REPORT ON CITY OF SYDNEY INDUSTRIAL & WAREHOUSE BUILDINGS HERITAGE STUDY

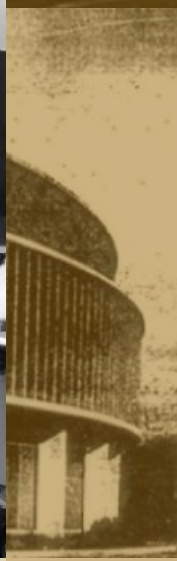
FOR THE CITY OF SYDNEY

OCTOBER 2014

FINAL
VOLUME 1


Eveready batteries, 1937 (Source: Source: SLNSW hood_08774h)


Shea's Creek 2013 (Source: City Plan Heritage)



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Note: This document is preliminary unless it is approved by the Director of City Plan Heritage				

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EXECUTIVE SUMMARY

As one of only two major centres for historic Australian industry, the City of Sydney retains the largest concentration of historic industrial and warehouse buildings in New South Wales and, together with Melbourne, one of the largest known collections of its kind in Australia.

Sydney's remaining industrial buildings and structures record a major stage in Australia's evolution—industrialisation—and Sydney's transformation into one of the largest industrialised cities in the South Pacific. Australia's industrialisation during the nineteenth and twentieth centuries transformed these former British colonies from an agrarian society into a modern nation. Together with Melbourne, Sydney's twentieth century industrial boom expanded Australia's economy from the 'sheep's back' to the 'industry stack' or from primary production to manufacturing.

Sydney's industrial transformation not only impacted on the national economy, but also played a significant role in developing Australia's self-sufficiency, growth, urbanisation, society and its contribution to the war effort for World War II. By 1947 more Australians were working in city industries than in farms or mines. Whether through the number of workers employed, goods and technology produced, the prosperity it engendered, or social change and urban environments it generated, Sydney's industrial heritage has affected the lives of many Australians.

Surviving industrial and warehouse buildings from twentieth century Sydney, while often modest architecturally, historically are significant as evidence of this important activity, change and progress for Sydney and Australia. Many of the buildings from the peak period of twentieth century industry are concentrated in the southern parts of Sydney's local government area. Sydney's older industrial buildings from the nineteenth century are concentrated in the inner-city near the waterfront and waterways.

Australia and Sydney has been slow to value and document its industrial heritage, especially from the twentieth century. This heritage study seeks to redress this imbalance by investigating and acknowledging the significance of Sydney's industrial heritage, especially it's twentieth century industrial heritage, as evidence of this important period in Sydney's and Australia's history, economy, environment, society and identity.

This study has been prepared at the initiative of City of Sydney Council in response to the growing development pressure on Sydney's industrial buildings. It has also been prepared to ensure that significant industrial buildings are retained and incorporated into the urban renewal plans for former industrial areas in southern Sydney.

This study is believed to be the first of its kind for New South Wales, and the second of its kind for Australia. Other than Melbourne's "Western Regional Industrial Heritage Study" (Gary Vines 1989), no other known study of industrial heritage of this scale has been undertaken in a major Australian city.

The studied area covers the western and southern half of the Sydney local government area, excluding the previously studied areas of most of central, northern and eastern Sydney. As industrial heritage covers more than just factories and warehouses, this study also examined the infrastructure which underpinned Sydney's industrial growth including electricity substations, service stations, fire stations and water and sewer infrastructure. Other types of industrial heritage, such as woolstores, quarries, shipping and railways, have been investigated by earlier heritage studies.

In order to identify industrial buildings of heritage value, this study examined the available historic records, consulted with expert heritage bodies, conducted comparisons, and physically surveyed over 470 surviving industrial buildings, structures or complexes within the study area.

KEY RECOMMENDATIONS

As a result of a comprehensive survey and assessment, this study recommends consideration of the following key actions for Sydney's industrial heritage:

1. **Additional listings:** Add 63 industrial buildings, structures or complexes and two industrial conservation areas to the heritage schedule of Sydney Local Environmental Plan 2012.
2. **Existing listings:** Retain and update the inventories for the 21 existing heritage items reviewed in this study.
3. **Archaeology: :** Include 5 sites with potential archaeology remains in any future archaeological zoning plan and advise proponents to prepare an archaeological assessment for excavation of these sites in accordance with the existing provisions of the local plans.
4. **Planning controls:** Update the existing development control plan to provide more specific controls to guide the development of industrial and warehouse buildings.
5. **Matters for further heritage study:** Further investigation, mapping or listing consideration is recommended for matters outside the scope of this study including archaeology from market gardens in southern Sydney and a number of former industrial buildings in central Sydney.

While 63 heritage items and two conservation areas represent a small proportion of the built form that once existed, these additional listings will capture the surviving industrial buildings and structures of greatest integrity and historical value from this important period in Sydney's history. Combined with improved development guidelines and the existing heritage listings, the above actions recommended in this study will ensure that Sydney's industrial heritage resource is appropriately, recognised, managed and protected for current and future generations.

1.0 ABOUT THIS STUDY

1.1 BACKGROUND

In July 2013, City of Sydney Council engaged City Plan Heritage to prepare this heritage study of industrial and warehouse buildings in the Sydney local government area.

City of Sydney Council resolved on 14 May 2012 to prepare this heritage study to proactively identify and protect Sydney's industrial heritage. The increasing pressure for redevelopment of Sydney's industrial buildings was a major impetus for this study. It was also prepared to inform and support current urban renewal plans for former industrial areas in southern Sydney.

This study has potential to lead future heritage studies of the rich industrial heritage in NSW. It aims to improve the understanding of the heritage significance of the City's industrial heritage so that, where required, change to the City's industrial heritage resources is managed and appropriately protected.

1.2 PURPOSE

This study investigates and assesses the significance of the industrial and warehouse resources in the Sydney local government area, with a particular focus on southern Sydney.

The primary purpose of this study is to identify industrial buildings and sites of heritage significance which warrant statutory protection through local heritage listing. Additional requirements of this study were to:

- review 21 existing listings and update inventories
- identify sites with potential industrial archaeology
- peer review existing heritage assessment for Wentworth Avenue, Surry Hills
- recommend planning controls to guide the sympathetic development of industrial buildings.

1.3 COMPONENTS

This study of the industrial and warehouse heritage of the Sydney local government area is presented in three main parts:

- Report (volume 1): to outline the process and findings of this investigation
- Historical overview (Appendix 11.1): to inform this investigation
- Inventory forms (volume 2): to outline the significance of places recommended for listing

1.4 AUTHOR IDENTIFICATION

This study has been undertaken by a multi-disciplinary team of heritage consultants lead by City Plan Heritage. These include:

- Kerime Danis, Director, City Plan Heritage
- Flavia Scardamaglia, heritage consultant, City Plan Heritage
- Bianca Hollo, graduate heritage consultant, City Plan Heritage
- Susan Kennedy, senior heritage consultant, City Plan Heritage
- Dr Shirley Fitzgerald, historian – for *Sydney's historic industrial and warehouse resources: overview of historic development report* (Appendix 11.1)
- Dr Iain Stuart, industrial heritage archaeologist, JCIS Consultants – for industrial archaeology consultancy and geographic information system mapping services.

1.5 ACKNOWLEDGEMENTS

The study team acknowledges the support and assistance provided by the following:

- City of Sydney staff
- Dr Noni Boyd - Australian Institute of Architects
- Toni Brassil - National Trust of NSW
- Ian Bowie - Engineering Australia
- Executive Committee members of Australia ICOMOS

1.6 STUDY AREA

The study area mostly covers the western and southern portions of the City of Sydney Council local government area, excluding most of central Sydney and the northern and eastern areas, as shown in Figure 1. This study area mostly covers part or all of land formerly contained in Leichhardt and South Sydney government areas. Excluded areas have already been subject to detailed heritage studies or are governed by other authorities and planning instruments.

The study area includes all or part of the following suburbs:

- **Central and eastern locality:** Darlinghurst, Surry Hills Sydney.
- **Western locality:** Ultimo, Pyrmont, Glebe, Forest Lodge, Camperdown.
- **Southern locality:** Redfern, Newtown, Alexandria, Beaconsfield, Erskineville, Rosebery, Waterloo, Zetland.

The boundaries of the study area are illustrated in the following maps for four precincts which together define the extent of the study area as follows:

- **Precinct 1: Southern Employment Area** also known as the Southern Industrial Area on the land shaded red in the following Figure 1.
- **Precinct 2: Remaining southern and western Sydney** shaded yellow in Figure 1.
- **Precinct 3: Surry Hills block** bounded by Wentworth Avenue, Goulbourn Street and Wemyss Lane, as outlined in Figure 2.
- **Precinct 4: Central Sydney blocks** bounded by Erskine Street (North), York Street (East), Druitt Street (South) and Kent Street (West), as outlined in Figure 3.

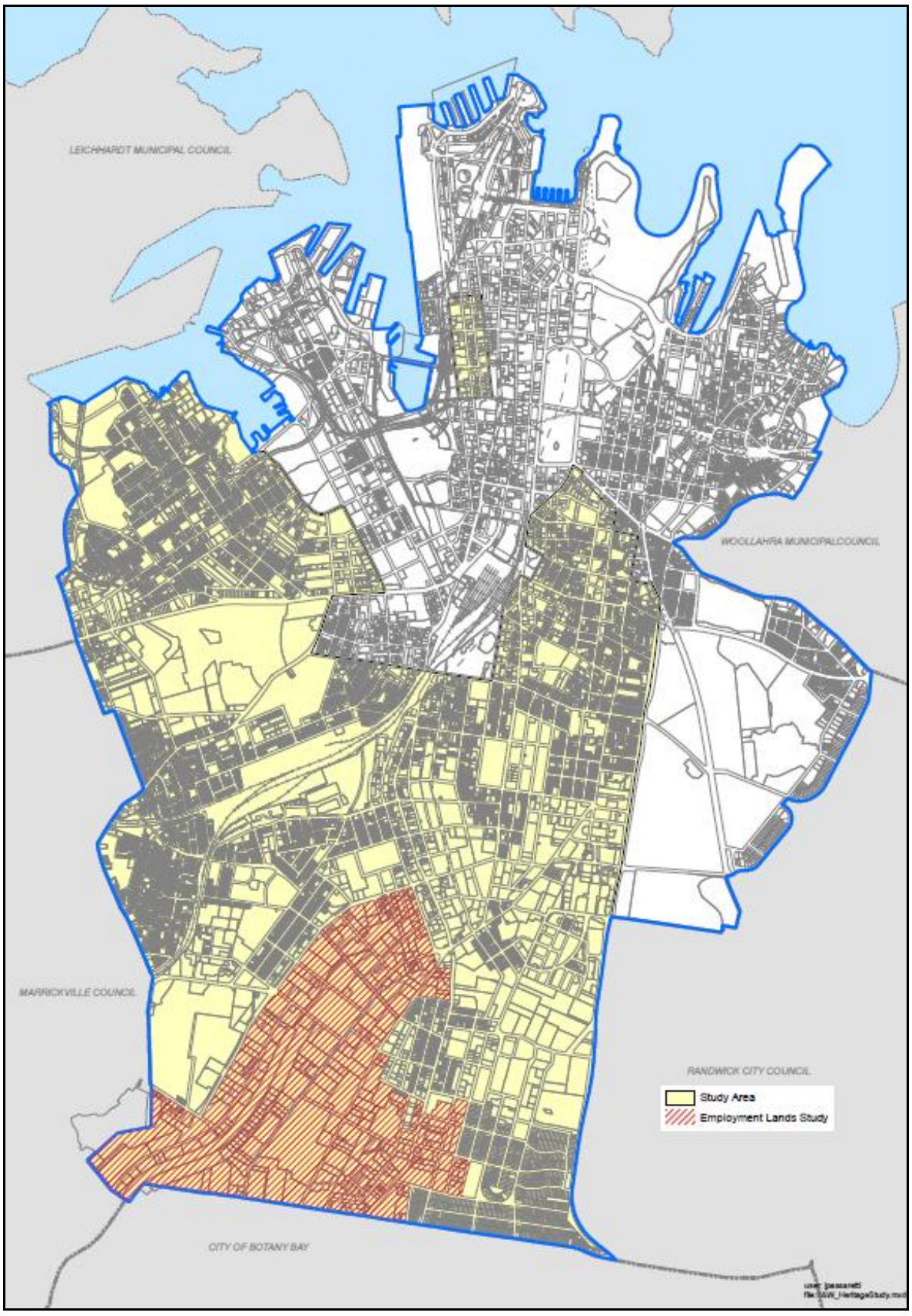

Figure 1: Study Area showing the Southern Employment Area shaded red (precinct 1) and the remainder of the study area shaded yellow (precinct 2).

Figure 2: Surry Hills precinct outlined in red (precinct 3)
(Source: City of Sydney, Heritage Map, Sheet 015)

Figure 3: Central Sydney precinct outlined in red (precinct 4)
(Source: City of Sydney, Heritage Map, Sheet 015 and 016)

1.7 SCOPE

The coverage and subject matter investigated in this study is clarified as follows.

Inside scope:

- Land: within the study area mapped in the above section, excluding specific sites identified below.
- Secondary industry including the:
  a) Manufacture and storage of goods
  b) Repair servicing of equipment or machinery
  c) Infrastructure associated with development of industry in the area.
- Building typologies studied:
  a) Warehouses
  b) Factories
  c) Workshops
  d) Archaeological relics of former industrial buildings and machinery
  e) Infrastructure for energy, water and other supporting services including:
  f) Substations
  g) Service stations
  h) Weighbridges
  i) Fire stations
  j) Pumping stations
  k) Stormwater and sewer channels

Outside scope:

- Land: outside the study area as mapped in the above section
- Other aspects of industrial history:
  a) Primary industry: natural resource production and extraction, such as farming and mining
  b) Maritime industry or shipping
  c) Intangible evidence of industrial heritage, such as oral histories
  d) Manufacturing or technological processes, other than what is reflected in the built form
- Building or other types not studied:
  a) Structures and relics with no significant industrial association
  b) Industrial machinery
  c) Dams and associated archaeology
  d) Woolstores, woolsheds and wool-washing establishments
  e) Wharves (outside study area)
  f) Roads
  g) Railways

h) Market garden archaeology
i) Public domain features
j) Natural landscape features such as topography and vegetation

- Specific sites already studied including:
  a) ACI glassworks site, Waterloo, bound by South Dowling Street, Lachlan Street, Bourke Street and Crescent Street
  b) Chubb factory site, Elizabeth and Powell Streets, Waterloo
  c) Sheas Creek Woolsheds and Alexandra Canal, Alexandria
  d) Victoria Park site, Joynton Avenue and O'Dea Avenue, Zetland
  e) King Street, Newtown
  f) Eveleigh Carriage Workshops and Australian Technology Park site
  g) Sydney University
  h) Glebe Point Road, Glebe
  i) Rozelle Tram Depot
  j) Brickyards at Sydney Park

1.8 LIMITATIONS

While every effort has been made to thoroughly investigate the study area, no heritage study is exhaustive and complete. The following limitations of this study are highlighted:

- Potential remains for additional industrial places to be identified as heritage items in the future, even if not identified as part of this study. New information, improved access to previously obstructed features and changing community values for heritage could identify further industrial places of significance for listing beyond those identified in this study.
- Most potential items were identified and described on the basis of an external survey, with limited access to the properties themselves, or to the interior of buildings.
- This heritage study does not provide a full heritage assessment of all sites recommended for listing. It recognises that more detailed heritage assessment of the sites, if listed, can occur as part of the statement of heritage impact when a development is proposed.
- Limited resources for historical research allowed for only brief historical notes for the identified potential heritage items; for example date of construction, builder or architect (where known), early owners, and the subdivision history.

1.9 PREVIOUS HERITAGE STUDIES

This study builds on previous heritage studies of the Sydney local government area. These past heritage studies investigated industrial heritage to a lesser degree than this study, either as part of a general study of the local government area, or a specific typology or period of industrial heritage. These studies account for the existing heritage listings for industrial sites in the Sydney area. As background to this study, these previous studies are outlined as follows:

1990 Leichhardt Municipality Heritage Study
(McPhee Pty Ltd, Craig Burton & Wendy Thorp)

In 1989-90 Leichhardt's study identified and analysed the environmental heritage of the council area and made recommendations for its conservation and management. The study area included areas such as Glebe and Forest Lodge that were later absorbed within the City of Sydney area boundaries in 2003. Built, landscape and archaeological sites were assessed in this study for their level of significance. These items were individually described and documented in heritage inventory forms. The built items assessed for listing included industrial and utilitarian precincts, as well as residential, religious and commercial buildings.

1990 Pyrmont and Ultimo Heritage Study
(Anglin Associates)

This study investigated the predominantly residential and industrial heritage located in the inner city waterfront areas of Pyrmont and Ultimo. Of 230 items recorded in this area, the study produced inventories for 150 items and 3 conservation areas recommended for listing, and identified 6 other special precincts. Industrialisation was one of ten historical themes identified for the studied area. Three industrial precincts were identified including the CSR sugar refinery, MSB wharfage and Pyrmont Power Station. Warehouses and woolstores were noted for their significance as physical manifestations of the national significance of primary industry in Australia. The study also noted that after World War II the major concentration of industry moved out of Pyrmont and Ultimo to outer Sydney.

1993 (1995 edited) Survey of warehouse and woolstores within the City of Sydney
(Trevor Howells & Mark O'Connell)

This study undertook a general survey of warehouse and woolstore buildings within seven geographic precincts in the inner city and along the waterfront including central Sydney, Millers Point, Haymarket, Circular Quay, Pyrmont and Ultimo, the Rocks and western edge of the inner city (called western Sydney). A more detailed survey of selected buildings was included. The study provided clear definitions of warehouses and woolstores and identified their function, architectural characteristics, structure, plan, materials and height. It also identified six different construction phases that influenced the style and date of these buildings. This study was the first planning policy specifically tailored for a type of industrial heritage in the City of Sydney. The southern areas of Sydney were not investigated by this 1993 study as they formed part of the then separate local government area of South Sydney.

1995 South Sydney Heritage Study
(Tropman and Tropman)

The 1995 heritage study of South Sydney Council collected both documentary and physical evidence with the aim to identify and assess potential heritage items and conservation areas and review existing heritage items. This investigated the suburbs of South Sydney City Council at the time including Newtown, Darlington, Erskineville, Alexandria, Waterloo and Redfern, Surry Hills (in part), Potts Point, Elizabeth Bay, Kings Cross, Darlinghurst, Chippendale, Ultimo, Rushcutters Bay (in part), Camperdown and Darlington. These area were later absorbed into the City of Sydney boundary in 2004. Findings of the study revealed that heritage items assessed as having heritage significance mostly included residential, religious and commercial buildings with limited warehouses and factory buildings. These were individually described and documented in heritage inventory forms organised by the planning districts of the time.

1999 Chippendale Heritage Study
(Architectural Projects)

The Chippendale heritage study aimed to gain an understanding of Chippendale's significance as a conservation area, provide guidelines for the assessment of proposed developments and prepared a set of generic policies and preliminary set of controls for the area. Industrial sites played a key role in Chippendale history, however sites assessed within the Chippendale boundary also included residential, commercial and religious buildings.

2006 Study of Inter-War Garages & Service Stations
(Ian Kirk & Megan Martin)

This heritage study focused on inter-war garages and service stations in Sydney and New South Wales. It investigated the emergence of this distinctive building type in New South Wales, identified the different forms in the first half of the twentieth century, and surveyed surviving examples of such buildings in the Sydney metropolitan area. One of the major findings of this survey was that motor garages and service stations in the inter-war years took a number of functional forms. It also found that a great number of motor garages or service stations were associated with a block of flats, a rare combination that has only occurred in Sydney.

2012 Electricity Substations of the Sydney Municipal Council
(J Pennington)

Although not technically a heritage study, this publication constitutes the largest source of research on the history of the electricity network in the Sydney metropolitan area. It identifies electrical substations built by the Sydney Municipal Council from 1904 until 1936, as well as other substations established by other organisations in the Sydney area. Each substation is singularly

described in its historical development and documented with current and historical images. This history identifies that over 360 substations were built in the Sydney area during this peak period for the electrification of Sydney.

2.0 WHAT IS INDUSTRIAL HERITAGE

International standards have been adopted for the purpose of this study to establish the extent of what is considered as industrial heritage. These standards establish that industrial heritage covers more than just factories and warehouses.

In 2003 the International Committee for the Conservation of the Industrial Heritage, TICCIH, defined industrial heritage as the physical manifestations of industrial culture with historic, technical, architectural or scientific value including:

> "buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education."

The 2011 international principles jointly adopted by ICOMOS and TICCIH extended the meaning of industrial heritage further to:

> "…sites, structures, complexes, areas and landscapes as well as the related machinery, objects or documents that provide evidence of past or ongoing industrial processes of production, the extraction of raw materials, their transformation into goods, and the related energy and transport infrastructures."

Industrial buildings specifically, as defined in the Dictionary of Industrial Archaeology, include "buildings which housed industrial enterprises, varying in shape and design according to the type of activity it houses" (p196).

The following defines and outlines the main industrial typologies found in the Sydney area within the scope of this study.

2.1 WAREHOUSES, FACTORIES AND WORKSHOPS

A **warehouse** is a utilitarian building erected principally for the purpose of storage of manufactured goods or agriculture produce, though excluding grain. A warehouse generally does

not include a retail function but may involve a minor degree of assembly or manufacture. The goods stored may be locally produced or imported.[1] A warehouse is also defined as a building or part of a building used for the storage of merchandise; the building in which a wholesale dealer keeps his stock of goods for sale; a building in which furniture or other property is housed, a charge being made for the accommodation; a government building in which dutiable imported goods are kept in bond until it is convenient to the importer to pay the duty.[2]

A **workshop** is defined as being a building in which light manual or industrial work is being undertaken. Workshops are integral part of the industrial building stock and activities in providing essential trades associated with particular industrial activity, as well as employment to the local or wider area. Trades may include railway infrastructure services, blacksmiths, carpentry, and manufacturing, processing and producing goods to name a few. Workshops have dominated the landscape of most of the industrial suburbs of City of Sydney, in particular the South Sydney locality.

A **factory** is a building or group of buildings where goods are manufactured or assembled chiefly by machine.[3] From the 1930s onward factories were proliferation of small scale manufacturing establishments in the suburbs of Sydney, typically covering less than an urban block; biscuit, confectionary and jam factories, button makers, printeries, motor car and related industry manufacturing, and communication industry etc. Following move of many inner city industries out to suburban sites, older factory stock was often utilised for warehousing such as self storage or commercial or residential units.

