrutton's factory, however structural features pre-dating 1892 were not identified. The foundations of the factory, as well as early forges and a later installation of a dock were revealed.

The only evidence of structures unrelated to the factory was a remnant of 'Grove House', the first structure built on the property in 1882-1888, which is described in rates records as being two stories with seven rooms. It was largely removed by the 1910 extensions to the factory; however, the remaining evidence indicated that it was built of semi-plastic shale bricks on a sandstone foundation.

CSR Site, Pyrmont (Jacksons Landing)

Casey & Lowe, during October to December 1996, undertook archaeological testing and excavations at the former CSR site in Pyrmont, Sydney for Lend Lease The site is now known as Jackson's Landing.

Casey & Lowe's 'Archaeological Assessment CSR Site, Pyrmont' (August 1996), addressed and identified the potential archaeological remains of the site, in a number of areas. Testing was conducted in the areas considered to have the greatest potential for survival of archaeological remains. Five areas were excavated, three were found to have extensive archaeological remains, and two were found to have limited remains. The following is an excerpt from Casey & Lowe's excavation report (2000: i):

> ***Area A*** *contained the remains of four houses, Houses 15 to 21 New Street, Pyrmont.*
> ***Area B*** *contained the remains of three houses, Houses 67 and 69 Bowman Street and 2 New Street, Pyrmont.*
> ***Area C*** *contained the remains of four houses, Houses 1 to 7 McCredie Street, a footpath and roadway, Pyrmont.*
> ***Area D*** *contained limited remains associated with a dairy, 69 John Street.*
> ***Area E*** *contained the remains of a single terrace house, 17 Mount Street. Other potential remains in Area E did not survive twentieth-century use as a truck parking area.*

The housing on the site had been constructed in 1859, contemporary with the report on 'Conditions of the working classes' and as such the houses were designed to provide poor long-term houses while those built later appear to have provided better housing stock. The occupants were mostly working-class families, comprising skilled men working in nearby shipyards, abattoirs and wharves, while their wives were responsible for household duties. Personal items were the dominant artefact group recovered in most of the houses, including those associated with clothing, jewellery, accessories, grooming, and hygiene. This reveals that the importance of personal appearances was apparent among working class families, a somewhat surprising notion (Casey & Lowe, 2000: v).

50-72 Union Street, Pyrmont

Casey & Lowe's excavation of the Union Street site between November and December 2003, encompassed parts of the former Alma and Edward Streets. The preservation of the archaeological remains of residential development had been impacted by twentieth century developments which resulted in variations in the survival of the archaeology. Construction of the Anchor Flour Mill in the late 1920s, in particular had a significant impact on the underlying archaeology. The three terrace houses, some of the earliest domestic structures on the site, were the main focus of the

archaeological investigations. They were occupied by various tenants from the 1840s and 1850s to the early twentieth century. The following are excerpts from Casey & Lowe's excavation report (2010: i):

> *Houses 64 and 66 Union Street both contained small areas of underfloor deposits within some of the rooms and both had an external building (presumably a kitchen) at the back of each house. Remains of stone footings, a fireplace, drains, and floor and yard surfaces were all identified, planned and recorded.*
> *Little remained of No 62 Union Street apart from the sandstone footings of two basement rooms and a partial yard surface.*

Three sets of double cesspits were investigated for artefacts on the northern end of Edward and Alma Streets. The remainder of these streets were highly impacted by the flour mill buildings.

> *38/40 Edward Street: This double sandstone cesspit would have serviced these two houses. It was excavated by hand in 100mm spits and contained the largest quantity of artefacts of all three cesspits.*
> *31/33 Alma Street: Another stone cesspit was excavated containing a black, sandy, artefact rich deposit, 300mm deep at the base of the cesspit sitting directly on the bedrock.*
> *35/37 Alma Street was similar structure to the cesspit at 31/33 Alma Street. Both were excavated by machine due to contamination in the ground with the fill then skimmed for finds.*

A total of 3106 artefacts were recovered during the excavations at Union Street, largely from underfloor deposits in Houses 66 and 64 on Union Street and the cesspit in Edward Street. The underfloor deposit artefacts reflected a gradual accumulation of materials throughout the entire occupation period, and the cesspit artefacts indicated the fill from which they were from was '*a primary deposit of direct household refuse used to backfill the cesspit after its abandonment as a water closet c.1870-1880 prior to the introduction of city-wide rubbish removal*'

None of the artefacts could be directly linked to families or individuals occupying the houses, however the assemblage is typical of working-class urban sites in Sydney, and particularly domestic environments. They provide an insight into the working-class neighbourhood in Pyrmont during the second half of the nineteenth century and the early twentieth century.

3.2 Archaeological Potential & Integrity of the Resource

Based on the historical review and realised archaeological potential from sites within the vicinity, the survival and integrity of the archaeological resources in the Ultimo Creative Industries Precinct are likely to be variable. Construction of the Ultimo Power House and conversion of the SUOC stables to the Tram Depot for stabling electric trams in 1899 completely altered the local landform, with deep foundations, basements, machine beds and inspection pits will have had a significant impact on the underlying archaeology. Although the power house and tram depot have been modified to house the Powerhouse Museum, the essential structure of these buildings is extant (Figure 3.6).

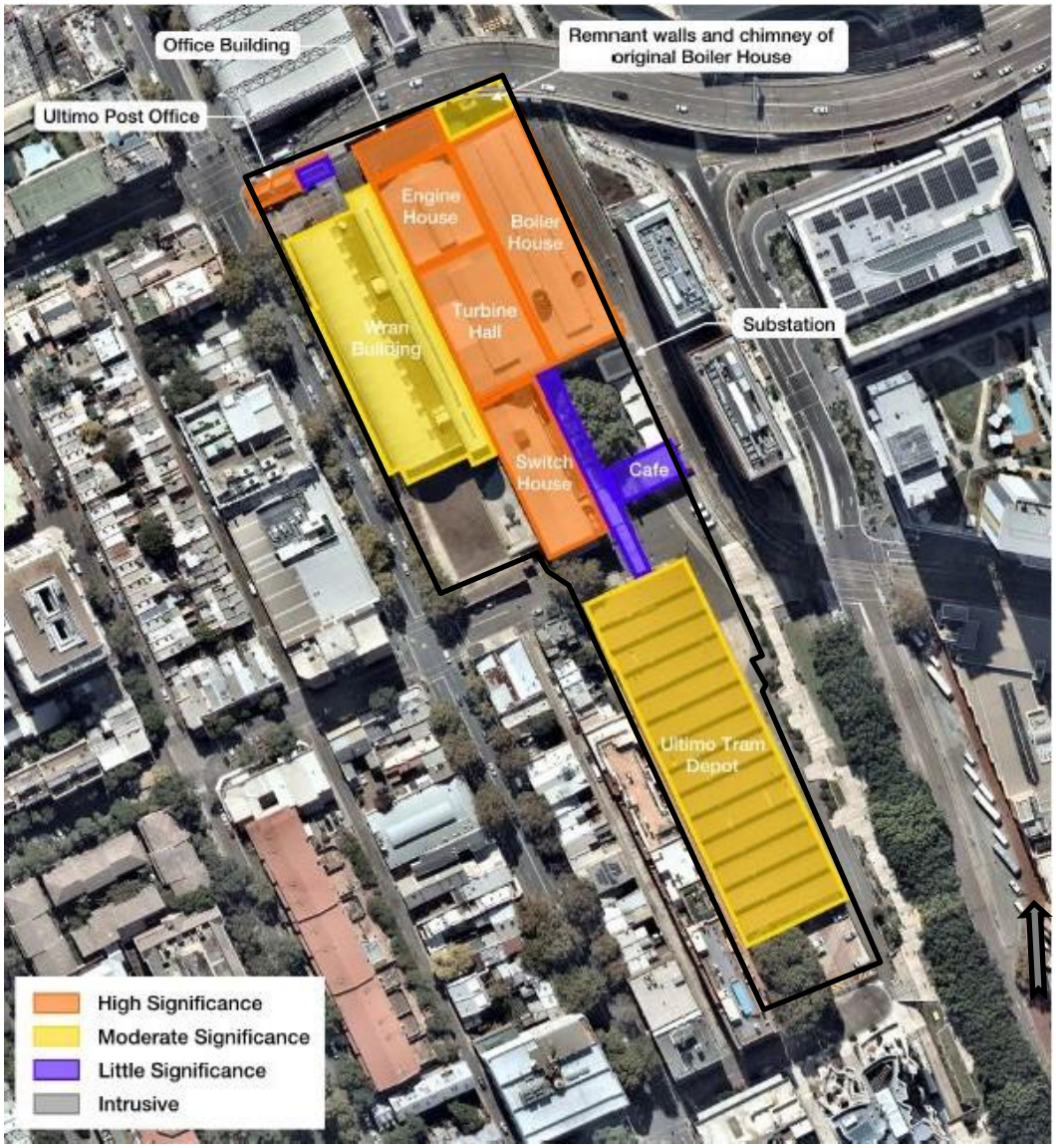

Figure 3.6 The existing buildings in the study area; the buildings associated with the former Ultimo Power Station are also labelled. Approximate study area indicated (TKD Architecture, 2018).

3.2.1 Block U3: William Henry – Macarthur Streets

The northern block of the study area encompasses the Ultimo Power Station and Ultimo Post Office, which overlie the sites of the 1840s and 1850s houses. Despite the incursions of the basements and foundations it is possible that some physical remains associated with some of the early houses located outside of the existing building footprint may survive (Figure 3.7).

The basements and machine beds associated with the Ultimo Power Station, particularly in the Engine Hall, Boiler House, Turbine Hall, Office Building (and to a lesser extent, the Wran Building), will have impacted the archaeological resources of the site. The Engine Hall basements range from approximately 3.5m to 6.7m deep, the Boiler House basements range from approx. 3.3m to 6m deep, those in the Turbine Hall are approx. 3m deep, the Office Building basement is approx. 4m, and the Wran Building basement is approx. 4.5m deep. A comparison of Figure 3.6 and Figure 3.7 allows for an insight into which pre-existing structures are situated within the footprint of the existing buildings, and those that lie outside of the heavily disturbed areas.

The 1886 Sydney water plan indicates that the major part of 137 William Henry Street is situated beneath the Office Building and Engine Hall, and a section along the western side of the property may be beneath the Wran Building and the area outside of the Office Building. However, accounts of the removal of the house in c.1913 for the construction of the Tramway Instruction Room indicate the remains would be located to the west of the office building. Photographic evidence of the house at 137 William Henry Street demonstrate the former house was situated between the post office and the office building (Figure 2.10). This inconsistency in the documentary sources is not uncommon and demonstrates the need for careful and diligent investigation. The main house and greater part of the backyard would have been disturbed by the former Tramway Instruction Room Building (since removed) and then the later construction of the Wran Building in 1987 (see Figure 3.8). However, there is potential for some archaeology associated with the house, including foundations and underfloor deposits, to be extant in the empty space between the Office Building and the post office. There may also be some remains within the backyard, including yard surfaces, outbuildings, cesspits and rubbish pits beneath the Wran building foundations to the south (approximate extent of the property in Figure 3.8).

The house off Harris Street at 517, is within the footprint of the Boiler House and Turbine Hall and it is unlikely that there will be any surviving physical evidence following construction of the basements (see Figure 3.11).

The archaeology for the remaining houses off Harris Street at 519, 521 and 523 may be relatively undisturbed; it is possible that house foundations and underfloor deposits, yard surfaces, rubbish pits, outbuildings and cesspits are extant. The sites of these houses are located within the footprint of the cafe courtyard, with a small part of the 521 and 523 properties beneath the Switch House. The depth of the foundations and the presence of a basement cannot be ascertained from the plan of the Northern part of the Switch House (referred to as the South-East court) (Figure 3.11). It is possible that some part of these properties may be extant but likely in a disturbed state. Archaeology beneath the café courtyard may be assumed to be relatively undisturbed with good integrity.

The two houses at 554 and 556 Harris Street, demolished in 1922, and now within the footprint of the raised south-west forecourt and it is likely that the archaeological resources associated with these houses will be extant with good integrity.

Although various reclamations had been done around Darling Harbour from the 1820s until the 1860s, the evidence from the UTS site indicates that John Harris did not show an interest in improving his land and in fact, the reclamation of that site was not undertaken until 1884 (AMC, 2015:53-54). There is potential for surviving evidence of reclamation of the swamp to be present and also of evidence of the underlying swamp landscape, which may have been modified prior to erection of houses. Also, as found in the UTS site, it is possible that the physical evidence of earlier houses and perhaps of quarrying may be extant with good integrity beneath the reclamation (refer Figure 2.4 and Figure 2.5 above).

The potential archaeology associated with the houses; 154 and 156 Harris Street, off Harris Street at 519, 521 and 523, and 137 William Henry Street, and the local environment is likely to comprise:

- Evidence of the first land management and modification of the swamp, similar to that found at the UTS site, may be present beneath, or associated with the earliest structures on the site. Analysis of the soils and pollens will provide an insight into the original landscape and vegetation.
- Foundations and underfloor occupation deposits, containing artefacts of everyday life, associated with the group of early houses on the site.
- The houses were unlikely to have been connected to water or sewerage until the later nineteenth century and each house would have been dependent on a cess pit, which may contain artefacts associated with the life and work of the site. Analysis of the contents of cesspits may also provide information regarding diet.
- Gardens and rubbish pits associated with the early garbage disposal prior to the introduction of Council garbage removal.
- Post-holes demarcating outbuildings and fence lines.

Figure 3.7 Sydney Water 1886 U3 plan (see Figure 2.7 above) overlain on the current aerial of the Ultimo Powerhouse and Post Office site (https://maps.six.nsw.gov.au/).

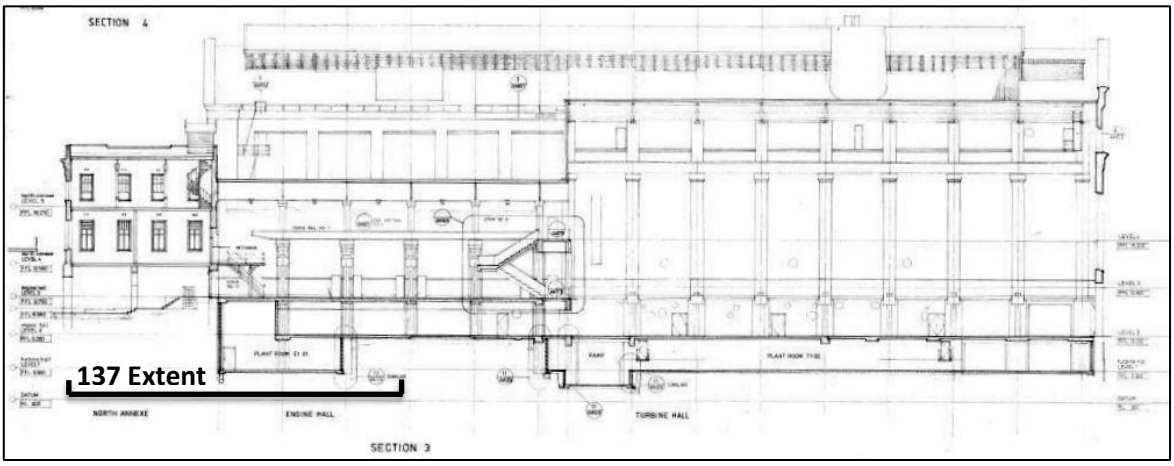

Figure 3.8 1984 MAAS Stage 2 Construction plan (Section 3) facing West, illustrating the basements beneath the North Annexe (the Office Building), the Engine Hall and the Turbine Hall (left to right). The basement of the Office Building is 4.28m and that of the Engine Hall is 6.75m at its deepest, and 2.48m in the shallower section. The approximate extent of 137 William Henry Street is marked.

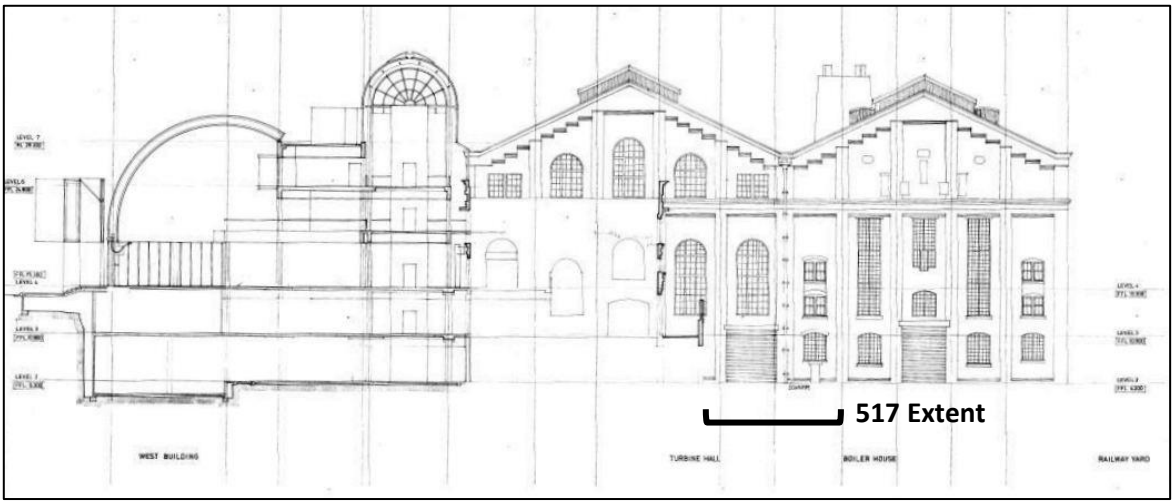

Figure 3.9 1984 MAAS Stage 2 Construction plan. Section 11 faces South, and illustrates the basements beneath the West Building (the Wran Building), the Turbine Hall and the Boiler House (left to right). The approximate extent of 517 off Harris Street has been marked.

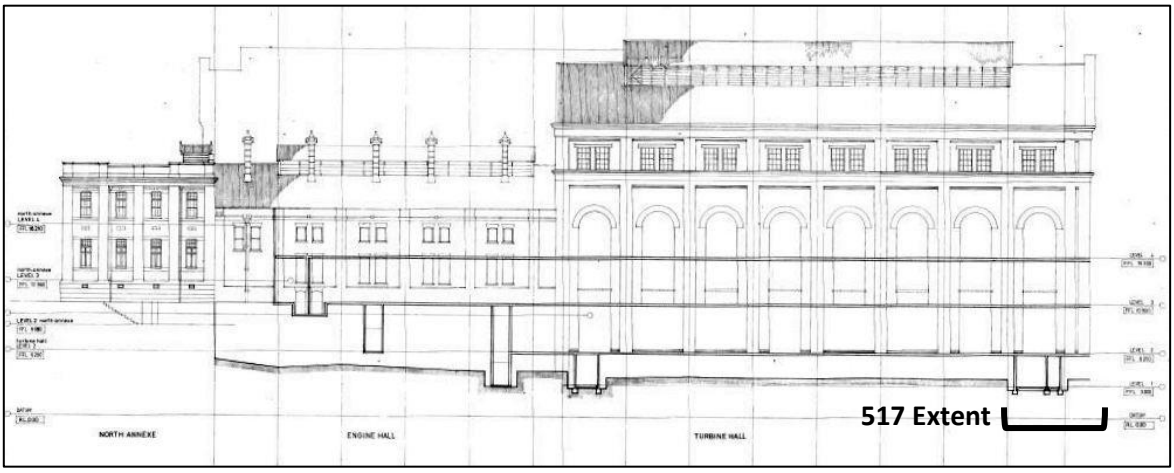

Figure 3.10 1984 MAAS Stage 2 Construction plan with the extent of 517 off Harris Street marked. Section 14 faces West and pictures the North Annexe, Engine Hall and Turbine Hall (left to right). The basement of the Turbine Hall is 3.2m deep. The approximate location has been marked.

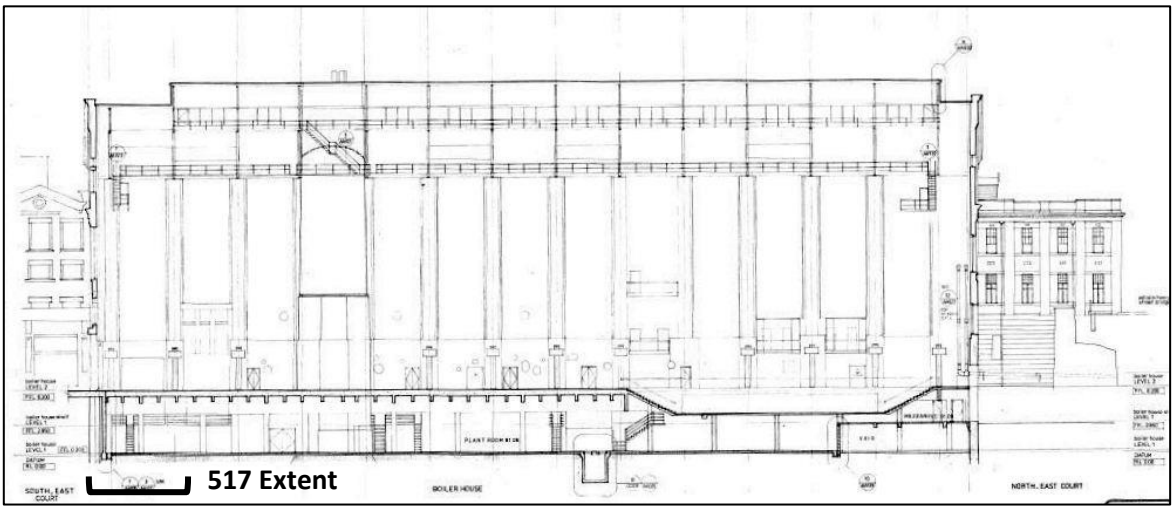

Figure 3.11 1984 MAAS Stage 2 Construction plan. Section 15 (bottom) faces East and depicts part of the Switch House, the Boiler House and North-East Court. The basement of the Boiler House is 6m deep. The approximate extent of 517 off Harris Street has been marked.

3.2.2 Block V3: Macarthur – Mary Ann Streets

The southern block of the study area encompasses the Ultimo Tram Depot which overlies the earlier stables associated with the Sydney Tramway & Omnibus and City Carrying Companies which in turn overlays brick and wooden houses representing earlier residential occupation of the study area (Figure 3.13, Figure 3.13 and

Figure 3.14).

Construction of inspection pits, in particular, associated with the electric trams and the subsequent redevelopment of the site for the Museum are likely to have destroyed, or significantly disturbed underlying archaeology within the footprint of the Tram Depot. As such it is unlikely that there will be surviving physical remains associated with the Sydney Tramway and Omnibus Company Stables, Feed Cutting Works, Edward Hanna's blacksmith and workshops and the earlier houses. However, although there may be some disturbance from the construction of the tramlines traversing the Tram Shed southern forecourt, there is potential for physical evidence associated with the City Carrying Company Stables and the earlier houses appearing on the Trigonometric Survey map to survive. As demonstrated in the overlays, there are two phases of occupation within the footprint of the Ultimo Tram Depo (Figure 3.12 – Figure 3.14). The physical evidence for the stables would likely include:

- Stone pavers over the floors
- Post-holes demarcating stables and walls
- Artefacts fallen between pavers or around walls which may provide an insight into the daily lives of the stables.

The physical evidence for the former houses would likely comprise:

- Evidence of the first land management and modification of the swamp may be present beneath, or associated with the earliest structures on the site. Analysis of the soils and pollens will provide an insight into the original landscape and vegetation.
- Foundations and underfloor occupation deposits, containing artefacts of everyday life, associated with the group of early houses on the site.
- The houses were unlikely to have been connected to water or sewerage until the later nineteenth century and each house would have been dependent on a cess pit, which may contain artefacts associated with the life and work of the site. Analysis of the contents of cesspits may also provide information regarding diet.

- Gardens and rubbish pits associated with the early garbage disposal prior to the introduction of Council garbage removal.
- Post-holes demarcating outbuildings and fence lines.

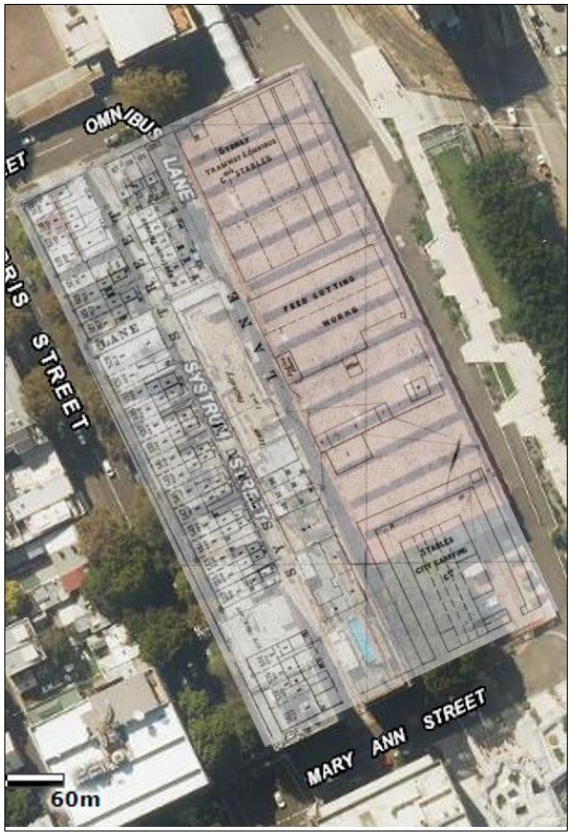

Figure 3.12 The 1886 Sydney Water V3 Plan overlaying an aerial of the study area.

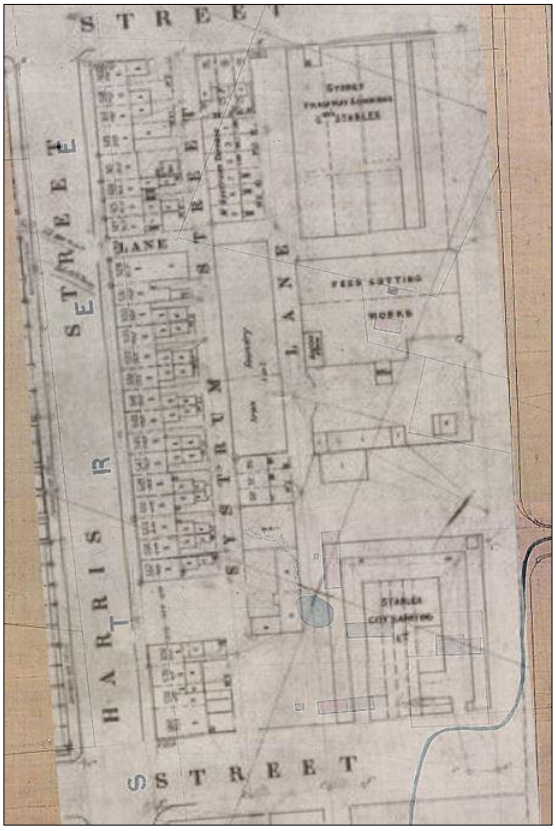

Figure 3.13 Detail from Figure 2.17, the 1886 Sydney Water V3 Plan overlaying a detail from Figure 2.5, the Trigonometrical Survey of Sydney, 1865.

Figure 3.14 Detail of the south eastern corner of the overlay of the 1865 Trigonometrical Survey and 1886 Sydney Water within the footprint of the City Carrying Co. stables. Note the construction materials are indicated: timber (grey), stone (yellow) and brick (pink).

3.3 Research Potential

The additional research undertaken to provide a detailed historical development of the Ultimo Creative Industries Precinct has contributed to a more comprehensive understanding of the extent, likely integrity and research potential of the northern and southern blocks of the study area. The archaeological resources with good integrity have the potential to contribute to an understanding of the development and social interactions within a discrete group of early houses. Analysis of archaeological excavations discussed above in Section 3.1, particularly the adjacent Bullecourt Place and 14-28 Ultimo Road sites, indicates that the archaeological resource in the study area has the potential to contribute to research themes associated with the development of Sydney's urban environment from the mid-nineteenth century (Figure 3.15).

The potential for artefact assemblages from the properties in the northern block of the study area that have been assessed as being relatively undisturbed and with good integrity; (519, 521 and 523 off Harris Street, 554 and 556 Harris Street and 137 William Henry Street). Excavation of these houses and may facilitate an insight into lives and working conditions during the second half of the nineteenth century. If physical remains of the City Carrying Company stables are present with good integrity then the archaeological resource is likely to contribute to an understanding of the local history and potentially contribute to research themes associated with the development of Sydney's urban environment. Should the remains of the City Carrying Co. stables be identified and have good integrity then it is likely that the remains of the former houses dating to the mid-nineteenth century are also present. If the archaeological integrity of these remains is good then there is the potential for this resource to contribute to research themes associated with the lives and working conditions during the second half of the nineteenth century.

It is possible that the remains of early cottages/houses similar to those exposed at the 14-28 Ultimo Road site will be extant. In addition, information regarding landscape modifications, such as managing the swampy environment would make an important contribution to an understanding of local settlement patterns. Questions to be considered might be why was the area so sparsely occupied and whether the site was reclaimed and if so when.

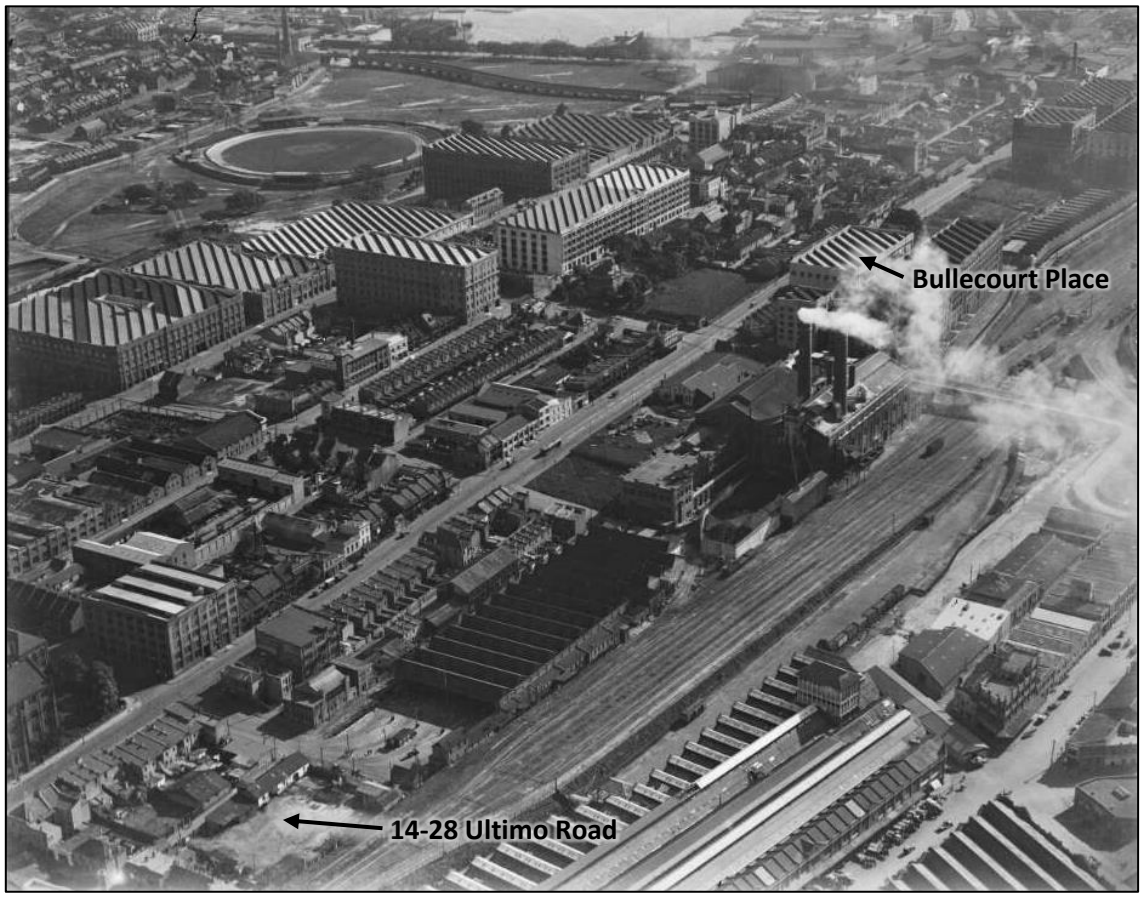

Figure 3.15 Aerial view of the Power House and Tram Sheds, 15 March 1932, glass negative taken by Baden H. Mullaney. The locations of the Bullecourt Place site, to the north of the Ultimo Creative Industries Precinct, and the 14-28 Ultimo Road sites, to the south, are indicated (http://nla.gov.au/nla.obj-161864278/view).

4 Archaeological Significance

The physical evidence of past activities is a valuable resource that is embodied in the fabric, setting, history and broader environment of an item, place or archaeological site. The above evaluation of the Ultimo Creative Industries Precinct has identified the potential for relatively intact archaeological resources. 'Cultural heritage significance' and 'heritage value' are terms used to express the tangible and intangible values of an item, place or archaeological site, and the response that it evokes in the community.

Archaeological resources can provide information regarding the daily and working life of a local area or a specific site that may not be available from other sources. An item will be considered to be of local (or State) significance if, in the opinion of the Heritage Council of NSW, it meets one or more of the SHR criteria.

4.1 Assessment of Archaeological Significance

Historical archaeological relics assessed as having State or local significance should be managed under the 'relics' provisions of the *Heritage Act 1977*.

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

The archaeology of Blocks U3 and V3 is associated with housing established from the 1840s into the later nineteenth century. If present with good integrity, structural remains and artefact assemblages associated with early houses would have the potential to reveal information regarding social interactions of a small but developing community. If present with good integrity, the archaeological remains within the footprint of the Ultimo Power House and the Tram Shed would contribute to major research themes concerning early settlement patterns and may reach the threshold for state significance.

Physical evidence associated with the stables beneath the former Tram Shed forecourt may contribute information that will enhance information regarding the development of the local area. Such archaeological remains would have local significance.

Evidence of early modifications of the landscape to create a habitable environment which may be present would make an important contribution to research themes regarding the original landscape and processes of modification and change, including reclamation and quarrying. The significance of the archaeological resources lies in the ability to demonstrate an evolving natural and urban landscape and may meet the threshold for state significance.

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

Although the archaeological resources within the footprint of the Ultimo Creative Industries Precinct have an association with John Harris and the beginnings of omnibus services and the electrification of the tramways in Sydney, they would not make a significant contribution to an understanding of these events.

The threshold for inclusion against this criterion has not been met.

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

The archaeological resource of the study area is unlikely to demonstrate a high degree of creativity or technical achievement, that is not already available from other sources.

The threshold for inclusion against this criterion has not been met.

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

While no consultation has been undertaken with the local community in relation to the values of the archaeology, it is acknowledged that local communities are interested in the archaeology of their local area and its development. It is possible that the substantial and intact archaeology that is anticipated may have interest or value to the local community.

It is likely that if the public are made aware of the site archaeology through the media or an Open Day, community appreciation of the physical remains of their past will provoke considerable interest.

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

The archaeological resources within Block U3, the northern block, and Block V3, the southern block, have the potential to contribute to an understanding of landscape modifications and settlement within a likely swampy environment from the early- to mid-nineteenth century. Artefact assemblages associated with the houses have the potential to provide insight into living conditions, social interactions, occupations and gender. The 1865 Trigonometric Survey map shows a scatter of early houses across the entire site and the possible locations of quarries while the1886 Sydney Water map shows seven houses on the northern block and the Sydney Tramway & Omnibus Co. and City Carrying Co. stables. It has been assessed that there is potential for remains of some houses shown on the Trigonometric Survey map and the houses at 554 and 556 Harris Street, 521, 523 and 519 off Harris Street, 137 William Henry Street may be extant with good integrity within the northern site. There is also potential for remains of the four houses on the southern block beneath the and City Carrying Co. stables to be extant and with good integrity beneath the stables, physical evidence of which may also be extant. These resources, if present with good integrity, will provide an insight into the development of a local community from the 1840s, possibly together with evidence of early landscape modifications, which would contribute to important research themes regarding the early settlement and activities in Ultimo. If present with good integrity, the archaeology may meet the threshold for state significance.

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

The archaeology of the study area represents an opportunity to examine an archaeological resource that may provide an insight into the development and interactions of a local community. The artefact assemblage associated with houses and businesses dating from the 1840s to the late nineteenth century would make a contribution to an understanding of the early historical development of this urban environment. Evidence regarding early modifications of the landscape, which may have included early reclamation and quarrying, would contribute to an understanding of early land management practices, that are not currently well known. Substantial archaeological remains providing information regarding living conditions, social interactions, occupations and

gender as well as evidence of modifications of the natural landscape may meet the threshold for state significance.

Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places or cultural or natural environments (or the local area).

Physical remains of 1840s houses and associated underfloor deposits, cesspits and outbuildings would be comparable with the archaeological resources from those sites excavated within the local vicinity and would provide an insight into the social interactions of the community. Additionally, the archaeological remains of the stables will offer an understanding of the operation of the City Carrying Company.

Under this criterion, any substantive archaeological remains with good integrity within the study area would have state significance.

4.2 Statement of Archaeological Significance

The potential archaeological resources of the Ultimo Creative Industries Precinct encompassing the Ultimo Power House and Tram Depot have the potential to provide information that will contribute to important research themes and understanding of the historical settlement from the 1840s of a small but developing community. Potential evidence of the processes of landscape modifications prior to and following the construction of housing in the 1840s may also make a contribution to early site formation processes and to form a habitable environment within a swamp.

Physical evidence of houses, as well as artefact assemblages from underfloor deposits, cesspits, and rubbish pits may have the potential to provide an insight into living conditions, social interactions, occupations and gender. Evidence from the archaeological resource of the northern site, such as personal and domestic artefacts, has the potential to be compared with the assemblages from sites within the local vicinity and beyond, to contribute to addressing research questions relating to urbanisation, material culture, consumerism, identity, and social interactions within this local vicinity.

The potential archaeological resource within the UCIP, if present with good integrity, is likely to have a high level of research potential and may meet the threshold for state significance.

5 Managing the Archaeological Resource

If present with good integrity, the archaeological resources within the footprint of the Ultimo Creative Industries Precinct have been assessed as having local and may meet the requirements for state significance and as such should be managed in accordance with the requirements of the *Heritage Act 1977*.

It is understood that concepts for the future use and configuration of the Precinct are at an early stage and that there are no proposals to excavate beneath the current ground or basement levels with the exception of the Harris Street south site. Retention of archaeological resources in situ where it can contribute to future, new research questions, is the preferred management strategy.

However, should excavation ultimately be required within any of the areas identified as being archaeologically sensitive, an application for an Excavation Permit under Section 140 of the *Heritage Act 1977* must be lodged with the Heritage Council of NSW. The application will need to include a Research Design which includes the information contained in this report as well as detailed research questions, excavation methodology and excavation director, who will comply with the Heritage Council Excavation Director Assessment Criteria for a state significant historical archaeological site.

Figure 5.1 Aerial with overlay of the Sydney Water 1886 plan of Block U3 (left) and the plan of Block V3 (right) with areas of potentially state significant archaeological sensitivity shaded red. It should be noted that the archaeological resource in Block V3 relating to the City Carrying Co. has the potential to be locally significant; however, should physical evidence of the earlier houses be revealed within the footprint of the former stables this resource is assessed as state significant (refer to Figure 2.7, Figure 2.17, Figure 3.13 and Figure 3.14 above).

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Appendix A

Tabulated Sands Directory and City of Sydney Rates Assessment Books Information 1845-1948

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
1845 Rates Assessment	Ultimo Thomas Halloran (owner John Harris), wattle hut, barked roof, 1 floor, 2 rooms, £10 (1acre ground and detached room)				
1848 Rates Assessment	2130, Ultimo Thomas Halloran (owner Mrs Harris), wood house, bark roof, 1 floor, 2 rooms, £8				
1855 Rates Assessment	Ultimo Road Thomas Halloran (owner Mrs Harris), cornfield, plaster house, shingled roof, 1 floor, 3 rooms, £40 Ultimo Rd Nr Harris St John Gorman (owner Mrs Harris), stone house & ground, shingled roof, 1 floor, 2 rooms, £50				
1856 Rates Assessment	Near Harris St Thomas Halloran (owner Mrs Harris), cornfield, plaster house, shingled roof, 1 floor, 3 rooms, £40 (Near) Harris St John Gorman (owner Mrs Harris), stone house & ground, shingled roof, 1 floor, 2 rooms, £50				
1858 Sands/Rates Assessment	32 Harris St Edward Quinn (owner O Halloran), wood house, iron roof, 1 floor, 2 rooms 34 Harris St John Gorman, stone house, iron roof, 1 floor, 4 rooms.				
1861 Rates Assessment	34 (off) Harris St John Gorman, stone house, shingled roof, 1 floor, 6 rooms, £36 36 (off) Harris St Martin Brown (owner Mrs Harris), stone house, shingled roof, 1 floor, 2 rooms, £12				
1863 Sands/Rates Assessment	John Gorman (owner George Harris), brick house, shingled roof, 1 floor, 4 rooms, £26 – in good repair				
1864 Sands	Ultimo John Gorman, dairy				

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
1865-1866 Sands	Ultimo John Gorman, dairyman Martin Brown, milkman				
1867 Sands/Rates Assessment	Harris St – east side 326 Thomas Maher (owner George Harris), brick house, shingled roof, 1 floor, 3 rooms, £17 328 Mrs Margaret O'Halloran, dairy (owner George Harris), stone house, shingled roof, 1 floor, 3 rooms, £17 Vacant land 332 John Gorman, dairyman (owner George Harris), wood & stone house, iron & shingled roof, 1 floor, 6 rooms, £40 Vacant land 340/342 Martin Brown (owner George Harris), wood & stone house, iron roof, 1 floor, 3 rooms, £17. Cow house and stable				
1868 Sands	Harris St – east side 326 Thomas Maher, drayman 328 Mrs Margaret O'Halloran Vacant land John Gorman, drayman Vacant land Halley Henderson Alexander Grierson				
1870 Sands	Harris St – east side 326 Thomas Maher 328 Mrs O'Halloran Thomas Williams				

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
	Halley Henderson James Wood, brickmaker 380 Martin Brown, dairyman				
1871 Sands/Rates Assessment	Harris St – east side Off Harris St Thomas Maher, drayman (owner George Harris), stone house, shingled roof, 1 floor, 2 rooms, £12 Off Harris St Mrs O'Halloran (owner George Harris), wood house, shingled roof, 1 floor, 2 rooms, £16 Off Harris St C O'Keeffe (owner George Harris), brick house, iron roof, 1 floor, 4 rooms, £20 1 off 474 Harris St Empty (owner George Harris), wood house, shingled roof, 1 floor, 4 rooms, £20 2 off 474 Harris St Empty (owner George Harris), wood house, shingled roof, 1 floor, 5 rooms, £22 3 off 474 Harris St Martin Brown, dairyman (owner George Harris), stone house, iron roof, 1 floor, 2 rooms, £16			472 William Henry Harris (owner Miss Harris), brick house, shingled roof, 1 floor, 6 rooms, £40 474 William Cope (owner Miss Harris), brick house, shingled roof, 1 floor, 6 rooms, £40	4 off 474 Harris St John Woods (owner George Harris), wood warehouse, wood roof, 2 floors, 4 rooms, £40
1873 Sands	Harris St – east side John Godfrey Drinkwater			William Harris William Cope	Harris St – east side Sydney United Omnibus Company John Free
1875 Sands	Harris St – east side 352 John Godfrey Drinkwater Vacant land William Pierce, stonemason William Sinclair Henry Haste, engineer John Riley, drayman	Harris St – east side Thomas Bladen, ironmoulder		Harris St – east side 370 William Houston, grocer 372 David Taylor, clerk	Harris St – east side 374 John Free 376 Sydney United Omnibus Company 378 Edward Hanna, blacksmith
1876 Sands	Harris St – north side Mrs Caroline Drinkwater	Harris St – north side Thomas Bladen, iron smelter		Harris St – north side P.J. Duffy, wharfinger	Harris St – north side Vacant land

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
				Vacant land	Charles Hunt Sydney United Omnibus Co.'s stables
1877 Sands/Rates Assessment	Harris St – east side Off Harris St J.G./Mrs Caroline Drinkwater (owner Harris family), brick & stone house, iron roof, 1 floor, 5 rooms, £22 Off Harris St Thomas Maher, drayman (owner Harris family), brick & wood house, iron roof, 1 floor, 4 rooms, £13 Off Harris St Thomas O'Halloran (owner Harris family), brick & wood house, shingled roof, 1 floor, 3 rooms, £13 Off Harris St William Pierce, miller (owner Harris family), brick & stone house, shingled roof, 1 floor, 4 rooms, £26 Off Harris St Robert Reilly/Rielly, draper (owner Harris family), brick & stone house, shingled roof, 1 floor, 4 rooms, £26 Off Harris St Henry Haste, engineer (owner Harris family), brick & stone house, iron roof, 1 floor, 4 rooms, £26 Pyrmont St/Off Harris St John Rielly (owner Harris family), brick & stone house, shingled roof, 1 floor, 4 rooms, £26 Off Harris St Martin Brown, dairyman (owner Harris family), brick & stone house, iron & shingled roof, 1 floor, 2 rooms, £30	William Henry St/Off Harris St Thomas Bladen, ironmoulder (owner Harris family), brick & stone house, shingled roof, 2 floors, 8 rooms, £52		Harris St – east side 474 Mrs Mott (owner Harris family), brick & stone house, shingled roof, 1 floor, 4 rooms, £40 472 P.J. Duffy, wharfinger (owner Harris family), brick & stone house, shingled roof, 1 floor, 4 rooms, £40	Harris St – east side Charles Hunt off Harris St Thomas Hales (owner John Harris)/S.U. Omnibus Co stables, stalls for 200 horses, brick & wood house & stables, iron roof, £300 Edward Hanna, blacksmith
1879 Sands	Pyrmont St (William Henry St to Macarthur St) Thomas Maher, drayman Thomas O'Halloran, drayman William Pierce, miller Robert Reilly, draper Henry Haste, engineer Michael Brown	Thomas Bladen, engineer	Vacant land	Michael O'Connor Vacant land Peter J Duffy John Lowe, cabman	Pyrmont St (William Henry St to Macarthur St) Thomas Maher, drayman Thomas O'Halloran, drayman William Pierce, miller Robert Reilly, draper Henry Haste, engineer

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
	Martin Brown, dairyman				Michael Brown Martin Brown, dairyman
1880 Sands/Rates Assessment	Off William Henry St Thomas Maher, drayman (owner Harris estate), brick house, iron roof, 1 floor, 4 rooms, £15 Margaret O'Hallaran (owner Harris estate), stone house, iron roof, 1 floor, 3 rooms, £20 Pyrmont St South – west side Vacant land 1 off 506 Harris St William Pierce, miller (owner Miss Harris), wood house, shingled roof, 1 floor, 4 rooms, £26 2 off 506 Harris St Robert Reilly/Riley (owner Miss Margaret Harris), wood house, shingled roof, 1 floor, 4 rooms, £26 2 off 506 Harris St Robert Ware/ Henry Haste (owner Miss Harris), wood house, iron roof, 1 floor, 5 rooms, £26 1 off 520 Harris St Michael Brown, dray owner (owner Miss Harris), wood house, shingled roof, 1 floor, 4 rooms, £26 2 off 520 Harris St Martin Brown, dairyman (owner Miss Harris), wood house, iron roof, 1 floor, 4 rooms, £26	Thomas Bladen, iron manufacturer (owner Mr Harris), wood house, shingled roof, 2 floors, 6 rooms, £60	Vacant land	506 Michael O'Connor, dray owner (owner Miss Harris), brick house, iron roof, 1 floor, 4 rooms, £26 Vacant land 518 John Colquhoun, gardener / Margaret Duffy (owner Miss Harris), brick house, shingled roof, 2 floors, 6 rooms, £45 520 John Lowe, cab owner (owner Miss Harris), brick house, shingled roof, 1 floor, 4 rooms, £45	Pyrmont St South – west side / Harris St 540 Harris St William Townsend (owner John Woods), wood house, iron roof, 1 floor, 4 rooms, £36 542 Harris St J Woods & Co.'s Depot, iron store, iron roof, 1 floor, 1 room, £40 3 off 520 Harris St Winifred Travers/S.U. Omnibus Co, wood stables, iron roof, 1 floor, 2 rooms, £200 1 off 542 Harris St Winifred Travers/S.U. Omnibus Co, brick chaff store, iron roof, 1 floor, 6 rooms; iron New Forge, iron roof, 1 floor, 1 room; wood Old Forge, shingled roof, 1 floor, 1 room; £289 [note says "pulled down"] Off 542 Harris St Edward Hanna, farrier etc (owner Harris estate/John Woods), iron farrier's shop, iron roof, 1 floor, 1 room, £24 Vacant land
1882 Sands/Rates Assessment	501 Pyrmont St William Pierce (owner Miss Margaret Harris), wood house, shingled roof, 1 floor, 4 rooms, £26 503 Pyrmont St	William Carroll, butcher (owner Margaret Harris), wood house, shingled roof, 2 floors, 7 rooms, £52	Miss Margaret Harris, land (400 feet)	518 John Grant (owner Miss Harris), brick house, shingled roof, 1 floor, 4 rooms, £44	Pyrmont St – west side / off Harris St Thomas Hales/Bus Company (S.U. Omnibus

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
	Robert Reilly/Riley (owner Miss Margaret Harris), wood house, shingled roof, 1 floor, 4 rooms, £26 505 Pyrmont St John Port/Michael Leo (owner Miss Margaret Harris), wood house, shingled roof, 1 floor, 4 rooms, £26 505 Pyrmont St Michael Brown (owner Miss Margaret Harris), wood house, shingled roof, 1 floor, 4 rooms, £26 Miss Margaret Harris, land			520 John Lowe, cab proprietor (owner Miss Harris), brick house, shingled roof, 1 floor, 4 rooms, £45 Miss Margaret Harris, land (20 feet)	Company), iron stables, iron roof, 2 floors, 7 rooms, £260 Edward Hannah, brick workshop, iron house & stables, iron roof, 1 floor, 1 room, £26
1883 Sands	Pyrmont St – west side William Pierce Robert Reilly Matthew Leo, carrier Michael Brown	William Carroll, butcher		518 John Grant, contractor 520 John Lowe, cabman	Pyrmont St – west side Omnibus Company's stables
1884 Sands	Pyrmont St – west side William Pierce Robert Reilly Jacob Sargeant J Webber	William Carroll, butcher		518 John Grant, contractor 520 John Lowe, cabman	Sydney United Omnibus Company's stables
1885 Sands	Pyrmont St – west side George Smith Michael Flood August Webber Samuel Polglase, miner George Dodd Charles Stewart John Brown	William Carroll, butcher		John Grant, contractor John Lowe	City Carrying Co.'s stables [N.B. Omnibus Co.'s stables is listed here in Pyrmont St – west side]
1886 Sands		William Carroll, butcher		518 John Grant, contractor 520 John Lowe, cab proprietor	City Carrying Co.'s stables [N.B. Sydney Tramway and Omnibus Company's stables is listed here in Pyrmont St – west side]
1887 Sands		William Carroll, butcher		518 Mrs C Sampson, music teacher 520	Sydney Tramway and Omnibus Company's stables

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
				John Lowe, cab proprietor	
1887-1889 Sands		William Carroll, butcher		492 Miss M O'Leary, storekeeper 518 David Sampson, butcher 520 John Lowe, cab proprietor	Sydney Tramway and Omnibus Company's stables
1890 Sands		William McCaffrey, drayman		554 David Sampson, butcher 556 John Lowe, cab proprietor	
1891 Sands/Rates Assessment	517 Pyrmont St P O'Hallaran (owner Miss Harris), wood house, shingled roof, 1 floor, 4 rooms, £31 519 Pyrmont St T McCarthy (owner Miss Harris), wood house, shingled roof, 1 floor, 4 rooms, £31 521 Pyrmont St L Davey (owner Miss Harris), wood house, iron roof, 1 floor, 5 rooms, £31 523 (off) Pyrmont St M Brown (owner Miss Harris), wood house, iron roof, 1 floor, 4 rooms, £26	William McCaffrey (owner Miss Harris), wood house, shingle roof, 1 floor, 7 rooms, £52	Miss Harris, land, £774	554 Thomas Fitzgerald, van proprietor (owner Miss Harris), brick house & stables, iron roof, 1 floor, 6 rooms, £52 556 John Lowe, cab proprietor (owner Miss Harris), brick house, iron roof, 1 floor, 6 rooms, £44 Miss Harris, land, £72	535-577 Pyrmont St John Woods/Sydney Bus Company, iron house & stables, iron roof, 1 floor, 4 rooms, £770
1891-1894 Sands		William McCaffrey		554 Thomas Fitzgerald, van proprietor 556 John Lowe, cab proprietor	
1895 Sands		William McCaffrey		556 John Lowe, cab proprietor	Sydney Tramway and Omnibus Company's stables
1896 Sands/Rates Assessment		William McCaffrey (owner Margaret Harris), house & stables	Miss M Harris, land, £312	554 Mrs Mary Black / Mrs Agnes Dooley (owner Miss M Harris), brick house & stable, iron roof, 1 floor, 6 rooms, £41 556	Sydney Tramway and Omnibus Company, wood stables & stores, iron roof, 2 floors, 4 rooms, £600

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
				John Lowe, cab proprietor (owner Miss M Harris), brick house & stable, iron roof, 1 floor, 6 rooms, £41 Miss M Harris, land, £40	
1897-1899 Sands		Mrs Henrietta Meikle James O'Grady, butcher		554 Mrs M Black Mrs Agnes Dooley 556 John Lowe, cab proprietor	Sydney Tramway and Omnibus Company's stables
1900 Sands	Electric power station	Thomas Love		554 Mrs M Black Mrs Agnes Dooley 556 John Lowe, cab proprietor	Electric tram powerhouse
1901 Sands/Rates Assessment		Thomas Love / William McCaffrey (owner Margaret Harris), house & stables, £35	Miss M Harris, land (Block 23), £270	554 Mrs Mary Black / Mrs Agnes Dooley (owner Miss M Harris), house/stable, £33 556 John Lowe, cab proprietor (owner Miss M Harris), house/stable, £33 Miss M Harris, land (part Block 23), £34	
1902-1903 Sands	NSW Government Railway Commissioner Electric power station		Ultimo Post and Telegraph Office	496-504 The Sydney Glass & Tile Co Ltd 554 Mrs M Black 556 John Lowe	Electric tram traffic office
1904-1905 Sands	Electric power station	George Taylor	Ultimo Post and Telegraph Office	496-504 The Sydney Glass & Tile Co Ltd 554 Mrs M Black	Electric tram traffic office

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
				556 John Lowe	
1906-1908 **Sands**	Electric power station	Charles Lacey	Ultimo Post and Telegraph Office	496-504 The Sydney Glass & Tile Co Ltd NSW Govt Electric Tramways, powerhouse Wright Sheard, fuel merchant 554 Mrs M Black 556 John Lowe	Electric tram traffic office and car sheds
1909 **Sands**	Electric power station	Charles Lacey	Ultimo Post and Telegraph Office	496-504 The Sydney Glass & Tile Co Ltd NSW Govt Electric Tramways, powerhouse Wright Sheard, fuel merchant 554 Mrs M Black 556 John Lowe [N.B. 554 and 556 are noted as being south of Macarthur St in this year]	Electric tram traffic office and car sheds
1910 **Sands**	NSW Government Railway Commissioner Electric power station	Charles Lacey	Ultimo Post and Telegraph Office	496-504 The Sydney Glass & Tile Co Ltd NSW Govt Electric Tramways, powerhouse Wright Sheard, fuel merchant 554 Mrs M Black Mrs Agnes Dooley 556 Miss L Lowe	Electric tram traffic office and car sheds

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
1911 Sands/Rates Assessment	NSW Government Australian Gaslight Company brick Tramway Power House, iron roof, 2 floors, 4 rooms, £9,388	Charles Lacey (owner Margaret Harris), wood house, iron roof, 1 floor, 8 rooms, £31	The Commonwealth of the Govt, Ultimo Post and Telegraph Office, brick, tiled roof, 1 floor, 2 rooms, £78	496-504 The Sydney Glass & Tile Co Ltd (owner Margaret Harris), stone offices & workshop, 2 floors, 2 rooms, £464 The Sydney Glass & Tile Co Ltd (owner Margaret Harris), land, £112 Wright Sheard, fuel merchant (owner Margaret Harris), wooden wood and coal yard, iron roof, 1 floor, 1 room, £66 554 Mrs M Black / Mrs Agnes Dooley (owner Margaret Harris), brick house, iron roof, 1 floor, 6 rooms, £39 556 John Connolly (owner Margaret Harris), brick house, iron roof, 1 floor, 6 rooms, £39 Govt of NSW Railway Commissioners (owner Margaret Harris), land, £48	Govt of NSW (Railway Commissioners) electric tram traffic office and car sheds. Brick tram depot, iron roof, 1 floor, 1 room, £2777
1912-1913 Sands	Electric power station	Charles Lacey	Ultimo Post and Telegraph Office	496-504 The Sydney Glass & Tile Co Ltd NSW Govt Electric Tramways, powerhouse Wright Sheard, fuel merchant 554 John Black Mrs Agnes Dooley 556 John Connolly	Electric tram traffic office and car sheds

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
1914 Sands/Rates Assessment	NSW Railway Commissioners brick Tramway Instruction Room, tiled roof, 1 floor, 1 room, £78 NSW Railway Commissioners brick Power House, iron roof, £9,388	Federal Govt, Ultimo Post and Telegraph Office, brick, slate roof, 1 floor, 1 room, £78 [N.B. Commonwealth Savings Bank noted here as well, on William Henry St]	496-504 The Sydney Glass & Tile Co Ltd (owner Margaret Harris), brick works & offices, iron roof, 1 floor, 2 rooms, £464 The Sydney Glass & Tile Co Ltd (owner Margaret Harris), land, £135 Wright Sheard, fuel merchant (owner Margaret Harris), wooden wood and coal yard, iron roof, 1 floor, 1 room, £59 554 John Black / Leo O'Connor / Mrs Agnes Dooley (owner Margaret Harris), brick cottage, iron roof, 1 floor, 6 rooms, £41 556 John Connolly (owner Margaret Harris), brick cottage, iron roof, 1 floor, 6 rooms, £41 Railway Commissioners iron workshop, iron roof, 1 floor, 1 room, £52	Railway Commissioner electric tram traffic office and car sheds. Brick tram depot, iron roof, 1 floor, 3 rooms, £2777	NSW Railway Commissioners brick Tramway Instruction Room, tiled roof, 1 floor, 1 room, £78 NSW Railway Commissioners brick Power House, iron roof, £9,388
1915-1917 Sands	Electric power station Tramway Instruction Room	Ultimo Post and Telegraph Office [N.B. Commonwealth Savings Bank noted here as on William Henry St]	496-504 The Sydney Glass & Tile Co Ltd NSW Govt Electric Tramways, powerhouse	Electric tram traffic office and car sheds	Electric power station Tramway Instruction Room

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
			Wright Sheard, fuel merchant 554 John Black Mrs Agnes Dooley 556 William Houston		
1918 Sands/Rates Assessment	NSW Govt Railway Commissioners brick Tramway Rooms, iron roof, 1 floor, 1 room, £78 NSW Govt Railway Commissioners brick Power House, iron roof, 1 floor, £9,388	Federal Govt, Ultimo Post and Telegraph Office, brick & stone, slate roof, 1 floor, 1 room, £78	496-504 The Sydney Glass & Tile Co Ltd (owner Margaret Harris), brick works & offices, iron roof, 1 floor, 2 rooms, £416 Margaret Harris, land, £135 Harry/Henry Chapman, fuel merchant (owner Margaret Harris), wood woodyard & stables, iron roof, 1 floor, 1 room, £58 554 Mrs Agnes Dooley (owner Maurice Newstadt), brick cottage, iron roof, 1 floor, 6 rooms, £41 556 William Housten / Mrs Annie Houston (owner Maurice Newstadt), brick cottage, iron roof, 1 floor, 6 rooms, £41 Maurice Newstadt, land, £80	NSW Govt Railway Commissioners electric tram traffic office and car shed. Brick tram depot, iron roof, 1 floor, 3 rooms, £2777	NSW Govt Railway Commissioners brick Tramway Rooms, iron roof, 1 floor, 1 room, £78 NSW Govt Railway Commissioners brick Power House, iron roof, 1 floor, £9,388

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
1919-1920 Sands	Tramway Instruction Room Electric power station	Ultimo Post and Telegraph Office and Commonwealth Savings Bank	496-504 The Sydney Glass & Tile Co Ltd NSW Govt Electric Tramways, powerhouse Harry Chapman, fuel merchant 554 Mrs Agnes Dooley 556 James Clapson	Electric tram traffic office and car shed	Tramway Instruction Room Electric power station
1921 Sands/Rates Assessment	NSW Govt Railway Commissioners brick Tramway Room, malthoid roof, 1 floor, £78 NSW Govt Railway Commissioners brick Power House, iron roof, £9,388	Federal Govt, Ultimo Post and Telegraph Office and Commonwealth Savings Bank, brick, slate roof, 1 floor, 1 room, £78	496-550 The Sydney Glass & Tile Co Ltd (owner Margaret Harris), brick works & offices, iron roof, 1 floor, 1 room, £780 Margaret Harris, land, £158 Harry Chapman, fuel merchant (owner Margaret Harris), yard & stables, £104 554 Mrs Agnes Dooley (owner Maurice Newstadt), brick cottage, iron roof, 1 floor, 6 rooms, £46 556 James Clapson (owner Maurice Newstadt), brick cottage, iron roof, 1 floor, 6 rooms, £46 Maurice Newstadt, land, £80	NSW Railway Commissioners electric tram traffic office and car shed. Brick tram depot, iron roof, 1 floor, £2777	NSW Govt Railway Commissioners brick Tramway Room, malthoid roof, 1 floor, £78 NSW Govt Railway Commissioners brick Power House, iron roof, £9,388

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
1922 Sands	Tramway Instruction Room Electric power station	Ultimo Post and Telegraph Office and Commonwealth Savings Bank	496-550 The Sydney Glass & Tile Co Ltd NSW Govt Electric Tramways power-house Harry Chapman, fuel merchant 554 Mrs Agnes Dooley 556 James Clapson	Electric tram traffic office and car shed	Tramway Instruction Room Electric power station
1923 Sands	Tramway Instruction Room Electric power station	Ultimo Post and Telegraph Office and Commonwealth Savings Bank	496-550 The Sydney Glass & Tile Co Ltd NSW Govt Electric Tramways power-house Harry Chapman, fuel merchant	Electric tram traffic office and car shed	Tramway Instruction Room Electric power station
1924-1925 Sands/Rates Assessment	Railway Commissioner brick Tramway Room, iron roof, 1 floor, 1 room, £78 Railway Commissioner brick Power House, iron roof, 1 floor, 1 room, £9,388	Federal Govt, Ultimo Post and Telegraph Office and Commonwealth Savings Bank, brick, slate roof, 1 floor, £78	496-550 The Sydney Glass Co Ltd brick & wood factory office, offices & yard, iron roof, 1 floor, £780 Sydney Glass Co Ltd, land, £180 Harry Chapman, fuel merchant (owner Sydney Glass Co Ltd), offices & yard, £104 Public weighbridge, No.552 Maurice Newstead, land, £200	Railway Commissioner NSW electric tram traffic office and car shed. Brick tram depot, iron roof, 1 floor, 3 rooms, £2777	Railway Commissioner brick Tramway Room, iron roof, 1 floor, 1 room, £78 Railway Commissioner brick Power House, iron roof, 1 floor, 1 room, £9,388

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
1927 Sands/Rates Assessment	The Crown, brick Tramway Room, malthoid roof, 1 floor, 1 room, £78 NSW Govt Railway Commissioners brick Power House, malthoid roof, 2 floors, £9,388	Commonwealth Government, Ultimo Post and Telegraph Office and Commonwealth Savings Bank, brick, iron roof, 1 floor, 1 room, £78	496-550 Sydney Glass Co Ltd, brick factory, iron roof, 1 floor & basement, 2 rooms, £780 Sydney Glass Co Ltd, land, £225 552 Harry Chapman (owner Sydney Glass Co Ltd), fuel merchant, brick wood and coal yard, iron roof, 1 floor, 1 room, £104 Public weighbridge, No. 31, brick shed and weighbridge Maurice Newstead, land, £257	NSW Gov electric tram traffic office and car shed. Brick tram depot, iron roof, 1 floor, 3 rooms, £2777	The Crown, brick Tramway Room, malthoid roof, 1 floor, 1 room, £78 NSW Govt Railway Commissioners brick Power House, malthoid roof, 2 floors, £9,388
1930 Sands/Rates Assessment	NSW Govt, brick Tramway Room, slate roof, 1 floor, 1 room, £78 NSW Govt Railway Commissioners brick Power House, malthoid roof, 2 floors, £9,388	Post Master General's Dept, Commonwealth Government, Ultimo Post and Telegraph Office and Commonwealth Savings Bank, brick, slate roof, 1 floor, 1 room, £78	496-504 Sydney Glass Co Ltd, brick factory, office & sheds, iron roof, 2 floors, 3 rooms, £780 Sydney Glass Co Ltd, land, £563 Maurice Newstead, land, £257	NSW Gov Tramways electric tram traffic office and car shed. Brick tram depot, iron roof, 1 floor, £2777	NSW Govt, brick Tramway Room, slate roof, 1 floor, 1 room, £78 NSW Govt Railway Commissioners brick Power House, malthoid roof, 2 floors, £9,388
1932 Sands/Rates Assessment	NSW Govt Railway Commissioner brick Tramway Room, slate roof, 1 floor, 1 room, £77 NSW Govt Railway Commissioner brick Power House, malthoid roof, 2 floors, 2 rooms, £9,388	Post Master General's Dept, Commonwealth Government, Ultimo Post and Telegraph Office and Commonwealth Savings Bank, brick, slate roof, 1 floor, 1 room, £78	496-504 Sydney Glass Co Ltd brick factory & offices, iron roof, 2 floors, 3 rooms, £702 506-550 Sydney Glass Co Ltd, land, £450 552-560	NSW Gov Metropolitan Transport Trust electric tram traffic office and car shed. Brick depot, sheds & offices, iron roof, 1 floor, 1 room, £2777	NSW Govt Railway Commissioner brick Tramway Room, slate roof, 1 floor, 1 room, £77 NSW Govt Railway Commissioner brick Power House, malthoid roof, 2 floors, 2 rooms, £9,388

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
			Maurice Newstead, land, £198		
1933 Rates Assessment	NSW Govt Railway Commissioner brick Tramway Room, slate roof, 1 floor, 1 room NSW Govt Railway Commissioner brick Power House, iron roof, 2 floors, 2 rooms	Post Master General's Dept, Commonwealth Government, brick Post Office, slate roof, 1 floor, 1 room	496-504 Sydney Glass Co Pty Ltd brick factory & office, iron roof, 2 floors, 3 rooms, £585 506-550 Sydney Glass Co Pty Ltd, land, £395 552-560 Maize Products Pty Ltd, brick warehouse, cement sheets roof, 1 floor & basement, 2 rooms, £935	NSW Gov Transport Commissioners brick shed, offices & depot, iron roof, 1 floor	NSW Govt Railway Commissioner brick Tramway Room, slate roof, 1 floor, 1 room NSW Govt Railway Commissioner brick Power House, iron roof, 2 floors, 2 rooms
1939 Rates Assessment	NSW Govt Railway Commissioner brick Tramway Room, slate roof, 1 floor, 1 room NSW Govt Railway Commissioner brick Power House, iron roof, 2 floors, 2 rooms	Post Master General's Dept, Commonwealth Government, brick Post Office, slate roof, 1 floor, 1 room	496-504 Sydney Glass Co Pty Ltd brick factory & office, iron roof, 2 floors, 3 rooms, £585 506-550 Sydney Glass Co Pty Ltd, land, £395 552-560 Maize Products Pty Ltd, brick warehouse, cement sheets roof, 1 floor & basement, 2 rooms, £935	NSW Gov Transport Commissioners/ Dept of Road Transport & Tramways brick shed, offices & depot, iron roof, 1 floor	NSW Govt Railway Commissioner brick Tramway Room, slate roof, 1 floor, 1 room NSW Govt Railway Commissioner brick Power House, iron roof, 2 floors, 2 rooms
1945 Rates Assessment	NSW Govt Railway Commissioner Tramway Room NSW Govt Railway Commissioner Power House	Commonwealth Government, brick Post Office, slate roof, 1 floor, 1 room, £78	496-504 Sydney Glass Co Pty Ltd brick factory & offices, iron roof, 2 floors, 3 rooms, £585 506-550	NSW Gov Dept of Road Transport & Tramways brick shed, offices & depot, iron roof, 1 floor, 1 room	NSW Govt Railway Commissioner Tramway Room NSW Govt Railway Commissioner Power House

Year & Source	William Henry Street (east end, next to railway line)	137 William Henry Street	494 Harris Street	496-560 Harris Street	84 Mary Ann Street
			Sydney Glass Co Pty Ltd, land, £395 552-560 Maize Products Pty Ltd, brick warehouse, cement sheets roof, 1 floor & basement, 2 rooms, £935		
1948 Rates Assessment	NSW Govt Railway Commissioner Tramway Room NSW Govt Railway Commissioner Power House	Brick Post Office, slate roof, 1 floor, 1 room	496-504 Sydney Glass Co Pty Ltd brick factory & offices, iron roof, 2 floors + basement, 3 + 5 rooms, £585 506-542 Sydney Glass Co Pty Ltd, land, £413 544-550 Sydney Glass Co Pty Ltd (owner NSW Govt Railway Commissioner), land, £150 552-560 Maize Products Pty Ltd, brick warehouse, cement sheets roof, 1 floor & basement, 2 rooms, £935	NSW Gov Dept of Road Transport & Tramways brick shed, offices & depot, iron roof, 1 floor, 1 room	NSW Govt Railway Commissioner Tramway Room NSW Govt Railway Commissioner Power House

APPENDIX D
Evolution of the Powerhouse Site (Maps by Design 5 Architects)

APPENDIX D—Evolution of the Powerhouse Site (Maps by Design 5 Architects)

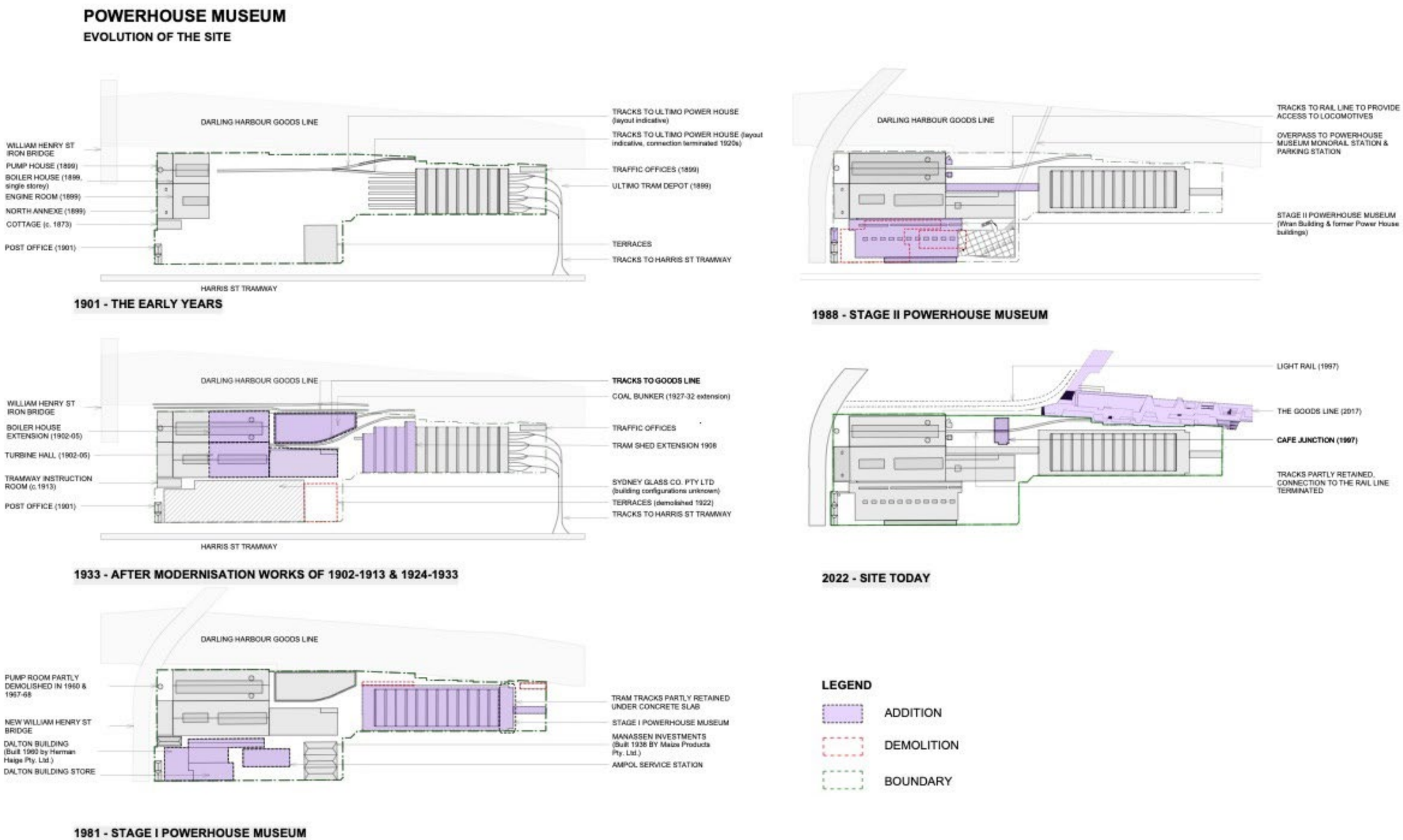
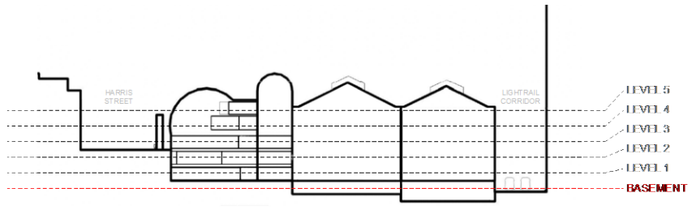
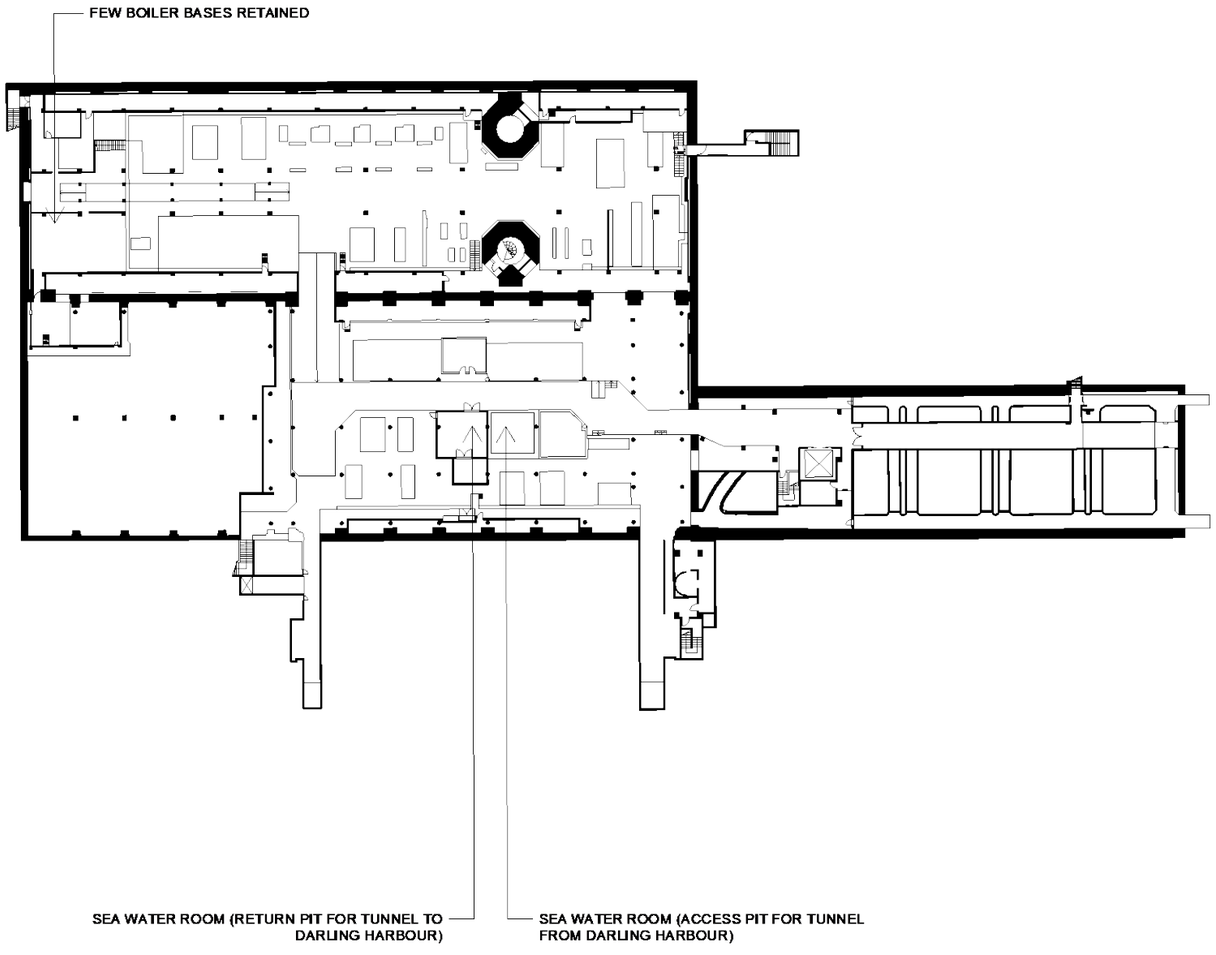


Figure 1: Evolution of the site, 1901 – 2022.