2.2 ELECTRICAL SUBSTATIONS

Substations are defined as an installation containing high-voltage switchgear and/or transformers, regulators or converting machinery, for the purpose of switching, transforming and/or converting of AC electricity.[4] One of the major innovations in industry during the 19th century was the development of electricity as a power and lighting source rivalling and then replacing water and steam power. The mills and workshops of the Industrial Revolution were mainly water and steam powered but the rise of electricity and in particular small motors for driving machinery and electrical lights allowed different configurations of industrial buildings and machinery. Moreover a new category of goods the electrical consumer goods began to be developed from 1890 providing Stoves and Ovens, Refrigerators and Washing Machines. In addition electricity was being used for transport firstly through Municipal Tramways and then Electrical Trains. There was also the use of the electrical telegraph and then the telephone.

[1] Survey of Warehouses and Woolstores within the City of Sydney, p.1.
[2] OED
[3] http://dictionary.reference.com/browse/factory
[4] James Pennington, *Electrical Substations of the Sydney Municipal Council and other local authorities*, October 2012, p.VI Glossary.

Following the passing of the Municipal Council of Sydney Electric Lighting Bill on 16th October 1896 the Sydney Council was given the right to provide a public electricity supply to Sydney city and surrounding areas for both domestic and industrial production. Substations were built initially in the city at Town Hall, Taylor Square, Woolloomooloo and Ultimo with Glebe, Newtown and Camperdown and suburbs beyond the city boundaries were added to the network subsequently. By 1915 the Council was supplying 23 municipalities. Gaslights were going out all over Sydney.[5] Wherever possible, substations were placed at optimum location to serve users and as industry was a large user, many were located in proximity to large plants.[6]

From the perspective on industrial development the construction of an electricity supply facilitated the development of an area by allowing modernisation of plant and also construction of new facilities along modern lines because the use of small electric motors eliminated the need for belt and shaft drives from the steam plant allowing a more flexible layout. Furthermore electric lighting meant that the rows of windows used to bring light into factories could be replaced by the new electric light.

2.3 PUMPING STATIONS

Pumping Stations are facilities incorporating pumps and equipment for pumping fluids from one place to another and are used for a variety of infrastructure systems, such as the supply of water to stormwater and sewer channels, and the drainage of low-lying land. Sewer pumping stations were built as a direct response to the outbreaks of Enteric Fever (Typhoid), which plagued Sydney from the 1870s to 1890s and the recommendations of the Sydney City and Suburban Health Board. The Board, which was established by the government in 1875 to report on the best means of sewage disposal, proposed the establishment of outfall sewers. Pumping stations are important infrastructure showing evidence of the works by the Public Works Department and later the Metropolitan Board of Water Supply and Sewerage in the 20th century. Overall, greater Sydney now has over 600 low level sewage pumping stations.

2.4 STORMWATER AND SEWER CHANNELS

Stormwater and sewer channels are manmade waterways built to manage the stormwater runoff and sewerage systems in the form of concrete, stone or brick canals. These channels provided a vital water resource to the industrial development and manufacturing activities within the study area. A network of stormwater channels were exploited in the early period of industrial development of the Alexandria/Waterloo area as a resource used by noxious industries. The channelisation of water streams represented a change in industrial use and the transformation

[5] George Wilkenfield and Peter Spearritt, *Electrifying Sydney*, Energy Australia, 2004, p. 36.
[6] James Pennington, *Electricity Substations of the Sydney Municipal Council and other authorities*, self-published, 2012. This study provides details of individual substations, including photographs of demolished and extant buildings.

from noxious industries into warehousing and factories during the inter-war industrial development period.

2.5 INDUSTRIAL ARCHAEOLOGY

Industrial archaeology is a subset of industrial heritage and covers the industrial spectrum from bridges to factories, to waterpower canals, to railroads, to flour mills, to blast furnaces, to mines, to dams and to workers' housing to name a few. Industrialisation is said to be the most significant technological change since the development of the first stone tool. It has brought social change worldwide on an unprecedented scale in an unbelievably short period of time. Industrialisation has had such a deep effect on human lives that virtually everything we do has been influenced by it. Industrial archaeology is the recording, study, interpretation and preservation of the physical remains of artefacts related to industrial sites and systems within their social and historical contexts. Emphasis on industrial archaeology began after World War Two when the retooling of industry began to destroy elements of an earlier industrial heritage. Industrial Archaeology has in recent years included "dirt" archaeology in addition to historical research and documentation of above ground exposed structures and machinery.[7]

3.0 STUDY METHODOLOGY

This heritage study comprehensively reviewed the industrial buildings within the Sydney area through a range of methods. Consistent with best practice standards and guidelines for heritage assessments and studies, this study has investigated the history of Sydney's industrialisation and industrial buildings, consulted with expert stakeholders, conducted comparisons of inter-state and national industrial buildings and studies, and completed a physical survey of surviving industrial buildings in the study area. Through these combined methods, this study has identified industrial buildings of heritage value recommended for heritage listing.

3.1 HERITAGE ASSESSMENT STANDARDS

This heritage study has been prepared in accordance with the best practice heritage standards for assessing heritage significance and heritage studies established by the NSW Heritage Council, Heritage Office and NSW Department of Urban Affairs and Planning, as set out in the NSW Heritage Manual.

[7] http://www1.umn.edu/marp/indus/indus.html

It has also been prepared in accordance with the national best practice standards for heritage assessment contained in the *Burra Charter* (Australia ICOMOS, 2013). The Burra Charter defines significance as the:

> "Aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups."

To determine whether industrial sites have heritage significance and therefore warrant heritage listing, each site has been assessed against the seven NSW criteria of heritage significance as set out in the NSW Heritage Manual. The seven criteria for heritage significance include:

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

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 cultural or natural history of the local area);

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);

Criterion (d): An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;
Criterion (e): An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the culture or natural history of the local area);

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

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

The NSW Heritage Manual guidelines establish that a site warrants heritage listing where it fulfils one of more of these seven criteria of local heritage significance. For each building, structure or site recommended for listing in this study, a succinct statement of significance summarising this assessment has been prepared, contained in the inventory forms in Volume 2 of this report.

The assessment process is the same for individual items, conservation areas and archaeological sites.

All buildings recommended for heritage item listing have been categorised according to their architectural style and detailing in accordance with Apperly, R. Irving, R, Reynolds, P. 1989. *A Pictorial Guide to Identifying Australian Architecture: Styles and terms from 1788 to the present*. Harper Collins Publishers; Australia.

3.2 STAKEHOLDER CONSULTATION

Professional heritage bodies with industrial expertise were also consulted to identify themes, information and industrial sites for assessment or consideration as part of this study. This included the following bodies:

- Australian Institute of Architects (NSW Chapter) - for twentieth century heritage industrial sites of architectural value and other comparable heritage studies.
- City of Sydney historian – for research on South Sydney's history collected for her forthcoming book (Lisa Murray, 'R.A.W.: a history of Redfern, Alexandria and Waterloo', forthcoming 2015).
- National Trust of Australia (NSW) Industrial Heritage Technical Committee – for assessed industrial heritage sites.
- Engineering Australia- for identification of potential industrial heritage sites of engineering value, especially in the southern Sydney.
- Australia ICOMOS (International Council on Monuments and Sites) Executive Committee– for identifying comparable heritage studies.

3.3 HISTORIC RESEARCH

A major component of this study was conducting historic research of industrial heritage to understand the significance of industrial development in Sydney's history, identify the main historic trends and understand the significance of individual industrial buildings. This research was conducted in four main forms.

Firstly, research contained in secondary sources of past heritage studies for the Sydney local government area was reviewed as background to this study. The past studies are outlined in the above chapter 1. Industrial heritage studies outside of the Sydney area were also investigated to understand the Australian historic context for Sydney's industrial development, outlined further in chapter 4.

An historian, Dr Shirley Fitzgerald, was also engaged to prepare a thematic history or historical overview of Sydney's industrial and warehouse buildings. This overview pulled together research

from approximately 100 primary and secondary sources. This history placed particular emphasis on southern Sydney to address gaps in previous histories. The historical overview is attached in full in Appendix 11.1 and summarised in the next section.

Thirdly, international material on the history and significance of industrial heritage and the global process of industrialisation was reviewed and incorporated into this study to understand the global historic context.

Finally, the history of individual sites was researched and a summary history included in the inventory forms for sites recommended for listing. These inventories are included in volume 2. The primary and secondary sources researched for these site histories are outlined in section 8 of this report.

This research identified the general deficiency in documentary records of industrial development. The historical overview noted that Sydney's written and pictorial records are more likely to ignore the history of industrial places than any other kind of structure. Although contemporary records from the time such as trade journals and investigations of working conditions describe the manufacturing process, records of these industrial activities are slight in comparison to descriptions of most other kinds of buildings and activities. The best records for Sydney's and Australia's industrial history were found in the Bureau of Statistics census information on population and industry, trade journals, business directories (particularly the Sands Sydney Directory for 1857-1933) and historic maps and aerials photographic surveys from the first half of the twentieth century.

Sites with potential industrial archaeology were identified by overlay of the Metropolitan Water Board maps and present day aerial photographs using GIS mapping system, and cross referencing with the 1943 aerial photographs and the 1956 survey plans.

3.4 FIELDWORK SURVEY

Another major component of this study included a comprehensive survey of historic industrial buildings in the study area. A total of over 470 industrial buildings, structures or complexes were surveyed between August and December 2013 with additional survey in April 2014 to identify, inspect and photograph industrial sites of potential heritage value.

This survey identified the address, architectural style, use, construction period, building condition, materials and conservation issues for surveyed buildings, where this could be discerned from an external visual assessment. Aerial photographs were also reviewed to survey sites, especially where site access or visibility from the public domain was restricted.

Effort was made to survey and document the interior condition of the buildings, with respect to the common laws rules on private property. In some cases access to the sites was not granted by owners to enable internal inspections.

The individual site information collected from this survey provided a sound basis to establish the integrity and comparative heritage value of surviving industrial building in the study area, in terms of their physical attributes. The historical attributes of sites were determined through historic research, as outlined in the above section. The comparative value and integrity established through this physical survey and historic research were two key criteria used to assess buildings for listing.

3.5 COMPARATIVE ANALYSIS

A comparative analysis was also undertaken to establish the relative importance of Sydney's industrial building stock in the context of Sydney, New South Wales and Australia. This included investigating the number and location of industrial buildings with identified heritage value in New South Wales and other industrial heritage studies in Australia.

This comparative analysis, outlined further in the next sections, found that Sydney contains the largest concentration of historic industrial and warehouse buildings in New South Wales and, together with Melbourne, one of the largest known collections of its kind in Australia. It also revealed that this study is Australia's second such study to investigate industrial heritage of a major Australian city and the first of its kind for New South Wales.

4.0 HISTORY OF INDUSTRIAL HERITAGE

This section outlines the role of Sydney's industrial heritage in the context of Sydney and Australia's development and the global process of industrialisation. The full historical overview is contained in Appendix 11.1 and the two key international references for industrial heritage are contained in Appendix 11.4.

4.1 INTERNATIONAL INDUSTRIAL HISTORY

In Europe toward the end of the eighteenth century, the social, technical and economic change brought about by industrial manufacturing was so rapid, it was called a revolution. The Industrial Revolution was the beginning of a historical phenomenon that has affected an ever-greater part of the human population, as well as all other forms of life on our planet. World-wide, the past two centuries of industrialisation represents a major stage of human history.

From its beginnings in England's north-west and midlands during the eighteenth century, industrialisation spread to the rest of Europe, North America and Australia during the nineteenth and twentieth centuries.

Industrial heritage provides evidence of this global process of industrialisation. The international heritage body known as ICOMOS (the International Council on Monuments and Sites) describes the heritage from this stage of industrialisation as critical to the Modern World.

In 2003 the first international charter to recognise and guide protection of industrial heritage was adopted by the International Committee for the Conservation of Industrial Heritage (TICCIH).

In 2011 ICOMOS adopted principles for industrial heritage, jointly with TICCIH, known as "the Dublin Principles". These international principles acknowledged that industrial heritage is highly vulnerable and often lost due to lack of awareness, recognition or protection.

4.2 AUSTRALIA'S INDUSTRIAL HISTORY

As one of only two major centres for historic Australian industry during the period when industry was centred in cities, Sydney's industrial history is part of the national history of industrialisation.

Sydney's surviving industrial buildings and structures record Australia's evolution to a major stage of human history in the modern world—industrialisation. Australia's industrialisation formed part the 'second industrial revolution' which began internationally during the mid-nineteenth century. This second revolution was driven by major technological innovations including the refinement of the steam engine, the invention of the internal combustion engine, harnessing of electricity, the invention of the assembly line, and the construction of canals, railways and electric-power lines. Evidence from these landmark features of the second industrial revolution are all found in Sydney's surviving industrial landscape.

Australia's industrialisation during the nineteenth and twentieth centuries, centred in Sydney and Melbourne, transformed these former British colonies from an agrarian society into a modern nation. Together with Melbourne, Sydney's industry expanded Australia's economy from the 'sheep's back' to the 'industry stack' or from primary production to manufacturing. Sydney's industrial transformation not only impacted on the national economy. Industrial Sydney also played a major role in developing Australia's self-sufficiency, growth, urbanisation, society and its contribution to the war effort for World War II.

Sydney's industrial activity, especially during the twentieth century, affected all levels of the Australian population in some way. As a major employer, cause for concentrating the population in city centres, contributor to the change in living standards and prosperity, place of protests about working conditions, means of independence from exclusively imported products, source for

equipping Australia's war effort and its diggers, and source for many Australian goods used in daily life, Sydney's twentieth century industry affected the lives of many Australians.

4.3 SYDNEY'S INDUSTRIAL HISTORY

Sydney's local government area contains the largest concentration of industrial and warehouse buildings that have been recognised as being of heritage value of all local councils in NSW.

This large resource is mostly located in the inner-city along the previous wharves, well connected to water and railway networks, where it developed mostly throughout the nineteenth century. Large concentrations of industrial sites also lie in southern Sydney built during the twentieth century period, where they were well linked to the shipping movements of Botany Bay harbour and aircraft connections.

Early industry, 1788-1850s

From its very beginnings of European settlement in 1788, Sydney grew faster than anyone predicted for this British colony, originally established as a place of punishment. This unexpected growth was underpinned by early and sustained manufacturing development and a dynamic construction sector.

The majority of early manufacturing and warehousing was located in what is now the inner city or central Sydney. Brick making, stone quarries, iron foundries, flour mills, timber yards and Government stores and dockyards were located primarily on the western side of the early town. Industry was then concentrated in Cockle Bay (renamed Darling Harbour in 1826) associated with the shipping industry and trade, in particular the export of maritime products and then wool. Small industries associated with wool emerged, including tanneries, woolwashing, leather goods and fellmongering plants. Warehousing on Sydney Cove by the mid-1800s was almost exclusively woolstores. By 1850 slaughterhouses and soap works were located at the edge of Ultimo. One of the largest early industries for distillery and brewing dominated Chippendale, located along Blackwattle Creek.

South of the city centre, limited early industry included mills for producing paper and flour. These were located in the wetlands of Waterloo along Sheas Creek and formed part of the manufacturing and trade empires of Solomon Levey and Daniel Cooper. Wool washing joined the mills in this area by the 1840s.

Late 1800s-early 1900s

In the second half of the nineteenth century, Australia's urbanisation was rapid by world standards. The growing population, spurred by high immigration from the 1850s and 1880s gold

rushes, boosted local demand for industrial products. Sydney's population rapidly grew from around 70,000 in 1851 to almost half a million by 1900.

Sydney's fast growth and technological change during the late nineteenth century contributed to a massive development of manufacturing industries, which continued to expand in the twentieth century.

From the 1860s to 1890s, high levels of British investment were also channelled into Sydney's domestic construction industry and transport infrastructure. Other industries included those supporting domestic market demand for food, drink, tobacco, railways construction, vehicle and carriage building and metals for cities, farm and mining machinery.

During the later decades of the nineteenth century, mechanisation transformed the nature of Sydney's earlier manufacturing industry from the domestic or family operations of 'cottage industry' into larger industrial operations.

Pyrmont became dominated by stone quarries, the sugar refinery, the shipyards of Darling Harbour, and associated industries and workers housing. City iron works, foundries, galvanisers and tin smelters serviced the refinery and shipyards.

From 1860, 'noxious trades' such as market gardens, tanneries, glue and soap makers and fellmongering shifted outside of the city limits to southern Sydney (south of Cleveland Street) after the colony's first environmental laws in 1848 banned these trades from the city centre. These industries were located near water supplies such as the Waterloo Swamps and Botany Bay, where the Sheas Creek dam provided water for wool washers, tanneries and boiling down works. Most of these noxious trades were by-products of the sheep industry and were concentrated along Sewer Road (now O'Riordan Street). Market gardens were considered noxious because of the use of fertilisers.

The boot, saddle and harness manufacturers followed the tanneries move to the south. Brick pits and potteries also dominated this area because of the area's vast clay deposits. Alexandria became one of the largest brick making areas of the city, producing the bricks for many of the buildings constructed throughout the City of Sydney.

In 1868 a new industry was established in this area near the Waterloo Swamp for refining the volatile chemicals of shale oil to produce kerosene, paraffin and heavy oils.

Following the 1889 flood of southern Sydney areas surrounding Sheas Creek, it was recognised that this low-lying land was more suited to industry than housing. The floods also highlighted the need for drainage and sewerage systems. The draining of these swamps at Sheas Creek from the 1890s opened large stretches of lands from Alexandria to Botany for industrial development.

From the late 1880s, Redfern was dominated by the railway workshops established at Eveleigh. Industries supporting the railways were centred here, together with expanding leather and food production.

Glebe contained small factories and workshops mostly for clothing and was dominated by the timber industry with timberyards located on the shores of Blackwattle and Rozelle Bays. Camperdown manufactured food such as jams and biscuits and provided warehousing the for large retailer on Broadway, Grace Brothers.

Warehousing for most of the nineteenth century was small-scale, often in conjunction with retailing. When wholesaling developed as a specialised trade in the late 1800s, more buildings were developed exclusively or primarily for warehousing. After 1860, older Circular Quay warehouses were supplemented with new often purpose-built warehouses located around Millers Point and along the western edge of the city centre into Darling Harbour. Woolstores were re-established across the bay to Ultimo on the Pyrmont peninsula.

Inter-war years, 1920s-30s

Sydney's industry expanded from the inner-city to occupy the cheaper lands to the south near the swamps in Waterloo and Alexandria. This area provided the most crucial access to cheap land, isolation from the population and access to water required by industry.

From approximately the 1920s, industrial development in southern Sydney boomed, when land previously tied up in large estates became available following the World War I and after the former swamps were drained through the construction of the Alexandra Canal and channels. Industry concentrated in this area expanded from the earlier noxious trades, food and clothing manufacturing to include car manufacturing plants and auxiliary industries from the 1950s. This southern area was dominated by industry until at least the 1970s.

The demographics of the industrial workers also changed during this period following World War I when women joined the workforce. As well as triggering major social changes, this affected the development of industry through the provision of cheap labour. In 1918 the NSW Board of Trade decreed that women were to be paid be half the wage of male workers. At the end of the first World War, 72% of Sydney's clothing and textile sector workforce were female. Women and minors also worked in manufacturing food, drink and tobacco—the lowest paid industries. Subsequent worker's rights activism and strikes were a major part of the social history of twentieth century industry in Sydney.

As a result of the policy of the day which restricted permissible work for Sydney's Chinese migrants, Alexandria also became a centre for one of the few permissible industries for Chinese migrants: manufacturing furniture.

Reflecting major technological changes of the twentieth century, manufacturing during this period expanded to metals, engineering, especially light machinery, chemicals, drugs, automobiles, white goods, leather and glassware. Former horse yards and stables closer to the city, such as the Bay Street Depot in Ultimo, were converted to support the motor vehicle. Ancillary industries like saddlers were replaced by motor garages and engineering services. Power houses and substations were constructed throughout Sydney to electrify the city, railways and power its industries.

The government's high import tariffs and subsidies during the twentieth century, especially following first World War, continued to foster Sydney's industrialisation and local manufacturing. So too did major government investment for the construction of public transport and infrastructure for the first few decades of the twentieth century. Some of the major public investments during this time included the waterfront remodelling for the creation of Walsh Bay from 1906-1922, the construction of Central railway station in 1906, the city railway line in the 1920s-50s, construction of Sydney Harbour bridge from 1926 and the electrification of Sydney and the tramways system.

World War II & post-war, 1940s-1970s

The second World War led many major industries occupying Waterloo and Alexandria to change their primary business and support Australia in the war effort. Many construction industries switched production to army equipment products during this period. Warehousing was commandeered for storage of munitions in places like Pyrmont.

Following 1945, all forms of manufacturing increased enormously for the next two decades. This represented the strongest period of Australia's industrial history. Australian brands came to occupy and dominate local industries, fostering local manufacturing. Alexandria by 1943 contained 550 factories. According to Alexandria's promotional publication, which proudly featured Alexandria's Metters factory for stoves, baths and sinks, other types of industries in Alexandria at this time included asbestos, aircraft, batteries, brushes, soap and tallow, fertilisers, steel springs, furniture and paint, amongst many others,.

The twentieth century boom in manufacturing industries made both Sydney and Melbourne amongst the largest industrialised cites in the South Pacific. The sheer size and importance of Sydney's role, both in the warehouse of goods and as a manufacturing city in its own right, has not been well documented. Nor has industry been well acknowledged in the common rhetoric about Australia's national identity, which has long favoured farming and primary industry over secondary industry.

Yet, contrary to the popular rhetoric about Australia 'riding the sheep's back', census figures show that by 1947 more Australians were employed nation-wide in manufacturing than primary production; mostly in Sydney and Melbourne. In other words, this shift meant that more

Australians were working in city industries than farms or mines. Sydney accounted for 31% of all Australian manufacturing jobs compared to Melbourne's 29%. Sydney dominated engineering and metal industries, oil refining, petrochemicals and food processing, while Melbourne led in textiles, clothing, footwear, motor vehicles and auto parts.

By the 1950s and 1960s when many inner city industries were moving out to suburban sites, older factory buildings in Sydney were often re-used for warehousing.

Although interrupted by severe economic depressions and two world wars, manufacturing in Sydney continued to grow, and was persistent until mid-1970s.

While records of Sydney's industry are generally scarce, town and building surveys and aerial photos from the 1940s and 1950s record the concentration and coverage of industry in southern Sydney during the inter-war and post war period, and the concentration of warehouses along the western edge of central Sydney, as illustrated in the following extracts.