EVOLUTION DIAGRAMS

BASEMENT 2022





NOTE: EARLIER PLANS FOR BASEMENT LEVEL COULD NOT BE LOCATED DURING THE RESEARCH PHASE.

KEY:

- EXISTING CONFIGURATION
- DEMOLITION
- NEW ELEMENT
- CONFIGURATION UNCLEAR / UNKNOWN

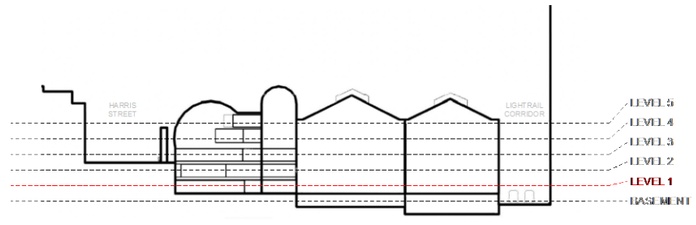
N

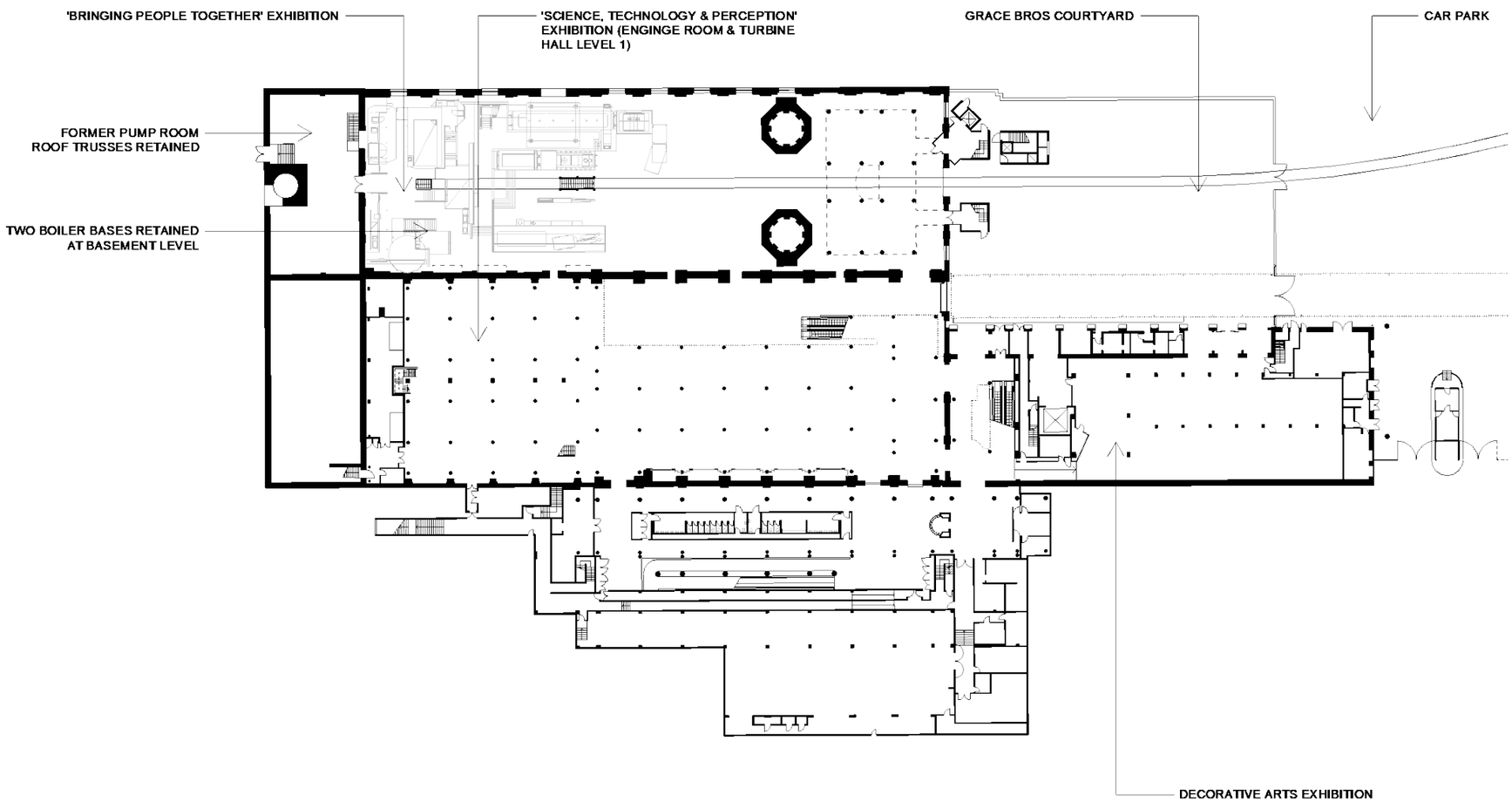
0 5 10 20

Figure 2: Stage II Powerhouse Museum Evolution Diagram for Basement Level, 2022.

EVOLUTION DIAGRAMS

LEVEL 1 1988





KEY:

- EXISTING CONFIGURATION
- DEMOLITION
- NEW ELEMENT
- CONFIGURATION UNKNOWN

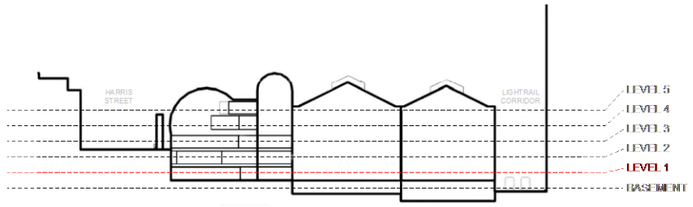
N

0 5 10 20

Figure 3: Stage II Powerhouse Museum Evolution Diagram for Level 1, 1988.

EVOLUTION DIAGRAMS

LEVEL 1 2013



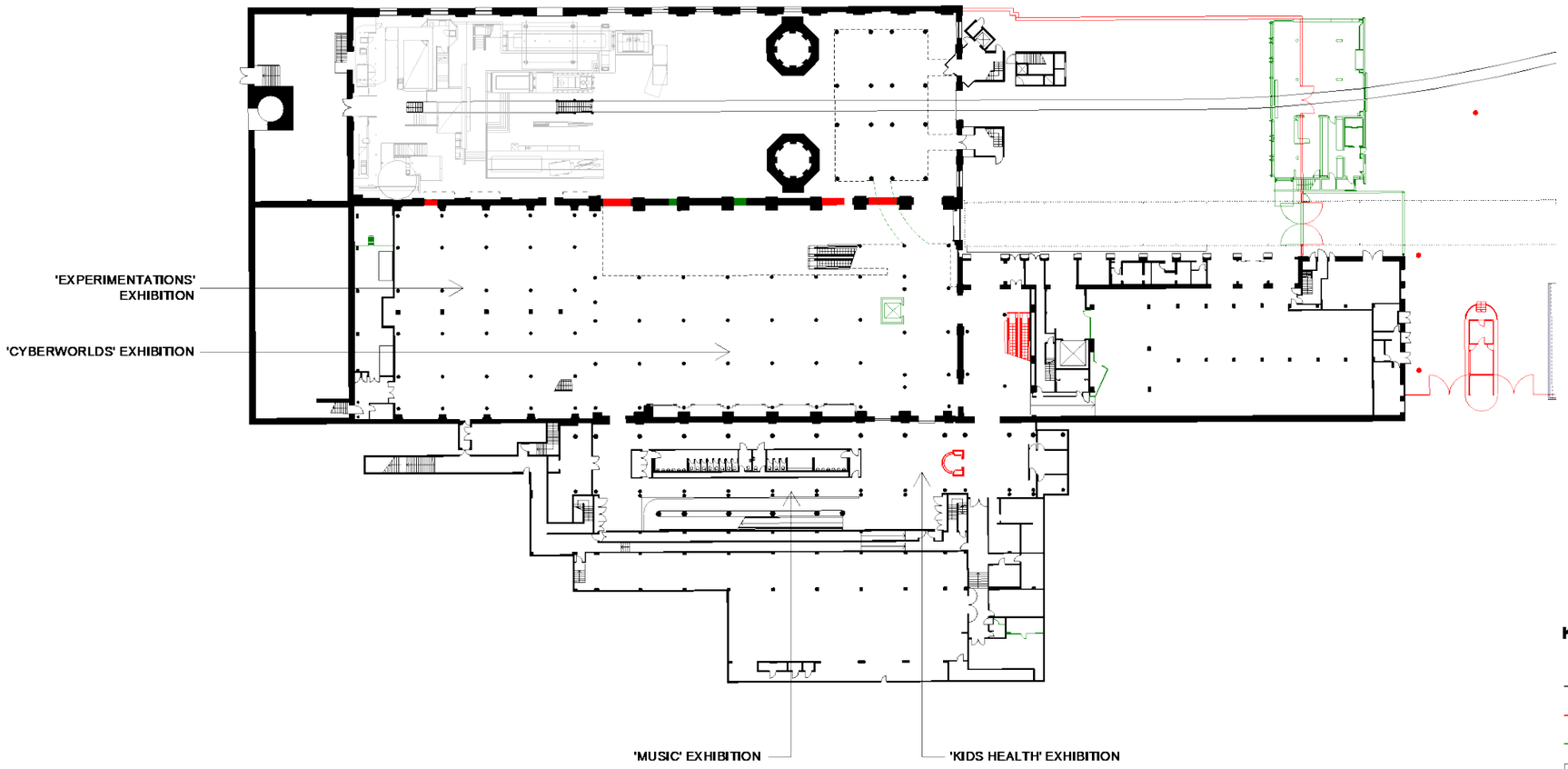
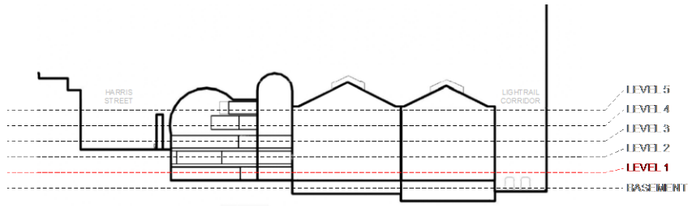
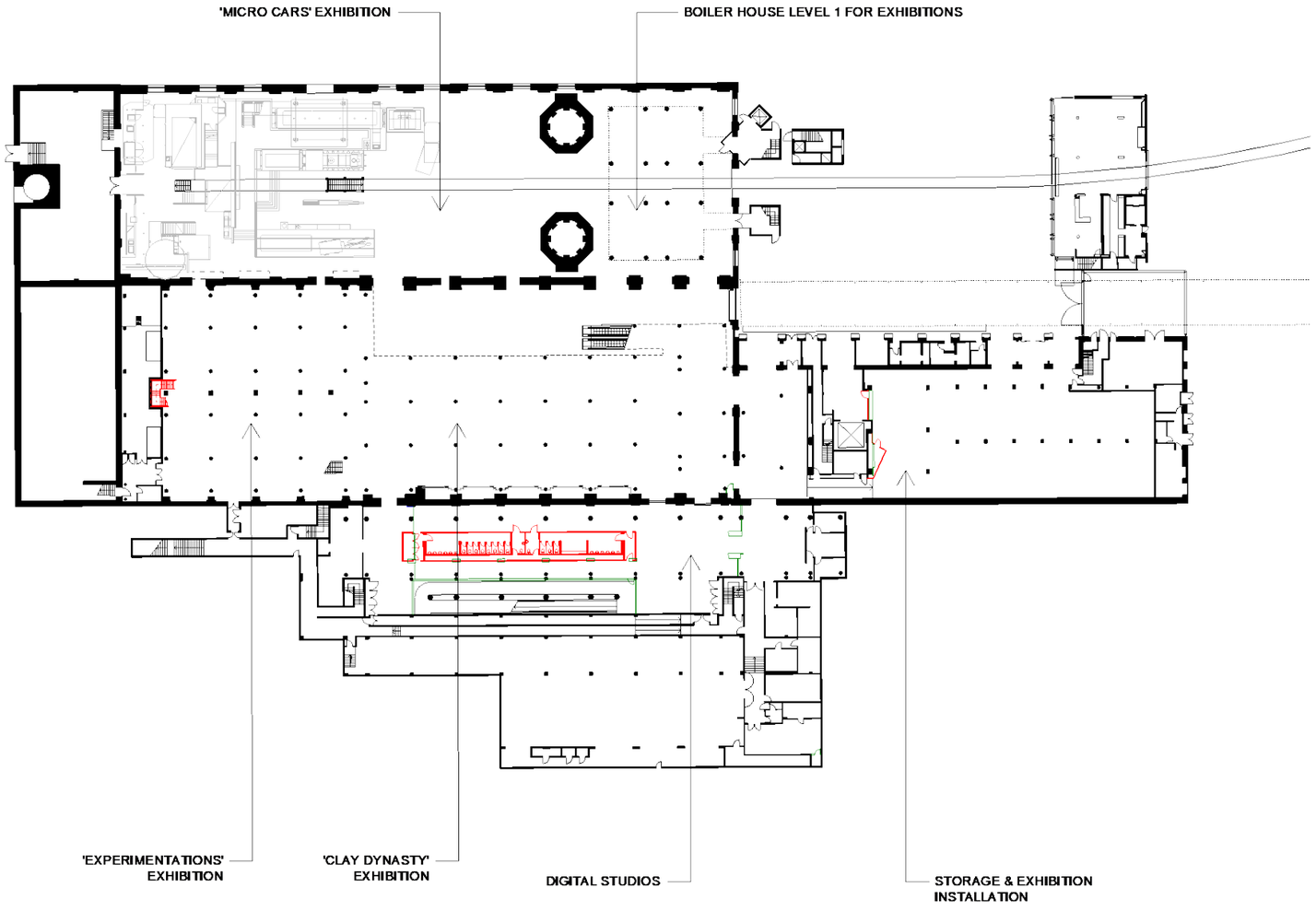


Figure 4: Stage II Powerhouse Museum Evolution Diagram for Level 1, 2013.

EVOLUTION DIAGRAMS

LEVEL 1 2022





KEY:

- EXISTING CONFIGURATION
- DEMOLITION
- NEW ELEMENT
- CONFIGURATION UNKNOWN

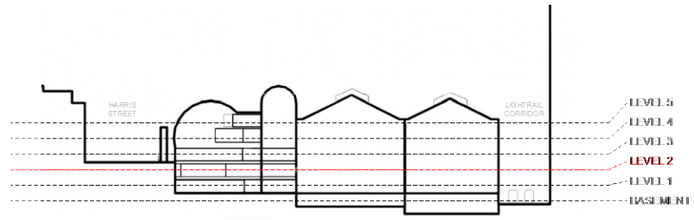
N

0 5 10 20

Figure 5: Stage II Powerhouse Museum Evolution Diagram for Level 1, 2022.

EVOLUTION DIAGRAMS

LEVEL 2 1988



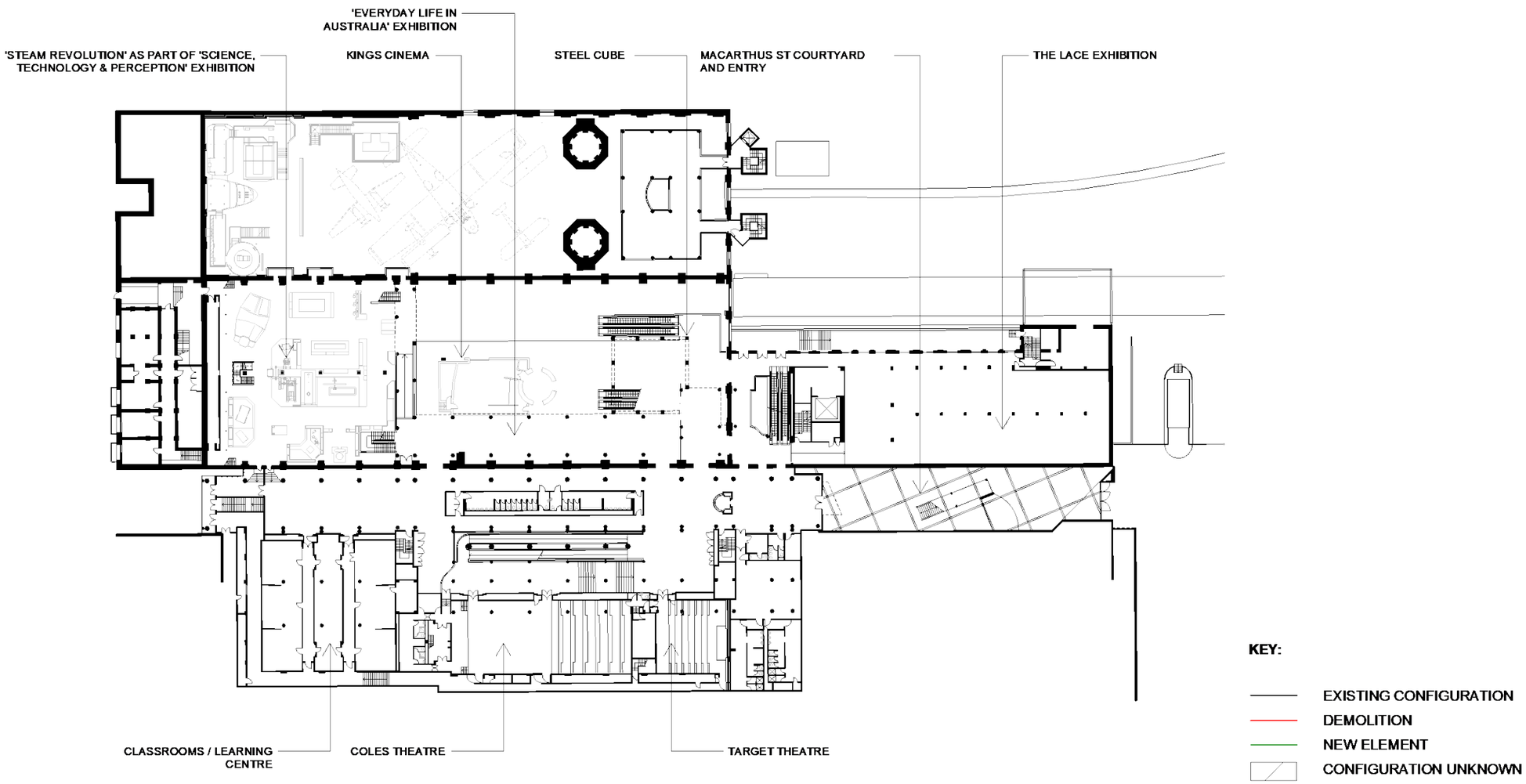
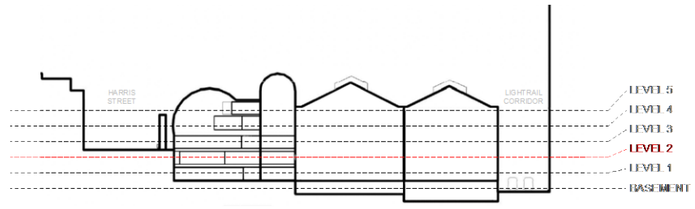


Figure 6: Stage II Powerhouse Museum Evolution Diagram for Level 2, 1988.

EVOLUTION DIAGRAMS

LEVEL 2 2013



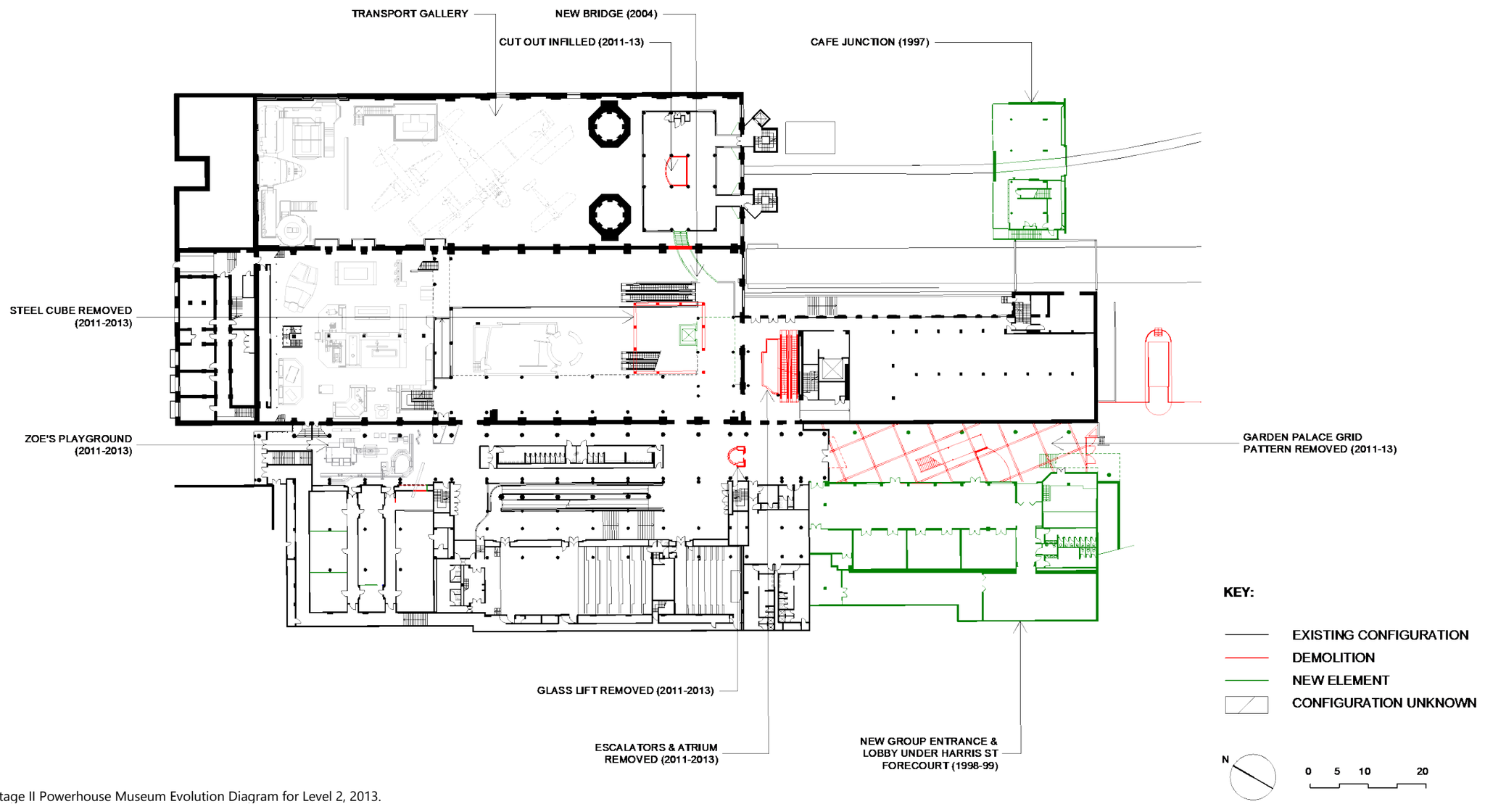
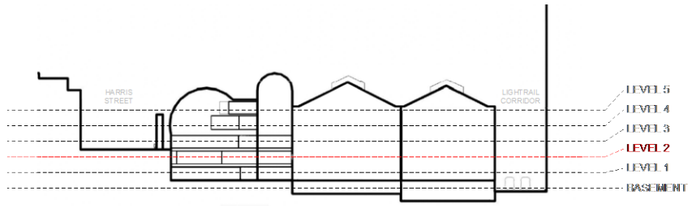


Figure 7: Stage II Powerhouse Museum Evolution Diagram for Level 2, 2013.

EVOLUTION DIAGRAMS

LEVEL 2 2022



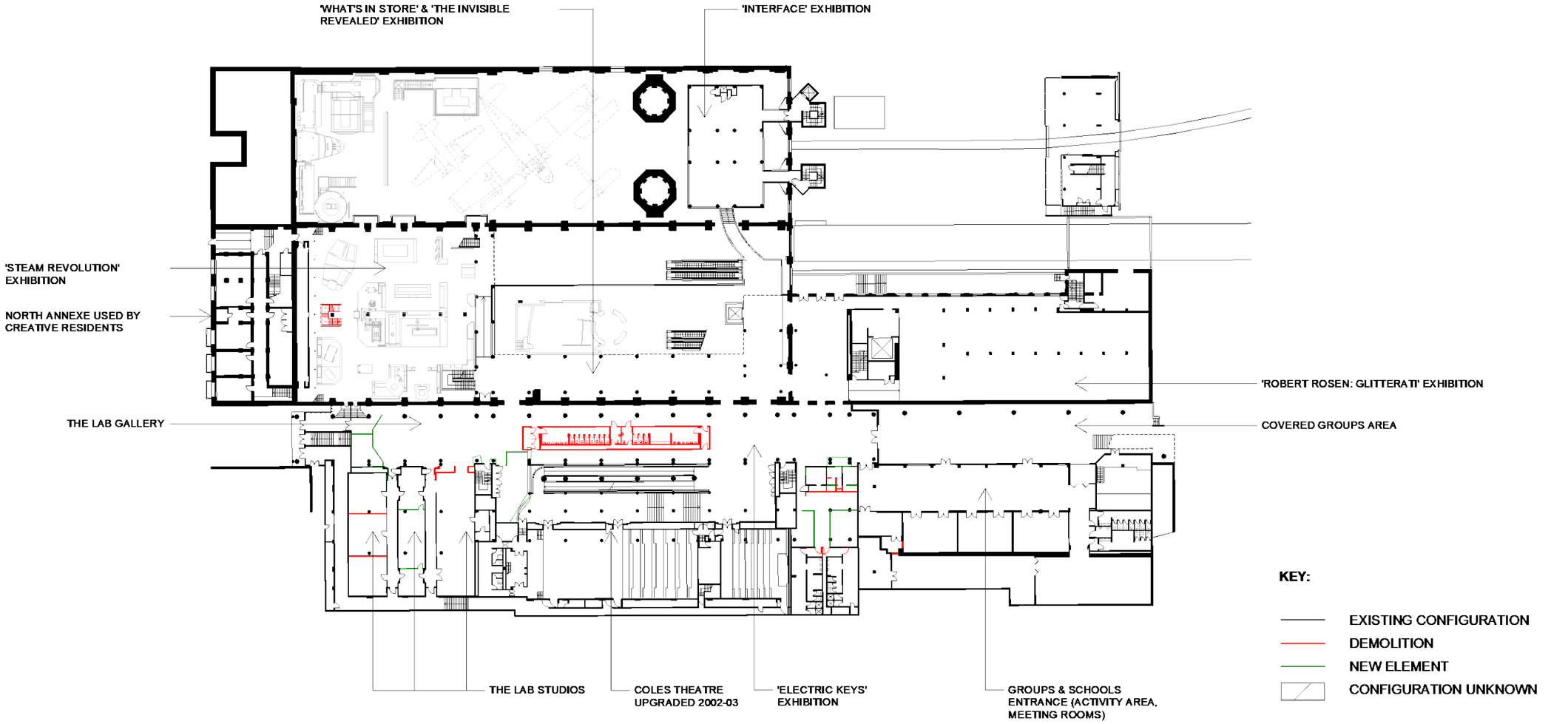
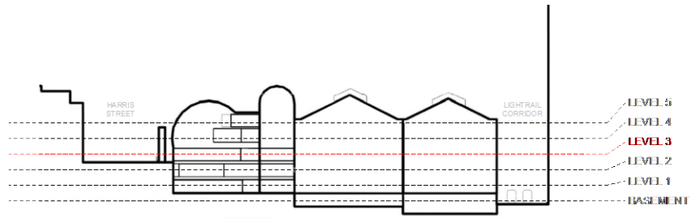


Figure 8: Stage II Powerhouse Museum Evolution Diagram for Level 2, 2022.

EVOLUTION DIAGRAMS

LEVEL 3 1988



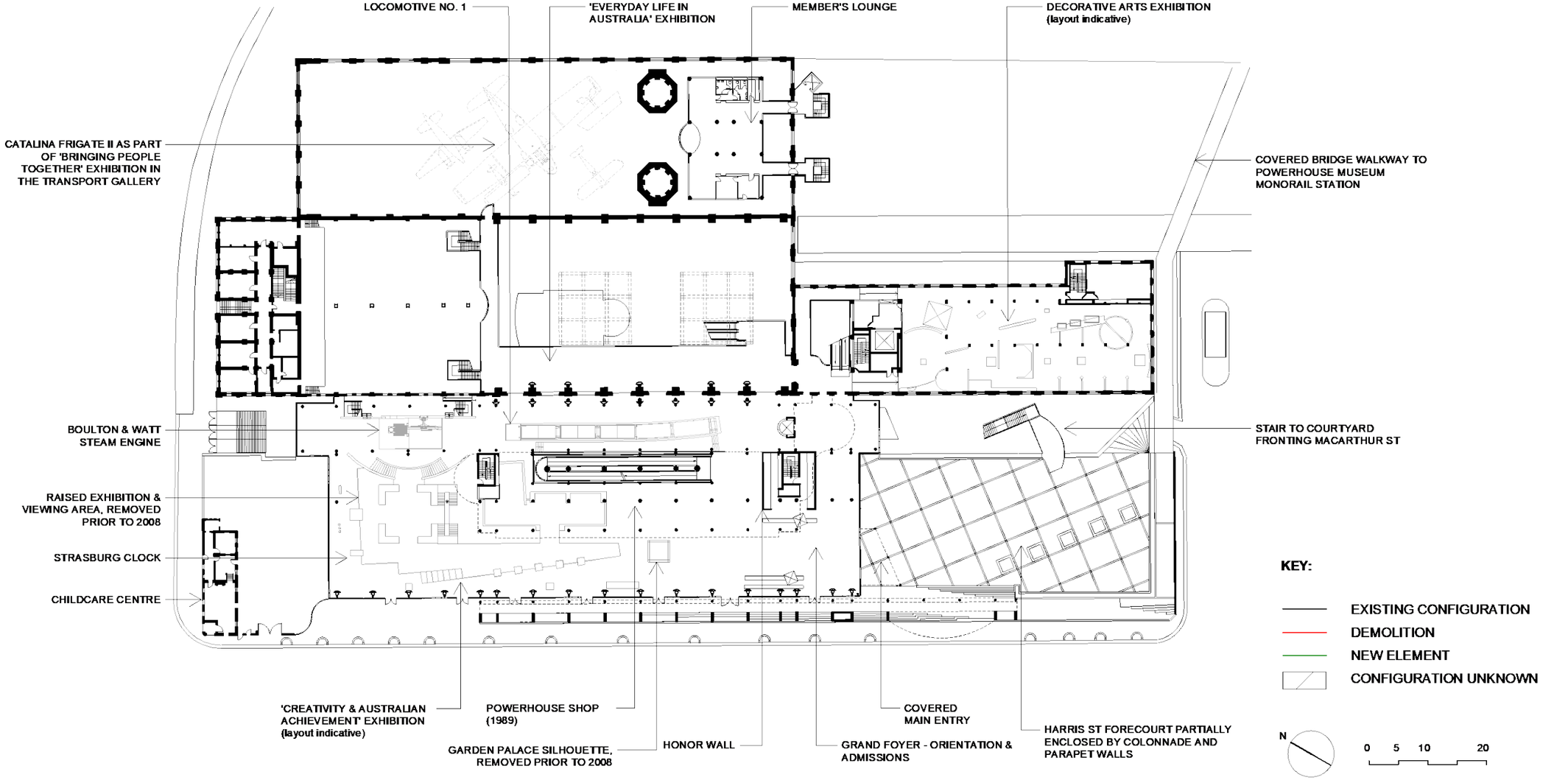
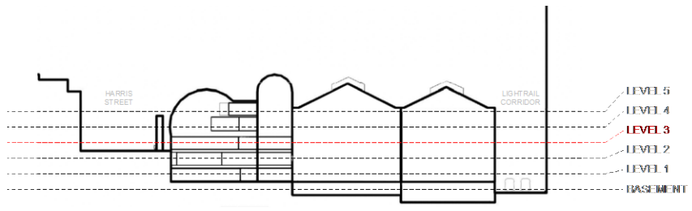


Figure 9: Stage II Powerhouse Museum Evolution Diagram for Level 3, 1988.

EVOLUTION DIAGRAMS

LEVEL 3 2013



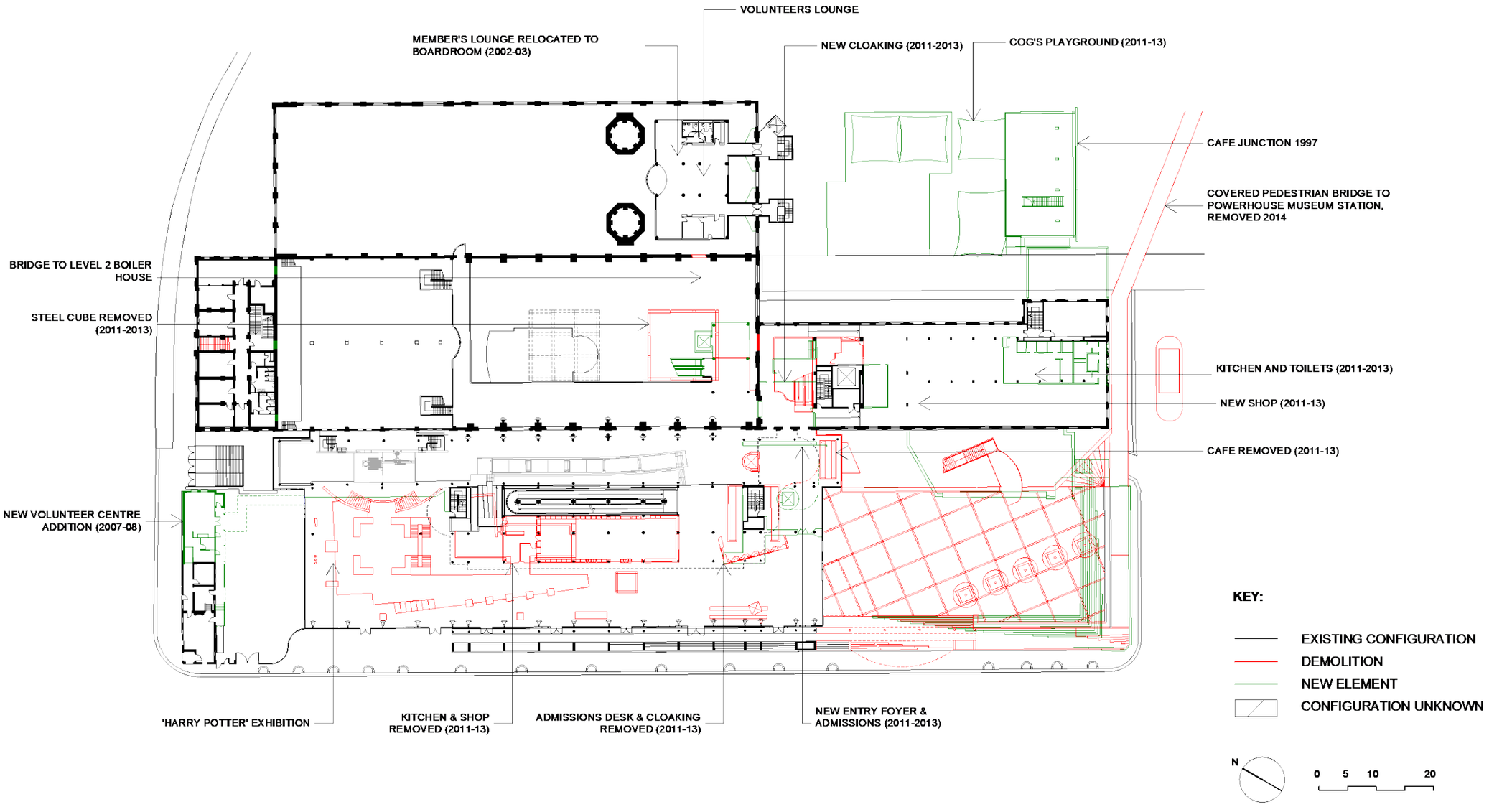
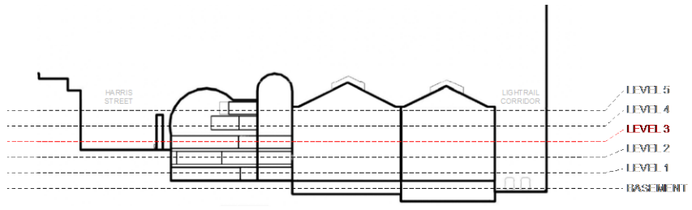


Figure 10: Stage II Powerhouse Museum Evolution Diagram for Level 3, 2013.

EVOLUTION DIAGRAMS

LEVEL 3 2022



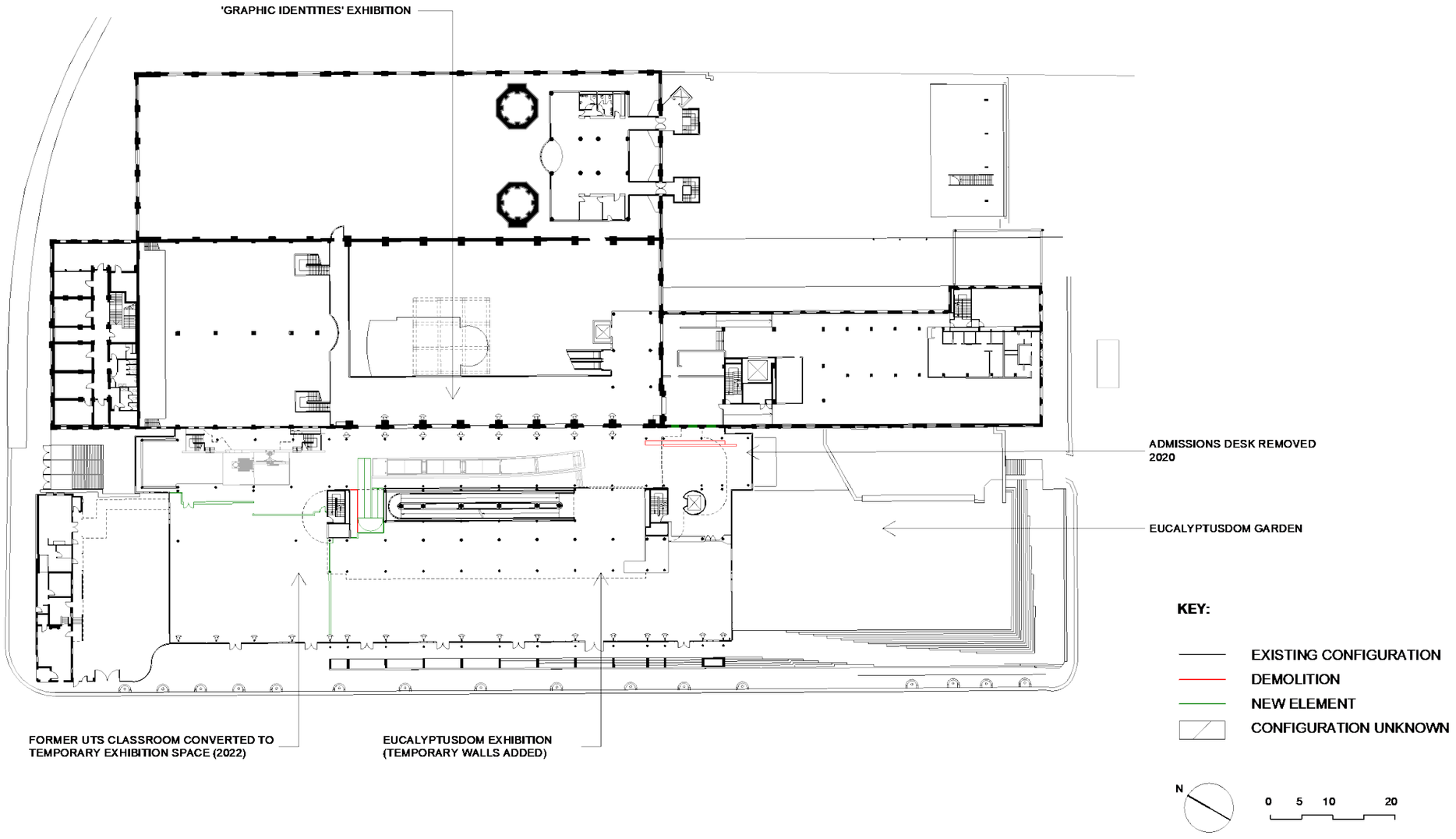
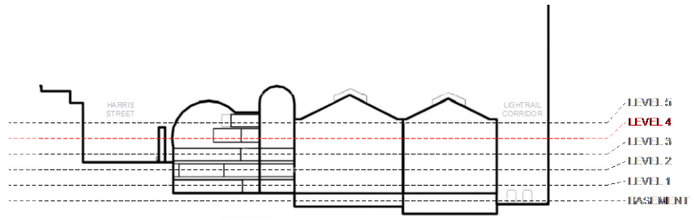


Figure 11: Stage II Powerhouse Museum Evolution Diagram for Level 3, 2022.

EVOLUTION DIAGRAMS

LEVEL 4 1988



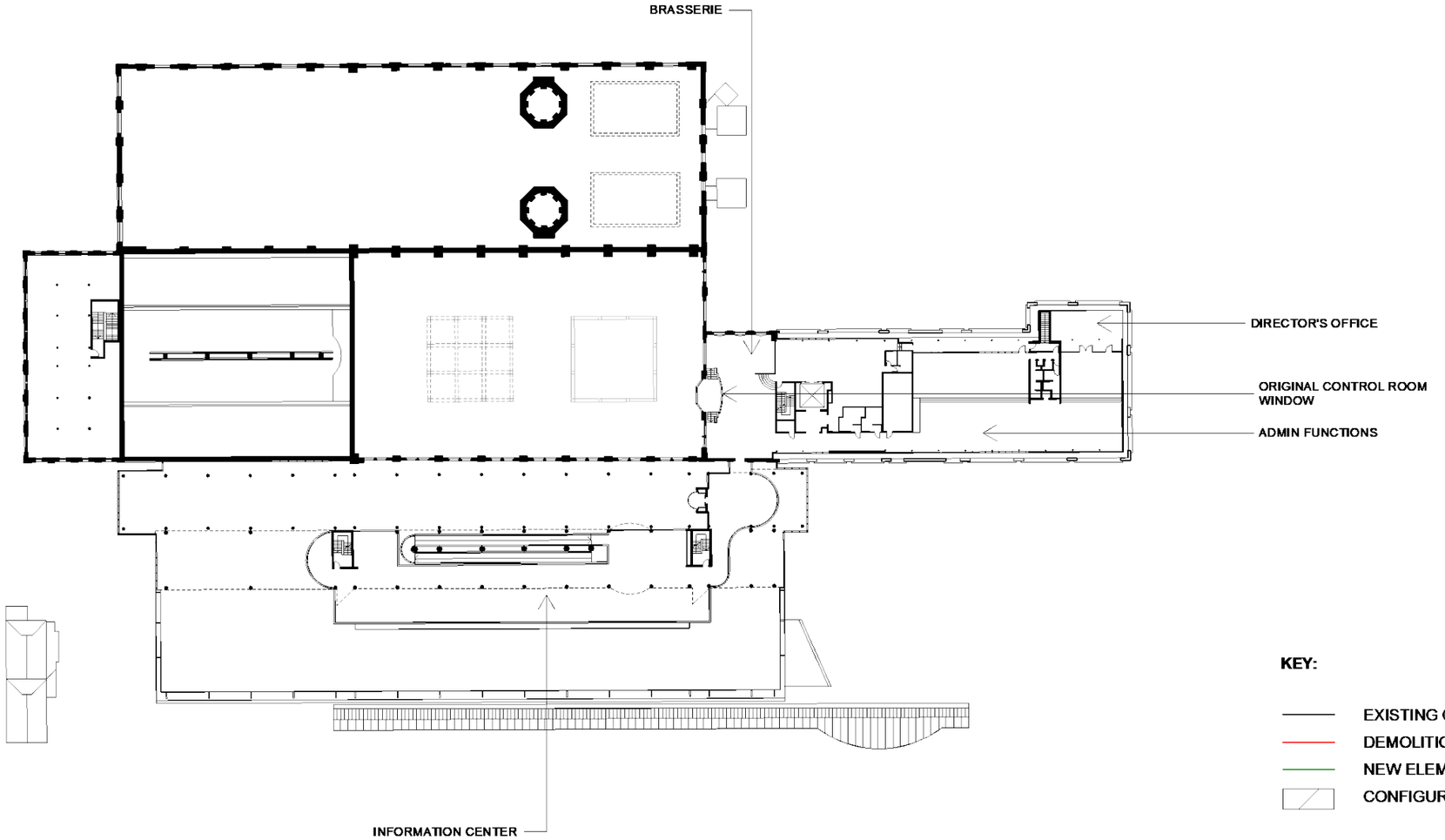
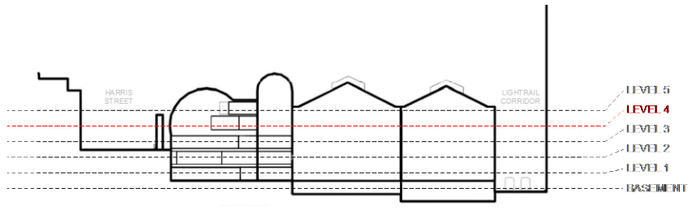
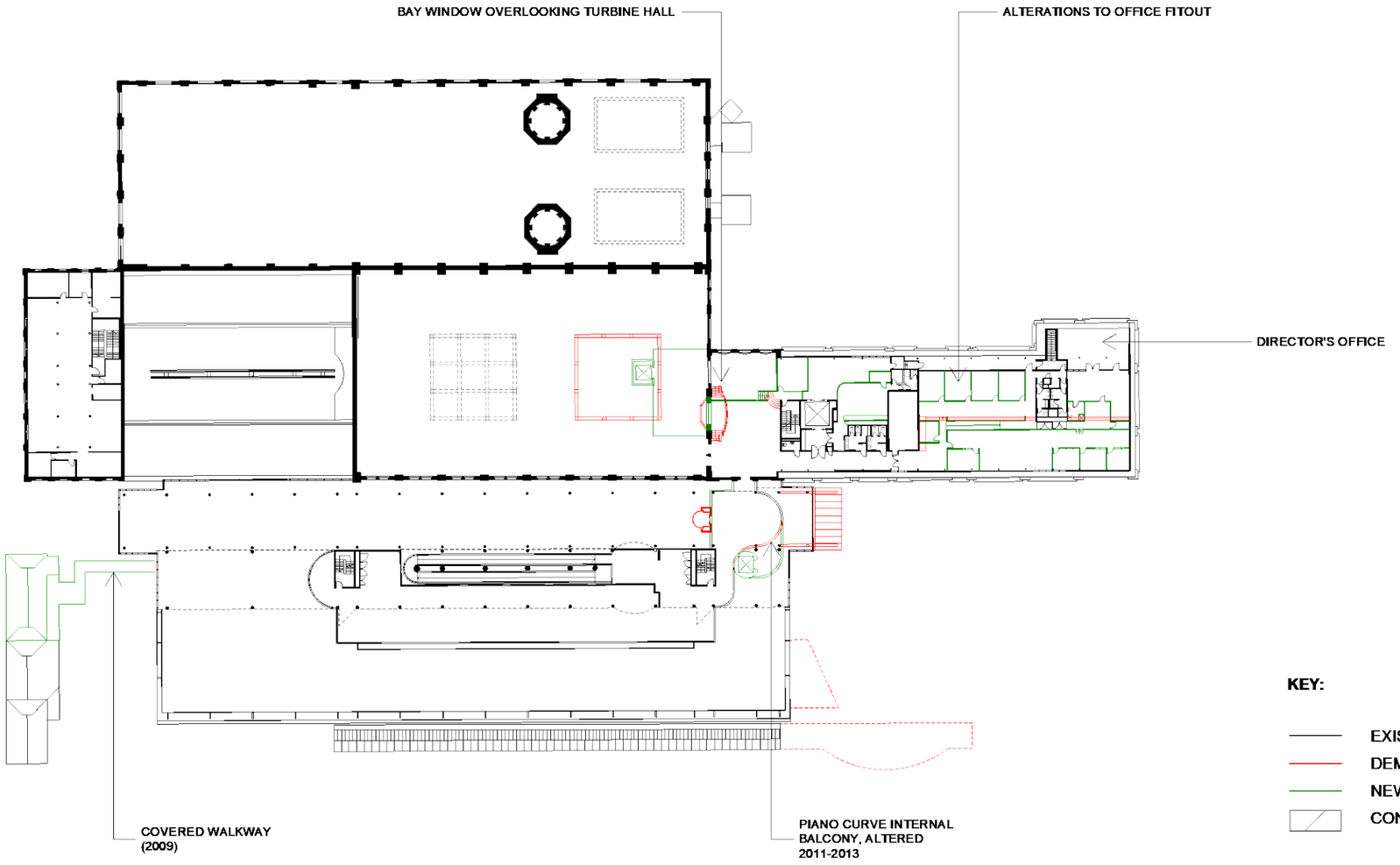


Figure 12: Stage II Powerhouse Museum Evolution Diagram for Level 4, 2018.

EVOLUTION DIAGRAMS

LEVEL 4 2013





KEY:

- EXISTING CONFIGURATION
- DEMOLITION
- NEW ELEMENT
- CONFIGURATION UNKNOWN

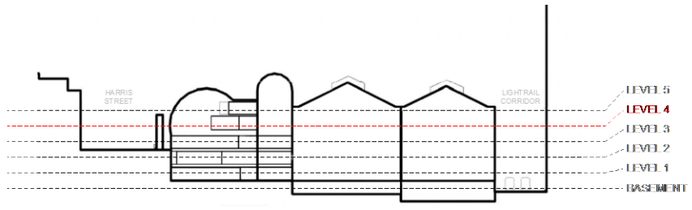
N

0 5 10 20

Figure 13: Stage II Powerhouse Museum Evolution Diagram for Level 4, 2013.

EVOLUTION DIAGRAMS

LEVEL 4 2022



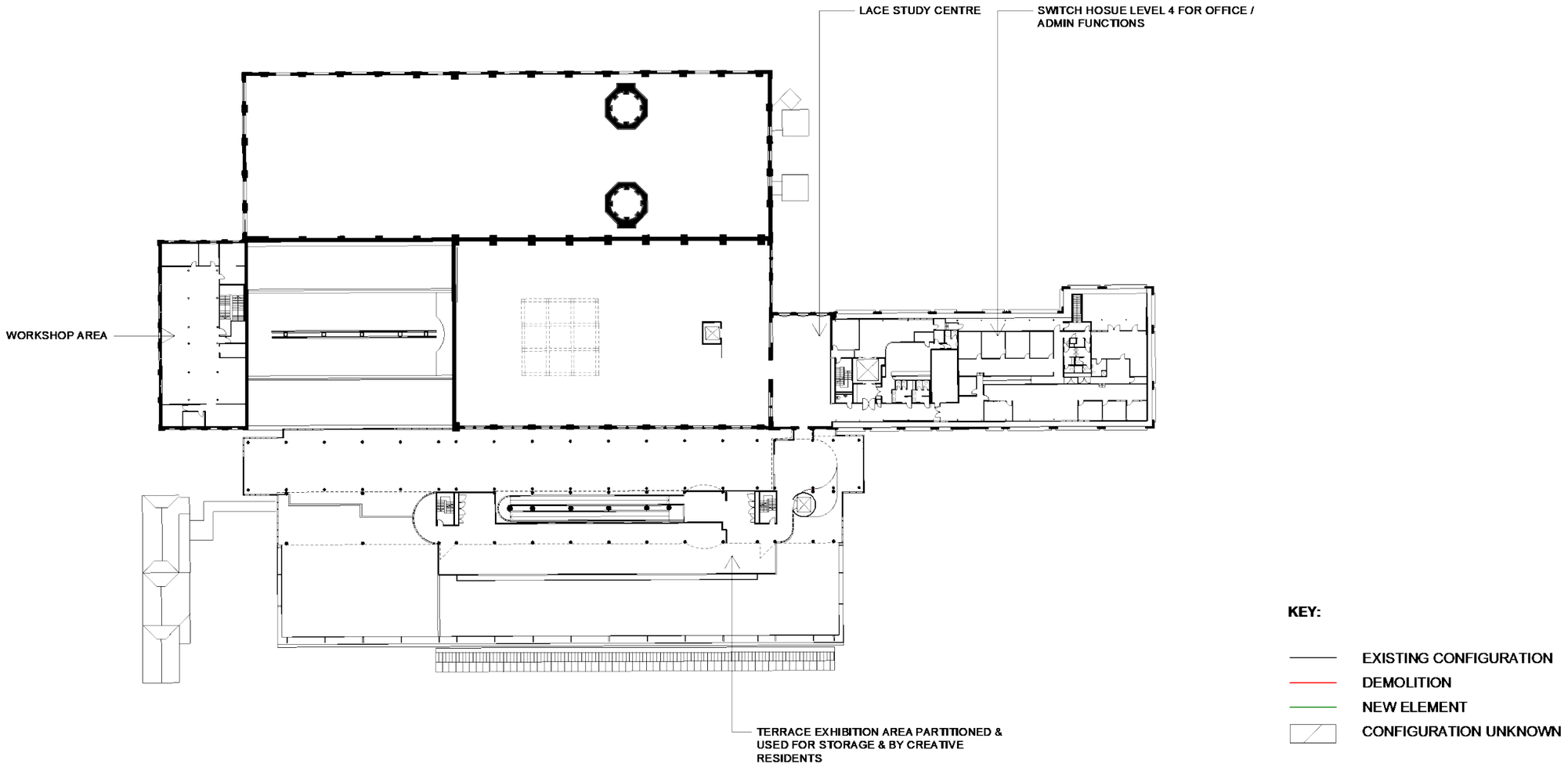
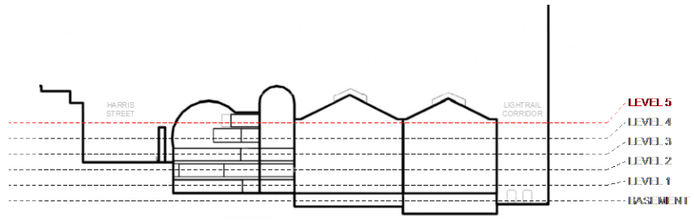
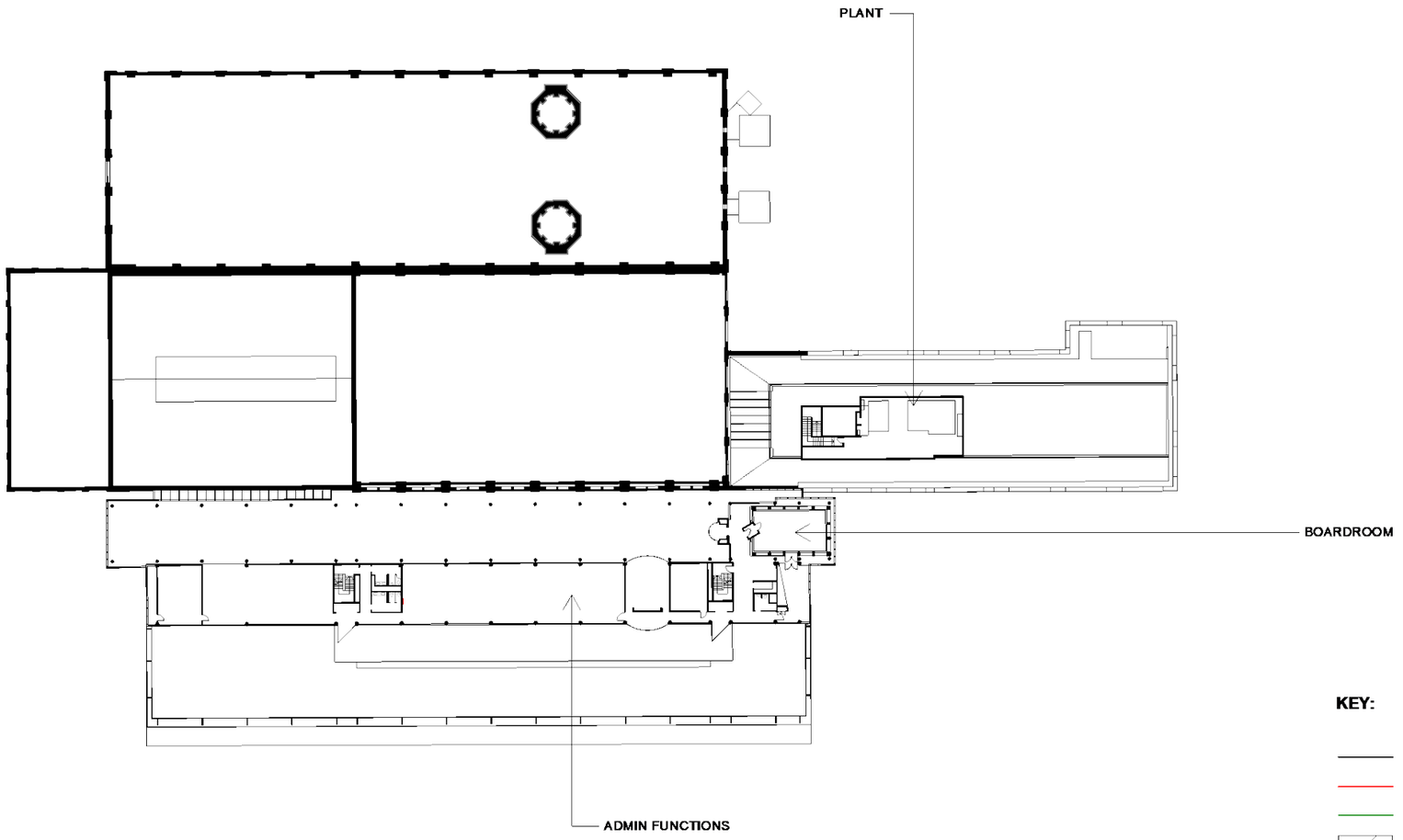


Figure 14: Stage II Powerhouse Museum Evolution Diagram for Level 4, 2022.

EVOLUTION DIAGRAMS

LEVEL 5 1988





KEY:

EXISTING CONFIGURATION

DEMOLITION

NEW ELEMENT

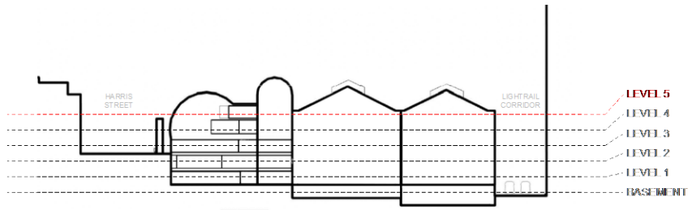
CONFIGURATION UNKNOWN

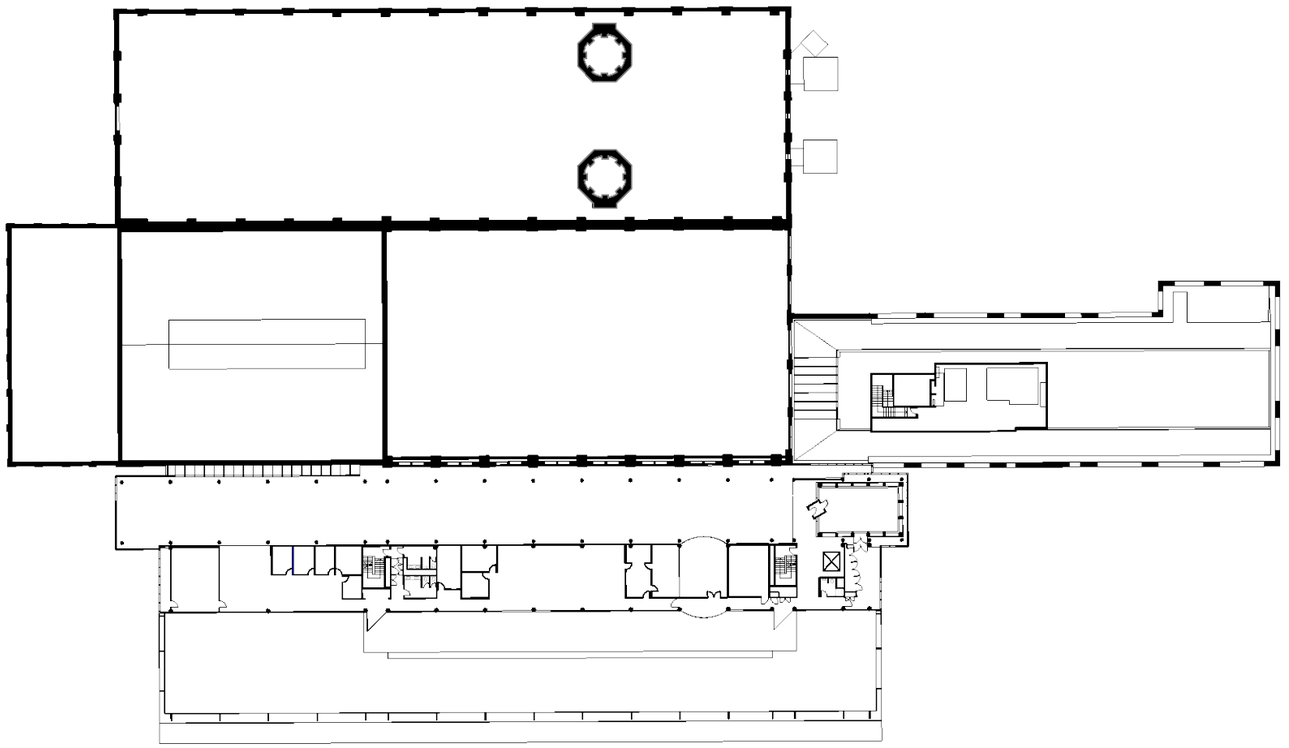
N 0 5 10 20

Figure 15: Stage II Powerhouse Museum Evolution Diagram for Level 5, 1988.

EVOLUTION DIAGRAMS

LEVEL 5 2013





KEY:

EXISTING CONFIGURATION

DEMOLITION

NEW ELEMENT

CONFIGURATION UNKNOWN

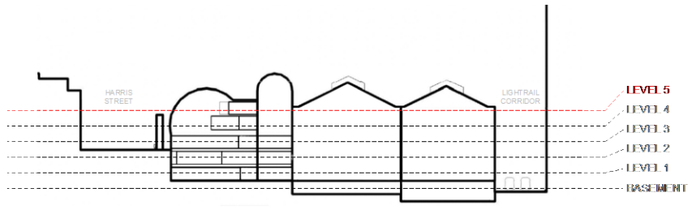
N

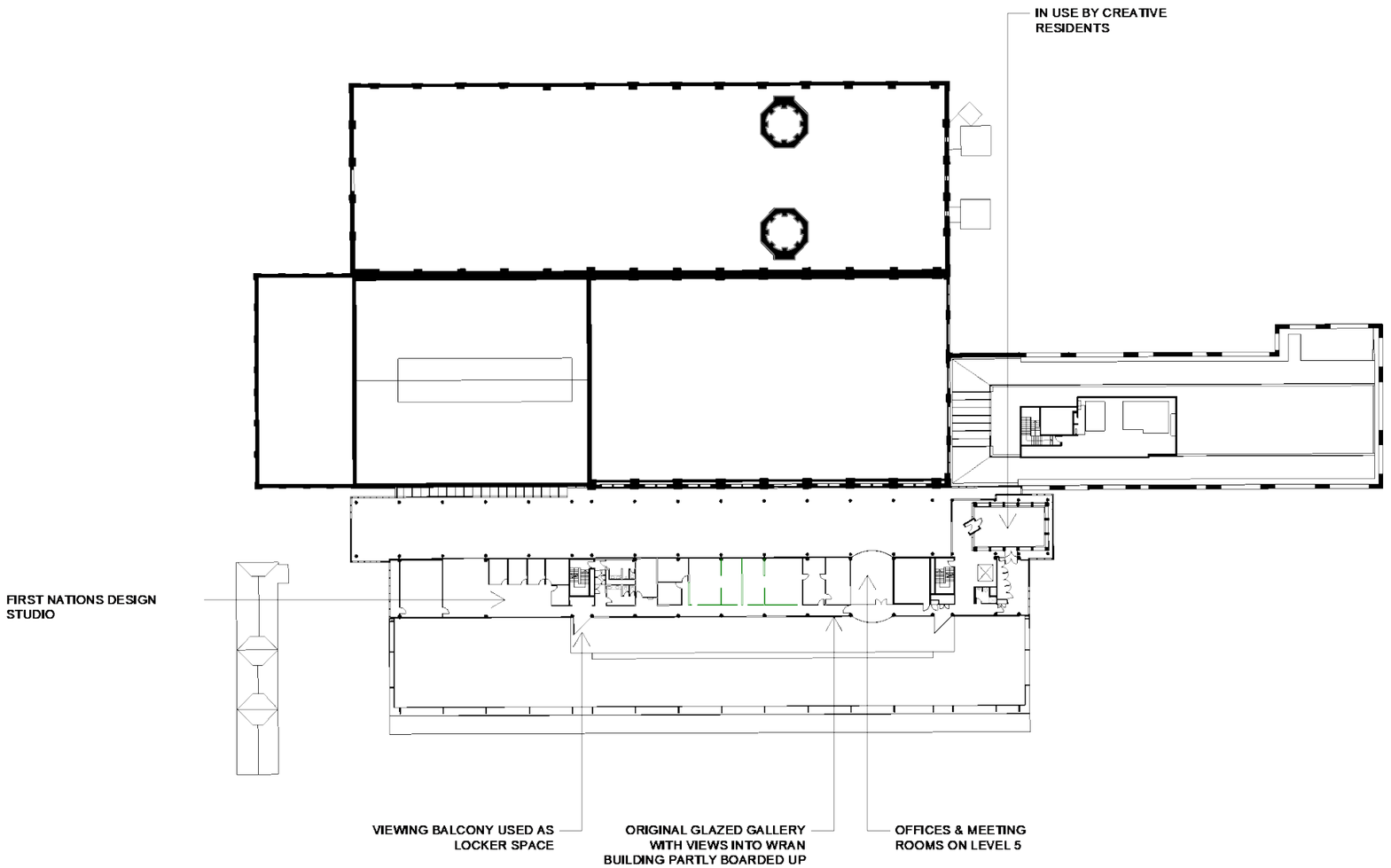
0 5 10 20

Figure 16: Stage II Powerhouse Museum Evolution Diagram for Level 5, 2013.

EVOLUTION DIAGRAMS

LEVEL 5 2022





KEY:

- EXISTING CONFIGURATION
- DEMOLITION
- NEW ELEMENT
- CONFIGURATION UNKNOWN

N

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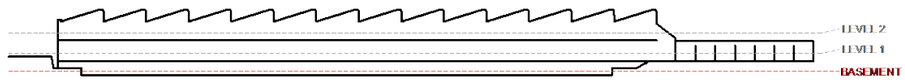
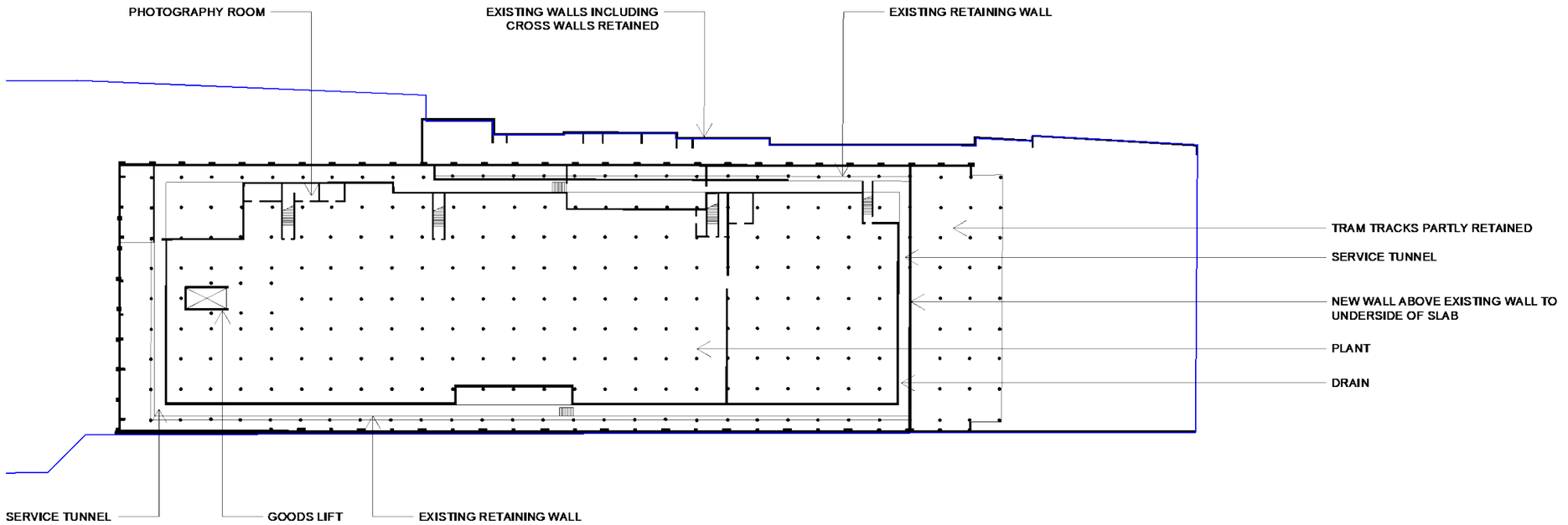
Figure 17: Stage II Powerhouse Museum Evolution Diagram for Level 5, 2022.

EVOLUTION DIAGRAMS

HARWOOD BUILDING BASEMENT 1981





KEY:

- EXISTING CONFIGURATION
- DEMOLITION
- NEW ELEMENT
- CONFIGURATION UNKNOWN

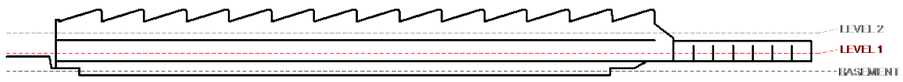
N

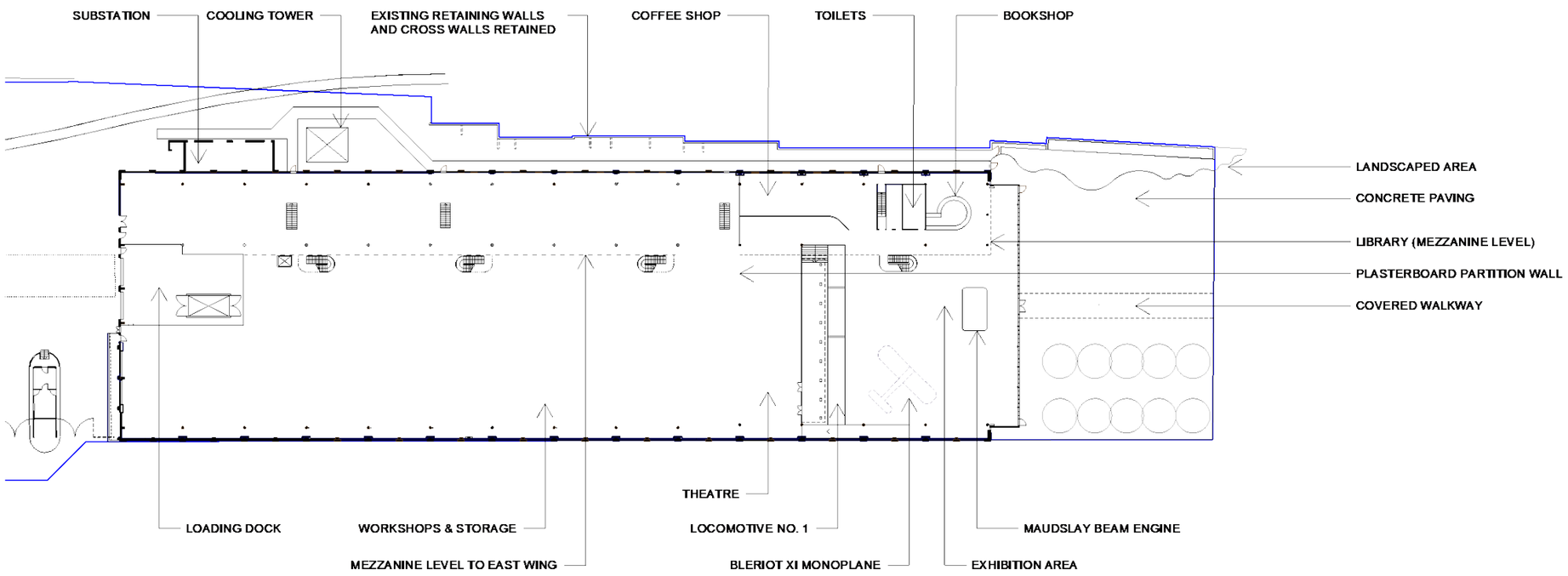
0 5 10 20

Figure 18: Stage I Powerhouse Museum Evolution Diagram for Basement Level, 1981.