Figure 4: Some of the industrial development concentrated in Alexandria from inter-war and post-war period, near the Shea's Creek stormwater channels

(Extract of Zetland Civic Survey 1938-1950)

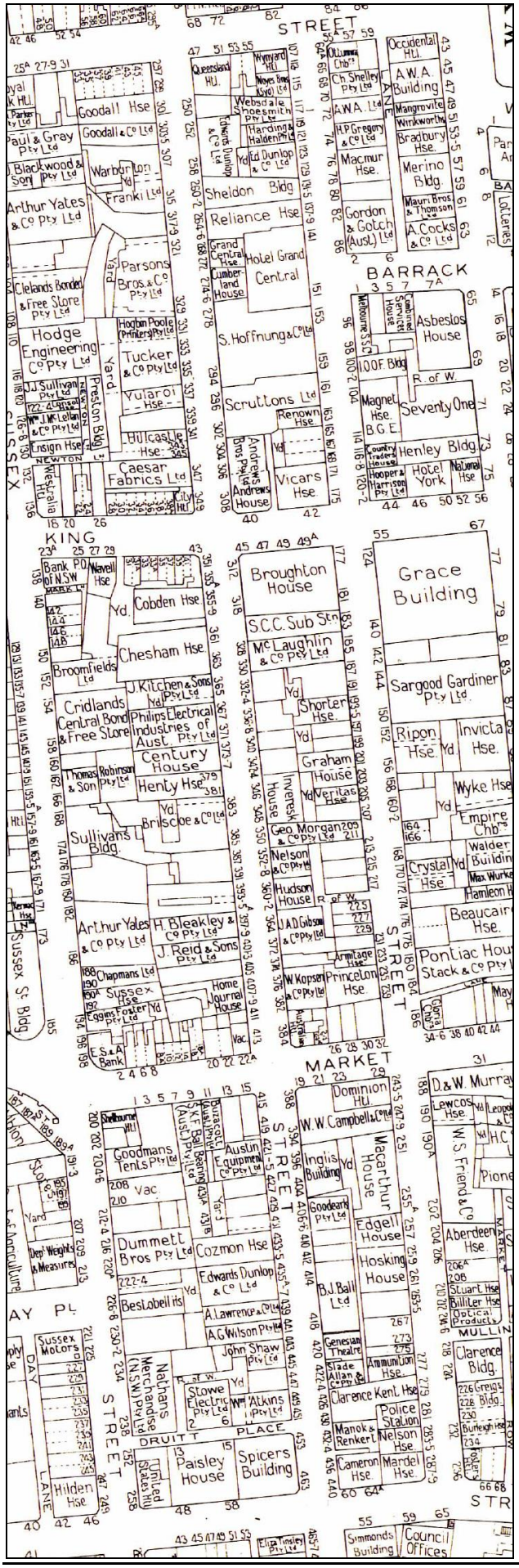

Figure 5: City warehouse district along the western edge of Central Sydney during the 1950s (extract of City Building Surveyors Detail Sheet 6, 1956)

1980s demise of industry

From the 1980s, the demise of industry was particularly marked in the Sydney area as traditional industries related to outer suburbs or closed. Many buildings from this earlier industrial activity remain and have been re-used for related light industrial or new purposes, such as car repairs, storage, creative, community, education and recreational uses, offices, shops, cafes or restaurants.

5.0 COMPARATIVE ANALYSIS

5.1 NEW SOUTH WALES INDUSTRIAL HERITAGE

The historic number of industrial buildings and sites that once existed in New South Wales and Sydney is unknown. However, the NSW heritage database of listed places provides an indication of the number, location and concentrations of significant industrial buildings and sites which have survived to the present day. These existing listings have been reviewed to understand how Sydney's collection of industrial heritage compares to other parts of the State and nation.

The NSW heritage database listings identify the large concentration and dominance of the State's significant industrial resources located in the Sydney area.

Across New South Wales, a total of 146 warehouses, 89 factories, 14 woolstores, 72 substations and 35 other industrial buildings are identified in the NSW database as local heritage items. Nine warehouse, two factories, one woolstore, 13 substations and 11 other industrial buildings are also listed at the state level on the State Heritage Register as some of the most important heritage sites in NSW. Some industrial sites may be listed twice at both statutory levels.

Of these 292 listed industrial buildings and sites across New South Wales, 186 are located in the Sydney local government area. Warehouses are particularly concentrated in Sydney where 122 of the total of 146 locally listed warehouses are found.

By comparison, other local government areas have significantly fewer listed warehouses including Newcastle (10), Broken Hill (7), Marrickville (2), Bathurst (1), Albury (1), Canada Bay (1), Clarence Valley (1), and Maitland (1). Listed factories are more evenly distributed across local government areas, with Eurobodalla containing the largest number (9) than any other area.

In the broader category of places listed under the historic theme for industry, New South Wales has a total of 326 industrial places listed locally, including 51 which are also state heritage listed.

Sydney contains the largest number of listed sites for the industry theme, compared to other local government areas, with 60 local listings and seven state heritage listings.

The next largest concentrations of listed sites for the industry theme in other government areas are approximately half the number found in Sydney. The next highest numbers of listed places for the industry theme include Parramatta (31; all archaeological sites), North Sydney (26), Penrith (25), Canada Bay (20), and Newcastle (19). While less than Sydney, these higher numbers indicate other centres of some significant industrial activity in New South Wales.

These listing numbers do not represent the complete or finite number of significant industrial buildings, because it does not include all types of industrial sites, does not identify multiple buildings listed collectively as part of areas, and only captures places identified in the listing as an industrial site. Furthermore, not all significant industrial sites will be listed and therefore recorded in the NSW heritage database. This is in part because Australia's and the State's industrial heritage sites have not been comprehensively reviewed through a national or state-wide heritage study, as outlined in the next section.

5.2 OTHER AUSTRALIAN INDUSTRIAL HERITAGE STUDIES

Key national and state heritage bodies were consulted to identify any Australian studies comparable to this industrial study. This included consulting Australia ICOMOS Executive Committee members and the Australian Institute of Architects. This consultation identified one other comparable industrial study in Australia, which investigated Australia's other major industrial heartland located in Melbourne, the "Western Region Industrial Heritage Study" by Gary Vines, from 1989.

Melbourne's 1989 study identified the rich heritage of surviving sites, buildings and works in Melbourne's west. This study was an important first step in Melbourne's plans for the conservation and enhancement of those buildings, areas and other places. 139 industrial buildings were recommended for local heritage listing in western Melbourne in this study; a similar number to the industrial buildings currently listed in the Sydney local government area.

Other studies of industrial heritage in NSW focus on either a particular period or a particular type of industrial heritage, or both. Three such studies have been identified including:

- study of St Mary's Munitions Factory site contained in the study of "World Wars 1 & 2 - Survey of buildings, sites and cultural landscapes in NSW" (Robertson & Hindmarsh, 2006)
- "Study of Inter-War Garages & Service Stations" (Ian Kirk & Megan Martin, 2006)
- "Electricity Substations of the Sydney Municipal Council" study (James Pennington, 2012).

Some of these only study portions of industrial sites, such as the World Wars study review of St Mary's Munitions Factory site.

Many currently listed industrial buildings and warehouses were identified as part of the general heritage studies by local councils, rather than studies specific to industrial heritage. These other studies affecting the Sydney area are outlined in the section “About this study”.

Based on these investigations and comparisons, this study is believed to be the first major heritage study of its kind and of this scale in NSW, and the second known in Australia.

6.0 LISTING RECOMMENDATIONS

6.1 LISTING RATIONALE

This study assessed surviving warehouse and industrial buildings against consistent criteria to establish whether buildings and structures have sufficient local heritage significance to warrant protection through statutory heritage listing. These criteria were used to measure whether buildings and structures fulfilled the NSW criteria for local heritage significance, as set out in the NSW heritage guideline ‘Assessing Heritage Significance”. The criteria or rationale for listing included whether the building or structure was considered to demonstrate:

- Historic association with an industrial company or activity
- Historic patterns of industrial development identified in the historic overview (Appendix 11.1) for the suburb or broader area
- A good example of its type for the locality, exhibiting typical characteristics of the building typology and period (individually or collectively as group)
- Fair integrity, in terms of intactness and condition of historic built form
- Capacity for retention as part of approved developments or advanced plans for the area

Buildings and structures are recommended for listing where they satisfy these criteria. Where they do not satisfy these criteria, buildings and structures are not recommended for listing. For instance, industrial buildings are not recommended for listing where they have been modified to a degree where their original or earlier industrial use is no longer identifyable or where demolition has been approved.

Individual buildings or sites, or isolated rows of buildings which satisfy these criteria are recommended for heritage item listing. Where these buildings are grouped together as part of a cohesive precinct, or where the group collectively rather than individually satisfy these criteria, conservation area listing is recommended.

6.2 RECOMMENDED LISTINGS OVERVIEW

6.2.1 QUANTITY

As a result of a comprehensive survey and assessment of over 470 industrial buildings, structures or complexes, 63 heritage items and 2 conservation areas are recommended for heritage listing. The 63 heritage items include 75 industrial properties containing approximately 99 industrial buildings or structures. The two conservation areas contain 36 further industrial buildings or sites.

While this represents a small proportion of the built form that once existed from one of Australia's industrial heartlands, these additions to Sydney's heritage list will capture the surviving industrial buildings and structures of greatest integrity and historical value from important periods of Sydney's industrialisation, as identified through this study.

6.2.2 INDUSTRIES

The recommended heritage items and conservation areas represent the surviving built form a range of Sydney's industries including:

- Food: confectionary, jam, food canning, liquor, tea and coffee
- Clothing: hats, shoes and boots
- Science and materials: textiles, tannery, chemicals, gas, tin, dental
- Technology: horse-drawn carts, motor car, aircraft, telephones, munitions
- Retail & household items: luggage, stoves, kitchenware, furniture
- Publication: printing, stationary
- Construction: fences, glass, cement engineering
- Government: stores
- Power and infrastructure: electricity, water, sewer and fire management

6.2.3 PERIODS

As reflected in the industries they supported, the majority of industrial buildings recommended for listing date from twentieth century; predominantly from the inter-war or post-war periods from the 1920s to the 1950s.

Only seven of the 63 items are older, dating from the late nineteenth century Victorian or Federation periods. Sixteen further items date from the first two decades of the twentieth century. Only one warehouse recommended for listing dates from the later twentieth century: the modern government stores building in Alexandria designed by Harry Seidler.

The older industrial building stock is located closer to the inner city or waterfront and the later industrial buildings further to the south.

6.2.4 ARCHITECTURAL STYLES

Many of the architectural styles from the late nineteenth and twentieth centuries are represented in the industrial and warehouse buildings recommended for listing. The architectural design of these buildings is closely related to their location, function, state of the economy and period of construction. Sydney's Victorian and Federation industrial and warehouse buildings are mostly found in or near the inner-city. The inter-war and post-war buildings are mostly located in the far south and to the west in Camperdown.

While the inner-city buildings are generally more decorated, by contrast, southern Sydney warehouses are less adorned and more utilitarian in character with a distinctive character often derived from their sawtooth roof construction. This difference reflects the nature of the operations and manufacturing requirements and the less urbanised setting, compared to the city warehouses and factories.

The modest built form of the southern industrial buildings also reflects major changes during the twentieth century when most of these buildings were constructed. Their unadorned design reflects the economic impacts and other shortages resulting from the Great Depression and two world wars and changes in modern architecture which favoured minimisation and "form following function."

Southern Sydney's warehouses do not, however, have less heritage value then the city examples. Their value derives from their role in recording Sydney's most industrial area since the first world war and their modest simplicity, which gives them a characteristic appearance distinct from the city industrial stock.

6.2.5 BUILDING MATERIALS

Sydney's industrial and warehouse buildings are typically constructed of load-bearing brick walls, floors of timber (before 1920s) or concrete (after 1920s), and pitched roofs clad in corrugated iron or asbestos sheets. Windows are either timber or steel-framed. Face brickwork is the most common material for the street frontage. Fewer brick facades are rendered or painted. For the more prestigious and generally Federation period of inner-city warehouses, sandstone is incorporated into the street frontages for ground floor walls, foundations or window trimmings.

6.2.6 BUILT FORMS

Federation, inter-war and post-war warehouses have a similar built form to factories from these periods. Some industrial buildings served both purposes as part of the original use or later conversions of factories to warehouses. Both factory and warehouse buildings can be located together or separately on stand-alone sites. When including a factory, these industrial buildings typically cover a significant area of the site, often with little or no set-back from the street and side boundaries. Some warehouses incorporate cartways and open courtyards within the site. The open character, high ceilings and generous proportions of the interiors of factories and warehouses reflect their original functions requiring clearance or storage space.

Southern and inner city industrial buildings have some distinctive physical characteristics beyond the level of ornamentation. Sawtooth roof forms and lower single or two storey scale distinguish the southern industrial buildings from the earlier industrial buildings located closer to the city. The repetitive form and profile of these sawtooth roofs often characterise street frontages. Alternatively, factories with sawtooth roof forms are located behind an office or showroom building fronting the street.

Factories pre-dating electricity often feature chimneys. For those built to be powered by electricity, large factories or groups of smaller factories often have electrical substations built on the site or in the immediate vicinity.

By comparison, the industrial buildings closer to Sydney or built for major companies generally exceed two storeys and have pitched roofs concealed behind parapets. Inner city warehouses are generally five to eight storeys in height. Federation warehouses of central Sydney, Haymarket, Chippendale, Pyrmont, Ultimo and Surry Hills are characterised by quality, heavy masonry of face brickwork and rusticated sandstone and simple geometric repeated bays expressed on street facades through groups of windows separated by vertical brick piers, often terminated by round-headed arches.

6.2.7 CURRENT USES AND DEVELOPMENT

From the 1980s when many traditional industries relocated to outer suburbs or closed, the buildings surviving from this peak period of industrial development in the Sydney local government area have been re-used for related light industrial or new purposes. New uses in the recommended items and areas have included car repairs, storage, creative, community education and recreational uses, offices, shops (predominantly for furniture, cars and outlet clothing), cafes or restaurants.

Some other industrial buildings currently listed as heritage items have been more substantially redeveloped for construction of residential housing in the outer areas or offices and other uses in

the inner city. These developments reflect past approaches to heritage conservation where only the building facades or small remnants of the original building were retained and incorporated into new buildings with differing degrees of sensitivity. While this approach or 'facadism' is no longer considered best practice for the adaptive re-use of historic buildings, these remnant facades from former industrial buildings still contribute to the streetscape and demonstrate the progressive development of Sydney.

Residential conversions of industrial buildings are less common and may have greater impacts and challenges especially in the southern areas because of a number of constraints including:

- contamination remediation standards required for housing
- satisfying the NSW design and amenity standards required for apartments, such as for sunlight access, specified in the State Environmental Planning Policy No. 65 – Design Quality of Residential Flat Developments
- some locations are flood-affected

Planning controls are recommended in section 8.0 to encourage sympathetic conversion of industrial buildings to new uses and, where already substantially redeveloped for a non-industrial use, development that is sympathetic to remnant building features.

6.3 RECOMMENDED HERITAGE ITEMS

For their individual heritage value as good suriving examples of Sydney's signficant industrial development, the following places, including their significant interiors, are recommended for listing as heritage items:

	Suburb	Address	Item name
1.	Alexandria	Between McEvoy Street and Bourke Road (as marked on the map)	Sydney Water sewer pipeline
2.	Alexandria	Between Sydney Park Road & Alexandra Canal (as marked on the map)	Macdonaldtown stormwater channel
3.	Alexandria	Doody Street (as marked on the map)	Doody Street stormwater channel
4.	Alexandria	Huntly Street, Maddox Street and Bowden Street (as marked on the map)	Shea's Creek stormwater channel
5.	Alexandria	Birmingham Street, 2-6	Former Walter Barr Pty. Ltd. Factory including interiors
6.	Alexandria	Birmingham Street, 22-30	Former Sil-Ora Dental Products factory including interiors

	Suburb	Address	Item name
7.	Alexandria	Birmingham Street, 27	Electricity Substation No. 375 including interiors
8.	Alexandria	Birmingham Street, 29-33	Former H.G. Whittle & Sons warehouse including interiors
9.	Alexandria	Botany Road, 602-612 (and 27-31 Ralph Street)	Former Coote and Jorgenson Engineers warehouses including interiors
10.	Alexandria	Botany Road, 684	Inter-war service station including interiors
11.	Alexandria	Bourke Road, 47-49	Q-Store including interiors
12.	Alexandria	Bourke Road, 138-196	Former Commonwealth Industrial Gases warehouse & stores including interiors (brick warehouse & stores buildings only)*
13.	Alexandria	Euston Road, 16	Electricity Substation No. 117 including interiors
14.	Alexandria	Maddox Street, 40A-42 (and Euston Road, 58-68)	Former Alexandria Spinning Mills including interiors (excluding modern building frontage to Euston Road)*
15.	Alexandria	Mandible Street, 1-3	Former Standard Telephones & Cables Pty. Ltd. industrial building including interiors
16.	Alexandria	Mandible Street, 30	Former Lempriere & Co Ltd office building including interiors (historic building only)*
17.	Alexandria	McEvoy Street, 124	Former Electricity Substation No. 152 including interiors
18.	Alexandria	O'Riordan Street, 52-54	National Motor Springs igloo building including interiors *
19.	Alexandria	O'Riordan Street, 82	Electricity Substation No. 225 including interiors
20.	Alexandria	Ralph Street, 38	Wilson Bros Willow Kitchenware Co. warehouse and factory including interiors
21.	Alexandria	Wyndham Street, 212-214	Former Electric Light Substation No. 89 including interiors
22.	Annandale	Booth Street, 1B	Sewage Pumping Station No. 3 including interiors
23.	Camperdown	Mallett Street, 6-10	Former Grace Bros Repository including interiors
24.	Camperdown	Mallett Street, 64-106	Former Bond's Industries complex including interiors, Substation No. 181, Chesty Bond Mural, and former commercial building facade for “Bonds Cafeteria” at 97-88 Church Street)**
25.	Darlington	Golden Grove Street, 2-10	Former Jones IXL factory garage including interiors

	Suburb	Address	Item name
26.	Darlington	Lawson Street, 181	The Foundry including interiors
27.	Erskineville	Coulson Street, 7-19	H. Brightwell & Sons Pty Ltd south-east warehouse building including interiors *
28.	Erskineville	Railway Parade, 127	Former Gramophone Coy Ltd factory chimney stack *
29.	Erskineville	Victoria Street, 18-20	Former shoes and boot factory including interiors
30.	Forest Lodge	Ross Street, 19	Electricity Substation No. 267 including interiors
31.	Glebe	Mitchell Street, 113	Former Volunteer Brigades fire station including interiors
32.	Newtown	Egan Street, 10-12	Former Sydney Confectionery factory including interiors
33.	Newtown	Wilson Street, 197-207	Former Gissing Bros warehouse including interiors
34.	Redfern	Great Buckingham Street, 53-63; and Elizabeth Street, 611-619	Former Hordern & Sons warehouse including interiors
35.	Redfern	Renwick Street, 99	Electricity Substation No.112 including interiors
36.	Rosebery	Crewe Place, 6-8	Former Wrigley's factory
37.	Rosebery	Dunning Avenue, 85-113	Former Rosella Preserving Manufacturing Co. buildings including interiors
38.	Rosebery	Dunning Avenue, 88	Electricity Substation No.192 including interiors
39.	Rosebery	Dunning Avenue, 115-133	Former Commonwealth Weaving Mills including interiors
40.	Rosebery	Dunning Avenue, 120	Former Otis Elevator Co. Pty. Ltd. warehouse including interiors
41.	Rosebery	Dunning Avenue, 135-151	Former Westinghouse warehouse buildings including interiors
42.	Rosebery	Dunning Avenue, 142	Electricity Substation No. 128 including interiors
43.	Rosebery	Hayes Road, 1-11	Former R.C. Henderson Pty. Ltd. warehouse including interiors
44.	Rosebery	Mentmore Avenue, 61-71; Morley Avenue, 34	Former Cyclone Co. of Australia Pty. Ltd. factory including interiors

	Suburb	Address	Item name
45.	Surry Hills	Devonshire Street, 268	Former Hill & Co warehouse including interiors
46.	Surry Hills	Elizabeth Street, 470-484	Former W. C. Penfold Co. Ltd. warehouse including interiors
47.	Surry Hills	Fitzroy Place, 5	Electricity Substation No. 229 including interiors
48.	Surry Hills	Foveaux Street, 1-15	Former Farleigh Nettheim & Co Ltd. warehouse including interiors
49.	Surry Hills	Marlborough Street, 47-97	Former David Jones factory (excluding northern carpark)*
50.	Surry Hills	Marshall Street, 13-15	Former Allington Stoveworks warehouse including interiors
51.	Surry Hills	Randle Street, 11-13	Former R.C. Henderson warehouse including interiors
52.	Surry Hills	Wentworth Avenue, 4-34	Group of warehouses including interiors
53.	Sydney	Clarence Street, 115	Former Noyes Brothers Ltd warehouse including interiors
54.	Sydney	Clarence Street, 185	Former McLaughlin & Co Pty Ltd warehouse including interiors
55.	Sydney	Clarence Street, 193-195	Shorter House store & offices including interiors
56.	Sydney	Kent Street, 252-258	Former Edwards Dunlop & Co warehouses including interiors (and 123-129 Clarence Street buildings)
57.	Sydney	Kent Street, 426-430	Clarence Kent House warehouse including interiors
58.	Ultimo	Bay Street, 10-16	Bay Street Depot including interiors (excluding south-east concrete car park)*
59.	Waterloo	Elizabeth Street, 723	Former William Brooks Pty Ltd industrial building including interiors (main warehouse building only)*
60.	Waterloo	George Street, 378	Electricity Substation No. 75 including interiors
61.	Waterloo	Lachlan Street, 23	Former Electricity Substation No. 109 including interiors
62.	Zetland	Joynton Avenue, 146-158	Former Joseph Lucas industrial building including interiors (curved corner building and east wing fronting Epsom Road only)*

* Partial site listing is recommended for these items as indicated in the item name description, generally in brackets, for the portions of the site which satisfied the above listing criteria.

** The above listing for the former Bonds Industries complex includes and consolidates two existing listings for parts of this complex including:

I59	Camperdown	Mallett Street, 64–106	Former commercial building facade, “Bonds Cafeteria” (97–99 Church Street)
I60	Camperdown	Mallett Street, 64–106	Former warehouse “Bonds Head Office” including interior (100–106 Mallett Street)

6.3.1 ITEM ASSESSMENTS

An individual assessment of each of these sites is provided in the inventory forms contained in Volume 2 of this report. These inventory forms outline the heritage signfiicance, location, overall site components and a brief history for each of the above places to support the above listing recommendations. More detailed assessment of these places will occur at the development stage when major changes are proposed, in accordance with the local planning controls.

6.3.2 ITEM NAMES

The above item names broadly identify the places recommended for listing at the given addresses. The name refers to the main historic signficant use of the site, which is not necessarily the only or current use. The item name will not identify all significant features. Other names, uses and significant site features are broadly outlined in the inventory forms contained in Volume 2 of this report.

Unless site components are exclued in the item name, the recommended listing includes all land at the given address. Where major site components do not contribute to the industrial heritage significance of the place and its setting, partial site listing is recommended by excluding site components in the above item name descriptions. Excluded portions of the site are shown in the listing boundary descriptions contained in the inventory form in Volume 2 and maps in Appendix 11.2.