EVOLUTION DIAGRAMS

HARWOOD BUILDING LEVEL 1 1981





KEY:

EXISTING CONFIGURATION

DEMOLITION

NEW ELEMENT

CONFIGURATION UNKNOWN

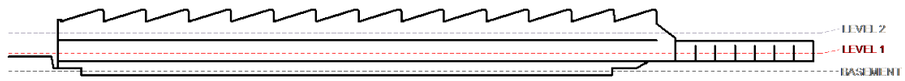
N

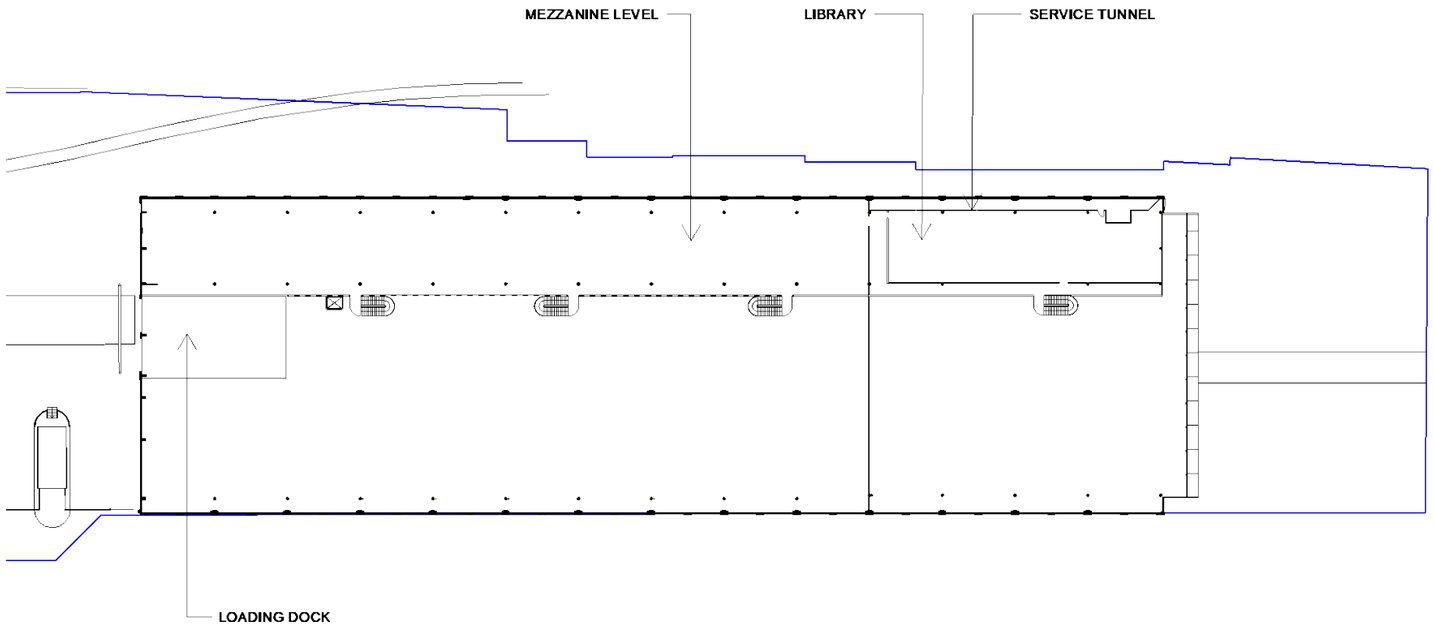
0 5 10 20

Figure 19: Stage I Powerhouse Museum Evolution Diagram for Level 1, 1988.

EVOLUTION DIAGRAMS

HARWOOD BUILDING LEVEL 2 1981





KEY:

EXISTING CONFIGURATION

DEMOLITION

NEW ELEMENT

CONFIGURATION UNKNOWN

N

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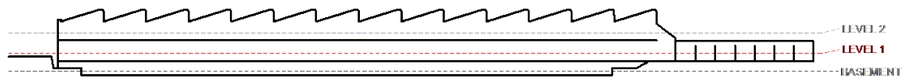
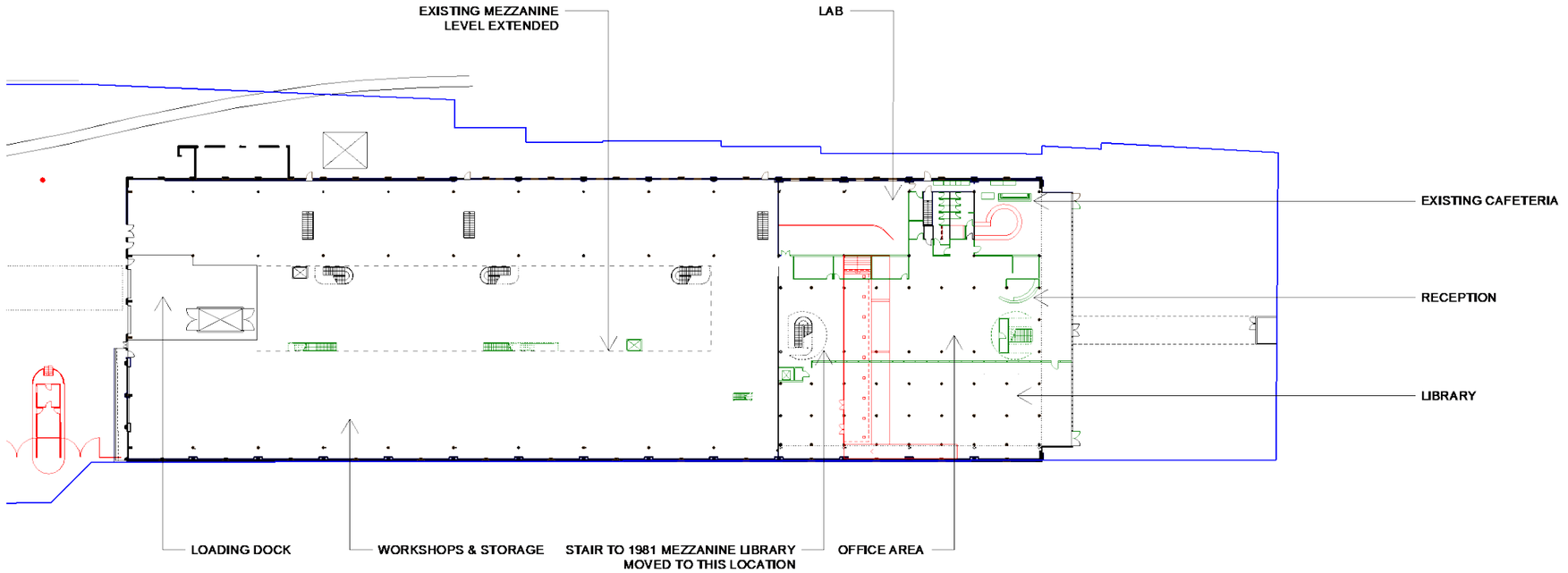
Figure 20: Stage I Powerhouse Museum Evolution Diagram for Level 2, 1988.

EVOLUTION DIAGRAMS

HARWOOD BUILDING LEVEL 1 1995





KEY:

- EXISTING CONFIGURATION
- DEMOLITION
- NEW ELEMENT
- CONFIGURATION UNKNOWN

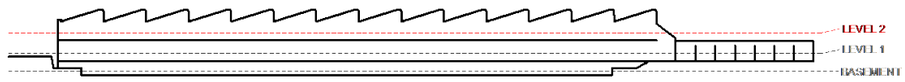
N

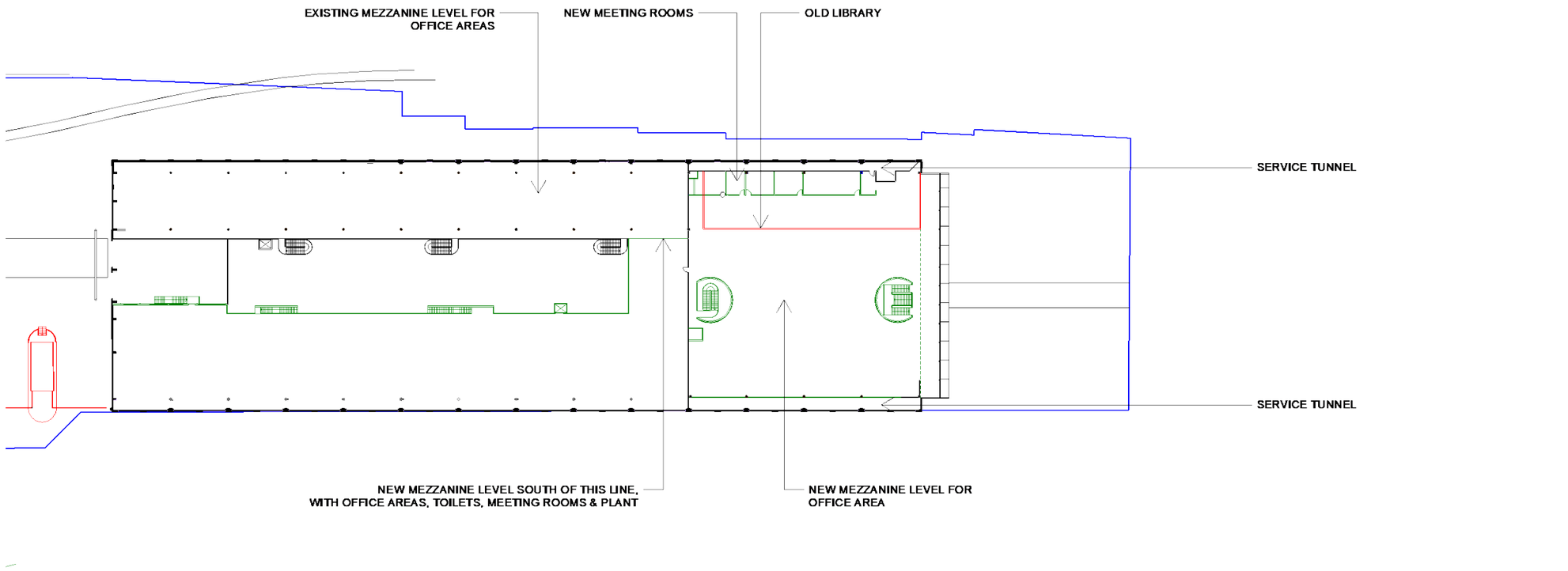
0 5 10 20

Figure 21: Stage I Powerhouse Museum Evolution Diagram for Level 1, 1995.

EVOLUTION DIAGRAMS

HARWOOD BUILDING LEVEL 2 1995





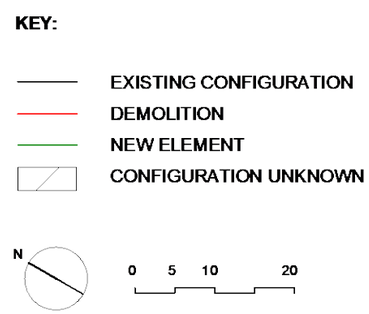
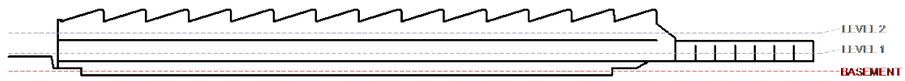
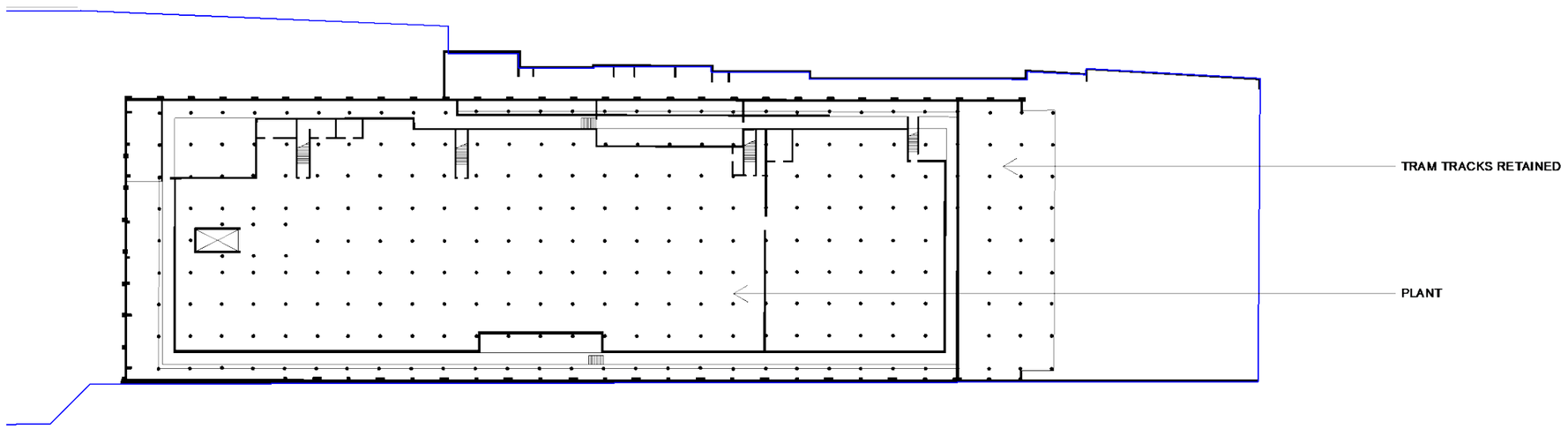


Figure 22: Stage I Powerhouse Museum Evolution Diagram for Level 2, 1995.

EVOLUTION DIAGRAMS

HARWOOD BUILDING BASEMENT 2022





KEY:

EXISTING CONFIGURATION

DEMOLITION

NEW ELEMENT

CONFIGURATION BASED ON 2020 SURVEY

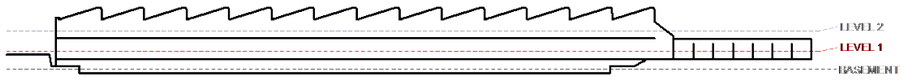
N

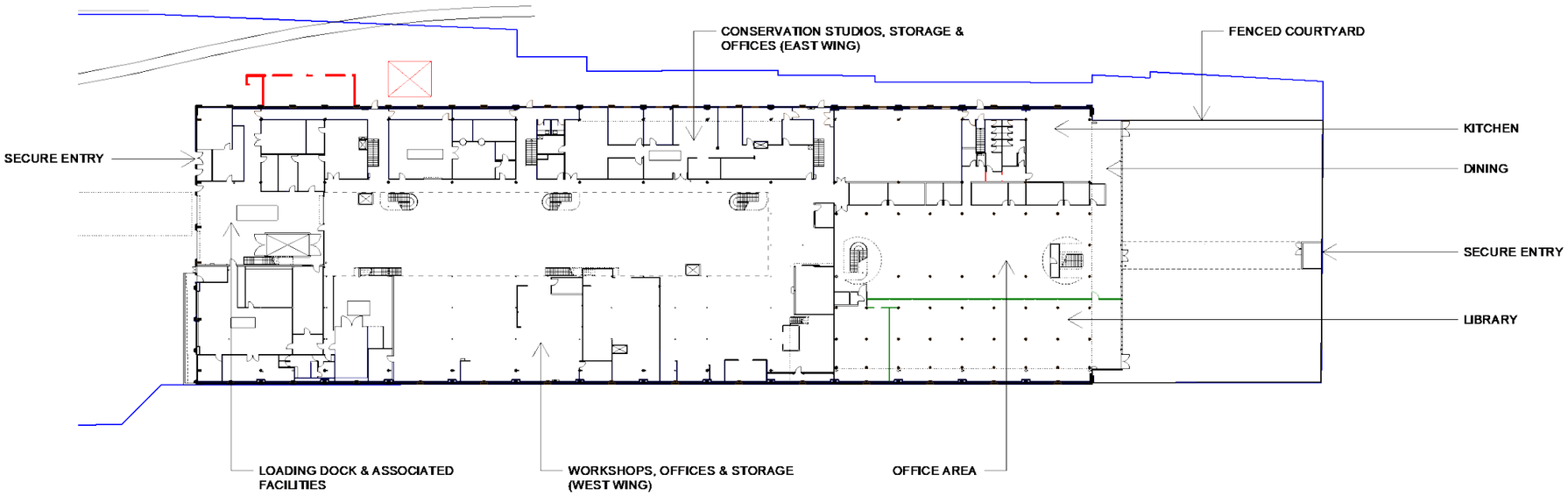
0 5 10 20

Figure 23: Stage I Powerhouse Museum Evolution Diagram for Basement Level, 2022.

EVOLUTION DIAGRAMS

HARWOOD BUILDING LEVEL 1 2022





KEY:

EXISTING CONFIGURATION

DEMOLITION

NEW ELEMENT

CONFIGURATION BASED ON 2016 SURVEY

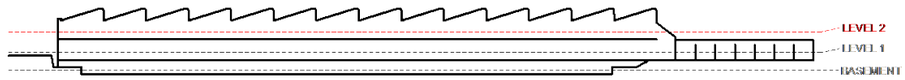
N

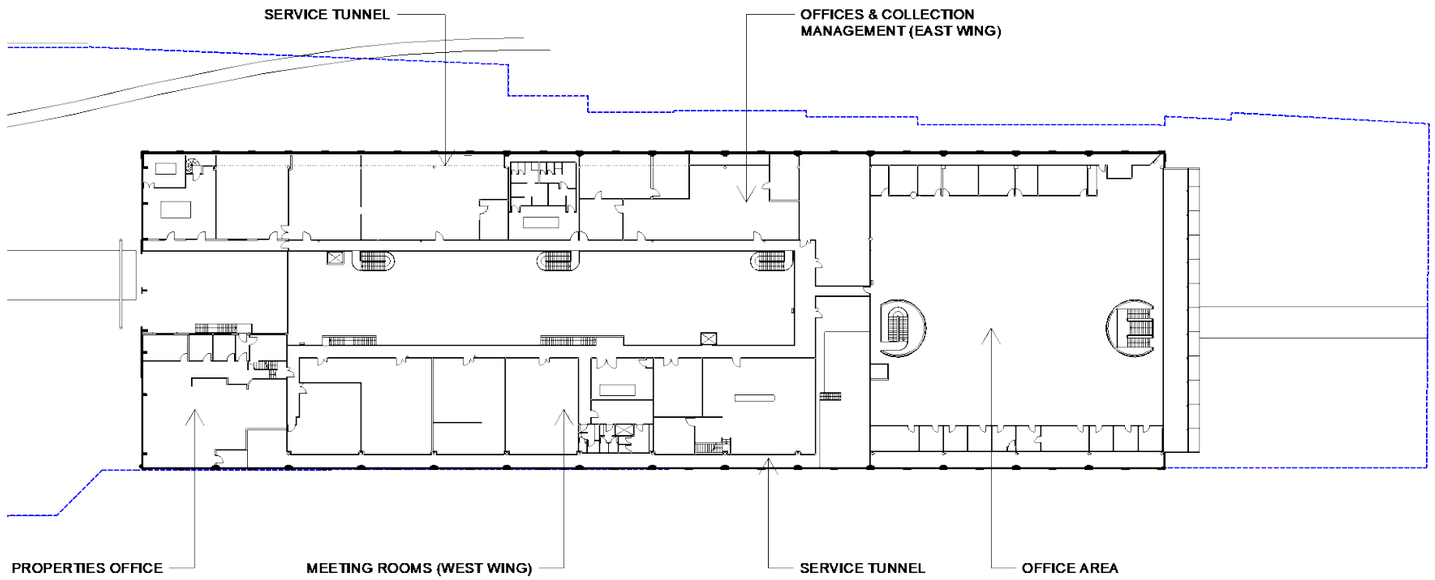
0 5 10 20

Figure 24: Stage I Powerhouse Museum Evolution Diagram for Level 1, 2022.

EVOLUTION DIAGRAMS

HARWOOD BUILDING LEVEL 2 2022





KEY:

EXISTING CONFIGURATION

DEMOLITION

NEW ELEMENT

CONFIGURATION BASED ON 2018 SURVEY

N

0 5 10 20

Figure 25: Stage I Powerhouse Museum Evolution Diagram for Level 2, 2022.

APPENDIX E
Powerhouse Museum Design Principles (Draft), Design 5 Architects

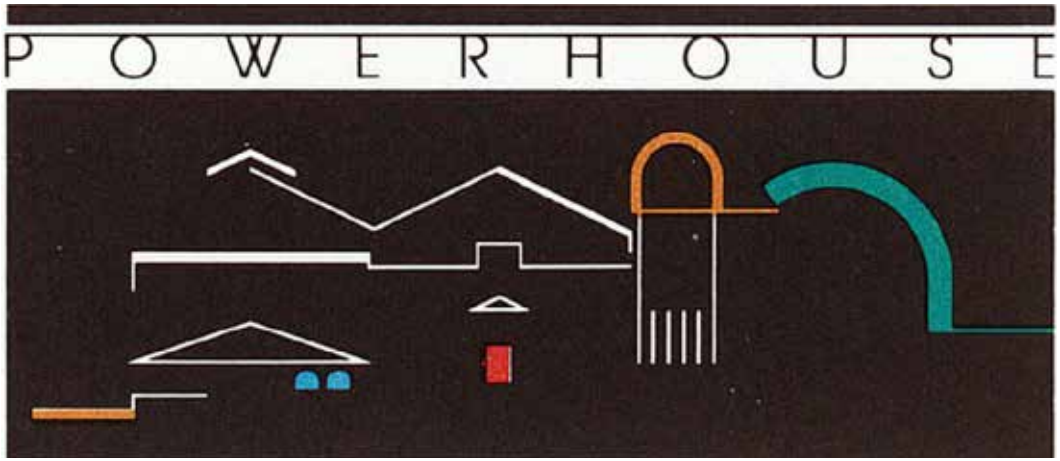
POWERHOUSE MUSEUM

DESTIGN PRINCIPLES

LIONEL GLENDENNING I ARCHITECTURE

RICHARD JOHNSON I EXHIBITION DESIGN

Draft I 13 October



2021 I Ultimo I Sydney

CONTENTS

01 INTRODUCTION
1.1 THE OBJECTIVES
1.2 A BRIEF HISTORY

02 THE VISION
2.1 ARCHITECTURE
2.2 EXHIBITION DESIGN

03 DESIGN PRINCIPLES | 1988
ORIGINS: HISTORICAL UNDERPINNINGS
MUSEUM AS SYMBOL
MUSEUM & PRECINCT
MUSEUM & COLLECTION
OLD & NEW
ARCHITECTURE & EXHIBITION
INNOVATION & SUSTAINABILITY
ENTRY, ORIENTATION & MOVEMENT
ENGAGEMENT
COLOUR & LIGHT

04 DESIGN PRINCIPLES | THE FUTURE

01 INTRODUCTION

"Over 30 years and more than 20 million visitors, the Powerhouse Museum in Ultimo has become an outstanding cultural institution of state significance with a national and international profile.

Since the Museum's 1st move to Ultimo in 1893, the Museum has been at the core of a sequence of changes - all strengthening the energy and identity of this Ultimo locale - ABC, Central Park, the Goods Line, Darling Harbour, Darling Park, UTS, Chippendale, Redfern, USyd, Notre Dame, Sydney TAFE and the expansion of start-ups, galleries and studios.

The Pyrmont Peninsula Place Strategy confirms Harris Street as the key frame for the development of Pyrmont Ultimo. As an instrument of public record and display, the Powerhouse has a pivotal role in supporting, recording, presenting and fostering connections in this creative space."[1]

As part of the Powerhouse Ultimo Renewal, the NSW Government aims to retain and regenerate the Powerhouse Ultimo.[2] The Museum of Applied Arts & Sciences informs the reimagining of the Museum with two significant objectives.

To facilitate the ongoing maintainace, conservation and refurbishment of the Museum, its architecture, and its collections, exhibitions.[2]

To safeguard the original design integrity of the Museum through the documentation of the history, vision and design intent for the 1988 Museum.[1]

The history, vision and design intent are articulated in a set of Design Principles that act as a reference for the conservation of the building and its evolving role in Pyrmont Ultimo. The principles play a critical role in guiding the Conservation Management Plan which sets out how this vision can be retained into the future.

This document is structured into four parts;

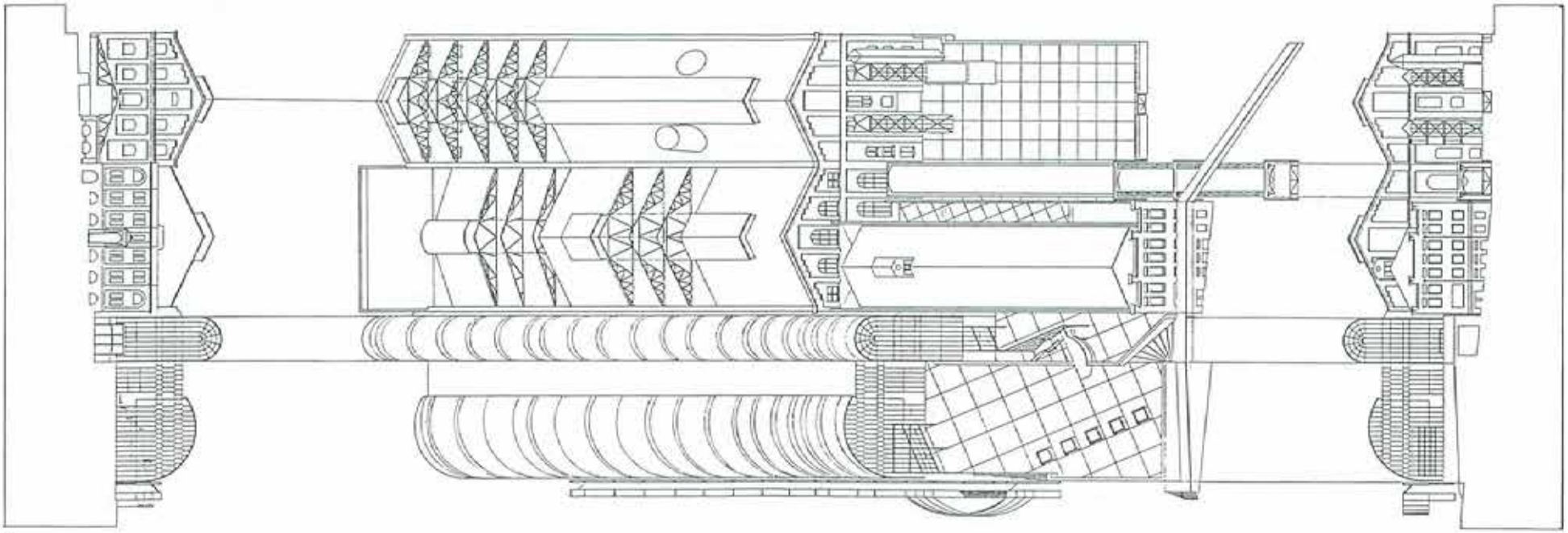
Part I - contains the objectives for the Design Principles accompanied by a brief history of the Museum.

Part II - contains Colin Wood's 1988 discussion with Lionel Glendenning and Richard Johnson describing the vision for the 1988 design and the accompanying exhibitions.[3]

Part III - lists the fundamental principles underlying the designs.

Part IV - outlines the approach to the future of Powerhouse Museum and Powerhouse Precinct.

The Principles are based on writings by Lionel Glendenning and Richard Johnson, and on their recent conversations and site walk with Design 5 - Architects.



1 | *Powerhouse Museum Axonometric Plan.*

1.1 THE OBJECTIVES

The Design Principles have the following objectives:

a) Outline and explain the 1988 vision for the building as Lionel Glendenning and Richard Johnson envisioned it, and identify the value of achievement in cultural heritage conservation, architecture, adapative re-use, innovation and exhibition design.

b) Inform the Conservation Management Plan (CMP), a separate document, with a clear understanding of the original design intent for the museum. These Principles set out why the museum was designed as it was, and the CMP sets out how these principles can be retained and respected into the future.

c) In conjunction with the CMP, act as a reference that informs future proposals for thoughtful modification and change to the Museum's architecture and exhibition design, in order to present and preserve the significance of Museum and the Museum precinct in Ultimo.

d) Inform a mutually advantageous relationship between architecture and future exhibitons. A synergistic dialogue between the two should aim to maintain and enhance the architecture, the exhibitions and people's experience of the two.

The following quotations by Lionel Glendenning and Richard Johnson capture their original vision for Powerhouse Museum, and ideas on its future. The principles act as a means to encourage exploration in any future changes to architecture and the exhibitions.

Lionel Glendenning

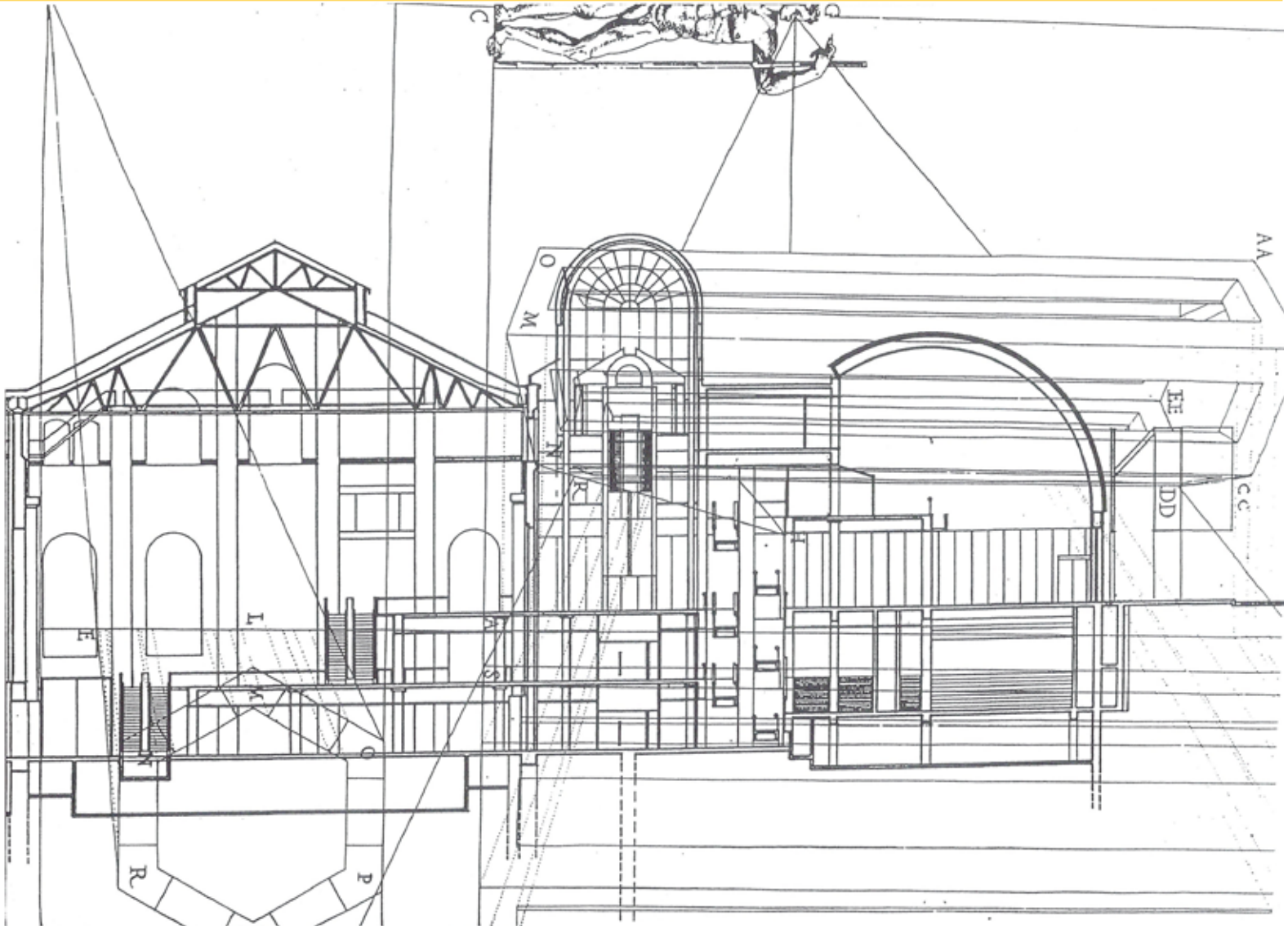
"Buildings like this should live well beyond today, extending into the future the principles that we had put in place in early concepts developed in the great successes of 1988. Hopefully many of the principles are flexible enough to allow their growth and expansion into the future, with an awareness that certain elements are critically important, while others defined in this document have a range of possible development opportunities."[1]

"We should see this document as a document that stabilises that position and makes an emphatic statement that the Museum is fundamental to understanding how the profession of architecture, museology, anybody who ever wants to think about how we go about making our world, as an example of how you have to work with what you have as much as your own creativity and socities' issues now and into the future."[1]

Richard Johnson

"One of the things that's probably embedded in all of them is the idea of diversity, it applied to the building, it applied to the exhibitions, it applied to the curatorial ideas, it applied to the story telling, it applied to the exhibition design, it applied to the audience that came. So that created the richness, but it all came out of the collections in the first place."[2]

"At the detailed design level what it was trying to do was to add to and be part of the total Museum experience. I call it 'Design as a Continuum,' that there was a continuum of thought historically, there was a continuum in the collection upto the contemporary times, there was a continuum of curatorial thought and there was a continuum of design."[2]



2 | *Concept section through Turbine Hall by Lionel Glendenning.*

1.2 A BRIEF HISTORY

"The Powerhouse Museum was a 100 year Bicentennial investment in a core Sydney cultural institution, that in a radial city is accessible to all in New South Wales as well as Australian and international visitors. Adjacent to the CBD, in Darling Harbour, the genesis of the 'creative precinct' of the early development of Pyrmont, Ultimo, Eveleigh – a 5 min walk or tram ride from Central Station and buses in Broadway, on the city bus shuttle stops, and 8 km from the major domestic and international airports."[1]

"The original Powerhouse Museum collection was acquired from the exhibits in the Sydney International Exhibition of 1879, held in the purpose-built Garden Palace in the Botanic Gardens founded in 1880 as the Technological, Industrial and Sanitary Museum. It was established in the Garden Palace after the exhibition closed (as was the Art Gallery of NSW and the Australian Museum). Unfortunately the timber and steel building was destroyed by fire in 1882 and most of the original collection was destroyed. The collection was quickly rebuilt by the first curator J. H. Maiden and in 1893 the Museum moved into its purpose built home, designed by W. E. Kemp in 1893, on Harris Street in Ultimo as the new Technological Museum. From 123 years ago to the present day the Museum (with the adjacent and integrated college precinct also designed by W . E. Kemp in 1893) has been a significant cultural and educational player in a locale modelled on the museum and education precinct of V&A + Science Museum in South Kensington, London.

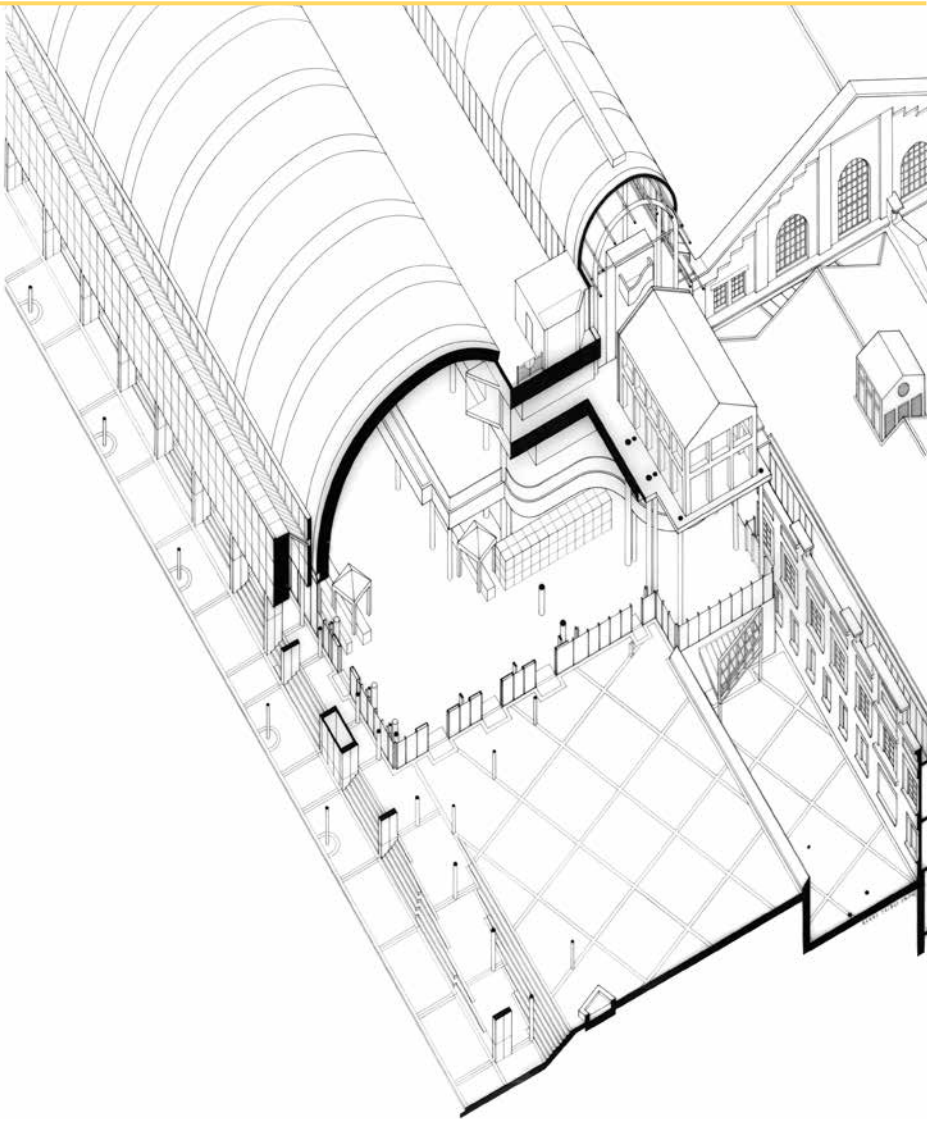
In 1896, the Museum opened its first branch museum in Albury, followed by Bathurst, Goulburn, West Maitland, Newcastle and Broken Hill – each attached to a technical college. Eventually all were closed because of lack of funding during the 1980s.

The Museum had become landlocked (with inadequate storage abd facilities, and small substandard galleries over 3 levels) with no site adjacent to the Museum. The Museum Trust purchased the derelict Ultimo Tram Depot (opened 1899) for future Transport Museum in 1964.

The expanding University of Technology and large Sydney Technical College were dominating development of the adjacent sites. Since the late 1950s, numerous proposals had investigated a range of sites but none were considered suitable till the old Sydney Market site and the decommissioned Ultimo Power House became available.

The Minister for Public Works, Jack Ferguson commissioned a feasibility study with the MAAS to explore options for development of a museum to rival the Centre Pompidou in Paris. These studies resulted over 10 years later in the Powerhouse Museum in the recycled Ultimo Power House that established a new paradigm for museums in Australia, indeed the state of the art access to the collection was vastly enhanced. With the highest museum standards, exhibits that ranged from Australian goldfields jewellery, musical instruments, decorative and applied arts to giant aircraft and locomotives, steaming engines and industrial heritage icons – the 1785 Boulton and Watt steam engine, the Saturn V rocket engine and the Catalina flying boat.

The multiaward winning Powerhouse Museum became the litmus test for many new museums in Australia and internationally with museum and cultural leaders from the United Kingdom, USSR, China, Europe, Central Asia, Asia and the USA engaging with the Museum through VIP visitors, memoranda of understanding, study programs, staff exchanges, exhibition partnerships and tours, and object loans." [2]



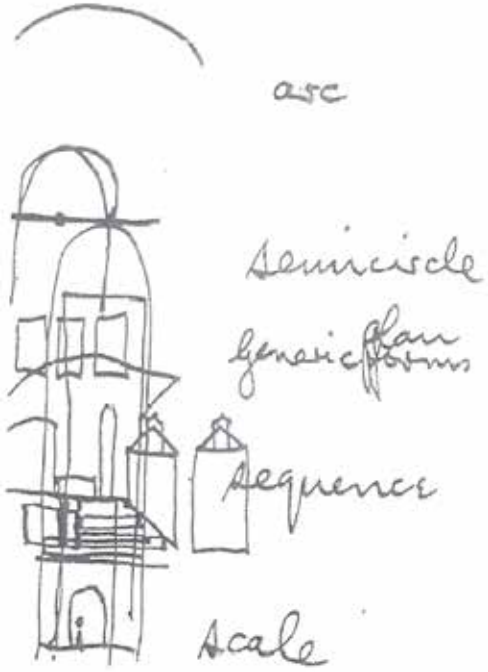
3 | *An axonomteric of the south west corner.*

02

THE VISION

The 1978 Feasibility Study for the development of the Powerhouse Museum undertaken by the NSW Government Architects Office, (prepared by Lionel Glendenning with critical support from Norman Harwood, Curator MAAS and reviewed by the MAAS Director Staff as submitted), noted the opportunities and advantages offered by the Ultimo Power Station and Tramway Depot:

> *For the purpose of developing a new Science and Technology Museum in the late twentieth-century, the site has outstanding potential. It is historically appropriate, structurally flexible and remarkably cost-effective. What could be more appropriate for such a Museum than the first major power-house in Sydney? And what building in Sydney has interior spaces built on such a generous scale to accommodate the Museum's exceptional transport and engineering collections?*[1]



3 | *An early conceptual figure by Lionel Glendenning.*

2.1

ARCHITECTURE

LIONEL GLENDENNING

1988

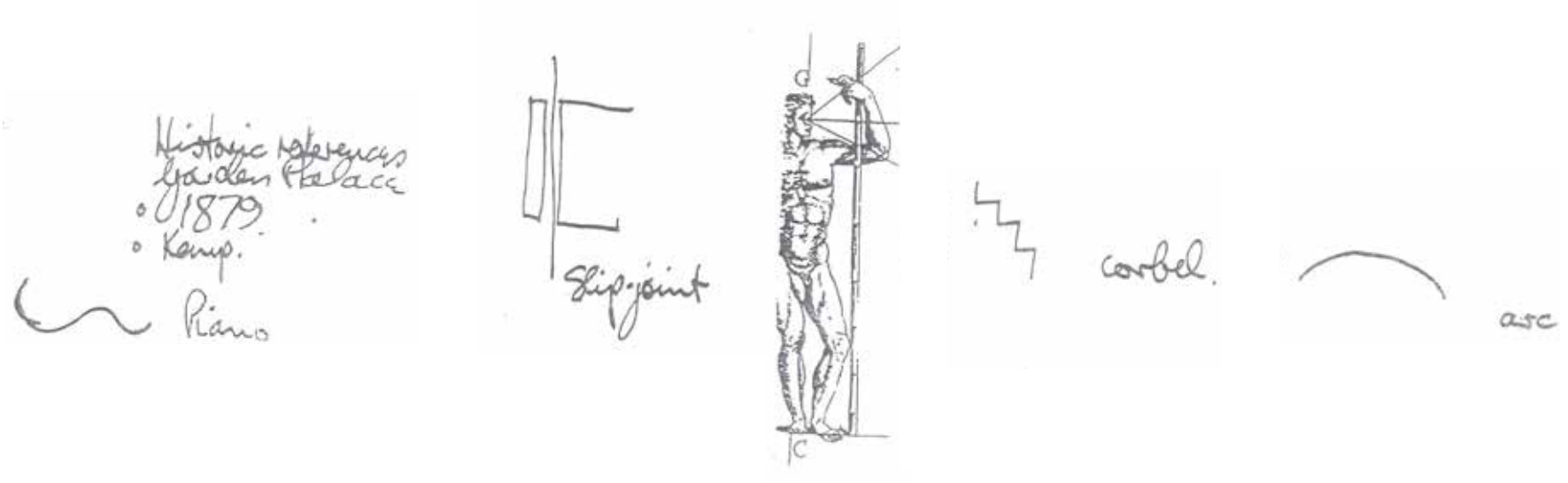
The following extracts have been taken from Colin Wood's 1988 discussion with Lionel Glendenning and Richard Johnson.[1] Lionel Glendenning describes his vision for the 1988 design and the accompanying collection.

"The beginnings of the Powerhouse Museum really begin with the Great Exhibition. In 1878 a building was very rapidly erected in London to great acclaim. Sydney had its own mini "Crystal Palace," the 1879 Garden Palace. This building was rapidly constructed, mostly wood on steel frame, and was destroyed in a conflagration in 1882 along with the Museum's first collection (elements and objects from the Garden Palace Exhibitions). The beginnings of the 1988 Powerhouse are reflected in the present design solution."

"The Architectural Brief was developed initially with Norman Harwood, Curator MAAS. There is always an evolutionary element in a Brief, but in this particular case Dr Lindsay Sharp, Museum DIrector had a view, an evolving view of the museums in that the traditional museum had pretty serious failings, particularly in its projection to the general public and he held that museums should change both their role and their ways of presentation; they needed to embrace the challenges of the new age. "

"The question of balance is always an issue. At this time the traditional approach was beginning to be reconsidered. The design resolution of the building offered variety and flexibility. This produced the opportunity for the museum to bridge the gap between the traditional style and the more radical, experimental, hands on experience, interactive type, of museum of today and the future potentially."

"In supporting the view that the Museum should offer the potential for traditional design options, being realised in certain exhibitions. There are parts of Museum exhibition design work that will be very beautiful, but explore quite traditional approaches to displaying objects of the collection. This spirit is reflected in the architecture in the retained character of and modified and drawn out of old architecture - the new architecture, and in the same way, the exhibitions don't deny the traditional view of museums, they embrace the old where it is appropriate."



4 | *Early conceptual figures by Lionel Glendenning.*

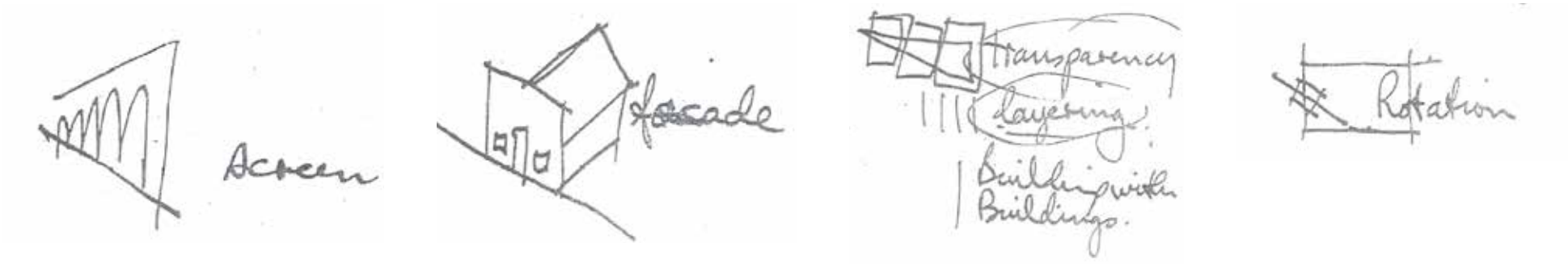
“The bottom line is the beautiful dichotomy between observer and object; that magical sense of wonder that occurs when one comes face to face with the real object. The feasibility study discussed ‘television,‘ ‘media,‘ and ‘image’; the fact that we have a society sated with television; the gap between self and reality. To give people reality was just about the biggest ‘turn-on‘ that one could create. So that point at which interaction occurs between the observer and object was what the museum is all about. It’s really about that magic moment, that sense of wonder, that confrontation.”

“To do that the architecture explored very controversial, very powerful and yet very sensitive and responsive design concepts. There was, however, a period in the development of the exhibitions where the building was seen as both a threat and impossible to work with. And yet working with Richard Johnson I felt that here was an opportunity. It just needed someone capable of making that connection between the new and the old in the architecture.”

“The collaborative design work has been subjected to the most rigorous scrutiny, from curators through a whole range of museum specialists. What has emerged is a pretty powerful design message; a project that’s unique and blazing new trails at a level that had never been achieved in this country, at least in this particular field.”

“Design has a voice on a whole range of issues in the Powerhouse Museum. It is built into committee structures so that there were key people who influenced a whole range of issues which normally the design community wouldn’t believe was their turf. The design groups established a direction, a concept and an approach in which quality was incorporated as fundamental. With the Powerhouse Museum, design has achieved a credibility.”

“. . . I believe that there is a need to ensure that the city’s patterns, the city’s connections, the city’s ‘feel‘ are generated in the buildings, which may become the generator of new urban forms. It’s not a very fashionable position but the ego trippers have been destroying the city. My feeling about architecture is that it’s evolutionary and revolutionary and so the Powerhouse, for me, is a demonstration of my thesis that the most revolutionary architecture can be evolutionary, and that design by constraint, design in context, can produce far more powerful, far more exciting, far more successfully integrated solutions than those that represent the current prototype for the city.”



5 | *Early conceptual figures by Lionel Glendenning.*

“From its very beginning from 1898 the museum was built upon the guiding principle that the skin was enclosing the technology. It was changed, it was robust, it was adapted and I felt that I was part of that continuity. Such changes will go on. This is a beautiful aspect of museums; they have a life beyond all of us. so I am simply a part of a continuum and my modifications, adaptations and adjustments to this building were done without some of the constraints that might apply in other projects.”

“My feeling was that I was dealing here with a skin that was scarred, broken and had lesions, was modified and had band-aids. In effect, I’ve tried to recreate some of the feeling in the east facade with those black silhouttes which are the shadows of what was once there. I’ve tried to explain the robust broken nature of the facade.

- An echo.”

11 | *An illustration of the interior of Wran building.*

2.2

EXHIBITION DESIGN

RICHARD JOHNSON

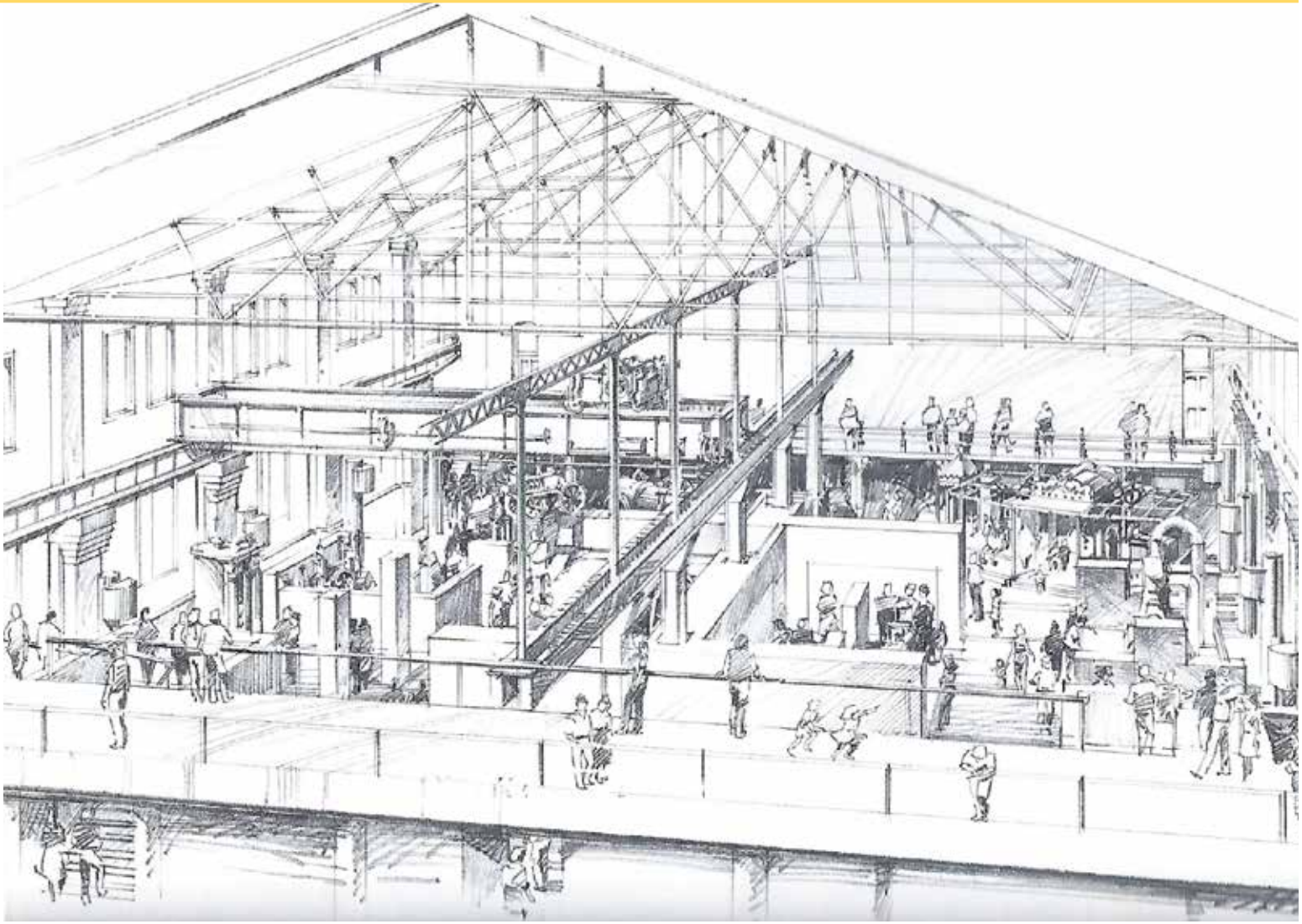
1988

The following extracts have been taken from Colin Wood's 1988 discussion with Lionel Glendenning and Richard Johnson.[1] Richard Johnson describes his vision for the 1988 exhibition design.

"I suppose I have two roles. One is trying to give the exhibition design some cohesion as an overall acivity. I am a consultant to the Powerhouse Museum, giving an overview and some criticism and direction to all of the exhibition design. No one had really looked at the exhibitions as a whole or from a design point of view. Most particularly they hadn't focussed on the fact that the exhibitions must feed from, and be part of, what Lionel Glendenning had already started; to grow and graft on to those things and exploit and add to what was already there rather than tussle against it"

"I see design art at its most effective as a continuum. It never stops. The building can open and the design is still there operating. The designer sets it in train with the client and various other bodies and people that inspire or generate the ideas. Those ideas and concepts have started the design process, generated it. Lionel Glendenning is carrying it through. Other people will pick up and work with it. But to be most effective it shouldn't stop. People must identify with it and understand it. The design process is not simply something that happens sitting at a drawing board doing a couple of drawings, although there is a tendency in the community to think of it that way . . . People have simply got to be aware that design is not some mystical process. It is something they should understand and want to keep, want to maintain and build upon."

"It is a contextual building, a graft of old and new. It offered a great variety of spaces, immense scale, some of the largest spaces within which to display quite a diverse range of objects. Some objects are so tiny they could be overwhelmed by the space while others fit comfortably within it. So the space was very assertive, quite constrasting in some cases, but at the same time offered immense opportunities that a new museum would never offer.



11 | *An illustration of the interior of the Engine House.*

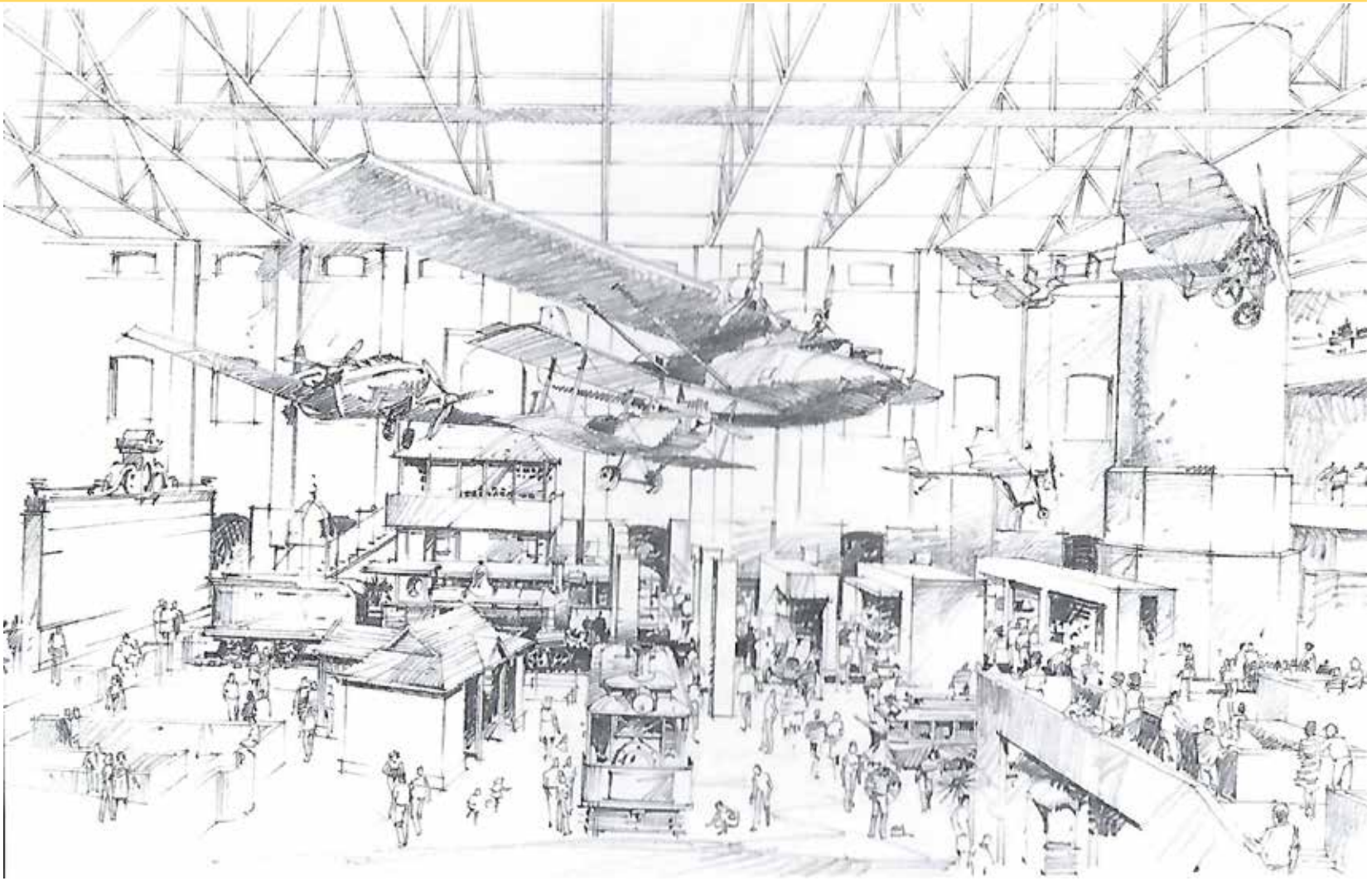
The collection is an old one and very diverse and includes some significant internally recognised symbols. I tried to build up a discipline, a way of structuring the exhibition design, based upon the way a visitor sees and moves through the building. This 'vista' perception was necessary to understand the ideas, the collections and the buildings."

"First of all we have to understand how people will approach and enter the building, how they move through it, because some of the spaces are quite intimidating; big, grand, enormous volumes. The building is as it is because it evolved over such a long period of time. Like a city it has sort of loose fit circulation, there's no classical route through it. You don't enter a central exhibition hall and then relate back to the hall. It's not that sort of a building. It's not that sort of a collection either, and that makes it actually much more interesting to people. But at the same time, every time we put another object, another statement, into the Powerhouse Museum, we could potentially confuse the reading of the building or the paths people have to take through it.

So we have to understand this and give people as they enter some comprehension of the total space, and then of the gallery space, and each bit that's devoted to an exhibition. The visitors have to comprehend the space, and feel comfortable with it, before they can focus on the exhibits. They must know where they are, and not feel they'll never find their way out of the maze.

Not only is the architecture challenging, but the objects and the ideas are also challenging. We try to give a range of different experiences so that if poeple are turned off by one particular thing, they can choose something else."

"There is quite a lot of learned debate among museum people that the 'black box environment' is the way to go for museums. This project has firmly convinced me otherwise. There are black box situations in the Powerhouse Museum, for individual exhibits, and they work well. But, overall one must have a balance. One nice thing about the project became very evident as soon as I walked through the site on the very first day. I felt here was a museum with a great range of diverse spaces, with a great diverse colelction, with a whole range of thematic ideas that they wanted to project to the public. The architecture had responsed to that diversity and contextualism and built upon the things that were already there and the exhibiton design had to folllow this lead.



11 | *The Catalina flying boat 'Frigate Bird II' as the aerial centerpiece in the 1988 exhibition theme 'Bringing People Together.'*

There were obvious constraints, there were also spaces that exhilarated because they had great shafts of natural light penetrating into them. From a museum point of view, some curators and others will tell you that it's impossible; that it just won't work and has to be blacked out. However, if museum design is generated by public perception, if visitors like the feeling of walking into a space flooded with natural light, why blacken it out? Why not, more cleverly, look at the design opportunities presented and try and control the environment in another way by building shelters or cocoons for things that are light sensitive."

". . . if the whole of Powerhouse Museum had been steam trains and huffing and puffing, with all the noise and excitement, then that would set up a relatively boring pattern. It might initially excite but it wouldn't sustain people's interest. One of the great things has been to attempt to arrive at a balance of content, space, experience, interactivity and classical presentation of an object for its own sake. It would be terribly wrong to have every exhibition with the same level of interactivity, or every single exhibition at the same level of excitement, noise or stimulation . . . And just as your mood will change momentarily as you're moving through a visit, or it will change from one visit to another, your needs and demands of the Powerhouse Museum will change. Every visitor needs change. They find their own way. They find their own special little spaces in what I see as the 'townscape' of the museum, just as we do in a town. And no two peoples' preferences are the same."

"We have placed what we call landmark objects in public spaces that will guide people through the museum . . . the Boulton / Watt Engine is a major landmark structure. Once you see it you never forget it, and you know where it is in the Powerhouse Museum. There are aircraft, there are small precious objects, exciting individual items that people will see and remember and know where they are. These are located at key points, generally with an axial approach to them so that people can see them from a distance and remember where they are and fit them to the structure of the circulation."

"Another thing that's happening is that we're putting in an electronic information system in the main foyer and every exhibition is identified by a stunning photograph of a key object within the collection. So, we are identifying exhibitions and themes by key objects. Every exhibition will have a poster on display in the forecourt, so people (before they enter the building) will know broadly what are the themes and what the content is going to be like. When they get into the Powerhouse Museum, they are directed to a particular exhibition by the poster image which is incorporated into the electronic information system."

". . . if you think about the design disciplines and specialist skills that have gone into the creation of the building, I don't think there would be any other building which would encompass and integrate so many of the design skills. Lionel Glendenning was talking about the theatrical set painters who painted the cloudscape. There are also audio and visual experts, there are sound experts, there are graphic designers, there are colour consultants, there are lighting design specialists, there are specialists in paint finishes, there are specialists in weaving special carpets . . . Public buildings actually demand the coordination and contribution of all that amount of design, technical and artistic expertise."

". . . it's like a town. It will evolve and details will change in an evolutionary way. That's how museums evolve. There's never sufficient money to redo the museum completely at any one point in time. That only happens once in a museum's life. So we've built in certain things that are less flexible than others in a hierarchy of broad elements to the fine grain. The most flexible are things like labels and text panels which are actually systematised to the point where the Powerhouse Museum, on its own desk-top computer can produce another instant label that will fit a perspex container. And if some fact is wrong they can change it. Additionally in some exhibitions there are items that, for conservation reasons, must be on constant change-over. Such items might be on display for only a matter of weeks or months before they are changed."

03

DESIGN PRINCIPLES | 1988

"It is worth restating the meaning of Museum and then exploring the potential of the term as it applied to the Powerhouse Museum in Ultimo. As defined by ICOM, the International Council of Museums :

> *A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment."*[1]

The following principles are described by Glendenning (quoted in blue) and Johnson (quoted in green), and are illustrated where appropriate. Some of the quotations are reused due to their relevance for explaining different facets of the design principles.

ORIGINS: HISTORICAL REFERENCES

MUSEUM AS SYMBOL

MUSEUM & PRECINCT

MUSEUM & COLLECTION

OLD & NEW

ARCHITECTURE & EXHIBITION

INNOVATION & SUSTAINABILITY

ENTRY, ORIENTATION & MOVEMENT

ENGAGEMENT

COLOUR & LIGHT

11 | *The Interior of the Garden Palace, photographed in 1882. MAAS was given the ground and first floors in the south-west corner.*

11 | *A close up view of the north western elevation of the Wran building.*

11 | *Garden Palace Silhouette in the Wran Building as part of 1988 exhibitions.*

ORIGINS: HISTORICAL REFERENCES

Beginnings in the Garden Palace, 1881

"The beginnings of the Powerhouse Museum really begin with the Great Exhibition. In 1878, a building was very rapidly erected in London to great acclaim. Sydney had its own mini "Crystal Palace," the 1879 Garden Palace. This building was rapidly constructed, mostly wood on steel frame, and was destroyed in a conflagration in 1882 along with the Museum's first collection (elements and objects from the Garden Palace Exhibitions). The beginnings of the 1988 Powerhouse are reflected in the present design solution."[4]

A reference to the rich history of the Museum of Applied Arts & Sciences (MAAS)

"The architectural design explored the rich history of the museum from its early beginnings in the great Garden Palace exhibition in 1879. The West Building (later Wran Building) and the galleria derive from the arched form of this earlier building whilst also creating spatial sequences that expand and augment the existing great rectangular volumes of the Turbine and boiler halls - the Ultimo / Pyrmont 'cliff of buildings."[2]

Celebration of the correlation between Power Station and Museum's Transport collections

"What could be more appropriate for such a Museum than the first major power-house in Sydney? And what building in Sydney has interior spaces built on such a generous scale to accommodate the Museum's exceptional transport and engineering collections?"[3]

Embodiment of Industrial Revolution

"Unique to the Powerhouse Museum is the fact that the Museum's building - its historic fabric and contemporary architecture, and its Ultimo location – together with its diverse collection are metaphors for the overarching narrative that informs the Powerhouse Museum, for the Museum is born of the Industrial Revolution – its essence is designing and making for living."[1]

The vision and design intent of the 1988 Museum

"A number of ideas are developed and explored in this project including:

- The great exhibition and railway buildings of the 19th century including Garden Palaces, Sydney; Melbourne Exhibition Building; Central Railway Station, Sydney.
- A contextual awareness and historic reference.
- Creating old and new linkages with the architecture of Ultimo and the Powerhouse.
- Architecture within Architecture. House within House.
- Adaption and reuse of existing fragments of the city.
- Separation, layering, transparency, screen, density, diversity, intervention."[5]

11 | *An aerial view of Ultmo at completion of Stage I of the Museum.*

11 | *Boiler Hall during construction. The 1902 chimneys are now used as part of the air conditioning system.*

11 | *Colonnade along Harris Street in 1988, since partly demolished..*

Recollection of our industrial past

"The building references the Garden Palace, Richard Johnson referenced the Garden Palace . . . Look how original that is, it has never existed before, how brilliant - a silhouette of a 'building as a building' - a ghost-like memory. The building references that through performance; through the Museum; and its beginning, and what you have is 200 years of incredible rich history."[6]

An Evolutionary Entity

"My feeling about architecture is that it's evolutionary and revolutionary and so the Powerhouse, for me, is a demonstration of my thesis that the most revolutionary architecture can be evolutionary, and that design by constraint, design in context, can produce far more powerful, far more exciting, far more successfully integrated solutions than those that represent the current prototype for the city."[4]

". . . it's like a town. It will evolve and details will change in an evolutionary way. That's how museums evolve."[2]

Museums are storytellers / Museology is storytelling

"Museums are the narrative in a way, which is a wonderful thing if you see it as an opportunity, and develop them positively in that way."[6]

An archive for Ultimo's urbanity

"I believe that there is a need to ensure that the city's patterns, the city's connections, the city's 'feel' are generated in the buildings, which may become the generator of new urban forms."[6]

"Concepts like the vault, built a powerful urban element which became almost rhetorical verandah, a really overstated urban element which we all know and recognise."[4]

11 | *The Engine House and Turbine Hall (foreground) during construction.*

11 | *Locomotive No. 1 pulled the first passenger train from Sydney Station (near where Redfern Station is today) to the Long Cove viaduct (near the present site of Lewisham) on 23 May 1855.*

11 | *Boulton and Watt steam engine, built in 1784 is oldest engine of its type to survive in the world. It is the Monalisa of the Museum's collections.*

MUSEUM AS SYMBOL

Museum as a lighthouse

"Whilst the world is changing in unexpected ways, the Museum is a 'lighthouse' that connects us to an unknown future and a known past – a vital cultural link in these complex times."[1]

A leader in museology

"We're one of the first museums in the world to steam all the objects - the great steam engines. For the Boulton and Watt, the museum replaced the bearings with new bearings in ways that would not damage the original object. We kept all the original bearings (they are in store). The whole system that was designed around the Boulton and Watt is done with careful conservation issues resolved to avoid any damage to the engine in any way possible. In fact, the conclusion that Jonathan Minns, a U.K. engineering expert came to, was that if we keep it warm and working, it is in its most safe form."[6]

Cultural and social symbol

"The Powerhouse Museum is a collection which resonates, makes real the past, speaks of the present and looks to the future – it provokes thought and reflection and, it inspires. And it does all this through the stories that it tells – the themes embedded in the objects are incredibly rich and rewarding – people's lives across time and space – across cultures."[4]

"The museum was attracting great interest from sponsors, collectors and the media, establishing the museum's pivotal place in the constellation of the Sydney's cultural milieu."[2]

"The museum opened in March 1988 to an amazing public reception to become internationally recognised as an insitution that continues a tradition of eclectic, universal collecting (albeit considered), thoughtful communication, passionate advocacy and learned scholarship whilst maintaining its links to fine traditions.

In some small way the architecture contributes to this cultural memory."[2]

". . . the project began to capture the imagination of Sydneysiders."[2]

"The Powerhouse Museum is the csutodian of our cultural memory - DNA of our civilisation."[1]

Cultural engagement and partnerships

"The Powerhouse Museum became the litmus test for many new museums in Australia, and internationally with museum and cultural leaders from the United Kingdom, USSR, China, Europe, Central Asia, Asia and the USA engaging with the Museum through VIP visitors, memoranda of understanding, study programs, staff exchanges, exhibition partnerships and tours, and object loans."[6]

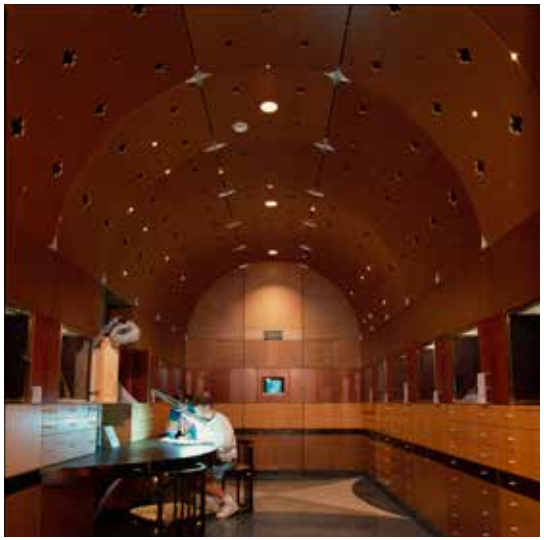
Essence of Australia

"The narratives of our nation - part of the world."[4]

"So the sky is a trompe-l'oeil, it's saying, "Look, I'm not afraid to decorate a building." If you look at Jørn Utzon's ceiling interiors for the Opera House, they were beautifully decorative, they were extraordinarily coloured draped curtains. So that's the sky, capturing a piece of Australia. I couldn't capture it enough, so I wanted that sense of infinity in the building."[6]

"Whilst the modernist project continues in the architecture, the concept explores a historical and local contextual set of references in an open-ended plan that seeks to anchor the solution both in and of it time, referenced to the continuity of Australian architecture - an urban form highly innovative yet understood in its broader context."[2]

11 | *A copy of Lawrence Hargrave's box kite and Strasburg Clock displayed against the sky. The sky was painted by theatrical set painters from the Sydney Theatre Company.*



11 | *Exquisite cabinetry designed by Iain Halliday for 'Lace - A Study Centre' in the 1988 exhibition.*

Hand and Mind - MIND and HAND

"At the Museum's heart, it is about the power of creative and innovative minds combined with skilled and inventive hands - Hand and Mind - MIND and HAND."[1]

"Its intellectual goldmine is the knowledge base generated by curatorial research and scholarship which reveals the story behind every object and the links between."[1]

". . . the most extraordinary thing about the museum and the project was how it brought together many high profile designers and architects in a way that other projects have not been able to do."[6]

A symbol for sustainable reuse of buildings

"Sustainability and resource management - this project has its roots deeply embedded in the environmental movement and the idea that resources shouldn't be wasted. That we can find ways to reuse our buildings . . . and the life of buildings lives beyond the ego of the last architect."[6]

". . . this building is an exemplar for saving old buildings and I think therein lies a real lesson for environmentalists let alone architects. And I think there's a lesson to be learnt about the way we use our precious resources in society."[6]

Agglomeration of design, tehnical and artistic expertise

". . . if you think about the design disciplines and specialist skills that have gone into the creation of the building, I don't think there would be any other building which would encompass and integrate so many of the design skills. Lionel Glendenning was talking about the theatrical set painters who painted the cloudscape. There are also audio and visual experts, there are sound experts, there are graphic designers, there are colour consultants, there are lighting design specialists, there are specialists in paint finishes, there are specialists in weaving special carpets . . . Public buildings actually demand the coordination and contribution of all that amount of design, technical and artistic expertise."[4]

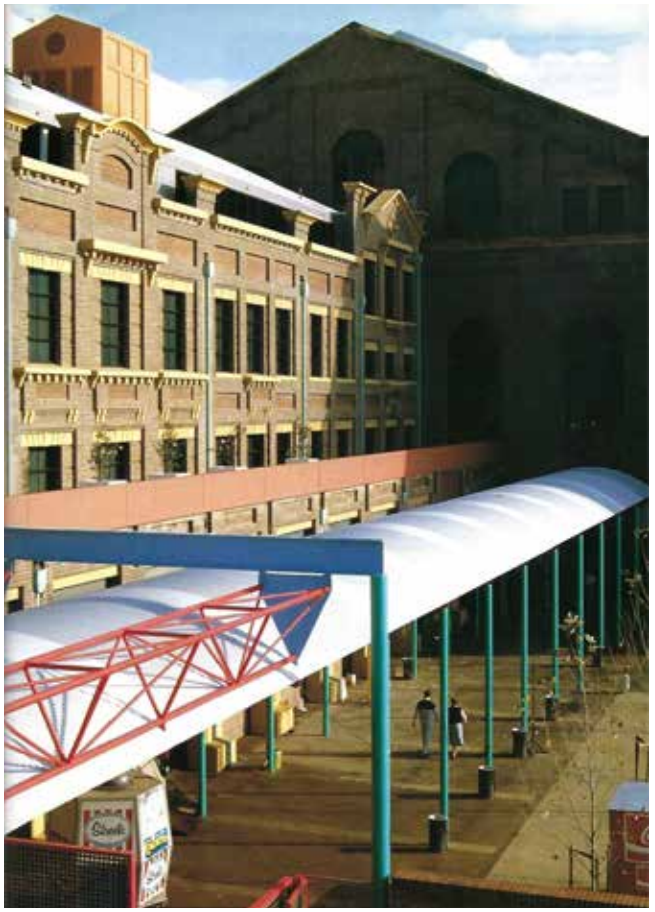
"There are quite a number of designers involved on the exhibition design side from a number of different firms."[4]

"Design has a voice on a whole range of issues in the Powerhouse Museum. It is built into committee structures so that there were key people who influenced a whole range of issues which normally the design community wouldn't believe was their turf. The design groups established a direction, a concept and an approach in which quality was incorporated as fundamental. With the Powerhouse Museum, design has achieved a credibility."[4]

Striving for best international museum standards

"Pragmatic decisions on achieving the best international museum conditions and standards, allowing for future changes, and creating a flexibility of circulation in a wide variety of gallery spaces were implicit in the architectural solution."[2]

11 | *Entry forecourt of the Museum with the Garden palace grid and the colonnade intact.*



11 | *Switch House Covered Way through the former Grace Bros Courtyard*

MUSEUM & PRECINCT

A Museum Precinct for Ultimo I Sydney

"The Powerhouse Museum's placement in the 'creative precinct' with UTS, ABC, the design studios of Surry Hills and Chippendale, Pyrmont and Eveleigh communications technology and IT start-ups is unique and synergistic, a critical element in the intellectual infrastructure of Sydney and NSW."[7]

"The institution is one of the great repositories of collective memory and therein lies the redefinition of the museum . . . the architecture and the life of the project is as much heritage as the heritage issues that are identified as brick walls and all the other things. So therein lies the secret of the museum and I think that takes you to the future."[6]

An anchor in Ultimo's creative precinct

"As an instrument of public record and display, the Powerhouse Museum has a pivotal role in supporting, recording, presenting and fostering connections in this creative space."[1]

An identifier of its place

". . . the importance of the urban sense of the large thing. Its' one of the last remnants, one that's linked to the warehouses along Ultimo, the great "cliff" of building, and retains that dynamic. I always refer to it as the medieval cathedrals and the village around it . . . and Pyrmont is just these giant cathedrals of industry, of warehousing (and all the rest of it), you get a great example of it there. Its volume . . . the contrast is so extreme, it's like Canterbury Cathedral in its low scaled village."[6]

"Adjacent to Sydney TAFE and UTS, the Museum is the core institution in the Ultimo 'IT, education, design and cultural precinct' - predating the government's recent announcement of an AI-tech precinct by 127 years."[1]

A Museum embedded in its location

". . . when you are an architect you need to have a greater sense of your responsibilities as a social being - professional working in a particular context that you become conscious of that context and use it in a creative way. You could argue that the Sydney Opera House did that. You know Jørn Utzon's building is so contextual that people compare it with spinnakers, boats and harbours and all the rest of it."[6]

Design cues derived from Ultimo's industrial context

"And the other thing which is good is that it looks to the retention of the Harwood building. The roof followed the profile of the original Tram Depot building. If you get above Ultimo - there's a wonderful photograph I have seen – an aerial photograph of Ultimo and Pyrmont with all these warehouse roofs - all 'cross hatched.