As heritage item listing seeks to conserve the heritage significance of the place as a whole, the listing includes significant building interiors, as noted in the item name. The intactness or signficance of the interiors or other components of the recommended heritage item are assessed in more detail at the development assessment stage when major changes or new uses are proposed and a statement of heritage impact is prepared.

6.4 RECOMMENDED CONSERVATION AREAS

Southern Sydney features two precincts where concentrations of industrial buildings have survived from Sydney’s peak period of industrialisation during the twentieth century. While some of the buildings in these areas may not meet the criteria for heritage listing individually, collectively they satisfy the listing rationale for their rarity, historic value, cohesion and distinct character as a

group. No other comparable industrial precincts of their period, form of development and integrity are known to survive in the Sydney local government area.

The large concentration of inter-war and post-war industrial buildings in these areas provides evidence of the pattern and extent of industrial development from one of Australia's former industrial heartlands. The two areas represent the rapid expansion of manufacturing that occurred following the two world wars, underpinning the strongest period of Sydney's industrial history. These two areas recommended for listing include:

	Suburb	Address	Name
1.	Alexandria	Land between McEvoy, Wyndham & Mandible Streets' boundary mapped below	North Alexandria industrial heritage conservation area
2.	Alexandria, Beaconsfield	William Street properties between Collins & Beaconsfield Streets' boundary mapped below	William Street industrial heritage conservation area

The boundaries for these precincts, mapped below, define the core industrial areas of greatest integrity and historic value. These boundaries contain the highest concentration of surviving industrial historic buildings, which together contribute to the cohesive precincts of distinct character. The relative contribution of individual buildings or sites towards the significance of these areas is mapped in Appendix 11.3.

These areas are detailed further in the inventory forms contained in Volume 2 of this report. These provide an overview of the signfiicance and history of both areas to support the above listing recommendations.

6.4.1 NORTH ALEXANDRIA INDUSTRIAL CONSERVATION AREA

Figure 6: Recommended boundary for North Alexandria industrial conservation area

This industrial precinct of approximately 30 properties, three streets and three laneways, is located in northern Alexandria adjacent to the Shea's Creek stormwater channel. The consistency of the buildings throughout this area with their simple design and repetitive elements adapted to the sites has aesthetic significance and contributes to the distinct industrial character of this precinct.

Key characteristics:

- Historic industrial uses in the area.
- Cohesiveness of the streetscapes, laneways and their association with the waterway.
- Grid street and subdivision pattern oriented perpendicular to the alignment of the stormwater channel.
- The building stock of predominantly single-storey brick warehouses constructed during the inter-war period
- Historic association of these factories built for textile and construction industries situated in proximity to the water stream.
- Buildings constructed to the front and side boundaries without set-backs.
- Consistent pattern of simple buildings forms with repeated modular elements adapted to their respective sites, including the use of face brick walls, corbelled or stepped parapets and sawtooth roofs.

6.4.2 WILLIAM STREET INDUSTRIAL CONSERVATION AREA

The inter-war and post-war industrial precinct on both sides of William Street in Beaconsfield and Alexandria is important for its streetscape pattern (including the laneways), impressive warehouse collection and cohesion externally. Amongst eight factories and warehouses from the inter-war and post-war period situated in this area, two of the larger factories include former Webster & Lumsden (29-39 William Street) and part of former White Elevators Pty Ltd (10-18 William Street).

Figure 7: Recommended boundary for the William Street conservation area.

Key characteristics:

- Historic industrial uses in the area.
- Cohesive streetscapes and laneways dominated by rows of single storey factories on the west alignment and single- to-two storey factories on east street alignment.
- Grid street pattern with rear laneways.
- Patterns of sawtooth roof forms and large gabled roofs with ventilation windows
- Repetitive bays with steel framed windows creating a ribbon of window fenestration
- Face brickwork
- Horizontal string courses and other brick detailing combining the individual bays in a continuous streetscape

6.5 NOTED HISTORIC SITES

Further industrial buildings were noted for having some historical value as part of this study, however did not satisfy all of the above criteria for further listing. No further listing is recommended for these sites. These buildings generally satisfied some of the criteria, but, for differing reasons, not all. For instance, for some buildings, demolition had been approved or required as part of advanced strategic plans supported by the council. Others were not considered a good local example of their type. Some had lost their integrity because of substantial alterations. Some noted historic sites also have contributory heritage value as part of a larger collection of historic buildings and are currently listed within a conservation area. Buildings located within conservation areas are already protected from demolition and their heritage value managed through this existing listing.

For noted historic sites without an existing area listing, retention and re-use of these buildings is still encouraged. If demolition or major development is proposed for these sites, appropriate interpretation of their history and/or archival recording of these sites is recommended. The noted historic sites include:

Suburb	Address	Notes
Alexandria	Birmingham Street, 14	Former T.N. Ellis
Alexandria	Botany Rd, 334-336	Former Henderson's Federal Spring Works
Alexandria	Bourke Road, 5-7 & 9-13	Former Roberts and Parsons Pty Ltd
Alexandria	Bourke Road, 20, 22 and 26	Group of inter-war factories
Alexandria	Bourke Road, 33A	Weighbridge

Suburb	Address	Notes
Alexandria	William Street, 1-9	Warehouse
Alexandria	Wyndham Street, 131 (103 McEvoy Street)	Former Speedy Springs Service
Camperdown	Layton Street, 3	Inter-war factory
Camperdown	Layton Street, 16-26	Electricity Substation No. 384
Darlinghurst	Palmer Street, 278 (also 45 Burton Street)	Former Crabbe & Sons
Glebe	Glebe Street, 128A	Electricity Substation No. 369
Rosebery	Botany Road, 783	W.H.S.Stacy Son & Co Engineers
Rosebery	Crewe Place, 6-8	Former Wrigley's Factory
Rosebery	Mentmore Avenue, 33-37	Former Harry Peck & Co (Aust) Pty Ltd
Rosebery	Rosebery Avenue, 23-25	Former Andrew's Laboratories warehouse building including interiors
Surry Hills	Goodchap Street, 32	Electricity Substation No. 133
Surry Hills	Marshall Street, 23	Electricity Substation No. 114
Waterloo	Allen Street, 3-5 Botany Road, 201-211 (in part)	Group of three inter-war factories
Waterloo	O'Dea Avenue, 20	Irwin & Sheehan
Waterloo	South Dowling Street, 879	Pumping Station

6.6 EXISTING HERITAGE ITEMS REVIEW

The following existing heritage items have been reviewed as part of this study. As a result of this review, it is recommended that these sites are retained as heritage items. These buildings and structures continue to contribute to an understanding of the industrial history of the area. Despite some of modifications and changes required to accommodate their adaptive reuses, these heritage items maintain most of their external integrity and overall characteristics of their respective historical period in discernable manner. The inventory forms for these existing heritage items have been reviewed and updated. Some of the items' names have been changed to reflect

the significance and to be in line with the approach taken in naming the potential heritage items. Former names of the relevant items are noted in the 'Other notes' column.

Item #	Suburb	Street Address	Item name	Other notes
17	Alexandria	Botany Road, 662-674	Former F. Cinzano & Co warehouse building (15–25 Birmingham Street)	Item name is changed from "Former warehouse “Boltons Trading Co”
19	Alexandria	Bowden Street, 8-22	Industrial building “Eclipse House” front elevation only	Single storey inter-war Art Deco style industrial building, c.1930
120	Alexandria	Euston Road, 48 (Maddox Street, 20-30)	Industrial building “Frank G Spurway” including interior	Two storey inter-war functionalist building
121	Alexandria	McCauley Street, 32-42	Group of warehouses including interiors	Item name is changed from "Warehouse including interior"
122	Alexandria	McEvoy Street, 111-117	Former industrial building including interiors	Functionalist style building
1519	Darlington	Abercrombie Street, 331-337	Former warehouse building including interiors	
1538	Darlington	Vine Street, 43-47	Former Cellulose Products Pty Ltd factory including interiors	Item name is changed from "Industrial building including interior" Two storey inter-war functionalist style industrial building, c.1930-40
1644	Forest Lodge	Ross Street, 1-3	Former Grace Bros warehouse building including interiors	Item name is changed from "Warehouse including interior"
1642	Forest Lodge	Minogue Crescent	MWS&DB aqueduct	
1643	Forest Lodge	Minogue Crescent	Bowstring Bridge	
1815	Glebe	Unnamed lane (Minogue Crescent, 9B)	Allan truss bridge, former Federal Road Bridge	
1823	Glebe	York Street, 12c	MWS&DB sewer vent stack	
11296	Redfern	Cleveland Street, 267-271	Former “Demco Machinery Co” including interiors	Four storey c1911 Federation building and c1940 inter-war functionalist building,
11329	Redfern	Marriott Street, 99	Former “W.J. Cryer & Co. Ltd” factory facades	Item name is changed from "Former “Hodbin

Item #	Suburb	Street Address	Item name	Other notes
				Poole Printers" facades" Two storey industrial building facades
11372	Rosebery	Botany Road, 797-807	Former "British General Electric Co" including interior	Two storey inter-war Art Deco industrial building, c1940
11376	Rosebery	Dunning Avenue, 25-27	"Paradise Garage" warehouse including interior	Inter-war functionalist warehouse
11377	Rosebery	Harcourt Parade, 30-40	"Eveready Australia"	Eveready Australia, factory
11382	Rosebery	Rothschild Avenue, 24	Former warehouse including interior	Inter-war, c1920
11405	St Peters	Campbell Road,53-57	Warehouse "Rudders Bond Store" including interior	Post-war warehouse c1950
11562	Surry Hills	Hutchinson Street, 36-38	"Electrical Trades Union Hall" including interior	Four storey warehouse
12166	Woolloomooloo	Dowling Street,153-161	Former warehouse "Cancer Council" including interior	Three storey warehouse

6.7 WENTWORTH AVENUE, SURRY HILLS, REPORT REVIEW

A component of this study was to peer review the existing heritage assessment for a row of warehouses on Wentworth Avenue in Surry Hills. The heritage assessment by Weir Phillips from October 2013 for these warehouses was reviewed and taken into consideration in the above recommendation for listing. Information from this heritage assessment has been incorporated in the inventory for the row in Volume 2 of this report.

The row of warehouses from 4 through to 34 is considered to satisfy the established criteria for listing as a heritage item. Despite some level of alteration, the row represents a cohesive and distinctive streetscape of Federation and inter-war warehousing built over a narrow period from 1915 to 1918. The interiors of the buildings were partially examined by Weir Phillips; however, no photographs have been included in that report to confirm an assessment of their internal integrity. Buildings between 24 and 34 were not internally examined by Weir Phillips and as such their internal integrity is unknown. Therefore interiors of all warehouses from 4 through to 34 have been included in the listing with recommendation to be examined and assessed in detail at major future development. Further description and assessment of the buildings within this row is included in the inventory in Volume 2 of this report.

6.8 SITES WITH POTENTIAL INDUSTRIAL ARCHAEOLOGY

Many of the heritage items and sites within areas recommended for listing as part of this study contain physical evidence of alterations, additions and machinery with potential value for industrial archaeological research. These have not been separately identified as archaeological sites.

Further sites with potential archaeological remains are outlined in the following table. These sites have been identified for their potential buried archaeological remains which could yield information on the industrial activities that are no longer extant in the local area. These sites are not recommended for heritage listing as part of this study, but are recommended for inclusion in any future archaeological zoning plan for the area.

Major excavation of these sites would require development consent and the preparation of an archaeological assessment in accordance with the archaeological provisions of the Sydney Local Environmental Plan 2012 and Sydney Development Control Plan 2012.

Suburb	Street Address	Site	Potential remains
Alexandria	Bourke Road, 35-39	Site of former boiling down works	Pits, building, footings, drains and pipes
Alexandria	Eusten Road, 167-169 Sydney Park Road, 398	Site of NSW brick works	Brick kilns and deep underground flues.
Alexandria	Eusten Road, 178	Site of City brick works	Brick kilns and deep underground flues.
Zetland	Botany Road, 511-515	Site of former Waterloo fire brick works	Brick kilns and deep underground flues.
Zetland	Botany Road, 377-497	Site of former industrial fire brick Co	Brick kilns and deep underground flues.

These potential archaeological sites have been defined on the following map:

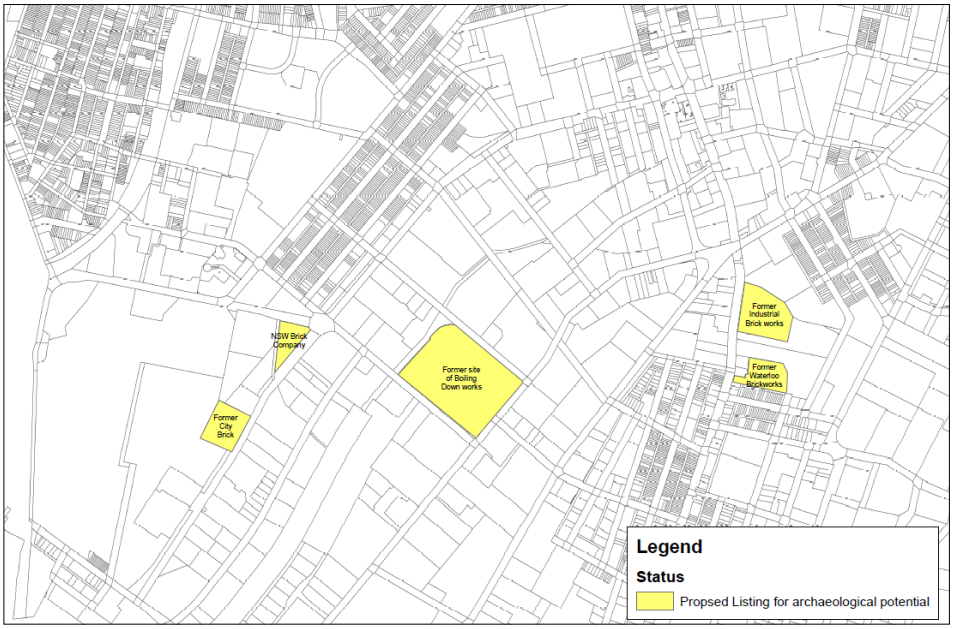

Figure 8: Sites with potential industrial archaeology

7.0 OUTSIDE SCOPE MATTERS FOR FURTHER HERITAGE STUDY

The following sections relate to sites and forms of industry outside the scope of this study. They were highlighted through the course of this study as worthy of further investigation, mapping or listing consideration as part of future studies or archaeological zoning plans.

7.1 FORMER CHINESE MARKET GARDEN ARCHAEOLOGY

While primary industry is not within the scope of this study, research into the history and development of the Alexandria and Waterloo areas for this study revealed that extensive Chinese market gardens once existed in these areas. These are shown on a series of maps for the planed extension of the Alexandria Canal and appear to comprise areas leased by Chinese people from the Cooper Estate and then sub-leased to other members of the Chinese migrant community. These sites of former market gardens are mostly located along the route of Sheas Creek. Other plans show Chinese gardens elsewhere away from the main line of the creek but still in the Cooper Estate. These plans date from approximately 1890 but the Water Board plans from the 1920s and 1930s also show gardens.

Investigating the archaeology of sites of known Chinese occupation would have the potential to yield information about the work and domestic life of Chinese migrants in Sydney beyond the urban environment of the Rocks, Chinatown or Surry Hills.
While extensive development of these areas since the 1930s would have destroyed many of the remains of market gardens, some sites may retain evidence of this significant early part of the area's history. It is therefore recommended that a comprehensive study and mapping of the potential market garden archaeology of southern Sydney is considered, potentially as part of a future archaeological zoning plan.

7.2 FURTHER CENTRAL SYDNEY INDUSTRIAL BUILDINGS

Further industrial buildings located in the central business district were highlighted during the course of this study, however these are either located outside of the study area or have been substantially modified. These sites warrant further consideration for listing as part of future studies. Some of these modifications to former industrial buildings have potential significance in their own right, for instance as examples of modern architecture or as warehouse conversions; however, do not relate to the industrial history that is the subject of this study.

7.2.1 LOCATED OUTSIDE OF THE STUDY AREA:

- Kent Street, 301
- Kent Street, 305
- Sussex Street, 307-325 (former Hordern warehouse group)

- York Street, 24-32 (former Reid House)
- York Street, 36 (former commercial warehouse)

7.2.2 SUBSTANTIALLY MODIFIED BUILDINGS OR BUILDING REMNANTS:

- Clarence Street, 76-80 (former Farleigh Nettheim and Co and Macmur House façade and interior remains)
- Clarence Street, 100-102 (Art deco building)
- Clarence Street, 142 (timber-framed warehouse with post-war modifications)
- Clarence Street, 161, also known as Kent Street, 298-302 (two Scrutton & Co Merchants warehouse remnants)
- Clarence Street, 249 & Kent Street, 392-394 (façade of two former warehouses)
- Kent Street, 187-191 (former warehouse façade)
- Kent Street, 304 (former Andres Bros Woollen Goods warehouse)
- Kent Street, 406-412 (former Kent stores remnants in replacement building)

8.0 RECOMMENDED PLANNING CONTROLS

The best way to conserve a heritage building, structure or site is to use it. Once a building's function becomes redundant, adapting it to a new use provides for its future. Work to heritage buildings should conserve what is important about them and provide the opportunity to reveal and interpret their history, while also providing sustainable long-term uses.

Retaining and re-using historic buildings is also an important component of urban renewal plans because of the appeal, identity and economic advantages they offer. By retaining links to the industrial past, historic industrial buildings provide character and unique place makers for neighbourhoods and urban centres. The mix of new and old in developments and areas creates distinctive destinations and a diversity of building stock and urban form. Diverse and distinctive areas offer greater liveability to attract residents, workers and visitors, and the resulting benefits these generate for local business, jobs and revitalising neighbourhoods.

Refining the planning controls to guide the re-use and development of Sydney's industrial and warehouse buildings will not only help to protect the City's industrial heritage, but will also inform and support current urban renewal plans for parts of southern Sydney.

8.1 EXISTING GUIDELINES

The 2011 international guide jointly produced by ICOMOS and TICCIH (in Appendix 11.4) for industrial heritage recommends a number of measures for the effective protection and conservation of industrial heritage structures, sites, areas and landscapes. Key measures recommended in this guide include:

- Appropriate policies, legal and administrative measures to protect these sites, structures, machinery and records (principle 6)
- Inventories of sites and their features with legal recognition (principle 7)
- Apply protection to contents as well as buildings to retain functional integrity (principle 9)
- Appropriate original or alternative adaptive use is the most frequent and often most sustainable way to conserve industrial heritage (principle 10)
- New uses should respect significant material, components and patterns of circulation and activity, based on the advice of specialist skills (principle 10)
- Where physical intervention is required to satisfy contemporary regulations, such as building codes, hazard mitigation and environmental or industrial requirements, adapt these standards to respect heritage features (principles 8 and 10)
- Make physical interventions reversible and respect significant traces or marks (principle 11)
- Dismantling and relocation are only acceptable in extraordinary cases when destruction is required by objectively proven and overwhelming economic or social needs (principle 11)
- Prior to decommissioning industrial uses or other major changes, document affected buildings including their material form, functioning and location as part of industrial process and collect oral or written stories of people connected with industrial processes (principle 12)
- Communicate and promote industrial heritage as a source of learning, such as through tours and visits (principles 13 and 14)

The NSW guide for the adaptive re-use of heritage buildings known as “New uses for heritage places” jointly produced by the NSW Heritage Council and NSW Institute of Architects, provides a good resource to help owners of heritage items understand how to sympathetically convert heritage buildings.

This guide establishes that new uses need to be compatible with the building, retain its historic character, evidence of its historic use and conserve significant remnant fabric and machinery. However, new uses can still introduce new services, as well as modifications and additions. Adaptation usually requires some element of new work and it should be informed by an understanding and analysis of a heritage building’s significance, its character and quality.

8.2 CITY OF SYDNEY’S EXISTING PLANNING CONTROLS

A number of the measures recommended in the international guide are already addressed through the City of Sydney’s existing planning controls for heritage and the inventories contained in Volume 2 of this report.

8.2.1 HERITAGE ITEMS AND CONSERVATION AREAS

Changes to heritage items and in conservation areas are guided by the heritage provisions contained in the City's two main plans known as the Sydney Local Environmental Plan 2012 and the Sydney Development Control Plan 2012. The controls in these plans seek to ensure that 'the significant elements of the past are appropriately managed and respected by new development'.[8]

Standard best practice controls are currently contained in these plans for managing the development of heritage places, including the need for Council's development consent for major changes, the requirement for statements of heritage impact to accompany development applications, and the Council's obligations to assess the impact of developments on the heritage significance of listed places.

Planning controls specific to warehouses and industrial buildings are also contained in section 3.10.1 of the development control plan, together with further controls for Central Sydney's warehouses in section 5.1.8.

8.2.2 NOTED HISTORIC SITES OVER 50 YEARS

Some heritage provisions contained in the development control plan also manage unlisted buildings where they are over 50 years of age. For instance, heritage impacts still need to be assessed for major alterations to or demolition of all buildings over 50 years of age through the requirement to prepare a statement of heritage impact. The specific development controls for warehouses noted above also apply to unlisted buildings over 50 years of age. These controls, with the following recommended updates, will provide sufficient provision for managing the historic value of industrial and warehouse buildings identified as noted historic sites. Council can require the recording or interpretation of these buildings as conditions of consent, as appropriate, after taking into account the proposal and significance of the place outlined in the statement of heritage impact.

8.2.3 ARCHAEOLOGICAL SITES

Sydney's local environmental plan requires Council's consent to disturb or excavate an archaeological site where the development is likely to discover, expose or damage relics. The development control plan further requires an archaeological assessment to be submitted with these applications.

[8] Sydney Development Control Plan (DCP) 2012

Separate to the local planning controls, the Heritage Council's consent may also be required under the Heritage Act 1977 by obtaining an excavation permit in accordance with section 139 of the Heritage Act.

8.3 RECOMMENDED PLANNING CONTROL UPDATES

The controls in the development control plan for industrial and warehouse buildings could be better clarified and tailored to suit the specific nature of the warehouses and industrial buildings. In some cases the existing general guidelines do not refer to the particular nature of the warehouses and industrial buildings such as the external form, facade fenestrations, sawtooth roofs, internal open plan quality, remnant industrial elements and overall appreciation of their character. Further guidance on treatment of asbestos roof sheeting is also recommended.