That link across the macro level and the urban level is well worth exploring - what is there from the heritage point of view. The profile of the roof is important, that was also considered in the Boiler Hall. They are all new trusses for various reasons - both structurally and otherwise, but it followed the profile of the original roof deliberately. A contextual awareness for the macro level of urbanity that existed between the spine of Ultimo - the warehouses. I call it the "cliff" of buildings, like the old sandstone cliff has been extended up Darling Harbour looking across from the city's core. We have the opportunity to save it, it's worth saving"[6]

11 | *A model of Strasburg Clock in the MAAS collection.*

11 | *Bookplate design entitled 'Wrought Iron and Enamelled Bronze Gate,' from the Lucien Henry Collection.*

11 | *Locomotive No. 1 on display in the Galleria. Note the delineation of old and new structure.*

11 | *'Cirrus Moth' de Havilland 60X VH-UAU biplane in the 'Transport Collection' in the Boiler Hall.*

MUSEUM & COLLECTION

Unique and Synergistic relationship between collections and the buildings

"The architecture needed to be a contradiction, a paradox, a labyrinth, to allow the discovery, the wonder, the excitement of finding anew the collection."[2]

"One of the most powerful concepts that struck me immediately when I became involved, and guided a lot of our thinking was this rare synergy that existed between the real ethos of the Museum and its diverse collections. The diversity of the building fabric that Lionel Glendenning contemporised by adding new contemporary layers to; the diversity of stories that were being told; the diversity of the audience that was attracted (this wasn't a specific audience, this was a very broad Church in a sense, of the people in Sydney and internationally that it appealed to). As a consequence, the detailed exhibition design was trying to do was to add to and be part of the total experience of the Museum. It wasn't saying "Oh very well, that's all good, but I need my 'black box.' I need to exclude all of that because I want to so something new." Because that big picture is part of the detail."[8]

"It is a contextual building, a graft of old and new. It offered a great variety of spaces, immense scale, some of the largest spaces within which to display quite a diverse range of objects. Some objects are so tiny they could be overwhelmed by the space while others fit comfortably within it. So the space was very assertive, quite constrasting in some cases, but at the same time offered immense opportunities that a new museum would never offer."[2]

A correlation between Power Station and Museum's Transport collections

"What could be more appropriate for such a Museum than the first major power-house in Sydney? And what building in Sydney has interior spaces built on such a generous scale to accommodate the Museum's exceptional transport and engineering collections?"[3]

"The different scales and volumes of the spaces were a great match to the collection's range and diversity- equally, the Power House itself was an excellent fit with the musuem as a museum of industry and technology."[2]

Museum's buildings and the collections embody the Australian spirit

"This museum has a uniqueness, it has a quality that captures the mongrel character of Australia."[6]

"When I think of the collections - it's bound up in the society in a holistic way, which I think is distinctly Australian. So, it's quite wonderful."[6]

"These buildings represent the essential spirit that created Sydney, and the great Australian civilisation. There's a lot to be understood about the impact of electricity on people's lives. And this building was seminal very early in the adoption of electricity. And it's an important artefact.

So, the museum is almost unique with this collection in this building - it's quite an amazing fit. The uniqueness of the collection, and it's appropriateness in these various spaces is wonderful. So often, buildings interfere with the understanding of the objects. This museum doesn't do that, it has an affinity for the collections."[6]

A repository of diverse collection

"The collection is an old one and very diverse, and includes some significant internationally recognised symbols."[2]

Emphasising the role of design and technology in life

"The Museum was stimulating curiosity about science and technology with its collection decades before STEM education was an issue. As for STEAM - the Museum from its founding in 1880 has been all about the Applied Arts and the Applied Sciences."[4]

"This is an irreplaceable historic context for audiences to be inspired about the history, synergies and potential of design and technology 'to enrich the quality of life for all.' (1945 MAAS Act)"[4]

Architecture and Collections: A mutually advantageous relationship

"At the time the decision to retain and recycle the existing building fabric posed huge complexities; particularly the sheer scale of the project was unique. Driven by the belief that it was not possible to construct new buildings of this scale with the restricted budget, and that the great breadth of the museum's collections required a variety of spatial types from vast halls (Catalina flying boat) to intimate galleries (decorative arts), the museum's signature element was decided."[2]

Inspiration from the bowerbird-like nature of the collections

"The other insight was built around the eclectic, slightly mad, universal, bowerbird nature of the collection in an age of specialisation - this serendipitous finding of the breadth of the collection across the range of human endeavour and social existence posed a potentially impossible demand upon the architecture."[4]

Deriving inspiration to innovate from the collections

"Using the museum's extraordinary diverse collection as inspiration, and the curatorial and design genius; it is possible to explore and experience the narratives of lives and collection, with new technologies, interactives, multimedia rich techniques."[4]

11 | *The interior of the Wran building in 1988. Note the slenderness and openness of the new structure in comparison to the robustness of the brick buildings which are displayed against the new upon arrival. This view through to the brick screen of the Turbine Hall strebgthens this 'openess and transparency.'*

11 | *Stage I exhibitions highlighting some of the museum's treasures in Harwood Building ahead of the opening of the 1988 Museum. The Bleriot XI monoplane (in the foreground) is very similar to the Bleriot aircraft that made the first epic flight across the English Channel on 25 July 1909.*

OLD & NEW

Retention and adaption for future use

"At the time the decision to retain and recycle the existing building fabric posed huge complexities; particularly the sheer scale of the project was unique.. Driven by the belief that it was not possible to construct new buildings of this scale with the restricted budget and that the great breadth of the museum's collections required a variety of spatial types from vast halls (Catalina flying boat) to intimate galleries (decorative arts), the museum's signature element was decided."[2]

"The initial architectural design included extensive reuse of the existing remaining fabric of the tram depot and powerhouse . . ."[2]

A clear relationship between new and old

"Develop a convincing combination of old and new in a positive manner."[5]

"Modulate and sequence spatially the relationship between new and old buildings - accentuating, layering and contrasting."[5]

"The new structures are delibrately not attached to the old buildings. In the Galleria, the glass does not touch the old building - it steps out over the cornice and goes down into the gutter behind the brick wall."[6]

Harwood Building - Stage I of the Museum

"Staged over four elements, the first critical stage was the conversion of the derelict, collapsed Ultimo Tram Depot to a new conservation laboratory, workshops, store and most importantly, a 'taste' of the future museum. It was at this time that the name Powerhouse was used: constantly titling drawings 'Museum of Applied Arts and Sciences' was less than inspiring. 'MAAS' was meaningless - so using our 'corb' stencils, the project became the Powerhouse Museum. Later, arts secretaries sought to change this simple, effective brand to the 'Museum of Human Achievement and Creativity' and other pretentious titles, but the Powerhouse has become etched in the colloquial consciousness. Somehow the extraordinary breath of that initial observation of the eclectic, bowerbird-like collection, ranging across the broad range of human existence is captured in the word 'Powerhouse'"[2]

The great cube of the existing Powerhouse Buildings

"The additive and sequential development of the original massive buildings to the east of the site is modulated by the intervention of structures inserted, layered and sequenced."[5]

New forms drawn out of the old

"I have retained the character of and modified and drawn out of the old architecture, the new architecture . . . I have tried to make the architecture very controversial, very powerful and yet very sensitive and responsive."[4]

"There was, however, a period in the development of the exhibitions where the building was seen as both a threat and impossible to work with. And yet working with Richard Johnson I felt that here was an opportunity. It just needed someone capable of making that connection between the new and the old in the architecture."[4]

A subtle distinction between new and old

"My feeling was that I was dealing here with a skin that was scarred, broken and had lesions, was modified and had band-aids. In effect, I've tried to recreate some of the feeling in the east facade with those black silhouttes which are the shadows of what was once there. I've tried to explain the robust broken nature of the facade which has had brick in-fill."[4]

"Externally, the great brick halls of the old buildings have an enormous presence in important views from Darling Harbour and the city, matching in scale the wool stores and warehouses of the district. The new buildings have a much lighter construction in glass and metal, some of it brightly coloured and the new forms are large, bold and simple."[6]

"If you look at the building (Galleria), the building changes at the intersection of the various phases of the brick building; so there's a sense that the new columns are not just repetitive, ignoring what happened before. It's progressive development, which is not repeated, but acknowledged in the grid of the building (Galleria). Layering or the separation of the elements is deliberately done in a way to not be like the massive rectilinear, orthogonal character of the old building, but almost a contrast and a contradiction. And the curves or the tubular frames are slightly different, modern expression of what was being done in the Turbine and Boiler halls, rather than using the same steel frames. So, you get a more responsive, modern building. Even though you may not be totally aware of it, your brain is still registering that there's a link between the old and the new."[6]

Expressing the robustness of existing fabric

"The cublic volumes of the existing Powerhouse buildings.

Massive brickwork

Thickness

Dimension

Gravity

Solid."[5]

11 | *The Board Room in the Galleria. The two cherubs painted across the sky represent new beginnings for the Powerhouse.*

11 | *The design approach adopted for the Museum's centenary of Federation evxhibition, 'Visions of a Republic.*

11 | *Christian Dior silk bridal gown displayed against the sky.*

ARCHITECTURE & EXHIBITION

Embracing the bigger scale of the buildings in exhibition design

"We don't want the volume, the character and the sequence of spaces to be destroyed."[6]

" . . . if you are a creative and you are going to have small exhibition in the building, you need to embrace the bigger scale, the bigger dimensions and be aware of that what you are doing - idea of the 'buildings within buildings' . . . "[6]

Exhibition design as a spatial design exercise

"It was a training ground for exhibition design in the country. Exhibition design prior to the Powerhouse was done by people who were graphic designers, they were not spatial designers."[8]

Critical armature links architecture and exhibitions

"An important step is to reinstate the critical armature linking architecture and exhibitions. This armature is the key frameowork mediating the internal architecture and the smaller scale of the exhibitions and other elements. This will reinstate the circulation which is both flexible and in sync with the building and conceptual sequences"[4]

"You have to use an intermediate element to register, to give a sense of purpose and focus to an exhibition within such big volumes." [6]

Exhibition design responds to its envelope

"There is quite a lot of learned debate among museum people that the 'black box environment' is the way to go for museums. This project has firmly convinced me otherwise. There are 'black box' situations in the Powerhouse, for individual exhibits, and they work well. But, overall one must have a balance."[4]

'Buildings within buildings'

"The Powerhouse and what I'm doing to it is like having a 'building inside a building.' The board room is the reversal. I put the Power House form, the rectangular prism of the building plan which is the barrel vault in section. I've reversed what I was doing, it's a reversal . . . if you go into the building it's really important to look up and look at the Board Room in the galleria because it's a paradox, it's a play on the thing that was the Powerhouse itself which is the big rectangular volume."[6]

"What Richard Johnson did was to create an intermediate scale element within the spaces that captured the Board Room idea - 'a building within a building.'"[6]

Referring to the Board Room at the top level in Galleria

"It's a minature Boiler Hall / Turbine Hall, its the primal hut, if you study the beginnings of architecture they say that architecture really emerged when that form of rectangular building with a pitched roof originated, and it captured the essence of architecture. So it's a 'building within a building' and it's reflective of how you might deal with the bigger spaces in the building."[6]

An intermediate scale to achieve an interplay between buildings, exhibitons and individual objects

". . . work the scale of the building down to the object . . ."[6]

"The intermediate scales between the objects and the small exhibitions and the architecture - the scale and dimension of the architecture need this mediating character within the spaces, which Richard Johnson and others were the designers of and which the Board Room at the top of the galleria - the little Board Room - 'a building within a building,' I used that term in '84. I wanted 'buildings within buildings' which would then be colonised by exhibitions as well as the big Boiler Hall exhibitions . . ."[6]

". . . increasing the depth and dimension of what you're doing to embrace that intermediate scale and reference the exhibitions in that overall umbrella of the museum . . ."[6]

". . . the architecture, the objects and the small scale exhibition is critical to the interpretation of these buildings . . . it's an intermediary scale that mediates between the big vast character of the Boiler Hall and if necessary an individual object in that hall. That's the only way. If you put the object in the hall it's dead, the object can't survive."[6]

Integration of fabric, technology and museum's requirements

"Materiality and detail became critical with the integration of engineering systems; whilst maintaining the overall cost-time framework for the project became increasingly problematic as the demands of the museum became more profound and more and more teams were created to develop the museum's requirements."[2]

Progression in journey is expressed in architecture

"I have always had a love for baroque architecture of Francesco Borromini. In barqoue architecture the curves are incidental to the way the space is manipulated. The Wran building has a half complete arc and this incompleteness takes you to the perfect expression of the arc in the Galleria. You are compressed by the building between the Wran building and the Galleria and then when you walk into the Galleria the explosion is extraordinary. That's what baroque architects did."[6]

INNOVATION & SUSTAINABILITY

Museum as a valuable investment

"The existing Power House buildings represented a valuable investment by our society both in time and collective memory and the thought that this resource should not be wasted was primarily a consequence of my interest in environmental issues and sustainability – issues that are now very much to the fore."[2]

"This project sets a new paradigm for our industrial urban fabric - no longer can the major resource commitment of past investment be discounted or ignored in the future. Depreciation also represents appreciation when 'values' are considered. Twenty years ago, this consideration was radical. Pressure for demolition was intense. Retention of the remnant power as a 'base resource' from which the new Museum might emerge - an appropriate metaphor for a venerable institution - led quickly to many innovative systems that exploited existing elements of the structures - the spectacular volumes + spaces, the harbour cooling conduits, the strctural capacities, free spans and the cultural memory - a link to a past and a reaffirmation of the value not only of past generations but our generation providing a link to the future generations - a cultural investment in the 'collective memory.' from this primary decision to forego demolition and to work with the existing fabric came countless innovations."[10]

Responsiveness to our environment

". . . this project is an exemplar of thinking that integrates those two fundamentally opposed ideas. You have the beginnings of the industrial revolution and the impacts of the industrial revolution and you've got a building that's being recycled and saved and trying to adopt environmentally responsible attitudes."[6]

"Sustainability and resource management - this project has its roots deeply embedded in the environmental movement and the idea that resources shouldn't be wasted. That we can find ways to reuse our buildings . . . and the life of buildings lives beyond the ego of the last architect."[6]

Ingenuity in Design, Innovation & Sustainability

". . . this building is an exemplar for saving old buildings and I think therein lies a real lesson for environmentalists let alone architects. And I think there's a lesson to be learnt about the way we use our precious resources in society."[6]

"The initial architectural design included extensive reuse of the existing remaining fabric of the tram depot and powerhouse . . . "[6]

Attention to design process and design detail

". . . when I explore design concept for a building, as you begin the evolution of the design, and the drawings and the documentation, even through contract and detailing, the implications of the first concept being realised through all the subsequent work is critical. If it doesn't it's failing and you see the breakdown of concepts when they have big ideas and then the detailing lets it down."[6]

Retention and adaption for future use

"For the Ultimo Power Station, demolition was a 'collective lobotomy.' Often infrastrcture is a key element for our 'mental maps' of our environment that enhances our sense of oneself, our world and our experience - its removal is not just demolition of a physical structure but a removal of our reference points, a loss of resource, past investment and a coarse economic and cultral decision."[10]

"At the time the decision to retain and recycle the existing building fabric posed huge complexities; particularly the sheer scale of the project was unique. Driven by the belief that it was not possible to construct new buildings of this scale with the restricted budget and that the great breadth of the museum's collections required a variety of spatial types from vast halls to intimate galleries, the museum's signature element was decided."[2]

New technology complements extant fabric

"It's interesting to also consider the many engineering issues posed by the project that sought similar defining positions; stratification of the large halls, titanium heat exchangers using Darling Harbour water and existing conduits for cooling and specialist lighting systems for various times in the museum's day and unique structural systems, all developed with Dave Rowe, services engineer; Ian Norrie, structural, lighting and acoustics engineer, who joined the architectural team at this time to develop many innovative engineering prototypes for the project."[2]

Fostering shared experiences through innovation in collaboration

"These shared and personal museum experiences will encourage and foster our imagination and thinking about the future of our cultural, technological and design development – inspiration underpinning aspiration."[1]

"When the ideas are right, appropriate and commonly owned, everyone wants ownership of the outcome."[8]

A complex building

"This building is a complex building. A giant machine running at the highest museum standards that were developed from the museums in England, America. All the services designed operated to the highest standards, in terms of environmental response. The lighting, the security lighting and all the fluorescents. All the glazing in the building, it's laminated with a special interlayer that filters out UV light, that's why we can place objects in the galleria."[6]

Referring to air handling system in the Boiler Hall

"They throw air across the space and stratify the spaces to best museum conditions, gradually tapering up through the building. They are critical to be retained, it's the perfect solution. They were developed by Dave Rowe and it applies through the building. It was one of the really innovative things he did. They were designed very carefully and they do about four things – security, monitoring, air handling and humidity control. They are designed to spread the air evenly across a big volume and there was a lot of worry about throwing air that distance, at least half the width of the space without drafts and with proper mixing. They are quite sophisticated in a mechanical engineering way."[6]

". . . one of the things that has to be carefully considered with the Boiler Hall is that its structure depends on the load coming down from the trusses and the aircraft hanging from it. All that load is transmitted as compression to stop the brick work from going into tension. That's how the structure works. If you take this out and lighten it you're actually weakening the structure potentially."[6]

Referring to the Switch House

"There were escalators within the building linking all the levels, so it could be operated independently from the rest of the building and use the entrance at the same time, that was the idea."[6]

"Switch House was a simple 'black box' gallery. It was perfect for small scale exhibitions."[6]

Deriving inspiration to innovate from collections

"Using the museum's extraordinary diverse collection as inspiration, and the curatorial and design genius, it is possible to explore and experience the narratives of lives and collection, with new technologies, interactives, multimedia rich techniques."[1]

ENTRY, ORIENTATION & MOVEMENT

A sense of arrival

"A key to the architecture was the sense of 'beginning a journey,' hence the railway station metaphor, the space-capturing arch of Normanton railway station, Queensland."[2]

The meaning of Harris Street forecourt

"Reinstate Colonnade and explore options to extend structure to mark and define Harris St forecourt, including possible external museum cafe and shop."[1]

"Reinstate paving as per 1988 design to express grid linked to Garden Palace."[1]

The meaning of Harris Street Colonnade

"The Harris Street colonnade - intended to house design shops and showcases - was designed to mediate . . . between the grand scale of the power station and the tiny terrace houses across the street - a great verandah"[9]

Sequential development of spaces

"The spatial sequence beginning with the vaulted "railway station" ('sense of arrival')."[5]

"Enter at right angles to layering buildup. Then rotate to sequence (in-complete vault)."[5]

"Compression as the visitor moves to the Galleria." [5]

"Organising - memorable - monumental."[5]

"Great spaces and see beyond to the great original brick buildings through the arcaded screen of the west wall of the Turbine Hall."[5]

"We don't want the volume, the character and the sequence of spaces to be destroyed."[6]

". . . the intermediate elements that were part of understanding the spatial progression through the building. This issue of entries is critical and is going to be addressed in ways, which are extraordinarily complex but equally simple and conceptually stunning."[6]

Insertion, layering and sequence

"The additive and sequential development of the original massive buildings to the east of the site is modulated by the intervention of structures inserted, layered and sequenced."[5]

"Modulate and sequence spatially the relationship between new and old buildings - accentuating and contrasting."[5]

Referring to the meaning of gradual setback of levels in the Wran building and Turbine Hall

"The terraced overview."[5]

Galleria as an uncluttered spine that links spaces and guides movement

"Contributing to both variety and identity, the Galleria is the central organising space within the larger cubic volumes of the older buildings as well as a foci for movement and reciprocal views."[4] "The Galleria is the building's axial street and source of interior light and space. Added to these multiple roles are vertical and lateral circulation paths. The pedestrian ramp adjacent the central lift rises free within the space at the bridge linking old and new."[1]

Familiarising visitors with exhibitions upon arrival

". . . we're putting in an electronic information system in the main foyer and every exhibition is identified by a stunning photograph of a key object within the collection. So, we are identifying exhibitions and themes by key objects. Every exhibition will have a poster on display in the forcourt, so people (before they enter the building) will know broadly what are the themes and what the content is going to be like. When they get into the Powerhouse, they are directed to a particular exhibition by the poster image which is incorporated into the electronic information system."[4]

Vantage points to orient the visitors

"We have placed what we call landmark objects in public spaces that will guide people through the museum . . . the Boulton/ Watt Engine is a major landmark structure. Once you see it you never forget it, and you know where it is in the Powerhouse. There are aircraft, there are small precious objects, exciting individual items that people will see and remember and know where they are. These are located at key points, generally with an axial approach to them so that people can see them from a distance and remember where they are and fit them to the structure of the circulation."[4]

A navigable museum

". . . every time we put another object, another statement, into the Powerhouse, we could potentially confuse the reading of the building or the paths people have to take through it. So we have to give people as they enter some comprehension of the total space, and then of the gallery space, and each bit that's devoted to an exhibition. The visitors have to comprehend the space, and feel comfortable with it, before they can focus on the exhibits. They must know where they are, and not feel they'll never find their way out of the maze."[4]

"The spatial character of building is read in our emotional experience of the architecture . . ."[6]

"The organisation of the building be easily "read" by the visitor."[5]

An approachable museum

"It's surprising how many people are frightened in a big public space and that constrains the way they approach or explore a building and exhibits. So we have to make them confortable and ensure that they aren't fatigued. In a building like this it's a much more important consideration because of its vast scale and its overall challenge."[4]

Museum journey designed to visitors' expectations

"I tried to build up a discipline, a way of structuring the exhibition design, based upon the way a visitor sees and moves through the building. This 'vista' perception was necessary to understand the ideas, the collections and the buildings."[4]

"We try to give a range of different experiences so that if people are turned off by one particular thing, they can choose something else."[4]

A coherent pattern of Museum's experience

". . . I made maps of experience - so where was density of objects, where was the sound, where was the audio-visual, where were the interactives, where were the quiet spaces, where were the points of landmark objects, where could somebody delve and get into immense detail in a subject that fascinated them. And then I mapped it all out and I put it on layers of clear acrylic and I mapped these sensory perceptions with a coloured dot on the plan and then I put them all together . . . and then when I did it to some of our emerging exhibitions, it was like reading music, you could actually see through the colour - the variation, the pauses, the changes of emphasis; you could read the experience of moving through the museum. The building itself did that and if the exhibitions negated that, it was all pointless to conserve those buildings."[8]

ENGAGEMENT

Fostering interaction and stimulation through powerful design

"To do that the architecture explored very controversial, very powerful and yet very sensitive and responsive design concepts."[4]

"Modulate and sequence spatially the relationship between new and old buildings - accentuating and contrasting."[1]

"Each of us has a pattern of the city that we carry in our mind . . . The reaction that most people have to the Powerhouse is one of identification. They feel good, they respond to a lot of the retained elements and in a positive subconsious way."[4]

Avenues for varied experiences

"We try to give a range of different experiences so that if poeple are turned off by one particular thing, they can choose something else."[4]

A sense of wonder

"The bottom line is the beautiful dichotomy between observer and object; that magical sense of wonder that occurs when one comes face to face with the real object . . . To give people reality was just about the biggest 'turn-on' that one could create. So that point at which interaction occurs between the observer and object was what the museum is all about. It's really about that magic moment, that sense of wonder, that confrontation."[4]

The power of movement

"And the flight - the idea that things are all flying through the space . . ."[6]

An element of surprise

"Having an element of discovery."[6]

Referring to the balconies overlooking the transport collection in Turbine Hall

"The balconies are meant to be a surprise viewing point from the upper levels, to keep people interested, they would be surprises, exclaiming 'Oh, my God, who would have thought.'"[6]

An essence of Australia

Referring to the sky at either ends of Wran building

"Those clouds are actually exploited in the exhibits in the west building. As you enter through a tower structure, attention is focussed on the Strasburg clock with a cloud backdrop. It's the sort of item that stylistically would have been seen against a sky. In the middle ground there's a wonderful box kite of Lawrence Hargraves soaring up into the vaulted space. That's seen against the clouds. There's also the first major exhbition as you enter. It involves you up a long theatrical ramp, not only into the vault but up into the clouds. This creates an elevating experience of coming into a museum of concepts and ideas to explore and think on a different level to the everyday"[4]

". . . the vastness - the people it amazes every time. I see people walk in, the sky does affect them, they sense the infinite nature of the space."[6]

A balance of excitement, noise and stimulation

"One of the great things has been to attempt to arrive at a balance of content, space, experience, interactivity and classical presentation of an object for its own sake. It would be terribly wrong to have every exhibition with the same level of interactivity, or every single exhibition at the same level of excitement, noise or stimulation."[4]

Eclecticism, responsiveness and play

"With the overriding belief shared with Lindsay Sharp, Director MAAS that the 'ah ha' moment in a museum comes when the observer views the real object; this became the essence of the many decisions made about the architecture and the exhibition. The other insight was built around the eclectic, slightly mad, universal, bowerbird nature of the collection in an age of specialisation - this serendipitous finding of the breadth of the collection across the range of human endeavour and social existence posed a potentially impossible demand upon the architecture."[2]

"And the flight - the idea that things are all flying through the space . . ."[6]

Careful integration of exhibition design tools

Referring to integration of interactives, audio visuals and graphics with the overall exhibition design and the buildings

"The scale, the dimensions and the way you move through the spaces, these things are intrinsically interacting as we experience the buildings and the exhibitions."[6]

"But in themselves they are a recipe for chaos."[8]

Uniqueness of the Museum generates interest

"The building is as it is because it evolved over such a long period of time. Like a city it has sort of loose fit circulation, there's no classical route through it. You don't enter a central exhibition hall and then relate back to the hall. It's not that sort of a building. It's not that sort of a collection either, and that makes it actually much more interesting to people."[4]

A 'Circuit Tour'

"Circuit tour for the person who can spend a brief half hour with the collection at a series of stops where an exhibit of some of the best pieces of the museum collections historically organised are available. From this overview if more time is available one could engage oneself a little more. If, as many visitors, you have a special interest or more time you may go onto any one of the great museum collections. This is better than dragging yourself through gallery after gallery to find the things you want to see."[5]

"The idea of the museum was to not have an enfiladed way of doing things - you go here you go there, here's the path, here's the way you've to experience the building. It's more a sense of being drawn into this experience. And you can come in and do it quickly. Or you can do it very detailed way, and come and be fascinated with an object and stay there and not feel that oh I've got to continue on now and go and do it all. So return visits were implicit in the design of this breakthrough idea that you don't tell people what they're going to do. You might have a way of experiencing the museum, but also a way for people with limited time."[6]

11 | *Rippled ceiling over the stairs in the Powerhouse Theatrette.*

11 | *The use of extraordinary colours in the Powerhouse Theatre.*

11 | *Transport collection in the Boiler Hall in 1988.*

COLOUR & LIGHT

Eclectic colours represent the real world

"I've battled with modernism's white hygienic view of the world. The world is coloured, its textured, it's not as pure."[6]

Use of exciting colours

"I became quite excited when George Freedman started to use all these wonderful colours . . . the hand rails are black and the green of the columns. But particularly the colours are intriguing and arouse great interest in a new modern Museum building."[6]

"The colours were driven by George Freedman's extraordinary sense of the way colours work together. When you go into the theatres, it's a bit of a shock, they are like jewels - they are full on colour."[6]

"George wanted to introduce a range of colours into the decoration of the walls as he was a colourist. He enjoyed working with a range of different colours - earthy mixes of grays, browns, greeny green and the windy blues."[6]

Use of colour and decoration in moderation

"The Powerhouse Theatre (big theatre) is simpler in comparison to the small theatre in architectural expression. It has coffered bays, and uses a combination of extraordinary colours. It's a shock for most modern architects who walk into the space. I was exploring the idea that there's something missing in the sterile world of modern architecture. We are relying on almost white or black forms. Don't be afraid of decoration, use it in moderation."[6]

"The other thing about modern architecture that worries me is this belief that somehow you can't decorate it. I think decoration is fundamental to our existence as human beings."[6]

Effective use of daylight to generate human interest

"There is quite a lot of learned debate among museum people that the 'black box environment' is the way to go for museums. This project has firmly convinced me otherwise. There are 'black box' situations in the Powerhouse, for individual exhibits, and they work well. But, overall one must have a balance."[4]

". . . if museum design is generated by public perception, if visitors like the feeling of walking into a space flooded with natural light, why blacken it out? Why not, more cleverly, look at the design opportunities presented and try and control the environment in another way by building shelters or cocoons for things that are light sensitive."[4]

Colours and design responses to capture fluidity and excitment of architecture

"I designed both theatres. George Freedman - the colour scheme. The Powerhouse Theatrette (small theatre) is a play on art deco, Otto Wagner Post Office and the Mackintosh grid. It has a lantern shape ceiling, but it has a white illuminated ceiling with black grid, it's quite expressive. I have always been fascinated by the mark we make as an architect, and the idea of a scribble or a continuous ripple. The ceilings over the stairs in both the theatres have the rippled ceiling following you down, so one gets a sense of flow on the stairs. It has a neon stripe that follows the edge of the theatre."[6]

Referring to the red colour in steam vents in the west brick wall of Boiler Hall

"When architects colour drawings, the brickwork in section is coloured with dark red watercolour (international colour standards). It's a little architectural joke for other architects who visit the Museum."[6]

"When people look at the holes, they ask - What are these holes, why didn't you patch them and fill them up? But that's where the steam went through, it's part of the story of the building."[6]

Referring to the carpets designed by George Freedman

"The carpet was speciallly designed by George Freedman for the buildings. It has a neutral appearance from mid distance, but if you look at it close up, there are all these colours. "[6]

Referring to the green grey colours of the columns in Wran building

"Wet concrete colour - it is an attempt to try and replicate that sense of it being fluid before it becomes solid."[6]

Referring to the italian nougat tiles (with large stone aggregates) in the Wran building

"I liked the excitement, complexity and texture of the tiles against the fine grain of the stones. Everyone loved the tiles including the curators. A number of people have commented over the years - how they love it. It's a really exciting finish. The patterning of the tiles resembles the great cathedrals.

The floor pattern is critical to the site. It's exploring the way in which you can manipulate the variety of finishes to both be a margin and an infill element. The infill is rotated through 90 degrees and the texture of the margin is always at right angels.."[6]

The 1988 Emery Vincent graphics

"The exemplary work that Garry Emery did - the corporate identity of the Museum, the building identity, the graphic design, the marketing, the publications, and the graphic imagery of the exhibitions were all integrated. And that was even inspired or connected to the design of the carpets, it was the same colours. That's an example of not only collaboration but interdisciplinary collaboration - where one design inspired the other."[8]

04

DESIGN PRINCIPLES | THE FUTURE

With evolution, exploration and collaboration at its heart, the Powerhouse Museum as part of the Ultimo Cultural Precinct would be managed based upon a set of fundamental design principles.

The comments by Lionel Glendenning and Richard Johnson are made in the context of their understanding of the Museum, its past, and its current and future needs.

The following principles are described by Lionel Glendenning (quoted in blue) and Richard Johnson (quoted in green).

A clear understanding of the 1988 Museum is essential to guide future interventions

"A major element implicit in what the Powerhouse did is missing in the way people are about to approach it."[6]

"An understanding spatially, of what themes or collections or focus each space is going to have. You can't design anonymous spaces without understanding what is the nature of this paticular Museum."[8]

Regeneration of Powerhouse for the 21st century

"It's feasible for the government to announce an extraordinary expansion, an extraordinary capacity for the museum to move into the future, in a way that captures the imagination."[6]

"One of the great possibilities of a regenerated Powerhouse is that synergy between what the Musuem is trying to do, its collection, the fabric of the architecture, and the display technique; all work together in unison. And then it's incredibly powerful because it is very very rare internationally, and we had that in 1988."[8]

A Museum Precinct for Ultimo I Sydney

". . . a coherent POWERHOUSE MUSEUM PRECINCT, which builds on the area's and the Museum's history and heritage, its contemporary design values which enhance and drive further development and create a new paradigm for the Museum to emulate the quantum change of 1988 which was a remarkable rebirth of this distinguished 1880 institution . . ."[1]

"As a precinct it should become an evolving bubble. This building in particular is part of the urban design character of Sydney."[6]

Museum as the locus of Ultimo's Creative Precinct

"As an instrument of public record and display, the Powerhouse Museum has a pivotal role in supporting, recording, presenting and fostering connections in this creative space."[1]

Harwood Building is intrinsic to the Museum

"Staged over four elements, the first critical stage was the conversion of the derelict, collapsed Ultimo Tram Depot to a new conservation laboratory, workshops, store and most importantly, a 'taste' of the future museum. It was at this time that the name Powerhouse was used . . ."[2]

Advance the urban connections of the Precinct

"The success of the Goods Line evolution as a key pedestrian link presently ends at the Museum, as does the Hay Street to George St and the CBD beyond. These interactions at the Museum present real opportunities for the Museum to create direct links and nodal places / squares integrating with these successful developments and crafting opportunities for activation, and links creating new value adding elements of the Museum's activities and exhibitons."[1]

Referring to the north eastern end of Museum's curtilage

"There's a chimney base there which has been chewed up by part of the bridgework, but it's original and it's important not to damage it. I've been thinking about how to connect through under the bridge and the best solution is to keep the tram and the pedestrians together till you get to the point where you can take the pedestrian off and let the tram run, because once the tram leaves Central Railway it's running on the street system. It comes up Hay Street on the true street system, there's nothing to stop it carrying on briefly for another 100 or 200 meters, and this simplifies how you might treat it from an urban design point of view - it's a tram running in the street."[6]

Strive to achieve 'Interdisciplinary Collaboration'

"Before you go to the actual process of creating buildings, a group of intellectual minds comes together in a collaborative sense - in a respectful context where ideas and concepts are listened to, and discussed in ways that make the whole exercise an escalating process aimed at perfection."[6]

Hand and Mind - MIND and HAND

"At the Museum's heart, it is about the power of creative and innovative minds combined with skilled and inventive hands - Hand and Mind - MIND and HAND."[1]

'Design as a Continuum'

Referring to the design intent in 1988:

"At the detailed design level what it was tryng to do was to add to and be part of the total Museum experience. I call it 'Design as a Continuum,' that there was a continuum of thought historically and Lionel Glendenning added a contemporary layer; there was a continuum in the collection upto the contemporary times; there was a continuum of curatorial thought and there was a continuum of design."[8]

Design that interests and excites

"I have tried to make the architecture very controversial, very powerful and yet very sensitive and responsive." (Designworld)

"Opportunity to demonstrate interest in:

- consolidation;
- use of constraints as design generators;
- creating old and new linkages with the architecture of ULTIMO and POWERHOUSE;
- a contextual awareness and historial reference."[5]

Ensure highest quality design input

Referring to the gradual dilution of design quality in recent changes

"Ensure highest quality of design input"[6]

"Good design doesn't cost money."[6]

Strive for best international museum standards

"Pragmatic decisions on achieving the best international museum conditions and standards, allowing for future changes, and creating a flexibility of circulation in a wide variety of gallery spaces were implicit in the architectural solution."[2]

Preserve the integrity of the original architecture

"The cublic volumes of the existing Powerhouse buildings.