The following updates or additional controls to the development control plan for the warehouse and industrial buildings over 50 years (section 3.10.1) are therefore recommended:

8.3.1 OBJECTIVES

- Ensure objectives and these controls only relate to industrial and warehouse buildings (remove erroneous reference to weatherboard buildings in objectives)

8.3.2 SIGNIFICANT FEATURES

- Significant features of these buildings to maintain and conserve, in addition to those already identified in the development control plan, include:
    - Sawtooth roof forms
    - External form
    - Original timber structure and floors
    - Interiors, including open plan qualities
    - Fenestration , external joinery and metal-framed windows and doors
    - Loading bays, hoist machinery, pulleys and ropes
    - Stonework and face brickwork
    - Early signage

8.3.3 CHANGE OF USE & BUILDING STANDARDS COMPLIANCE

- Consider non-residential uses for adapting the industrial and warehouse buildings located in the southern areas, including uses such as light industrial, commercial, storage, retail, creative, community education, recreation, food and car related services. Residential conversions are discouraged because of the greater impacts and challenges related to

contamination remediation, flood-affected land, and compliance with NSW design and amenity standards for housing.

- Where a change of use is proposed, ensure physical changes required to comply with the Building Code of Australia, Australian Standards and the Disability and Discrimination Act do not compromise the significant external form, interiors, fabric and building elements.
- Submit required compliance reports with the Development Application, including structural, fire, building services, access and building code of Australia (BCA) reports, to ensure all impacts are known and assessed as part of proposed use and works before applications are determined.
- In these reports, outline all physical interventions that may be required to upgrade the building for the use, and where alternate solutions may be necessary to retain and respect significant heritage features.

8.3.4 PAINTING

- Removal of paint or coating of stonework and face brickwork should not damage original materials.
- Where removal of paintwork from surfaces is not practical, surfaces should be painted in recessive earthy tones in a manner that reinforces the buildings form and character.
- Evidence of early interior lime wash finishes should be conserved.

8.3.5 PARTIAL BUILDING REMNANTS

- Where only partial building elements remain such as facades, opportunities should be taken to reinforce the building's setting and encourage reinstatement of missing façade components including joinery, metal framed windows and doors, party walls and ground floor detailing. This is particularly important where colonnades are added to the buildings.
- Do not demolish remnant facades or other partial building remains.
- Establish policies for the protection and ongoing conservation of partial building remains.

8.3.6 ASBESTOS CORRUGATED ROOF SHEETS

As undisturbed asbestos is not harmful by its presence alone, asbestos sheeting does not need to be removed where it is structurally sound, is not leaking, damaged, soft or broken. Therefore the following guidance is recommended:

- Retain, contain and maintain sound asbestos corrugated roofing sheets in accordance with relevant health and safety legislative requirements and regulations.
- Use only special sealants on asbestos material because ordinary paints do not bond well to the surface of weathered asbestos cement products.

- For painting asbestos, professional advice must be sought and a professional painter used where possible.
- Refer to Work Cover's (NSW) Fibro & Asbestos – a renovator and homeowner's guide for information on how to manage the asbestos roof sheeting and their coating.

8.3.7 RECORDING AND INTERPRETATION

- Prior to major demolition, archival photographic recording should be prepared for industrial and warehouse building of some historical or other heritage significance.
- Encourage the interpretation of the significance of industrial and warehouse buildings as part of major site redevelopments or changes of use.

9.0 CONCLUSIONS AND RECOMMENDATIONS SUMMARY

This study finds that Sydney contains the largest concentration of historic industrial and warehouse buildings in New South Wales and, together with Melbourne, one of the largest known collections of its kind in Australia. While often restrained architecturally and under-recognised for their heritage value, these buildings provide tangible evidence of an important phase in Sydney and Australia's development, as part of the twentieth century industrial boom which made Sydney one of the largest industrialised cities in the South Pacific.

As the second known Australian study of industrial heritage of its kind and the first known for New South Wales, this study provides opportunities for the proactive management of this under-valued form of heritage. In so doing, it implements the 2012 direction of City of Sydney Council, as well as the 2011 directions of the international heritage body and industrial heritage committee, known as the Dublin Principles, for documenting, protecting, conserving and recognising industrial heritage as part of the heritage of human societies around the world.

As a result of a comprehensive survey and assessment, this study recommends consideration of the following key actions for Sydney's industrial heritage:

1. **Additional listings:** Add 63 industrial buildings, structures or complexes and two industrial conservation areas to the heritage schedule of Sydney Local Environmental Plan 2012.
2. **Existing listings:** Retain and update the inventories for the 21 existing heritage items reviewed in this study.
3. **Archaeology:** Include 5 sites with potential archaeology remains in any future archaeological zoning plan and advise proponents to prepare an archaeological assessment for excavation of these sites in accordance with the existing provisions of the local plans.
4. **Planning controls:** Update the existing development control plan to provide more specific controls to guide the development of industrial and warehouse buildings.

5. **Matters for further heritage study:** Further investigation, mapping or listing consideration is recommended for matters outside the scope of this study including archaeology from market gardens in southern Sydney and a number of former industrial buildings in Central Sydney.

While 63 heritage items and two conservation areas represent a small proportion of the built form that once existed from one of Australia's industrial heartlands, these additional listings will capture the surviving industrial buildings and structures of greatest integrity and historical value from this important period in Sydney's history. Combined with improved development guidelines and the existing heritage listings, the above actions recommended in this study will ensure that Sydney's industrial heritage resource is appropriately, recognised, managed and protected for current and future generations.

10.0 BIBLIOGRAPHY

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11.0 APPENDICES

11.1 HISTORIC OVERVIEW

Sydney's historic industrial and warehouse resources: overview of historic development

Dr Shirley Fitzgerald

FINAL DRAFT

'Sydney's historic industrial and warehouse resources: overview of historic development' for

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Sydney's historic industrial and warehouse resources: overview of historic development

1 Introduction

1.1 The brief

The brief for this study placed emphasis on industrial and warehousing resources in the southern part of the City of Sydney, but specifically called for a 'concise overview of historic development [which] is to apply to the whole of the City of Sydney LGA'.[1]

This study is required to adopt a broad definition of 'industry' and 'warehousing'. The definition is to include 'manufacturing, repair servicing of equipment and machinery, storage of goods for commercial purposes and warehousing, as well as infrastructure associated with the development of industry such as substations and tram facilities'.[2] For the purposes of this historical overview, and following from the intention of this definition, pre motorised transport facilities and related manufacturing are included; stables and blacksmithing, for example.

Australian censuses divide the people who work into different sectors, and it is not possible to match these figures exactly to this study. When census figures are provided they are to be taken as a general guide to trends rather than as an accurate representation of numbers employed in manufacturing and warehousing in the City of Sydney.

The extent of the City of Sydney has varied over time with frequent boundary changes. For the purposes of this overview, the area for all periods is the current 27 square kilometres of the City of Sydney which stretch from Port Jackson south to Gardeners Road, and is bounded by Randwick and Woollahra Councils on the east and Leichhardt and Marrickville Councils on the west.

1.2 The remnant built form and the historical record

Sydney has been slow to value and interpret its industrial and manufacturing heritage, and the physical retention of many factories and warehouses has not been a high priority. The written record is more likely to ignore the history of these places than of any other kind of structure, and although there are descriptions of the manufacturing processes in trade journals and official investigations of working conditions, these are slight in comparison to descriptions of most other kinds of buildings and activities. With some outstanding exceptions, the pictorial record is also often bereft. Streetscape photographs may capture images of factories and warehouses by default, but interiors are often difficult to source and for every firm that produced an anniversary publication or commissioned a professional photographer to document its work, there are many more that did not. For example, according to a recent Conservation Management Plan for the Sydney Park Brick Kilns Precinct, the only known image of the large Bedford/Austral brickworks, the remnant remains of which dominate the present landscape of this park viewed from the Princes Highway at St Peters is the sketch of the works on the company's 1929 letterhead. [3]

The best records for this kind of study include Bureau of Statistics census information on population and industry, trade journals, business directories, particularly Sands Sydney Directories, (1857 –

[1] Brief from City of Sydney, 2013, p.3.
[2] Brief from City of Sydney, 2013, p.5.
[3] Rosemary Broomham in Tropman & Tropman Architects, 'Sydney Park Brick Kilns Precinct', Conservation Management Plan, for City of Sydney, 2007, p. 32.

1933) and maps, especially the City of Sydney's Building Surveyors detail sheets from the 1950s and the Civic Survey detail sheets from 1938-50 as well as various planning scheme maps and aerial survey photographic series. The 1995 South Sydney Heritage Study provides detailed lists and many reproductions of maps for the southern area of the city going back to the original 19th century land grants.[4] Currently there are many maps available electronically at the City of Sydney Archives, State Library, National Library and Land & Property Information sites. The most accessibly collection at present is contained within the Historical Atlas of Sydney on the City of Sydney's Archives pages. http://www.photosau.com.au/CoSMaps/scripts/home.asp

Published books, studies and reports of some of the areas and items covered by this overview have been listed in the Bibliography at 1.8. The City Historian's forthcoming book will be an essential reference for the southern areas of the City. (Lisa Murray, 'R.A.W.: a history of Redfern, Alexandria and Waterloo', forthcoming 2014).

The built form of Sydney's factories and warehouses responded to at least four obvious factors:

- the period of construction
- the state of the economy at the time of construction
- the type of materials to be made and/or stored
- perceptions and intentions of the builders and owners in relation to how they wished to present their enterprises to the world

In their 1995 'Survey of Warehouses and Woolstores within the City of Sydney', Trevor Howells and Mark O'Donnell observed that 'generally such buildings are not highly decorative, constructed of or finished in fine and noble materials.'[5] Back in1984 Aplin & Storey were more fulsome in their praise when they described the bond and woolstores built along East Circular Quay in the 1850s as 'beautifully practical buildings' and regretted their replacement in the mid 20th century by 'curtain-wall office blocks with no functional relationship to the waterfront'.[6] The City of Sydney's 'Policy for the Management of Warehouse/Courtyard Complexes in Central Sydney', adopted in 2001, describes these buildings as 'utilitarian, robust but generally well designed and constructed buildings, considered to have 'a high degree of aesthetic significance'.[7]

The nobility or otherwise of industrial buildings is a matter for discussion. The utilitarian and ephemeral appearance of many manufacturing and warehousing buildings erected in the early 21st century; pre-fabricated steel frames clad in lightweight concrete slabs, given a lick of paint and a superfluous pediment of sorts along the street frontage may have assisted in shifting the general perspective on many older commercial buildings, so that we are better able to appreciate what we now perceive as the charm of early sandstone warehouses, the solidity of 19th century woolstores or the style and obvious pride embedded in the construction of federation and art deco factories of the early 20th century.

[4] Tropman & Tropman Architects, 'South Sydney Heritage Study', Volume 1 –The Main Report, 3.2.5 and Volume 2, Rosemary Annable & Kenneth Cable, Historical Material, for South Sydney Council, 1995.
[5] Trevor Howells and Mark O'Donnell for the City of Sydney, 'Survey of Warehouses and Woolstores within the City of Sydney', November 1993, edited 1995. Reprinted, August 1997.
[6] Graeme Aplin & John Storey, *Waterfront Sydney, 1860-1920*, Allen & Unwin, 1984, p. 26.
[7] 'Policy for the Management of Warehouse/Courtyard Complexes in Central Sydney', City of Sydney 2001, p.5.

1. ***1850s Warehouse, Kendall Lane, The Rocks***
Source: City of Sydney Archives 020\020758, Garry Deirmendjian, photographer.

2. ***Pitt Son and Badgery Ltd Woolstore, Harris & Allen Streets, Pyrmont, 1900-39***
Source: SLNSW hall_35007r

3. ***Cahill's new deep-freezing processing factory, Mandible St, Alexandria, 1944.***
Source: SLNSW hood_10970

Many today believe that woolstores and factories of the 19th and early 20th century are both pleasing to the eye and 'noble'. Buildings with loadbearing external masonry walls and internal features that include soaring ceilings, exposed heavy timber beams and aged floorboards have been successfully reinvented as highly sought after residential property. Others have made a successful transition from older to more contemporary industrial and commercial uses.

There are, of course, many unadorned factories and warehouses, especially those that were built to function within a limited timeframe, or constructed in periods coinciding with depressions (1840s, 1890s,1920s). There are also remnant temporary structures erected to fill urgent industrial needs in times of war and when building materials were in short supply. Over time some of these mellow in the imagination while others remain unloved. The Walsh Bay wharves, for example, were clad in weatherboards, as a second best choice due to shortages of more substantial materials during and after World War 1, and many structures built after World War 2 were intended as temporary solutions to material shortages. It is instructive to read the discrepancies in construction and ornamentation as a reflection of the state of the sector and of the Sydney economy in general in the period when they were built.

1.3 Sydney as a manufacturing city

There are several obvious contributory factors leading to the tendency of Sydneysiders to undervalue the city's industrial and warehousing structures. Reared on national foundation stories of Australia as a major exporter of the products of primary and extractive industries, the sheer size and importance of Sydney's role, both in the warehousing of these goods and as a manufacturing city in its own right have been less well documented. By 1947 there were more workers nationwide in manufacturing than in primary production, with heavy concentration in the two main cities of Sydney and Melbourne, but this was not widely acknowledged in the national rhetoric of who we were.

From its very beginnings Sydney grew faster than anyone predicted that it would, and this unexpected growth was underpinned by early and sustained manufacturing development and a dynamic construction sector. The so called 'tyranny of distance' inevitably provided some natural protection for manufacturing, while the timing of the city's development and the place of the city within the overall structure of the British Empire added weight to manufacturing development. Important also were the high levels of immigration, especially during and after the 1850s goldrushes, in the 1880s and

following the two world wars. In the 20th century political determination to foster local manufacturing through the construction of a high tariff wall was an important permissive driver of industrialisation and manufacturing up until the 1980s. Thereafter manufacturing declined. Within the Greater Sydney area, its demise was especially marked in the City of Sydney as traditional industries relocated to outer suburbs or closed down operations.

1.4 Industry

Almost from the moment of the arrival of the first Europeans in 1788, Sydneysiders made things. Isolation and necessity resulted in the early development of brickworks, timberyards and docks. Industries clung initially to the waterfront around Sydney Cove, then moving west around Dawes Point and Millers Point, where elevated positions permitted the use of windmills to power the town's first mills, and where shipbuilding could expand as the older dock areas became congested, with boatyards and slips established at Millers Point by the 1820s. The head of Cockle Bay (Darling Harbour) at the foot of Goulburn and Liverpool Streets was also an early location for industry, with the colony's first steam mill installed here in 1815. By the 1820s settlement and industry had expanded south beyond the original brickfields of Brickfield Hill, into Chippendale. Here, fresh water streams that drained towards the Blackwattle Swamp permitted the development of a distillery in 1826, and a brewery a decade later. The swamp, in Ultimo, became an early location for the so called 'noxious trades'- soapworks, abattoirs and tanneries.

East of the original settlement administrative restrictions on land use prevented the growth of industry, although a mill stood briefly in what is now the Botanical Gardens and the elevated ridge that is today demarcated by Darlinghurst Road became the site of a number of windmills from the 1820s while at Rushcutters Bay the colony's first water mill was established in 1811.[8]

South of the original settlement, from c.1815 on, a number of mills were established utilising what came to be known as the Waterloo and Lachlan Swamps along the Sheas Creek, approached by the Botany Road. These were generalist mills used for grinding grain and making both paper and woollen cloth.

As the city's population increased, housing spread to within walking distance of the original settlement, especially south and west. Industry did likewise. While flour milling continued to hug the dock areas where grains arrived by ship, brickmaking sought out appropriate clays in many localities, eventually concentrating around Alexandria and St Peters. For many industries it was access to cheap land, isolation from population and access to water that were crucial. The timber industry, which used the waterways as conduits to move raw logs was pushed east to Woolloomooloo Bay and then by the end of the 19th century west into Blackwattle and Rozelle Bays. The earliest environmental legislation required the 'noxious trades' of tanning and fellmongering to relocate beyond the city limits by 1860, with the result that these kinds of industries shifted south of the city proper, choosing sites with plentiful water supplies such as the Waterloo Swamps and beyond towards Botany Bay.

The command economy of the early decades resulted in some of the largest manufacturing sites being publically owned and the direct involvement of government in the development of Sydney's industries continued until well into the 20th century. Early on places like the Hyde Park Barracks (1819) and the Darlinghurst Gaol (1840) were undoubtedly sites of manufacture as well as of punishment while the dry dock built on Cockatoo Island in the 1850s was of the beginning of what became Sydney's and Australia's largest shipbuilding site until its closure in 1991. Ongoing public works programs built much of the transport and energy infrastructure of the city as well as many fine public buildings. The public purse was open to private enterprise as well, despite some instructions to the contrary in the first decades of settlement.

By the mid 19th century population growth, spurred on by the goldrushes, led to a dynamic and sustained investment in urbanisation during the so called 'long boom' from 1860 until the 1890s depression. High levels of investment from Britain were channelled heavily into the development of the domestic construction industry and into transport infrastructure. Sydney's population reached

[8] Len Fox, *Old Sydney Windmills*, Southwood Press, 1978, passim: Edward West Marriott, *The Memoirs of Obed West: A Portrait of Old Sydney,* Barcom Press, 1988, pp. 35-6.

about half a million by 1900 and by then the houses that had been built were larger and more demanding of manufactured inputs than in the earlier part of the century. Sydney built roads, - including miles of wooden roads in the city centre - bridges and permanent ways for both the colonial railways and the urban tramways system, along with engines and rolling stock. This manufacturing was fuelled by both the rising needs of the urban population and by the growing rural industries which now included an expanding mining sector.

4. ***Men on the construction site of the Colonial Sugar Refinery. Pyrmont, 1879.*** *Source: Noel Butlin Archives, ANU, 142/3970.*

The shift from a walking to a mass transit metropolis generated increased industrial work, especially in the nascent manufacturing areas south of the city. Here brickfields, engineering works and foundries proliferated, along with the manufacture of goods which were underpinned by rising levels of consumption – tanneries and leatherworks, textiles, food production and general household goods.

During the later decades of the 19th century growing mechanisation pushed some kinds of production out of the 'domestic' or 'cottage industry' categories into larger, more genuinely industrial operations. This applied to food processing such as bakeries and smallgoods and meat curing, which were previously carried out in the home or as an adjunct to retailing establishments. Machine shops turned out tools and metal ware was manufactured with increased precision through the use of new forms of machining. The standardisation of paint colours and the manufacture of resins and oils put the traditional 'oil and colourman' out of business. Up until the 1870s brickmaking had been distributed across the suburbs in operations that were sometime only small family affairs, but the introduction of mechanised pugging, pressing and cutting as well as the Hoffman continuous steam drying kilns concentrated this industry into larger manufacturing plants.[9]

By far the largest and most important industrial site in the city by the end of the 1880s was the Eveleigh Railway Workshops, built progressively from 1880. They were the heart of the colony's railway transport system and the heartland of southern Sydney's industrial landscape from then and for much of the 20th century.

From 1891 Sydney was severely impacted by a major depression. The depression was directly linked to the falling price of Australia' s wool clip, which in turn resulted in a downturn of activity on the Sydney waterfront and a collapse in domestic construction. The decline in the exports of wool were, to some extent offset by the development of refrigeration which permitted meat exports for the first time and added refrigeration plants to the Sydney landscape for the first time. But the strongest effect of the depression was to drive home the political need to encourage both a wider range of rural production and local manufacturing. Increased diversification in both these areas in the early decades of the 20th century was underpinned by strong government intervention in the economy.

[9] Shirley Fitzgerald, *Rising Damp: Life and Work in Sydney, 1870-1890*, Oxford, 1987, pp.162-4.

From the start of the century, and especially after World War 1, industry was supported with government subsidies and high tariff walls. Major remodelling of the waterfront -the creation of Walsh Bay, the construction of modern wharfage and warehousing in Darling Harbour and at Woolloomooloo, the construction of a branch railway line westward through Pyrmont and Glebe and the grain silos on Glebe Island - all contributed to a more efficient waterfront and shipping industry. Likewise the new Central Railway Station (opened in1906), the creation of an underground rail loop through the city (1920s-1950s) and the building of the Sydney Harbour Bridge (1926+) and other bridges all signified urban efficiency through public infrastructure.

Electrification of the city and its public transport, including an extensive tramways system, resulted in the construction of several large powerhouses and generated many ancillary industries. So too did the growth of telecommunications. As with earlier decades, it was British capital that made these investments into local infrastructure possible. Electrification of manufacturing processes generated new industries and industrial structures.

The introduction of the slow combustion engine altered industrial methods and provided new opportunities for the location and spread of manufacturing. Sydney's first motor lorry arrived in 1908 and two years later the Sydney City Council was the first in Australia to place an order for mechanical garbage trucks. [10] Private industry also moved to motorised transport, especially where the carting of heavy goods such as bricks was involved. Over the following decades the introduction of motorised cabs, buses and lorries resulted in the demise of horses, blacksmiths, stabling and carriage works. Garages, petrol bowsers, car showrooms and mechanical support industries proliferated.

Manufacturing in the 20th century both consolidated in inner city areas and spread further out. Consolidation in areas such as Ultimo, Chippendale and Surry Hills followed on from land resumptions and demolitions of some of Sydney's oldest housing in these localities which the City fathers now deemed unfit for residential occupation. The inner city was to be a place for commerce and for manufacturing, and in order to facilitate this, city streets were widened and new ones created, like Wentworth Avenue. It was created to directly connect the increasingly industrial Surry Hills to the new Central Railway. A more dispersed spread of factories into areas became viable as reliance on horse and cart gave way to motorised trucking. By the 1930s in places such as Camperdown and Forest Lodge there was a proliferation of small scale manufacturing establishments, typically covering less than an urban block; biscuit, confectionary and jam factories, button makers and printeries.

South of the city the vast Eveleigh railway workshops in Redfern continued to be the dominant industrial employer, while much of the land further south in Alexandria, Zetland, Waterloo and Rosebery remained tied up in large estates until World War 1. As soon as this land became available these areas rapidly filled up with factories, vying with each other to be considered the most 'industrial'. Industries such as the already well established noxious trades and food and clothing manufacture remained and consolidated while the establishment of car manufacturing plants and auxiliary industries transformed this southern area of the city from the 1950s.

During World War 2 factories, including the Eveleigh Railway Workshops, geared up for war production, with some notable technological triumphs (see section 1.4.3). Australia reached its highest level of commitment to manufacturing, with a quarter of all workers employed in industry. In Sydney the concentration was far higher, reaching 45 % of all workers in 1947 when a census of employment was undertaken. It was said that 'three-quarters of the County of Cumberland's factory employees lived within a three and a half mile radius of Redfern station.'[11]

The two decades following the war were ones of continuing strong employment in industrial employment and by now the sector did not look anything like it had a century before. While all forms of manufacturing increased enormously, the share of manufacturing employment in metals and engineering rose from 18% of all manufacturing in 1871, to a peak of about 48 % in 1970. This expansion occurred most rapidly after 1945, underpinning the strongest period of Sydney's industrial history.[12] But along with the strength of the sector there was a trend for many industries to seek

[10] Lester Hovenden, 'The Impact of the motor vehicle, 1900 – 39', in Garry Wotherspoon, ed. *Sydney's Transport*, Hale & Iremonger for Sydney History Group, 1983, p.142.
[11] South Sydney Heritage study, 1998, Vol. 2, Rosemary Annable & Kenneth Cable, 'Historical Material', p. 138, referencing the County of Cumberland Planning Scheme, 1948.
[12] Robert Fagan, 'Industrial change in the global city: Sydney's new spaces of production,' in John Connell, ed. *Sydney: The Emergence of a World City*, Oxford, 2000.

suburban locations where land was cheaper as land hungry single storey plants were more suitable to modern mechanised operations.