Massive brickwork

Thickness

Dimension

Gravity

Solid."[5]

Additional space / facilities

Referring to the Harris Street forecourt

"I think you should excavate here and put in a 20 storey building down like the State Library of NSW has on Macquarie Street (the Library has seven storeys below ground). The roof of it would be level 3 (entry level), and the edge (to Macarthur Street) could be cafes or shops. It would be a very simple thing to do."[6]

Reinstate the meaning of Harris Street forecourt

"Reinstate Colonnade and explore options to extend structure to mark and define Harris Street forecourt, including possible external museum cafe and shop."[1]

"Reinstate paving as per 1988 design to express grid linked to Garden Palace."[1]

'A sense of arrival, generosity and welcome'

"A key to the architecture was the sense of 'beginning a journey,' hence the railway station metaphor, the space-capturing arch of Normanton railway station, Queensland."[2]

"This issue of entries is critical and is going to be addressed in ways which are extraordinarily clever, but equally simple and conceptually stunning."[6]

Retain the concept of 'Layering-in' from Harris Street

"The additive and sequential development of the original massive buildings to the east of the site is modulated by the intervention of structures inserted, layered and sequenced."[5]

Manage the Galleria as an uncluttered spine that links spaces and guides movement

"The Galleria is "the building's axial street and source of interior light and space. Added to these multiple roles are vertical and lateral circulation paths. The pedestrian ramp adjacent the central lift rises free within the space at the bridge linking old and new."[1]

"I think you could extend the Galleria to the end (Macarthur Street), embrace the Switch building and put that inside the building and link it down to the schools and coming in from the back courtyard. It would work brilliantly. You would have this amazing triple height space with the galleria coming through."[6]

Referring to the northern end of the Galleria

"The view across to the Ian Thorpe Aquatic Centre would be quite interesting. The shape of the pool is reflected in the Galleria."[6]

Potential for cross link connection

"The Switch House connection is a great opportunity for a cross link between Harris Street / Galleria / Goods Line square."[6]

Referring to the northen end of Switch House and its possibility to be a grand entry into the museum

"It's like a giant junction of all the elements that go out into the museum. You could link the lower level entry with the upper level entry through this space. You could take the back courtyard level right through the building, extend the Galleria right down into that level and bring all the school kids in there. Put in a set of escalators that serve each level, and, as you enter, you would look up through the building to beyond the Galleria. It would be quite an extraordinary thing. It would be like the big concourse at the Louvre. There could be shops, cafes and all the other free-standing elements within this grand space. It would be an articulation of the shopping feeling that you get across the way (along Hay Street) as you come up the Goods Line, onto this one level going right through till you are in the Galleria. The potential is wonderful."[6]

Retain clear relationship between new and old

"Develop a convincing combination of old and new in a positive manner."[5]

Referring to the birghtly coloured stair cores at the south brick wall of Boiler Hall

"They were an intervention. Depending upon what happens in the rear courtyard, these could be removed or retained. New interventions in this courtyard have the potential to have the openess, accessibility and transparency that the Galleria offers. The robustness of this massive brick wall of Boiler Hall should be retained and new interventions should be lightened."[6]

Re-establish the unique and synergistic relationship between collections and buildings

"The architecture needed to be a contradiction, a paradox, a labyrinth, to allow the discovery, the wonder, the excitement of finding anew the collection."[2]

A comprehensible and navigable museum journey

". . . give people as they enter some comprehension of the total space, and then of the gallery space, and each bit that's devoted to an exhibition. The visitors have to comprehend the space, and feel comfortable with it, before they can focus on the exhibits."[4]

Museum Exhibition design not independent of the buildings

"The building had, if you sought it out - a natural geometric rigour, and therefore the insertions within the building needed to understand and take their cues from it . . . if you don't understand it, you can't work with it"[6]

Referring to the distinction between an art gallery / art museum and the Powerhouse Museum

"The concept of museum has been diminished by the dominance of art galleries and their success in attracting huge number of people, and museology has lost its way a little. In a strange way, an art gallery can be divorced from its paintings, they have never had a tradition like museums have had, of really delving deeply and explaining themsleves to the viewer, whereas the museums are the opposite of this. And this particular collection is so eclectic, so bowerbird-like, so societal, it's a very strange collection. It's like no other in the world that have experienced."[6]

"Despite that diversity there was an electric synergy between the building fabric and its spaces, and the collections. Because even the decorative arts, which needed more intimate spaces, had the intimate spaces and everything worked together. And therefore that gave it an authenticity . . . In most cases, the architecture of an art museum doesn't reflect the nature of the art."[8]

Exhibitions should have a balance of excitement, noise and stimulation

"One of the great things has been to attempt to arrive at a balance of content, space, experience, interactivity and classical presentation of an object for its own sake. It would be terribly wrong to have every exhibition with the same level of interactivity, or every single exhibition at the same level of excitement, noise or stimulation."[4]

Responsive design to reinstate and retain the authenticity of spaces in the buildings

"There is some sort of restitution necessary in the process of clearing out some of the egregious interventions by others. The damage done is so much - the openness of the Wran building, which was one of its features, has been blocked completely by a lot of plasterboard. The attempt to convert it into a black space bemuses me because great exhibiitons were placed in there from around the world, and no one ever said that the volume, the space was an issue."[6]

"It wasn't an issue if the exhibition designer understood that there was a natural light issue that had to be dealt with by cocooning the object in a showcase or by other exhibition design means. It is an easy way out to blacken everything. I often say, if you are putting a painting in a major room in the Louvre or in the Palace of Versailles and you wanted to hang it next to the window, and you said that "the window is not in the right spot, I am going to brick it up because I want the painting there." You would put the painting somewhere it wasn't in harm."[8]

'Buildings within Buildings'

"The intermediate scales between the objects and the small exhibitions and the architecture - the scale and dimension of the architecture need this mediating character within the spaces, which Richard Johnson and others were the designers of, but which I called up and which the board room at the galleria up the top - the little board room, a 'building within a building,' I used that term in 84. I wanted 'buildings within buildings' which would then be colonised by exhibitions as well as the big Boiler Hall exhibitions . ."[6]

Embrace the scale of the buildings in exhibitions

" If you are a creative and you are going to do a small exhibition in the building, you need to embrace the bigger scale and the bigger dimensions and be aware of that what you are doing to the idea of the buildings within buildings."[6]

Reinstate the principles that underpinned the intermediate scale elements

"An important step is to reinstate the critical armature linking architecture and exhibitions. This armature is the key framework mediating the internal architecture and the smaller scale of the exhibitions and other elements. This will reinstate the circulation which is both flexible and in sync with the building and conceptual sequences"[1]

New interventions to link architecture and exhibitions

"There is no point in recreating the interventions that I put into the Powerhouse that are now demolished. They were never intended to be permanent, some had a permanence well beyond the exhibition, but I envisaged that ultimately they would all go and the building would still be there, but the principle of them wouldn't go. They would be replaced by better interventions that did the same thing functionally or aesthetically."[8]

Undertake research to understand the complexity of the building

"This building is a complex building . . . It was a giant machine running at the highest standards, museum standards that were given to us from the museums in England, and America and we operated on that basis."[6]

The potential in recycling and adaptive reuse

"The existing resource in buildings that the society has invested in, is worth working with and building up as contextual ways for great design."[6]

A corporate identity for the Museum

"Reinstate and reconfigure the outstanding 1988 Emery Vincent signage and graphics scheme."[1]

An urban design study to resolve urban connections of the precinct

"As part of the revitalisation and activation of the Powerhouse Precinct, resolution of the urban design issues at the conjunction of Hay Street - 'Urban Nest' - Darling Drive, Light Rail, Macarthur Street and the Goods Line node. This key arrival node is an unresolved confusion of paving and levels, steep stairs and an assortment of residual walls and handrails, miscellaneous engineering elements - an urban design mess. With clear unambiguous urban design, a resolution of this important public arrival and transition place is vital. To that end, the City of Sydney Council, Light Rail and NSW Govt should commission an urban design study"[1]

Explore and present Museum's context and linkages

"Exploring the existing precinct, sites and architectural heritage through research and revelations underpinning Site Heritage Interpretation at all the Museum's sites. For example, the Castle Hill historic plantation and the Museum's early record of research and experimentation into the potential of Australia's Essential Oils industry and, Native Timber industry."[1]

Familiarise the visitor with the rich history and heritage of the Museum

"Whole of the site interpretation of the history of the Museum's precinct, site, all buildings, and of the institution of the Powerhouse Museum itself, will be a feature of the public's experience of the one of Australia's oldest museums."[1]

Celebrate the diversity and difference of people

"Engaging many audiences through the broad sweep of the Powerhouse Museum's Collection, based on our social, cultural, technical and scientific history. The First State, recognising First Nations culture - the foundation of our nation's prehistory, developing penetrating insights into the formative and developmental influences on today and into the future."[1]

Conserve the intangible heritage of the Museum

"Heritage at the moment is evolving into the beginnings of an understanding of the intangible benefits of a site or a building. We are focussed on the artefact - the physical reality, but not on the intangible. And the Powerhouse has all of those other layers of intangible benefits that go beyond the physical fabric - that's the collections, the synergy of the collections and the building, it's the building and the precinct, its inspiration as the training ground for designers . . ."[8]

A robust Conservation Management Plan that builds upon the Design Principles

"A properly prepared CMP guided by Design Principles to maintain the original design integrity of the Powerhouse Museum is essential . . . The CMP should be a robust framework to consider, debate and prioritise a range of options proposed in the master planning process."[1]

"The important thing about the CMP is that it should manage change in a sensitive, thoughtful way, and ensure that the quality continues and that we pass it on."[6]

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LIST OF IMAGES

Section 01: Introduction
Figure 01:

Section 1.1: The Objectives

Section 1.2: A brief History

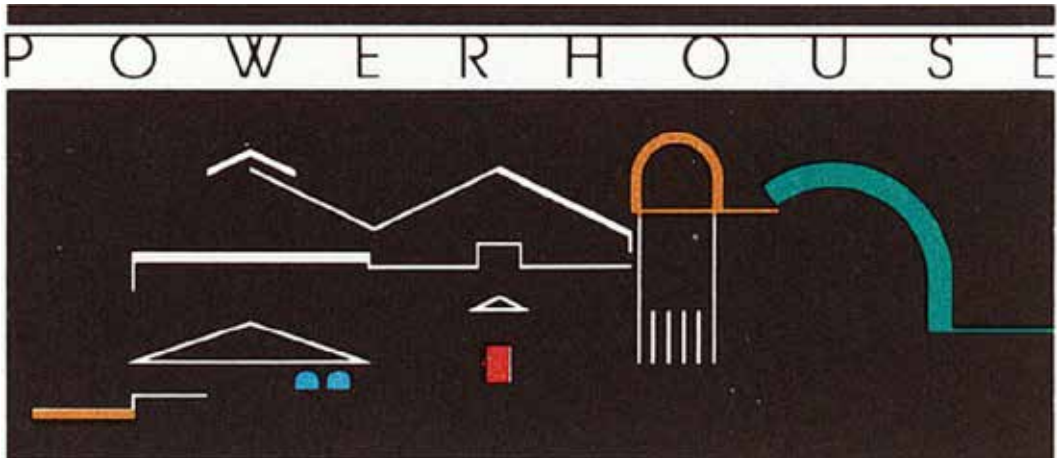
Section 2: The Vision

Section 2.1: Architecture I Lionel Glendenning

Section 2.2: Exhibition Design I Richard Johnson

Section 03: Design Principles I 1988 &

Section 04: Design princieples I The Future


POWERHOUSE

APPENDIX F
Powerhouse Museum Moveable Heritage List

L4154/2 Work cap, fabric / plastic / metal, owned by Hiram Lennon, safety officer at Ultimo Power Station, Sydney, New South Wales, Australia, maker unknown, 1940-1970

Work cap, fabric / plastic / metal, owned by Hiram Lennon, safety officer at Ultimo Power Station, Sydney, New South Wales, Australia, maker unknown, 1940-1970

Black fabric cap with black plastic brim and fabric braid around the edge of the crown. A metal badge is at the centre of the front of the braid.

Physical Numbering
Not physically numbered

Dimensions

Type	Length	Width	Height	Depth	Diam	Units
General		263	130	293		mm

L4154/1 Shaving brush, mug and razor, metal / wood / [hair], owned by Hiram Lennon, safety officer at Ultimo Power Station, Sydney, New South Wales, Australia, makers unknown/England, 1940-1970

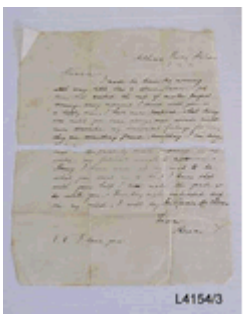
Shaving brush, mug and razor, metal / wood / [hair], owned by Hiram Lennon, safety officer at Ultimo Power Station, Sydney, New South Wales, Australia, makers unknown/England, 1940-1970

Shaving brush with wooden base painted brown. A gold coloured ring is at the top of the base. The brush consists of blonde coloured hair. Silver coloured mug with handle soldered to side. Silver coloured razor with bronze coloured handle.

Physical Numbering
Not physically numbered

Dimensions

See parts for dimensions



L4154/3 Letter, paper, owned by Hiram Lennon, Australia, 1940

Letter, paper, owned by Hiram Lennon, Australia, 1940

The love letter was written by Hiram Lennon of Ultimo Power Station to his fiancee Grace. The letter has been torn horizontally through the centre and is now in two halves. The letter is handwirtten in black ink on a loose sheet of lined and margined paper and dated 2.10.40.

Dimensions

Type	Length	Width	Height	Depth	Diam	Units
General		200	250			mm

Dimensions refer to letter as a whole (the letter has been torn into two halves)

2000/26/1 Book, 'First Aid to the Injured', hardcover with paper cover, paper, published by St John Ambulance Association, London, England, 1938, used by Lloyd Birdsall, Ultimo Power Station, Sydney, New South Wales, Australia, 1939

A small, hard-cover book loosely covered with brown paper and inscribed by the donor's mother. White pages with black ink text and illustrations. Attached to the inside front cover is a diagram of the bones and arteries of the human body. 'First Aid/L. Birdsall/Ultimo Power Station' is written on the front of the brown paper in black ink. 'First Aid to the Injured' is the authorised textbook of the St John Ambulance Association. This is a copy of the 39th edition.

Physical Numbering
Numbered on verso inside last page, l.l. in 2b pencil

Dimensions

Type	Length	Width	Height	Depth	Diam	Units
General		108	135	20		mm

This refers to the book when it is closed.

No image

88/332 Photographs (8), black and white prints, featuring the Ultimo Power Station and White Bay Power Station, paper, photographer unknown, Ultimo, New South Wales, Australia, c. 1911-1925

Photographs, (8), black and white Ultimo & White-Bay Turbine Generator & Switch Eq. Australia, 1911-1925

Dimensions

85/123 Vesta case for matches, presented by the English Electric Co of Australia Ltd, in March 1923, commemorating the starting up of the first Australian-made steam turbo-alternator at Ultimo Power Station, Ultimo, New South Wales, Australia, silver, Australia, 1923, made by Magnus Goldring, Sydney

Vesta case for matches, presented by the English Electric Co of Australia Ltd, in March 1923, commemorating the starting up of the first Australian-made steam turbo-alternator at Ultimo Power Station, Ultimo, New South Wales, Australia, silver, Australia, 1923, made by Magnus Goldring, Sydney

Dimensions

Type	Length	Width	Height	Depth	Diam	Units
General		20	50	60		mm

96/1/1 Keys (13), attached, metal / leather, possibly Ultimo Power Station, Australia, 1924-1928

Keys, 13, metal/leather, [Ultimo Power Station], Australia, 1924-1928. A set of 13 keys, possibly used originally in the switch rooms of the Ultimo Power Station Switch House. Rooms A & D had 50HZ cycles generators. Some of the keys are marked for these rooms (see: vol 5 of the Ultimo Powerhouse Study).
Set of 13 keys, all attached to a circular cloth bound ring, consisting of 2 groups of 5 & 6, with 2 separate keys. All are attached to brass & cloth bound metal wires. Keys are identified by leather tags, and two brass tags.

Dimensions

Type	Length	Width	Height	Depth	Diam	Units
General		150	200			mm

Dimensions are of the entire set of keys

2007/25/4 Photograph, Chromogenic print, 'Model in boiler hall of the Ultimo Power Station', paper / wood, photographed by Jozef Vissel, Sydney, New South Wales, Australia, 1975-1980

Portrait photograph, 'Model in boiler hall of the Ultimo Power Station', type C, paper / wood, photographed by Jozef Vissel, Sydney, New South Wales, Australia, 1975-1980

Framed type C photograph of a nude female model sitting in the interior of the disused boiler hall of the Ultimo Power Station prior to its conversion to the Powerhouse Museum during the early 1980s. The model is reclining in the foreground and wears a necklace, earrings, bracelet, ring and watch. Inscription on reverse.

Physical Numbering
Numbered on the reverse lower right hand corner in 3B pencil.

Dimensions

Type	Length	Width	Height	Depth	Diam	Units
Framed	597	452				mm

The measurements above are of the frame only. The measurements of the print by sight only are 196(W) x 295 (L).

B579 Blueprints, section of Babcock and Wilcox boiler at Ultimo Power Station, paper, maker unknown, place of production unknown, c. 1930

Blueprints showing section of boiler recently installed at Ultimo Power Station, Sydney (SB). One mounted blueprint of the Babcock and Wilcox boiler unit installed at the Ultimo Power Station in 1930.

Dimensions

99/20/1 Pressure gauge, portable recording, metal / glass / paint, made by Foxboro-Yoxall Ltd / Alfred Snashall Pty Ltd, London, England / Sydney, New South Wales, 1934-1947, used at Ultimo and White Bay Power Stations, Sydney, New South Wales, Australia

Pressure gauge, portable recording, metal / glass / paint, used at Ultimo and White Bay Power Stations, Sydney, made by Foxboro-Yoxall Ltd / Alfred Snashall Pty Ltd, London, England / Sydney, New South Wales, 1934-1947.
Round-faced gauge with hinged glass front (catch is broken). Stand and handle (at top) in one piece bolted to the back of the gauge. Plate bearing the words 'Tech.Invest. Officer Ultimo Power Station' screwed onto the back of the gauge. Gas inlet at back below handle. Label on face has room for details of temperature and pressure, but the only information stamped into it for this gauge is: serial number E4710, chart 79805 type DIA, and one pen to record pressure from -3"W.G. to +3"W.G. (referring to the measurement of pressure from vacuum of 3 inch water gauge to positive 3 inch water gauge). The pen holder hangs from the top left of the gauge face. Attached to the metal rim holding the glass front is a metal label bearing the words 'Manufactured for Alfred Snashall Pty Ltd Civic House 477 Kent St Sydney NSW by Foxboro-Yoxall Limited'.

Physical Numbering
Numbered on back, inner rim of stand, in white ink, acetone in paraloid base coat with petroleum in paraloid top coat.

Dimensions

Type	Length	Width	Height	Depth	Diam	Units
General		335	390	140		mm

No image

97/44/1 Photographs (4), aerial views of Sydney streets, paper, Australia, c.1940s

Photographs (4), aerial views of Sydney streets, paper, Australia, c.1940s.
Four horizontal format black and white photographsic prints on gloss paper. The photographs depict aerial views showing the development of Sydney streets. These photographs include:
view from the Ultimo power station across to the Darling Harbour goods yards with the city in the background;
view from the city end of Sydney to Central station and surrounds and Prince Alfred Park;
view from the Royal Botanical Gardens across Macquarie Street to Pyrmont Bridge and Darling Harbour; and
view across the Lavender Bay side of the Sydney Harbour bridge to Circular Quay, with the Royal Botanic Gardens in the left middle ground and the city in the background.

Physical Numbering
2B pencil on reverse

Dimensions

See parts for dimension information

APPENDIX G
Aboriginal History Overview-Powerhouse Ultimo

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15/112 McEvoy Street
Alexandria NSW 2015

ACN: 625442480

Aboriginal History Overview – Powerhouse Ultimo

FINAL DRAFT – April 2022

WARNING: Aboriginal & Torres Strait Islander readers should note that this document discusses, and contains images of, deceased Aboriginal people

Using this overview

This overview was prepared by Coast History & Heritage (Coast) for the Powerhouse Museum, to inform the preparation of a Conservation Management Plan for the Powerhouse Ultimo site. It was written by historians Michael Bennett and Paul Irish with assistance from Neenah Gray.

There are many more Aboriginal stories and linkages to the Powerhouse Ultimo sites and surrounds than this overview contains. It is not a comprehensive Aboriginal history of the Powerhouse Ultimo site and should not be read in this manner. It is intended only as a preliminary overview to flag some of the major themes in the Aboriginal history of the Ultimo/Pyrmont area. The overview was based on desktop research only, and is written from the perspective of non-Aboriginal historians. It is presented in a linear (chronological) fashion and we acknowledge that this may not reflect how past or present Aboriginal communities would relate to the site.

We have not included some images and content of a potentially personal and sensitive nature in this document because obtaining appropriate community and family permissions were beyond the scope of this initial research. More comprehensive research into Aboriginal connections to the area will be undertaken in future by the Powerhouse Museum, which will involve Aboriginal community collaboration, extensive archival research and incorporation of Aboriginal knowledge about the site. The outcomes from this research will present a more rounded and Aboriginal community focussed view of the Aboriginal history of the area, and will also ensure that appropriate permissions and attributions are obtained and used.

1 Before Tumbalong

These days it is hard to imagine how the lands around Tumbalong (Darling Harbour) looked before the arrival of Europeans in Sydney. The entire shoreline has disappeared beneath wharves and straightened shorelines, creeks flow in covered drains, and large buildings on either side obscure the lay of the land. Aboriginal people have witnessed these changes over recent centuries, but their ancestors experienced one far more fundamental – the creation of Tumbalong itself. Here we consider what archaeology and geology tells us about the birth of Sydney Harbour. We do not discuss Aboriginal creation stories, which would require detailed research and extensive consultation to ensure that this information is appropriately told from an Aboriginal community perspective.[1]

If we wind back the clock 20,000 years, the world was at the height of the last ice age. There were no glaciers in Sydney but it was drier, 6-10 degrees colder and looked very different to today. Glaciers elsewhere in the world held vast amounts of water, resulting in sea levels more than 100 metres lower. Tumbalong, and indeed the entire harbour, did not exist. The ocean lay more than 10 kilometres further to the east, at the base of a cliff we know today as the submerged continental shelf.[2] Back then, more than 1,000 generations ago, Aboriginal people had already been living in the Sydney region for a long time.[3] They knew this as a very different landscape (see **Figure 1**). Standing on today's harbour heads, they were not surrounded by lapping waves, but looked east over a vast coastal plain. Turning west, Sydney Harbour looked a bit like the landscape of the Blue Mountains most of us are familiar with – fingers of ridges looking down on a timbered valley with a river snaking along its floor.

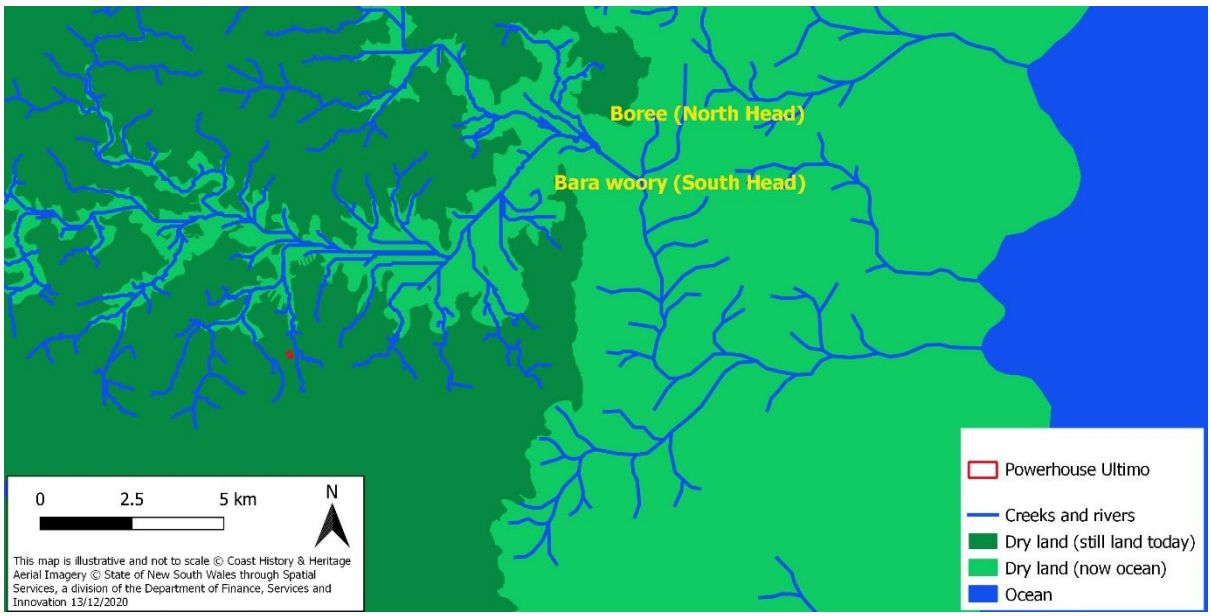

Figure 1. An impression of what Sydney looked like around 20,000 years ago.

[Spelling of Aboriginal place names follows Attenbrow 2010. *Sydney's Aboriginal Past*, Table 2.1. Source:[4]].

At this time, Tumbalong was not a bay, but a forested creek wending its way down to the main harbour river (**Figure 2A**). On either side of the creek the ridges of today's Ultimo and the Sydney CBD would have been covered in woodland. This was freshwater, inland country. Plants, birds and land animals probably provided most, if not all, of the food for people living around Tumbalong. They would have travelled around this area along ridges and creeks and could have walked right across what is now the harbour - perhaps not even needing a canoe to wade or swim cross the pre-harbour river.

About 18,000 years ago, the global temperature began to rise, sending glacial meltwater back into the ocean. Aboriginal people around Tumbalong would have seen or heard of this change as the waters at the base of the continental shelf cliff got higher and eventually began to creep across the coastal plain and between Boree (North Head) and Bara woory (South Head).[5] The harbour gradually took shape, like a very slow-filling bath. Saltwater eventually began to fill the wooded gully of Tumbalong, until around 7,000 years ago the bay was formed. Over the next few thousand years the

seas rose and fell slightly but by around 3,000 years ago Tumbalong would have looked more or less like it did to Aboriginal people when they encountered Europeans in 1788 (**Figure 2B** & **Figure 3**).

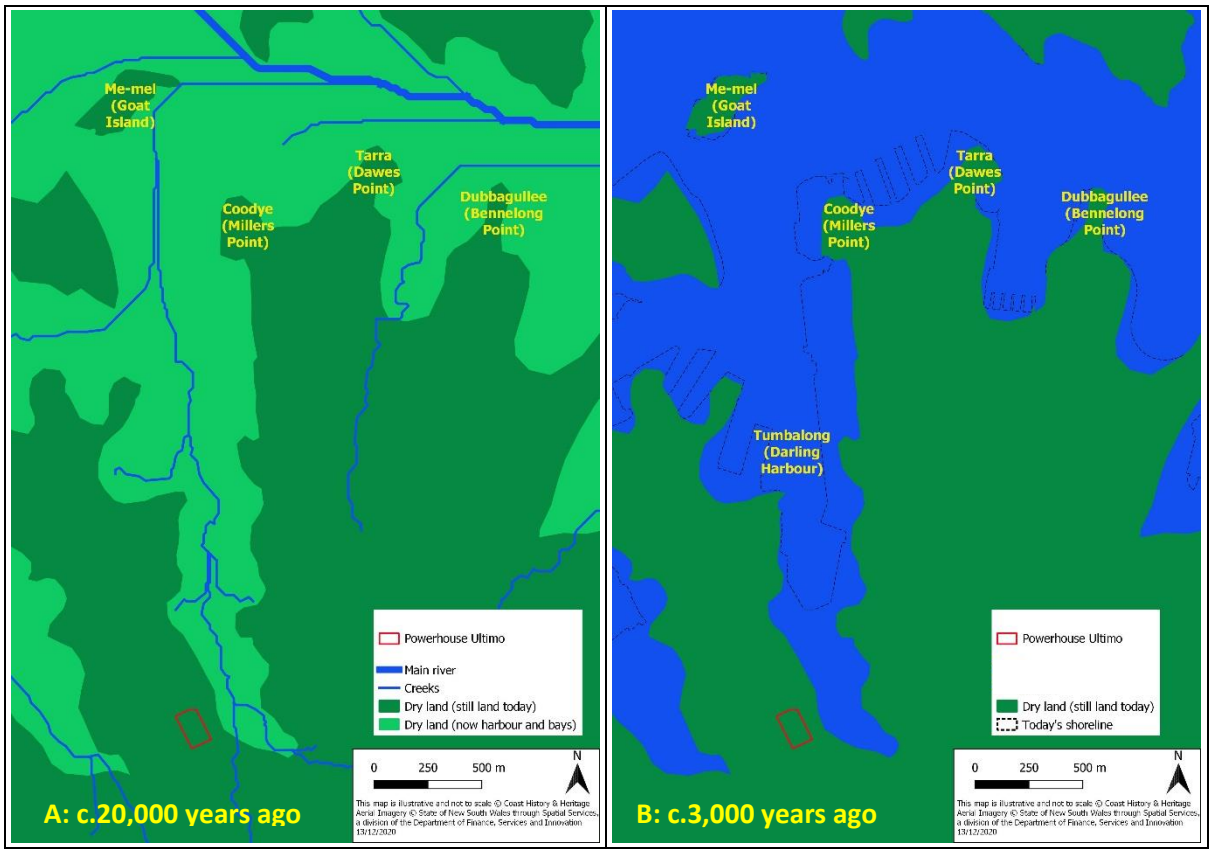

Figure 2. Tumbalong before and after sea level rise.

[Note: creeks and shorelines are approximate only. Spelling of Aboriginal place names follows official dual namings where available, or Attenbrow 2010. *Sydney's Aboriginal Past*, Table 2.1. Sources[6]].

2 On the shores of Tumbalong

Figure 3. View from the site of Sydney Observatory across the outlet of Tumbalong.

[The timbered hill behind the people is Barangaroo and behind that is Me-Mel (Goat Island). Tumbalong is the waterway extending left and the Parramatta River stretches into the distance. Source: Heath, J 1798, *By water to Parramatta; with a distant view of the western mountains, taken from the Windmill-hill at Sydney, 25 May 1798*, State Library NSW, DL Pd 764].

Recreating a sense of how Aboriginal people have lived around Tumbalong over the past few thousand years is difficult. The massive disruptions to Aboriginal life caused by the arrival of Europeans and the spread of the colony mean that we are often forced to rely on archaeological and historical records to supplement continuing community knowledge. The records are valuable, but have some important limitations. The historical records created by early Europeans in Sydney for example, provide a unique snapshot of Aboriginal life around the harbour. These are nonetheless taken from particular viewpoints. They missed more than they captured, and tried to explain what they saw by observation alone, while overlooking the very spiritual beliefs and cultural practices that influenced everything that Aboriginal people did. The legacy of this is far more than just a historical footnote, it has ongoing impacts today. For example, in areas like Ultimo in response to the seemingly basic question – who lived here?

Aboriginal people in Sydney related to the land through clans based around shared totems and a common male ancestor. Each clan probably had between 25 and 60 people, and these people had primary rights to their clan estate.[7] The clan estates around the harbour were relatively well defined by early Europeans, and clan names literally referred to the people of each particular estate. As Governor Phillip wrote in 1790

> From 'the entrance of the harbour, along the south shore, to the cove adjoining this settlement [Tumbalong], the district is called Cadi, and the tribe Cadigal; the women Cadigalleon…The south side of the harbour from the above-mentioned cove to Rose Hill, which the natives call Parramatta, the district is called Wann, and the tribe Wanngal'[8]

What do we do with this information? According to early Europeans, and many later historians and archaeologists, these clan boundaries defined how Aboriginal people lived.[9] Tumbalong, for example, was the 'boundary' between the Cadigal and Wanngal.[10] But day to day, the Aboriginal people camped on both sides of Tumbalong and fishing its waters were smaller and more diverse groups (sometimes called 'bands') than entire clans. Women married into other neighbouring clans, so any family contained people from at least two different clans. Each individual had primary responsibilities to look after their own clan estate, but could also have responsibilities in other clan lands to which they were linked through parents, grandparents or by marriage. This web of responsibilities was constantly being re-spun and reconfigured as senior people passed, as babies were born and as couples married. Caring for Country drove the movement of Aboriginal people, binding them closer to the land.[11]

So while it is probably correct to say that Ultimo, on the western shore of Tumbalong is Wanngal land, we should remember that this land also had meaning to the Aboriginal people living across the saltwater clans of coastal Sydney who linked back to the Wanngal. Based on this, we should avoid the temptation to assume (as many early Europeans did) that any Aboriginal person observed in a particular area was necessarily 'from' that clan. This is very important to bear in mind when we look at how Aboriginal people lived around and on the waters of Tumbalong.

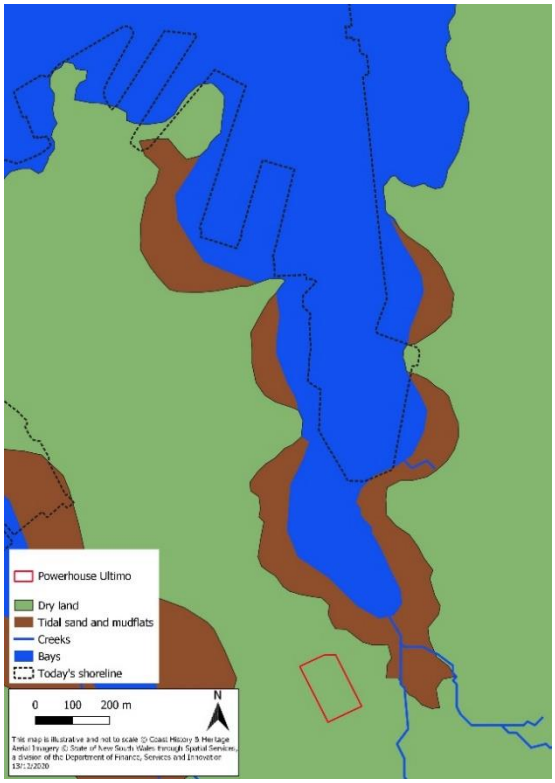

Figure 4. The rough extent of tidal flats compared to today's shoreline.

It is hard today to get a sense of the Tumbalong that Wanngal, Cadigal and other coastal Aboriginal people knew intimately over the last few thousand years. Some early colonial images, like the 1798 sketch in **Figure 3,** give a sense of what the outlet of the bay into the harbour looked like and we can also imagine this from some of the other preserved woody headlands around the harbour. But what about the headwaters nearest to the Powerhouse at Ultimo? Early maps show us that there were extensive tidal flats of mud and sand here, home to the cockles which gave Tumbalong its early European name (**Figure 4**). Later reclamation of the foreshore completely remade this landscape, but archaeological and historical information give us clues as to how it was used by Aboriginal people.

As early colonial images and descriptions in coastal Sydney show, fishing was a central part of Aboriginal life on the harbour (**Figure 5**). Both women and men fished, though women were more frequently and continually seen fishing from nawi (bark canoes), with a fire burning on a clay pad in the centre.[12] Men carried their fishing spears with them at all times, while women carried their hooks and string fishing line (made from twined bark) in a small bark container that resembled (fittingly) the canoes from which they frequently fished. Their canoes were mobile fishing platforms. The low draught allowed easy access to shallow bays like Tumbalong where shellfish could be scooped out of the mud, opened on the fire, chewed up and eaten or spat into the water as burley. Unsuspecting fish were hooked or speared, and the process continued. Women fished all day in their canoes and into the night, when men also took spears and torches into the shallows of the harbour bays. It is likely that fish traps were also used in some areas.[13]

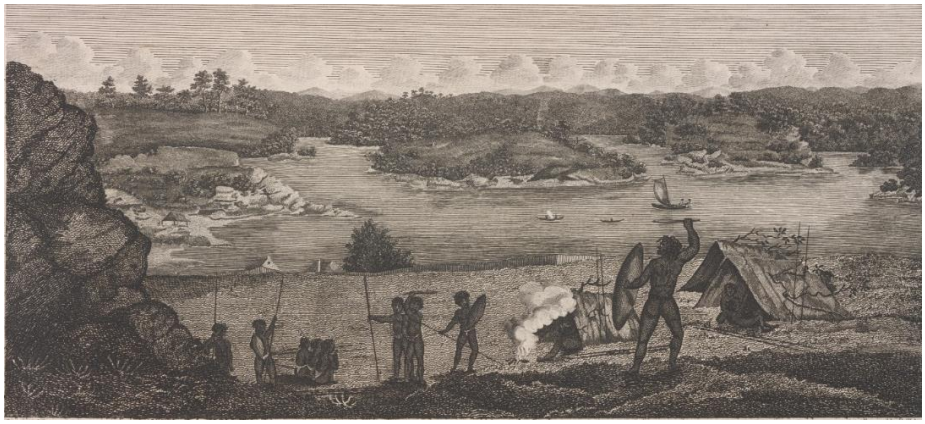

Figure 5. Aboriginal people camped around the entrance to Tumbalong in the early 1880s.

[Note the canoes fishing the bay. Source: *Native camp, Cockle Bay with Parramatta River from Dawes Pt*, NSW State Library, Government Printing Office 1 – 09422]

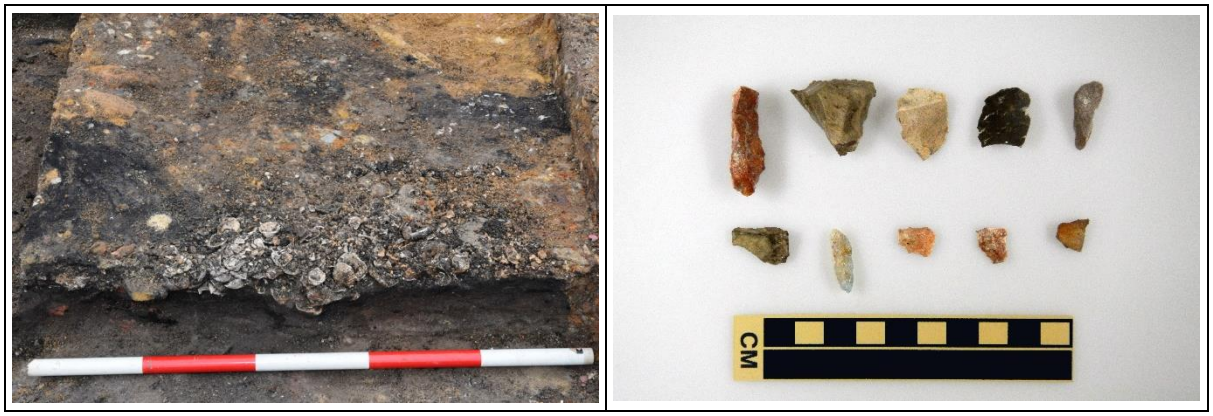

Figure 6. Shells and stone artefacts from an Aboriginal camp (midden) at the head of Tumbalong.

[Note: the shells have been mixed in which mud and historical material from the reclaiming of the bay. Source: https://www.sydneybarani.com.au/sites/darling-walk-midden/].

Despite the massive changes to the shoreline, some traces of Aboriginal fishing camps have survived around Tumbalong. The remains of coastal campsites called shell middens have been found on both sides of Tumbalong in recent years. On the western side, one of these middens was found to be about 300 years old.[14] Another midden on the opposite shore was found in 2009, mixed with historical materials from the reclaiming of the bay. These middens show that Aboriginal people fished cockles, rock oysters and mud whelks out of the mudflats and ate them on the nearby rocks (**Figure 6**).[15] They may also have cooked fish like snapper and bream, as were found at another camp on the opposite side of Tumbalong, but no traces were found.[16] Their wooden tools and weapons have also not survived in the ground, but several pieces of worked stone show that Aboriginal people fashioned implements at the camp. The stone for these implements probably originated in western Sydney, as it is not found locally.[17] Stone artefacts have also been found at other camps to the southwest of the Powerhouse, around the mudflats of Blackwattle Bay.[18]

Aboriginal people would have slept at these camps in bark huts like the ones shown in **Figure 5** and **Figure 8**. They camped elsewhere on the rocky shores and ridges around Ultimo and Pyrmont in sandstone overhangs (**Figure 7**). Many of these have since been destroyed by the extensive sandstone quarrying that has taken place around the peninsula, but would originally have been numerous and variable in size, perhaps including some large enough to accommodate several families at a time. Aboriginal people sometimes created artworks in shelters such as hand stencils or outlined figures in pigment, and carved motifs into exposed sandstone rocks. While many such artworks are known from elsewhere in coastal Sydney, none have yet been documented in Pyrmont or Ultimo. This does not mean that they were none present, but more likely reflects the early destruction of sandstone outcrops through quarrying before they could be recorded. The sandstone ridges also contained springs, providing precious freshwater which flowed down into the salty bays below. One of these springs at Pyrmont was known as 'Tinkers Well'.[19] It was located in a large rock shelter, and contained shells which were almost certainly from Aboriginal people living there (**Figure 7**).