From the 1970s government subsidies and high tariff walls were progressively dismantled and since the 1980s there has been significant deindustrialisation, especially in the inner city areas. This has resulted in the clearance and reuse of many manufacturing sites. The establishment of new railway workshops at Chullora in 1937 was an early example of manufacturing moving out of the inner city areas, and by 1989 the old Eveleigh Railway Workshops had closed down altogether. Some firms retained inner city sites while also expanding into outer areas, such as Standard Telephones & Cables (STC), which remained in Alexandria, but in 1948 constructed a large factory on a 60 acre site at Moorebank where it manufactured radios and household appliances.[13]

Throughout the city woollen mills fell silent and clothing workshops downed tools as they were unable to compete with cheaper imported goods from Asia. The same applied to electronics and a multitude of household appliances. The movement of the car industry to suburban locations led to the closure of many support industries. And so on. Sydney was deindustrialising and nowhere more so than in the City of Sydney.

The retreat of industry came at different time to different parts of the City of Sydney. It can be conceptualised as a wave of movement out of the original areas of settlement to localities such as Pyrmont and Surry Hills in the early part of the 20th century, then moving on through to the southern areas as factories in these places in turn became antiquated or too small. This boa–constrictor kind of movement is easily understood. What was not so expected by planners and government in the immediate post war period was the way in which old residential stock, in areas that were ear-marked for demolition and redevelopment and /or industrial expansion remained tenacious for residential use. Immigrants who worked in the industrial southern localities bought up terrace houses that Anglo residents were retreating from, thus 'saving' them from demolition. Eventually in the 1960s and beyond this old housing stock became sought after, with the process beginning in Paddington and moving on to Surry Hills and Chippendale, then later to Newtown and Redfern. This deindustrialisation process was a complicated one which also involved reclaiming the city as a preferred residential location.

The deindustrialising process has not meant that industry has disappeared. The growth of the high rise city, which dates from the lifting of height restrictions on buildings at the beginning of the 1960s, has generated investment in new technologies and construction methods. The new 'information economy' with its demands for legal, banking and insurance services has replaced many traditional manufacturing jobs, but although the products of this sector are often intangible it still requires the production of office buildings, data storage, cabling, call centres, studios and information services.

1.5 Warehousing

Warehousing bares no direct relationship to manufacturing and the extent and importance of warehousing does not depend on to the level of industrialisation as goods that are warehoused can be the products of importation or local manufacture. The amount and type of storage required alters with changing trading and retailing practices, transport options and technologies. It depends on a complex web of distribution practices, the overall level of production and consumption and the viability of duration of storage, which in turn depends on the type of goods stored and the level of technology available to preserve them. The invention of refrigeration in the 1880s, for example, dramatically altered both the types of goods stored and the location of their storage. The most important factor in determining the location of warehousing is proximity to transport routes.

The first warehouses clung to the waterfront's wharf areas. Early warehousing located at the mouth of the Tank Stream and along western side of Sydney Cove where the first dockyards, the government Commissariat stores and Customs House were built as well as the first privately owned stores belonging to Robert Campbell of the East India Company. The early development for export of the products of the maritime industries of sealing and whaling, then by the 1820s wool, all required storage, as did the imports of tea, alcohol, household goods, horses, hoists and just about everything

[13] Christopher Keating, *On the Frontier: A Social History of Liverpool*, Hale & Iremonger, 1996. This and other area histories of Sydney's suburbs provide a good perspective on the trajectory of many older firms which initially located in the inner city.

else the nascent town required. The exception to wharf-side storage was of goods considered dangerous or vulnerable, which were often stored on islands in the harbour. This applied to the storage of gunpowder on Goat Island and grain on Cockatoo Island. A few warehouses and stores from the 1830s and beyond remain in The Rocks and Millers Point.

Later storage spread around Dawes Point which was for decades the focus of the wool trade, and into Darling Harbour which took the produce of the coastal shipping trade. The 1887 Corn Exchange building at the foot of Market Street and similarly aged warehouses along Kent Street, all now used for offices and retailing, remain today as indicative of late 19th century warehousing. They were sited in proximity to Darling Harbour and to the City Markets, located from 1812 on George Street between Druitt and Market Streets. Wool storage, which related to the mooring of the wool ships on the eastern side of Circular Quay was unable to expand in the latter decades of the 19th century. Its centre of gravity moved across Darling Harbour to the Pyrmont peninsula after the 1880s. This move related also to altered methods of wool sales and to the convenience of the new Darling Harbour goods yards (see 1.3.3). By the 1920s the goods railway had extended along the Pyrmont peninsula and snaked across into Glebe via a series of tunnels and viaducts across the head of Blackwattle Bay resulting in the construction of warehouses, coal depots and woolstores along Bridge Road. Goodsyards in Alexandria were opened c. 1917,[14] and at times when normal trade has been disrupted, temporary storage has been extensive, including temporary buildings on Wentworth Park and 250 woolsheds built along the Alexandra Canal built to stockpile wool during World War 2.

By the 1950s and '60s when many inner city industries were moving out to suburban sites, older factory stock was often reutilised for warehousing. Examples ranged from former factories being recycled for self- storage in areas with residents who were downsizing into small high-rise apartments, through to the once proud Leylands car manufacturing plant at Zetland which was transformed into a warehouse for naval stores in 1976. By the 1970s the great woolstores of Ultimo were emptying out as brokers moved operations to the new Yennora Wool Centre (1971). The last tram ran in 1961, leaving a lot of unused tramsheds to find other uses. The Pyrmont Bridge was closed to traffic and the Darling Harbour rail lines and yards were torn up in the 1980s. By the 1980s, the Port of Sydney, long a generator of on shore warehousing had practically vacated Port Jackson for Botany Bay, leaving underutilised or unused wharfage and storage in its wake.

The relationship of warehousing with retailing has altered greatly over the 20th century and is currently in such a state of flux that predictions for future trends are impossible to make. Small retail shops are closing against the completion of large warehousing retailers such as Bunnings, which self-labels as a 'warehouse'. On-line retailing has generated some new forms of warehousing and expanded use of the postal system while other on-line services have contracted it. Pre-fabrication and 'flat pack' methods of marketing have altered warehousing requirements while goods that traditionally would have been unloaded and stowed from ships arrive in containers which occupy vast tracts of land, including some on the extremity of the southern borders of the city.

Energy and communication storage facilities have changed dramatically in the 20th century. The AGL gasometers at Darling Harbour were dismantled in the 1920s. The functions of electrical powerhouses within the City have progressively moved out of urban locations, leaving huge shells of buildings behind. Substations required to distribute power which once occupied buildings the size of small houses were no longer required - and have, in some cases, actually become small houses - while bulky telephone exchange buildings such as the one on Macleay Street, Potts Point have been adapted for reuse as commercial space.

1.6 Organisation of Report

This overview history of manufacturing and warehousing in Sydney is organised chronologically with each period presented in three parts:

- an overview of trends

[14] This date given in Godden Mackay Logan , 'Australian Technology Park', Conservation management Plan, Vol. 1, 2013, p.22. However, earlier references were found in newspaper searches with the *Sydney Morning Herald*, 13th April, 1916, p.8 reporting that the Alexandria yards had been upgraded to handle up to 200 trucks a day.

- an analysis of political constraints/opportunities
- locality histories, for the following areas:
  - central and eastern: Sydney, Centennial Park & Moore Park, Elizabeth Bay, Darlinghurst, Kings Cross, Potts Point, Rushcutters Bay, Surry Hills, The Rocks, Millers Point, Woolloomooloo.
  - western: Ultimo, Pyrmont, Glebe, Forest Lodge, Camperdown.
  - southern: Chippendale, Redfern, Newtown, Alexandria, Beaconsfield, Erskineville, Eveleigh,
    Rosebery, Waterloo, Zetland.

It should be noted that the South Sydney Heritage Study, (Tropman & Tropman Architects, for South Sydney Council, 1995) organised its historical report according to eight 'planning districts' adopted by that LGA. No attempt has been made to fit the present historical overview to this schema. As the historians working on that study observed, these boundaries 'do not have any particular historical validity' and forced an amount of repetition and confusion into the historical narrative. Given the enormous scope of this early Heritage Study it is inevitable that some of the detailed information provided does not accord with the details provided in the present historical overview. There is no major disagreement with its overall representation of the history of industrial development in the area.

2 1788 to 1850

2.1 Overview of Trends

Officially, Sydney was established as a place of banishment, but from its beginning the settlement at Sydney Cove was viewed as more than a solution to the problem of Britain's overflowing prisons. The idea of 'world trade ' was gaining currency in the late 18th and early 19th century as European empires increasingly traded across the globe. Within the British Empire, the metropolitan power was moving from an agrarian economy to one of heavy industrialisation, with its colonies supplying the raw materials and foodstuffs to support the centre.

Sydney was the spearhead of a settler economy where Britain forcibly took the land from an indigenous population and supplied the labour. Accordingly, the arrival of convicts was soon supplemented by free settlers and assisted immigrants and by 1841, just after the last convict ship arrived in Sydney, there were 26,977 convicts in New South Wales, and over 100,000 free citizens.[15]

From the arrival of the first fleet Europeans required shelter and food and local production was encouraged by the distance from accessible sources of manufactured goods. Government-run timber yards, brickfields and mills for grinding grain and cloth were established from the start. Initially all foodstuffs were channelled through the government stores – the commissariat. By 1812 convicts had built a large commissariat store close to the 1797 government docks on the western side of Sydney Cove, and these, along with large convict barracks at Hyde Park and at the southern end of George Street (1819) were visual signifiers of a command economy. Both these barracks were sites of manufacture as well as providing accommodation for convicts. However, by the time they were built there were also private warehouses located on Sydney Cove. In the context of severe entrepreneurial and skills shortages, early governors gave assistance to 'acceptable' private individuals and non-

[15] Wray Vamplew, ed. *Australians: Historical Statistics*, Fairfax, Syme & Weldon Associates, Sydney, 1987, p. 104. The numbers of Aboriginal people were not counted, with estimates of the number in NSW at 1788 ranging up to 550,000. Decimation through disease and warfare resulted in them being only a small presence in the early history of manufacturing.

government manufacturing was encouraged and supported through land grants and government funded infrastructure.

Private brickfields and quarries proliferated as settlement spread. Many of them were little more than family affairs servicing very local areas. Private windmills soon outnumbered government ones. Mills and factories were flexible affairs as the small size of the domestic market did not permit specialisation and those who embraced the idea of flexible output often performed well. Richard Dawson, for example, who located his mill at the head of the Tank Stream between George and Pitt Streets, was in partnership with H A Castle as a ship and anchor smith. He then established an iron foundry which made stoves and grates as well as his ships' work and lighthouse equipment in the 1830s. After a short insolvency in the 1840s depression he moved into making boiling down pots for distressed farmers. Always moving with the economy, his later career involved manufacturing gold mining machinery in the 1850s and the development of refrigeration engineering in the 1860s.[16]

The handful of manufacturers who strode the diminutive stage of this fledgling economy formed interchangeable business consortia and set the machinery of their mills to produce whatever products the little settlement had need of, so that the one mill might manufacture cloth and at another time make paper or grind grain.

This new British outpost provided naval supplies and ship building and repair services to British and American shipping as well as warehousing for traders. For the first three decades the local export trade consisted primarily of maritime products of whaling and sealing, sandalwood and trepang. By the 1820s the land based wool industry began to dominate both the export earnings and storage facilities, which for the whole of this period clung to the shores of Sydney Cove (transformed into Circular Quay by1844). Because Britain needed these products, the local settlement was able to attract British capital, and although the economy was organised around exports, from the beginning of settlement this inevitably led to the establishment of dockyards, shipbuilding and repair, as well as warehousing of oils, skins, hides and, most of all, the wool clip.

While the bulk of the wool clip was exported there was also the development of a local woollen cloth industry with related manufacturing establishments such as tanneries, woolwash and fellmongering plants. During the 1840s when the colony and Sydney experienced sharp depression, excess capacity resulted in boiling down to manufacture tallow for candle making and soap works. Leather products - bootmaking, saddleries and harness making - emerged in tandem with tanneries. Most of these were small establishments.

Half a century on from settlement gaslight from the Australian Gaslight Company (1841) lit some of Sydney's central streets and the Sydney City Council (incorporated in 1842) was taking its first faltering steps towards the provision of both reticulated water and sewers. Sydney remained a small isolated town up until the mid-century. It would take the discovery of gold in rural NSW and Victoria in 1851 to change the town's fortunes dramatically.

2.2 Political constraints/opportunities

Initially, boat building was forbidden, as a boat was an obvious temptation for a convict escape; on the other hand the ships that came with supplies, the ships from the East India Company trade in the Pacific and from China and the American whaling ships from Nantucket, needed the new settlement at Sydney to be place for repairs and revictualing. The earliest industrial activities were associated with the government dockyards on the western side of Sydney Cove and the nearby lumber yards.

[16] Harry Irwin, obituary of Dawson, Richard (Dicky) 1800-1865, *Obituaries Australia*, National Centre of Biography, ANU, http://oa.anu.edu.au/obituary/dawson-richard-dicky-14382/text25455 accessed July, 2013.

Initially, government enterprises dominated manufacturing and warehousing, but private entrepreneurs and even convicts on whom the administration looked favourably were soon participating in the economy. It is difficult to measure the opportunities contained within a scenario of being granted free land and free convict labour, but it is little wonder that many fortunes were made.

It is also difficult to measure the costs inherent in manufacturing in an isolated market where local demand was limited and opportunities to tap into other markets non-existent, and it is accordingly little wonder that fortunes were also lost. Manufacturing plant that was flexible and easily retooled for different outputs did best. While shipbuilding and repair work required a maritime location, other industries required fresh water. Although there were early efforts to protect the stream that drained into Sydney Cove with general edicts commanding a retreat away from what was the settlement's drinking water, the incursions of industry and settlement meant that it was soon polluted and that periods of water shortage became commonplace. By 1826 this water supply, known as the Tank Stream, was abandoned and water had to be carted in from the Lachlan Swamps, which were to the south in what is now Centennial Park. This supply was eventually connected to a stand in Hyde Park via the convict built Busby's Bore in 1837. Water quality and water shortage issues recurred during the following years.[17] The City Council, formed in 1842, commenced a water reticulation program in 1844 but connections were voluntary and limited.[18]

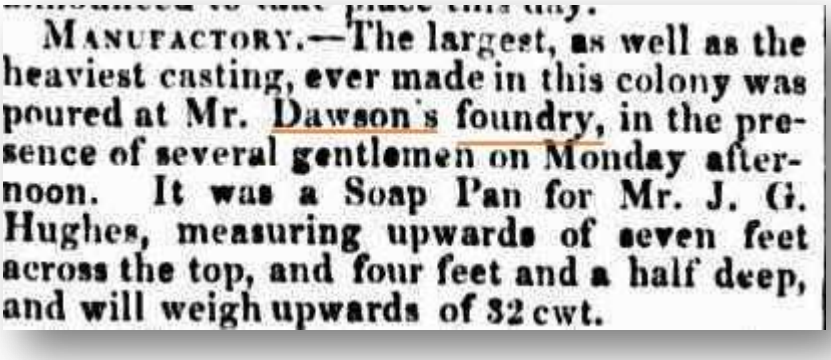
At the close of this period, in1849, legislation gave noxious traders such as tanners and fellmongers an ultimatum to remove their factories to beyond the city limits – Cleveland Street – by 1860, and when some of them had not done so within several years the government again resolved to enforce this law.[19] Some manufacturers were still petitioning unsuccessfully for compensation in the 1880s.

2.3 Development by locality

2.3.1 Central & Eastern

The majority of early manufacturing and warehousing was located in what is now considered to be the central city area, with the first brickfields located according to the dictates of suitable clays just beyond the original settlement to the south. The Brickfields employed convicts working for the government, but other pits soon opened up as required, many of them ephemeral family affairs. Stone too was quarried in a variety of places determined by ease of extraction and there remain landscapes of quarries and quarry faces visible in many places in the inner city today. Perhaps the most dramatic remnant from this time is the cliff face of the Tarpeian Way on the approaches to the Sydney Opera House, quarried for the creation of the Circular Quay in the 1830s and 40s.

[17] W V Aird, *The Water supply, Sewerage and Drainage of Sydney*, Water Board, Sydney 1961 pp. 1-8.
[18] Shirley Fitzgerald, *Sydney 1842- 1992,* Hale & Iremonger, Sydney, 1992, Chapter 2.
[19] Sydney (Slaughterhouses) Act, 1849: Select Committee on Tanners and Curriers Bill, *NSW V& P*, 1862, Vol. 5, p. 1125.



MANUFACTORY.—The largest, as well as the heaviest casting, ever made in this colony was poured at Mr. Dawson's foundry, in the presence of several gentlemen on Monday afternoon. It was a Soap Pan for Mr. J. G. Hughes, measuring upwards of seven feet across the top, and four feet and a half deep, and will weigh upwards of 32 cwt.

5. ***Report on Dawson's Foundry*** *Source: Sydney Herald 02 Jun 1842, p.2.*

The first industries located around the headwaters of the Tank Stream where as late as the 1840s Dawson's Foundry, which had grown out of a firm that began as ship and anchor smiths, was located on prime land between George and Pitt Streets with a shallow waterfrontage to Sydney Cove. By government decree the western side of the Tank Stream was where the convicts were housed and it was here that the early industries such as bakeries grinding the first grain with handmills, lumberyards and so on were located. Although the first government wharf was built on the eastern side of Sydney Cove and there were some manufacturing incursions into the area that became the Botanical Gardens in 1816, most industry, both government and private, was located in this western side of the settlement. By 1798 government dockyards had been built on the western side of Sydney Cove and along from these, to the immediate north, Robert Campbell of the East India Company was living at Dawes Point where he began building a warehouse and private wharf in 1798. [20] Surviving places such as the Argyle Stores, one of the oldest warehouse structures in Sydney, built from 1826 in Argyle Place, and the Unwin's Stores on Lower George Street, built in the austere 1840s, provide a measure of the style and size of successful trading enterprises.

6. ***The Military windmill next to the first St Phillip church, Church Hill. Governor Hunter referred to this when he said 'we are erecting upon the high ground over***

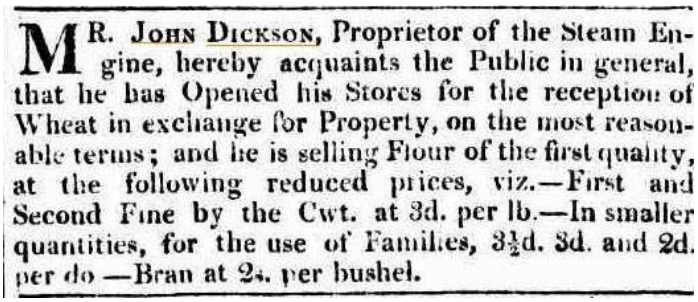
[20] Margaret Steven, Campbell Robert (1769 -1846) *Australian Dictionary of Biography*, http://adb.anu.edu.au/biography/campbell-robert-1876/text2197

Sydney a substantial and well-built windmill, with a strong tower that will last for 200 years'. It fell down about three years later in a violent storm. It was re-erected, and stood somewhere near the top of present day Grosvenor Street, long since disappeared. 'Roadway, bridge approaches and an overhead expressway marks the spot' [Len Fox, Old Sydney Windmills p. 19.] *Source: SLNSW Call No. PXA 1187.*

Windmills were the exception to the rule of favouring the western side of town, as any elevated place was suitable for harnessing the wind, and accordingly they were built both west and east of the settlement. The first windmill was erected on Windmill Hill, later known as Observatory Hill and from 1815 John Leighton (Jack the Miller) built three mills at Millers Point. Thomas Barker and others erected substantial mills on Woolloomooloo Hill along the Darlinghurst ridge.

The last mill to be demolished was the Craigend Mill in the 1870s. It stood on ground above the heritage listed Beare's Stairs, Darlinghurst, and it is possible that these were built of sandstone from the old mill.[21] Watermills were less common, with Obed West's Barcom Glen mill, located on the creek which drained to Rushcutters Bay on the very eastern extremity of the city being a rare example. West was granted the land expressly to construct his mill which was a 'single motion mill with one pair of stones and overshot wheel of about 24 feet in diameter'.[22] But this area was not destined to become industrialised; today a plaque marks the spot in Rushcutters Bay Park.

Away from Sydney Cove, the area at the headwaters of Cockle Bay - renamed Darling Harbour in 1826 - can lay claim to being the first truly industrial precinct in Sydney. Here John Dickson installed Australia's first steam mill in 1815, which he used to grind wheat. At this time the application of steam to mills was still uncommon in England. James Watt had only invented his engine in 1781. According to the *Sydney Gazette,* with the application of steam one pair of stones would be able 'to grind an average of 10 bushels of wheat in one hour' while 'at best one of the windmills could only grind 70 bushels a week.' [23] That first steam engine was a survivor, with a report of a new cylinder being cast for it as late as 1903.



MR. JOHN DICKSON, Proprietor of the Steam Engine, hereby acquaints the Public in general, that he has Opened his Stores for the reception of Wheat in exchange for Property, on the most reasonable terms; and he is selling Flour of the first quality, at the following reduced prices, viz.—First and Second Fine by the Cwt. at 3d. per lb.—In smaller quantities, for the use of Families, 3½d. 3d. and 2d. per do —Bran at 2s. per bushel.

7. *Source: Sydney Gazette,* 21 Feb 1818, p.2.

Dickson had arrived in 1813 determined to make it, and he brought with him not only the mill but a complete saw-milling plant. Governor Macquarie granted him 16 acres in the vicinity of George, Hay, Goulburn and Sussex Streets, and along Liverpool Street down to the waters of the harbour. During the 1820s he built several factories there, including a brewery and a soap and candle works. As the town developed this area became a focus of industry. In 1825 Daniel Cooper and Solomon Levey installed a second steam mill in this vicinity for grinding grain. The mill was purchased in 1827 by Thomas Barker who had been Dickson's apprentice and later became his son -in-law, and, by the

[21] Len Fox, *Old Sydney Windmills*, Southwood Press, 1978, pp. 50-53.
[22] Edward West Marriott, *The Memoirs of Obed West: a Portrait of Old Sydney*, Barcom Press, 1988, p. 35.
[23] *Sydney Gazette*, June 3, 1815, quoted in 'The First Wheel to Turn by Steam' in http://www.rahs.org.au/history-resources/the-first-wheel-to-turn-by-steam/. G. P. Walsh, 'Dickson, John (1774–1843)', *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, http://adb.anu.edu.au/biography/dickson-john-1977/text2395

1840s Barker was manufacturing woollen cloth. Steam Mill Street and Barker Street were victims of the redevelopment of the Darling Harbour leisure development there in the 1980s. Archaeological assessments carried out in conjunction with the construction of the Cross City Tunnel in 2003 uncovered parts of Barker's mill including original 1820s walls and a segment of a millstone and later in 2008 evidence of the original mill pond along with remnants of wharves, slipways and a slaughterhouse were uncovered. [24]

The government dockyards remained active until the 1830s, after which they were progressively used for other purposes, especially after the arrival of Circular Quay to the western side of the cove in the 1850s.[25] Archaeological remains of these docks remain today under an extension of the Museum of Contemporary Art. The construction of the Quay opened up new commercial land and the value of it increased so that although warehousing on Sydney Cove had been for a variety of materials, by the mid- century it had become the almost exclusive domain of the woolstores.

8. Edward Days, A View of Sydney Cove, New South Wales, 1804 [probably based on a drawing by Thomas Watling, 1798 -1800.] *Source: NLA http://nla.gov.au/nla.pic-an6016289.*

A second site for private boat building and ship repairs had been established by the 1820s at Millers Point and around into the upper reaches of Cockle Bay. Munn's slipway, built here in 1826, along with remnants of later iterations of the site as Cuthbert's and Dibbs' Wharves, were unexpectedly exposed in 2013 during archaeological excavations at the new Barangaroo site. [26]

[24] Archaeological work was undertaken by Casey & Lowe in 2002/3 in relation to construction of the Cross City Tunnel and in 2008/9 for the Darling Walk. Details of the many remnants of early industrial sites in this area are available at http://www.caseyandlowe.com.au/sitecct.htm

[25] For a detailed history of the dockyards and the Commissariat building, see Rosemary Annable, 'History of Museum of Contemporary Art Site', appendix in Casey & Lowe, MCA, AMP (Archaeological Master Plan), 2000, revised October 2007.

[26] Austral Archaeology Pty ltd, for Barangaroo Delivery Authority, June 2013.

9. ***Remains of 1820s Munn's Wharf exposed during Barangaroo construction at Millers Point June, 2013.*** *Photograph, Shirley Fitzgerald 2013.*

Further south along Darling Harbour the Australian Gaslight Company was established in 1841and the remnant structures here were described in 1993 as: 'Jenkins Street is a large and unusual example of a Colonial Georgian Warehouse built for the specific purpose of supplying Sydney with gas. It is perhaps the only one of its kind left in Australia.'[27] By the end of the 1840s numerous slips and stores were dotted along the length of Darling Harbour.

Elsewhere there were only scattered industrial workshops and some small scale activities in the vicinity of the haymarkets, the old brick fields and the splendidly isolated Albion Brewery, built by Samuel Terry in 1826 amongst the sandhills of Surry Hills where advantage could be taken of a good natural water supply.

2.3.2 Western

There was very little development west of the town in this period. Pyrmont was too far away. John Macarthur established a small salt making works on his Pyrmont land c.1808 and built a mill which operated on the high point commemorated in the name of Mill Street in the 1810s, but by the 1820s it was defunct. It is possible that rowing the grain across Darling Harbour made it un-economical. Or possibly Macarthur just lost interest in his Pyrmont land. Either way, by the 1820s this mill was being represented in misty colonial paintings as a deserted site, with a John Thompson painting labelling it in 1832 as 'haunted.'[28]

[27] Howels & O'Donnel, 'Survey of Warehouses and Woolstores', 1993, p, 72. Rod Howard in association with Rosemary Broomham and George Clark, Knox and Associates, 'Conservation Plan MSB Supply Stores 2-4 Jenkins Street, Millers Point', Sept. 2004.
[28] Shirley Fitzgerald & Hilary Golder, *Pyrmont & Ultimo: Under Siege*, 2nd edition, Halstead Press, 2007, pp.15-27.

10. ***View from Sydney of the Haunted Mill in Cockle Bay. 1832 drawn by John Thompson*** *Source: SLNSW DL PXX 31*

In 1842 the Pyrmont Estate was subdivided and put up for sale, but by then times were hard and sales were desultory. This part of Sydney had to wait until the construction of the Pyrmont Bridge in the second half of the 19th century before it became readily accessible from the original settlement of Sydney.

The Ultimo end of the Pyrmont Peninsula was theoretically more accessible, but it remained positively sylvan. It was not so much location as legalities that held back development of Ultimo where the Harris Ultimo Estate was tied up in the courts for decades.[29] The exception to this was the small area along Parramatta Road at the head of the Blackwattle Swamp. Here there grew up a gaggle of noxious little slaughterhouses and soapworks and the like along with some of Sydney's poorest housing. By 1850 there were eight small slaughter houses here and the area was frequently in the news as an exemplar of all that was bad about manufacturing in Sydney.

11. ***Detail from W H Wells1843 map of Sydney. showing the first subdivision of Macarthur's land at Pyrmont and the rural Ultimo Estate.*** *Source: SLNSW Digital Order No a3998001*

[29] Michael Matthews, *Pyrmont & Ultimo A History*, self-published, 1982, pp. 11-15.

12. ***From the perspective of a rural Ultimo the surrounding development is clear: the concentration of industry at the head of Darling Harbour, the brewery and CSR factories in Chippendale, the original railway terminus at Redfern.*** *Source: Illustrated Australian News, 25 Mar 1874, p 9.*

2.3.3 Southern

Heading out from town beyond the brickfields were Carters Barracks, built in 1819 to accommodate the convicts working in the pits and to store government equipment used by road-building gangs. Much later this early warehouse was handed over to the City Council when it was formed in 1842, as by then municipal labourers not convicts built the roads.

Past Carters' Barracks and the toll gate to mark the end of town at the junction of George and Pitt Streets was the locality known as Chippendale. It sat across Parramatta Street (now Broadway) from the slaughter houses at the edge of Ultimo, but the scale of industry in Chippendale was altogether different. Blackwattle Creek flowed through Chippendale to the Blackwattle Swamp, and its waters attracted two of Sydney's largest early manufacturing establishments, a distillery and a brewery.

The solid sandstone factory of Robert Cooper's Brisbane Distillery on Parramatta Street was a Sydney landmark for almost 60 years. Built in 1826, it was described in 1829 as having:

> 'an excellent range of buildings, entirely of freestone, situated on a stream of fresh water, with a mill, numerous store houses, and every convenience for carrying on an extensive business.'[30]

Closer to town Newnham and Tooth established the Kent Brewery north of Abercrombie Street in 1835, and from then until the end of the 20th century Tooth's brewery was an enduring and expanding presence in Chippendale. There were several other small establishments, including a flour mill in Abercrombie Street, but it was the distillery and the brewery that dominated an area that was otherwise only partially built over with housing.

The following map and image record the location and scale of the Brisbane Distillery and Tooth's brewery.

[30] Shirley Fitzgerald, *Chippendale: Beneath the Factory Wall*, 1st Edition, Hale & Iremonger, 1991, p 17.

13. ***This section of W H Wells 1850 map shows the scale of the Brisbane Distillery and its large dam in the lower left of the image. The Kent Brewery to the right of it has a large yard in front, used for stabling its horses and drays.*** *Source: SLNSW Call No. Z M2 811.17 1843 2*

14. ***This Samuel Elyard painting, with Sydney University in the background, dates from the 1860s but the two large buildings of the Colonial Sugar Refinery are the same ones that appear on the 1850 Wells map, built for the Brisbane Distillery in the 1820s. In the centre distance is the distillery/CSR dam, viewed here across Abercrombie Street. There is a bridge across the stream that heads towards the Kent Brewery which is out of the frame. This stream crossing the street is also clearly indicated on the Wells map.*** *Source Colonial Sugar Co., Chippendale, 1868 / watercolour by Samuel Elyard SLNSW a1528154.*

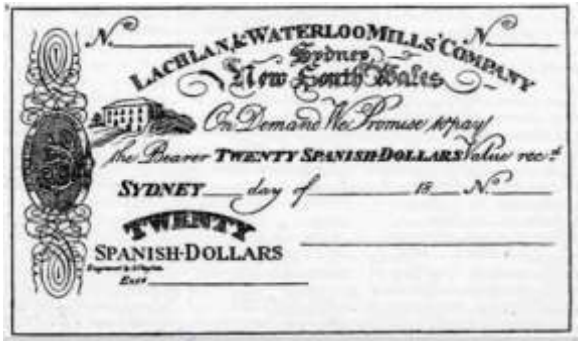
Beyond Chippendale, the southern areas could best be described as rural with a few manufacturing exceptions which have become part of the industrial story due to their rarity. Redfern was dotted with large holdings and a few mansions, with the first freehold land sales of suburban blocks in 1842. The land to the south of the township was well watered, with a series of swamps and creeks that drained into Sheas Creek and on to Botany Bay, creating a complex wetland in the localities known today as Waterloo, Alexandria, Zetland and Rosebery.[31] As early as 1813 John Hutchinson and Simeon Lord built a mill and millpond beyond the Redfern Estate, off the Botany Road near the junction of today's Elizabeth and Bourke Streets. Hutchinson proposed to erect 'grinding and rasping machinery' for 'several proposed purposes' and their stated intention was to manufacture cloth, pottery and glass. [32]

[31] Scott Cumming, 'Chimneys and Change' in Grace Karskens & Melita Rogowsky, eds., *Histories of Green Square*, UNSW, 2004, Ch. 3, pp.31-40.
[32] JJ Connolly, *Waterloo 1860-1920 Jubilee Free Exhibition*, Town Hall, Waterloo, p. 6. This detail does not concur with the entry in the *Australian Dictionary of Biography* for Simeon Lord, which states that he and Hutchinson had dissolved their partnership in this year and that Lord built the mill in the following year. http://adb.anu.edu.au/biography/lord-simeon-2371/text3115 accessed April 2014.

These ventures soon failed but by 1818 another mill built by Fisher and Duncan was manufacturing paper in this area with the *Sydney Gazette* possibly its first customer. In September 1820 new mills, constructed by Hutchinson, Cooper, Leverton and Williams were functioning as a flour mill. This was formally named the Waterloo Mills and from this the area took its name.

In one week in August 1821 the Waterloo Flour Mills ground 1600 bushels of wheat, an output described as 'stupendous' by the *Sydney Gazette*. The infrastructure to link the mill with town was strengthened by a convict built road described by Major Druitt, the official engineer, as 'a road from Sydney to the Waterloo Mills on the Botany Bay Road, two miles long and with six bridges.[33] Thus did this early manufacturing enterprise illustrate the public – private partnerships which routinely underpinned Sydney's manufacturing in this foundation period of development.

These mills were actually only a small part of the manufacturing and trading empires created by men like Solomon Levey and Daniel Cooper, who jointly took over the Lachlan and Waterloo Company, previously owned by Hutchinson, Terry & Co. All of these names appear over and over in the history of this southern part of the city where they bought up most of the land and had interests in ventures undertaken there.[34] At the corner of George and Elizabeth Street in the city the Waterloo Warehouse stored the produce of their mills and other goods and a good proportion of Sydney's trade passed through their hands in the 1820s.

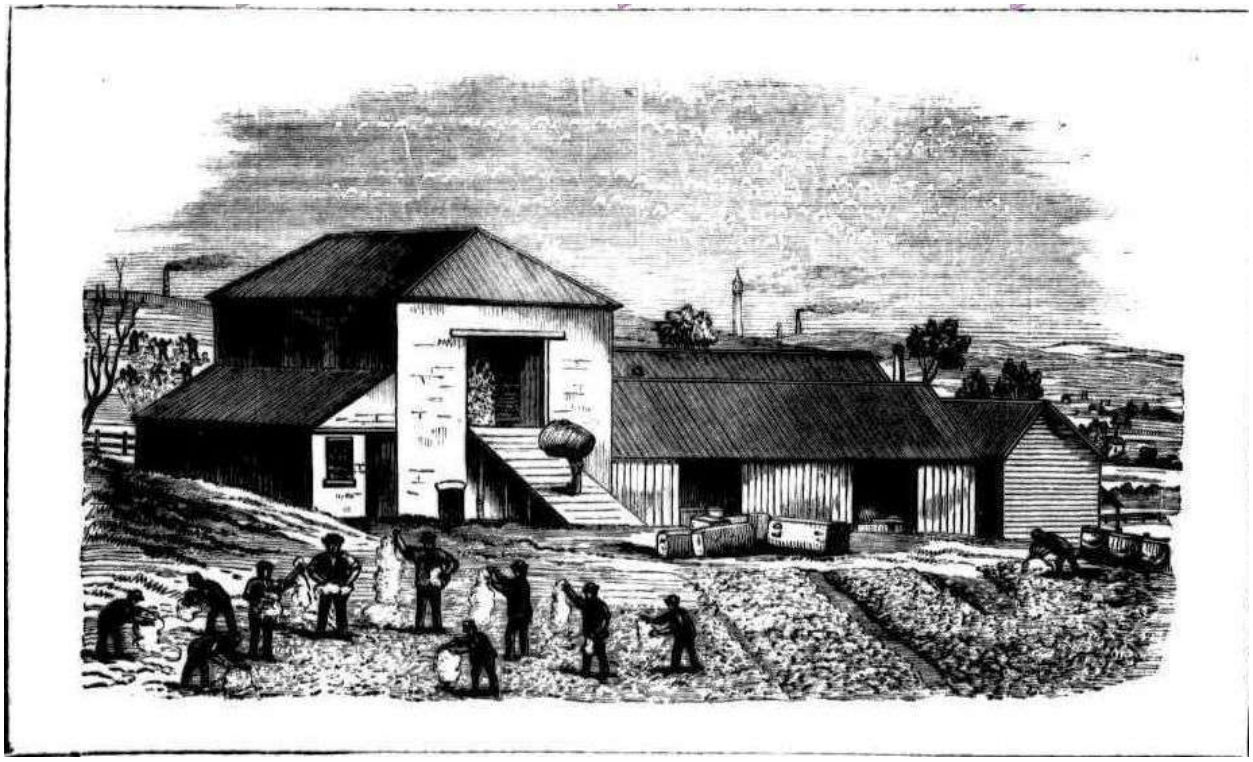


15. Lachlan & Waterloo Mills Company Promissory Note *Source: Evening News 25 Jan 1908, p.3.*

16. Waterloo Warehouse Promissory Note *Source: Evening News 25 Jan 1908, p.3.*

By 1847 the establishment that came to be known as Hinchcliffe's woolwash, established by Thomas Barker jnr. in c. 1845, taken over by Thomas Hayes in 1851 and by Hinchcliff in 1864, was operating with two mill ponds and ten acres of drying lawns, partially on the site of the earlier Waterloo Mills, thus entrenching what would become a long continuity of industrial use. The swamps and creeks in the area hosted a number of similar industries, but there is evidence that the potential of the area was artificially restricted by the limitations of land which was available to lease on the Cooper Estate.[35] But for some industries, their days were numbered as the polluting stresses being placed on the swamps was beginning to concern the government which was casting an eye southwards in search of a solution to Sydney's precarious water supply.

[33] As above, p. 9.
[34] See *Australian Dictionary of Biography* (ADB) entries for all these names.
[35] pers com, Lisa Murray. Forthcoming, 'R.A.W: a history of Redfern, Alexandria and Waterloo', 2014.



17. The Waterloo Mills Woolwashing Establishment, The lower dam. *Source: Town and Country Journal,* 16 Jun 1877, p 20.

3 1850 -1900

3.1 Overview of Trends

In the second half of the 19th century, Australia's urbanisation was rapid by world standards, and much of the gold discovered in rural areas and assayed at the mint in Macquarie Street was used to fuel an urban property boom. After 1870 Britain moved into a phase of overproduction and this resulted in unprecedented levels of capital flowing into Australia where it found its way to the pastoral and railway sectors, but also into urban housing and construction.[36]

Sydney's population increased from around 70,000 in 1851 to 200,000 by 1871, and by the end of the century the population was almost half a million. This was a large city for the time, on a par with British cities like Manchester and Liverpool. This period was altogether different in scale and in rapidity of change from what had gone before and in the centre of the city older convict buildings and Georgian townhouses were demolished with alacrity to create a large and prosperous late-19th-century provincial Victorian city.

At the 1856 census Sydney (city and suburbs) had a European population 33, 931 males and 35, 242 females. This even distribution of men and women was a normal urban distribution, unlike that for Australia overall, where a predominance of men continued until well into the 20th century. The stand out attribute of this population was the very high numbers in the age cohort of 21 to 44 year olds, with just above 14, 000 for both men and women.[37] This was a measure of the rapid increase in population as a result of the goldrushes which delivered to Sydney a work-ready young adult population. This in turn generated high levels of need for consumer goods and for the products of the construction industry – housing, schools and transport services. These conditions were positive for manufacturing expansion and as the production of many goods moved out of the domestic sphere and into factories and workshops, an increasing level of female participation followed. The obvious example of this was in textiles, with women also participating in light manufacturing such as bootmaking and tobacco. These also employed children, as did brickmaking prior to the introduction of machinery into this industry in the 1870s.

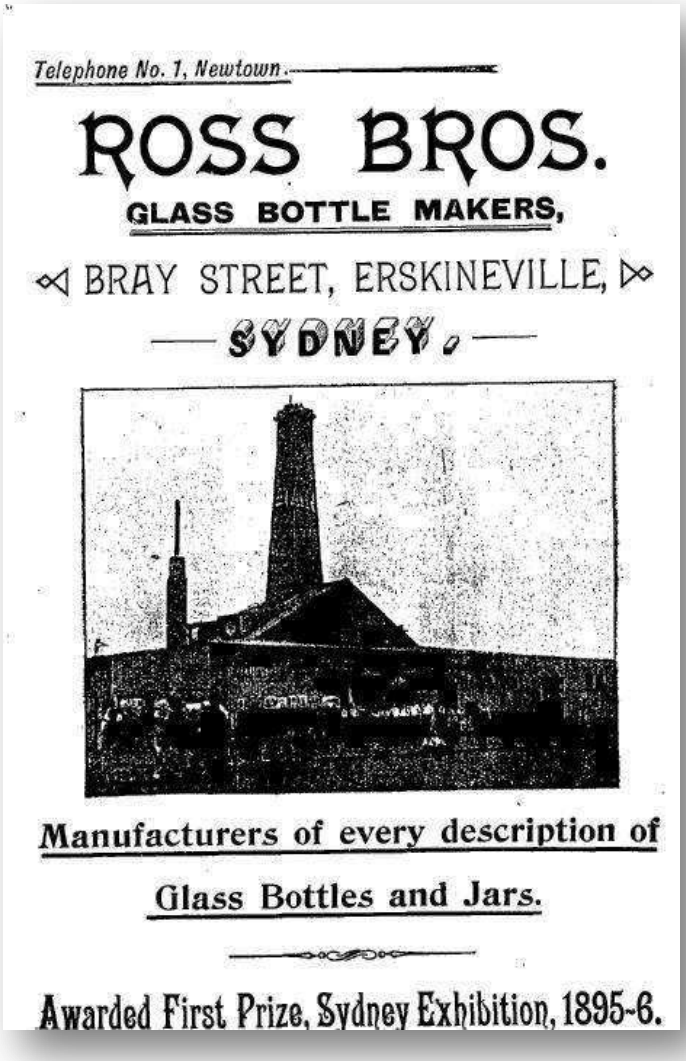
Manufacturing was concentrated around urban building and the construction demands generated by the new railway system, in the local consumption products of textiles, food, drink and tobacco, in vehicle and carriage building, including railway carriages, and in metals to service both the urban economy and a rural economy where the low levels of requirements of pastoralism were being supplemented by the more machinery-hungry agricultural and mining sectors. By 1871 NSW's share of total manufacturing was 34% and Victoria's was 37%. These two colonies/states continued to generate around 70% of all Australian manufacturing jobs right up until the 1980s.

At the beginning of the period manufacturing was typically generalist and labour intensive, while by the end of the century it was more reliant on mechanical power. This ranged from big things like ships that were propelled by steam generated by coal instead of by wind under sail, to less dramatic changes such as the application of machinery to the kneading of dough in bread factories or the introduction of machinery into brick pits where previously nothing more intricate than hand operated wire cutters had been used. This period also experienced the removal of many processes from the small, retail establishments, as in the examples of the standardisation of paint colouring in new factories from or the curing of meats, once done by the local grocer, now carried out in standardised meat processing plants.

[36] Peter Cochrane, *Industrialisation and Dependence, Australia's Road to Economic Development*, UQP, 1980, p. 9.
[37] Wray Vamplew, ed. *Australians: Historical Statistics*, Fairfax, Syme & Weldon Associate, Sydney, 1987, p.29.

The growth of mechanisation resulted in greater efficiencies from larger plant and more specialised equipment, which concentrated ownership both within Sydney's manufacturing sector and into Sydney away from the rural towns. For example, between 1871 and 1891 Sydney had 5 - 7 tobacco factories, while the overall number in NSW fell from 38 to 9. Clearly production was being concentrated in Sydney where the factories of Dixon, Saywell and Cameron were some of Sydney's largest establishments. On the other hand new techniques in brewing that were introduced into the large breweries in the 1870s improved the quality of the brew and encouraged the consumption of beer over spirits, resulting in a period of proliferation of small breweries such that there were seven in Sydney in 1880 and 26 ten years later. Thereafter, though, the large brewers steadily took over the smaller ones. [38]

While mechanisation encouraged larger scale in many industries, the opening of the first telephone exchange in Sydney in 1882 forecast the possibility of communications that would generate efficiencies within and between manufacturing plants but this would be a story for the 20th century.



18. Telephone No 1. Newtown's telephone exchange opened in 1888. *Source: Sands Directory, 1897, p. 875.*

[38] Shirley Fitzgerald, *Rising Damp, Sydney 1870-1890*, Oxford, 1887. Chapter 6 gives a detailed discussion of technical changes in this period.

For most of the 19th century warehousing was carried out on a small scale, frequently in conjunction with retailing. This changed with the development of wholesaling as a specialised trade by the end of the 19th century. This resulted in increased expansion of buildings that were used exclusively or primarily for warehousing. The older warehouses at Circular Quay were supplemented by new buildings, more often purpose built after 1860, with specialised hoisting and packing machinery, located around Millers Point and into Darling Harbour, with woolstores moving across to Ultimo on the Pyrmont peninsula.

Because warehouses were larger and more costly establishments than previously, they now often solicited financial backing from public listing. Hentsch's (Oswald Bond) at Millers Point, for example, was publically listed. The period saw the emergence of financial organisations in complex relationships with warehousing and trading firms, such as the Australasian Mortgage Company, a branch of a Scottish financial company which owned the Central Wharf at millers Point and formed a Sydney branch as the Central Wharf Co in 1887.[39]

By the late 1880s the economy faltered as the British economy contracted and demands of Yorkshire's mills for wool collapsed. By 1891 banks were collapsing along with a contraction of trade, manufacturing and urban employment and Sydney was in a major depression. Although falling overseas wool sales provided some opportunity for local wool scourers and manufacturers, the greater impact was to encourage new directions in investment to ensure a more diversified range of potential exports. This was symbolised by the development of refrigeration which would permit a wider range of trade and generate a wider range of local manufacturing in the next period.

3.2 Political constraints/opportunities

Manufacturing was expanding rapidly, but it did so within the context of a denial of its importance. When Charles Lynn published *The Industries of New South Wales* in 1882 he managed to ignore Sydney altogether while describing rural potteries and textile mills of far smaller scale than the large enterprises of the city. Denying the presence of manufacturing served to focus on the role of the city as a great trading centre for rural industries. It also allowed avoidance of industrial legislation.

This period saw the rise of the trade unions in a context where craftsmen were becoming mere sellers of their labour and many independent skilled workers became 'factory operatives'. Bootmakers and stonemasons were highly organised and some industries introduced standard hours of work and rates of pay. Nevertheless in many industries labour remained unorganised and protective legislation was slow in coming. While Victoria passed its first factory act in 1873, the NSW legislature threw out legislation including attempts to limit the hours of work of women and children in 1877 and resisted regulation of manufacturing until the first Factories and Shop Act was passed in 1896.

[39] Paul Davies, 'Millers Point & Walsh Bay Heritage Review', for City of Sydney, July, 2006, pp. 28 - 9.

19. ***Gantry Hoist now incorporated into Jacksons Landing Development, Pyrmont. It is a reconstruction of a workshop portal frame, supporting a gantry hoist from the Engineers workshop.*** *Source: Site Interpretation Strategy: Jacksons Landing, Pyrmont August 2003.*

Industrial accidents were commonplace. There were no regulations concerning weights of loads to protect workers on wharves and in warehouses. The introduction of new and unfamiliar machinery generated dangerous workplaces. Cogwheels, presses and rollers were often unprotected and regulation of construction scaffolding was still to come. An enquiry into child labour in 1876 found that children as young as six were employed in the arduous task of hauling the pug up from the bottom of clay pits. Diseases of the respiratory system were common amongst quarrymen and people working in tobacco factories and upholstery works where materials used to make stuffed furniture was not regulated. One tobacco worker told an enquiry 'you cannot very well breathe…Before I went to the factory I could do work with any woman…I was a strong girl then.[40]

Industrial health issues were poorly understood. Given their unpleasantness there was some focus on the so called 'noxious' trades which had been forced to relocate away from the city by 1860 – tanneries, boiling downs, fellmongers, soap boilers and so on. Redfern, just across the city limits was a place of first choice, along with Waterloo and Alexandria. In the following decades local governments varied in their response to these industries, with some keeping them out and others encouraging their presence. The latter included Alexandria and Waterloo where representatives of these industries made it their business to get elected to the councils in their area in order to advocate for their manufacturing interests. Some local authorities appointed Inspectors of Nuisances who policed the worst excesses of these industries with varying amounts of zeal, and when the new 'noxious trade' of kerosene refining was established in the 1860s the colonial government was worried enough to legislate for the appointment of an Inspector of Kerosene under a Storage of Kerosene Act, 1871.[41] A Royal Commission was held into Noxious and Offensive Trades in 1883 and during the 1880s there was interest in the idea of a noxious trades' site physically separate from Sydney. Various bills were introduced into parliament and in anticipation of legislation, work actually commenced preparing a noxious trades' site at Kurnell in 1887, but a downturn in the economy

[40] Quoted in Ann O'Brien, *Poverty's Prison: The Poor in New South Wales, 1880 -1918*, Carlton, MUP, 1988, p.86.
[41] Storage and Sale of Kerosene Restrictions Act 35, 1871 in The Statutes of NSW 1870-71 Section 4: 'Kerosene nuisance' *Sydney Morning Herald,* 5th May, 1868, p.5.

intervened and the plan was shelved. Eventually a Noxious Trades and Cattle Slaughtering Act was passed in 1894. In response to the depressed times, this was biased in favour of the manufacturers and did not include provision for a separate site. [42]

Ongoing problems with securing a reliable water supply for Sydney resulted in an enforced protection of eastern sections of the watershed of the Botany Swamps and the forcible resumption of industries that had located here from 1856. During the 1860s a series of dams were built at Botany, with reservoirs at Paddington and Crown Street, Surry Hills. Most of the city, excluding the high levels of The Rocks and parts of Redfern and The Glebe had been supplied by the end of the 1860s, with extensions to Waterloo and Camperdown in the following years. Water shortages were an ongoing issue for some industries until a secure source came on line in 1886 with the Nepean Scheme.[43] Once this was operating, land in the old catchment area was progressively leased back to industry.

Although trade remained focused on Britain, there were in this period new trade links forged with China as a result of the goldrushes and the continuing Chinese population living in Sydney. Local Chinese firms moved into manufacturing, particularly furniture making, while Chinese import – export firms generated new needs for warehousing.[44] The American Civil War resulted in a collapse of imported tobacco in the 1860s, thereby encouraging a local growing industry with implications for warehousing. Faster transport between Sydney and the west coast of the United States encouraged new trade. For example, when local materials could not fill the orders, Oregon pine was imported in order to fast track the construction of the Garden Palace, built in 1879 to host Sydney's first International Exhibition of Industries and Manufactures.

During these decades specialised finance companies developed and many enterprises went public on the stock exchange. Savings banks and building societies evolved to channel finance to small investors primarily for house construction.

3.3 Development by Locality

3.3.1 Central & Eastern

The Eastern side of Circular Quay was still lined with warehouses during this period. Wool auctions, previously held in London, were commenced in Sydney by Thomas Sutcliffe Mort in the 1840s and by 1880 there were about twenty brokers selling wool at auction houses around the Quay and in The Rocks.

[42] Shirley Fitzgerald, *Rising Damp*, Chapter 3.
[43] MacLaren North, 'Water', Dictionary of Sydney, 2011, http://dictionaryofsydney.org/entry/water , accessed April 2014.
[44] see Shirley Fitzgerald, *Red Tape, Gold Scissors: the Story of Sydney's Chinese,* 2nd edn. Halstead press, 2008, for Sydney's Chinese firms during this period.

20. Circular Quay looking east in the 1870s. *Source: SLNSW d1_19574*

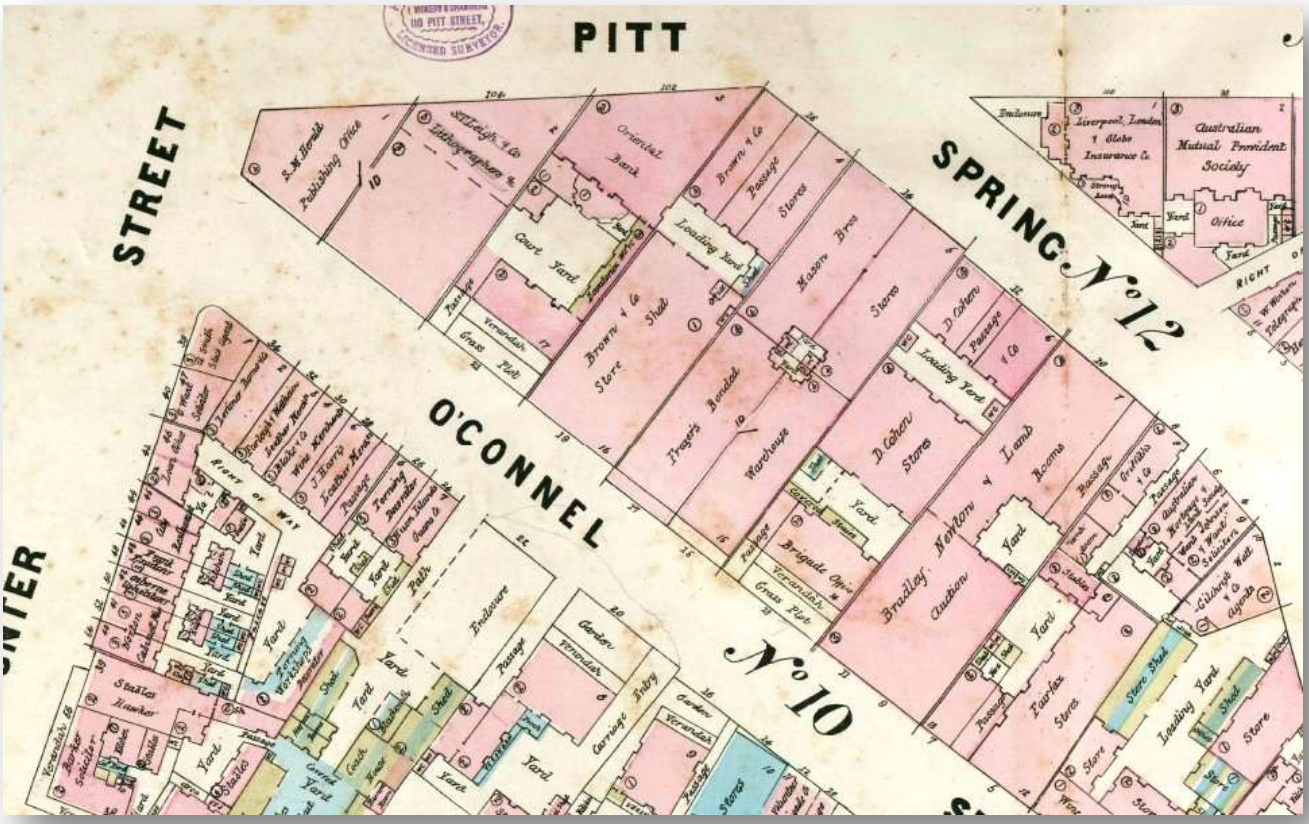
21. Hinchcliffe's Woolstore, built around 1870 is at 5-7 Young Street, immediately behind the former Customs House at Circular Quay and opposite the site of the original Goldsborough Mort Woolstore. *Source: SLNSW Album ID 990804*

22. Former Hinchcliff Wool Store, 5-7 Young Street as it is today. *Source: Draft Conservation Management Plan, Urbis Sydney November 2012.*

However, there was little room for expansion here and by the 1870s warehousing was also moving around past Dawes Point to Millers Point. Wool ships still left from Circular Quay, but by the 1890s the whole area was revamped with new ferry wharves, and entirely given over to commuter ferries and tramways, with large tram sheds on Fort Macquarie. At the Millers Point wharves and stores of firms

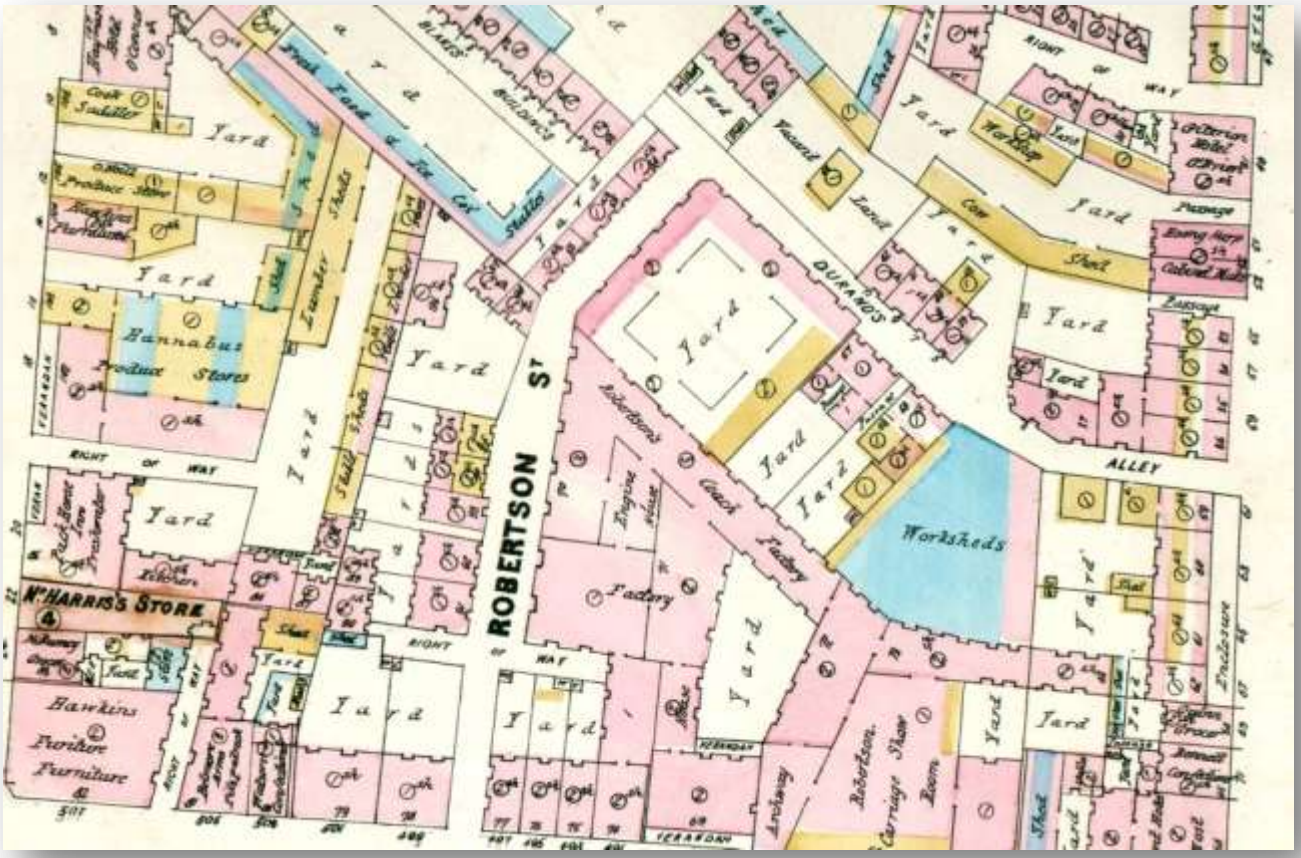
such as Parbury's and Central and Dalton's the latest in hydraulic lifts and wool presses were introduced by the end of the century. [45]

Although the requirement of shipping and wool storage made it imperative to move away from the old centre around the Quay, it would be a misrepresentation to say that industry was squeezed out of the oldest localities of the city as commercial and public buildings came to dominate, as many small manufacturers continued to locate in various corners of the what was becoming the public commercial precinct of the city. With manufacturing expanding, land uses in the centre continued to be mixed as the following sample sections from Percy Dove's 1879 plans illustrate.



23. In this locality, close to the Quay, there were premises of merchants and commercial offices but there were also bond stores, warehouses, yards for delivery carts and horses as well as the printeries of the Sydney Morning Herald and ST Leigh. Cohen, a clothing manufacturer who used the putting out system of employing women in their homes had a shopfront on Spring St. as well as stores and a yard. *Source: Percy Dove, Plans of Sydney, 1880, Blocks 9-13.*

[45] Emery Balint, Trevor Howells & Victoria Smyth, Warehouses and Woolstores of Victorian Sydney, Oxford U. P. Melourne, 1982.



24. These structures were between George and Pitt Street, south of Goulburn Street. It was close to the Belmore Markets and considered to be one of the poorest parts of town. Much of the area was given over to warehousing and stores, including one for lumber and even a cow shed. A gentleman who visited Robertson's Carriage Showroom on Pitt Street would have been shown vehicles manufactured on the premises behind the shopfront. According to the Town & Country Journal, 6 July, 1878 Robertson employed 100 men in this factory. *Source: Percy Dove, Plans of Sydney, 1880, Blocks 34-36.*

Around this part of town and southeast towards the backstreets near the Devonshire Street Cemetery and on into Surry Hills, small and medium factories were becoming numerous so too were large warehouses, many of them three and four storeys high. At the mid-century this eastern locality was very much on the fringes of Sydney. Surry Hills and Woolloomooloo combined held only 800 houses, and the only factory of any substance, the old Albion Brewery, established by Samuel Terry in 1826, had fallen on hard times and was operating intermittently as a flour mill or soap works. By 1890 there were about 5,300 dwellings in Surry Hills alone and along with this rapid residential development Surry Hills had acquired a lot of industry. Much of it was small with exceptions including the Goodlet & Smiths brickwork and pottery, in Riley Street close to Devonshire Street. It was established in 1867 and its tall chimney dominated the landscape of small houses. Its ornamental chimney pots still adorn Sydney houses today.

25. Chimney pot, ceramic, made by Goodlet & Smith, Surry Hills, c. 1900
Source: Powerhouse collection.

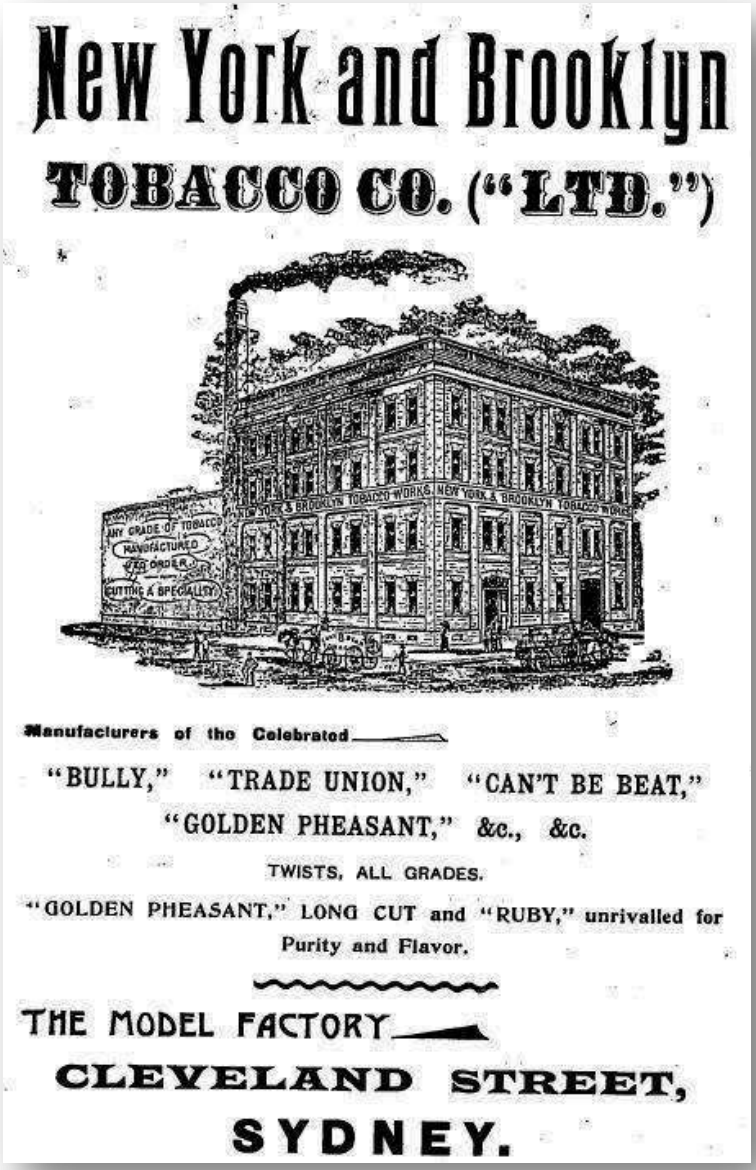
Riley Street was also home to Mackay's coach-building factory which made hansom cabs, while in Elizabeth Street Guerins made saddles and harnesses. The ruinous Albion Brewery was purchased by JT & JM Toohey who rebuilt it in 1875 as Toohey's Standard Brewery. [46]

Woolloomooloo, which adjoined Surry Hills, remained mostly residential except around the waterfront. The mud flats at the head of Woolloomooloo Bay were reclaimed and a wooden semi-circular Cowper Wharf was constructed in the mid 1860s. This became a centre for timber and road metal cargoes, although these did not generate much in the way of warehousing. By 1884 the Standard Paint Company located close to the wharves was manufacturing sixteen shades of paint 'by machine methods unheard of twenty years ago in America.' [47]

'America' was a by-word for 'modernity' but also for tobacco, and several large tobacco factories were established during this period, producing products with names like Yankee Doodle and Virginia Gold. Darling Harbour was a preferred location, with Cameron Brothers at the corner of Sussex and Napoleon Streets near the gasworks by 1890 and several other large concerns on Clarence and Kent Streets. Hugh Dixon occupied a more high profile spot, with his Conqueror Tobacco Works, which advertised its 'Yankee Doodle' brand in huge signage on its landmark factory at the corner of Elizabeth and Park Streets. Dixon installed a Bonsack machine in the late 1880s which claimed to

[46] Christopher Keating, *Surry Hills: The City's Backyard*, Hale & Iremonger, 1991, pp. 37-41.
[47] Philips Papers, Vol 56, ML, MS A4788, item 79.

produce between 10,000 and 12, 000 cigarettes an hour, ousting the skills of nimble fingered women who produced around 1000 a day. [48]



26. This tobacco factory positioned itself as American. In scale and solidity it was one of an increasing number of multi-storied factories that were common in the southern end of the city and into Redfern by the end of the 19th century. *Source: Sands Sydney Directory, 1899, p. 1263.*

The old locus of industries at the head of Darling Harbour around the foot of Bathurst Street consolidated during this period. The engineering firm of PN Russell which had started as a small affair on the Tank Stream and later established the Sydney Foundry in George Street (site of present Dymock's Building) moved to Barker Street in 1859 where the company had wharfage as well as warehousing space. At the time of the closure of the works in 1875 it employed about 600 hands making a wide range of products including engines and boilers and rolling stock for the railways.

[48] K A Richards, 'The Development of Manufacturing in New South Wales', M Ec. thesis, University of Sydney, 1967, p. 65.

27. Assembled workmen (and boys), P.N. Russell & Co., engineers & iron founders. *Source: SLNSW a089504r*

28. Russell's wharf with a quartz stamper. These scenes were taken around the time the works closed in 1875. *Source: City of Sydney History pages courtesy of Ian Bowie, Dept. of Civil engineering, University of Sydney.*

29. Wharf strip Darling Harbour Source: Detail: Woolcott & Clarke's map of the City of Sydney 1854 City Archives.

Along the length of Darling Harbour dozens of small wharves handled the produce of the coastal trade. The accompanying map detail (Woollcott & Clark's Map of the City of Sydney, 1854) shows uninterrupted wharfage and associated works. The Sydney Town Hall was built in stages between 1869 and 1889 After years of inaction. The City fathers had negotiated hard for this site which it believed was central to the commercial heart of Sydney, next to its own City Markets on George Street (1812, expanded 1830s, replaced by QVB in 1890s). Close too, to the commercial trading of local goods offloaded from coastal shipping at the wharves below the markets. The City Council's Corn Exchange Building at the commencement of the Pyrmont Bridge was built in 1887 and the nearby streets north of Druitt were lined with warehouses from the 1870s. Today there remain about 45 warehouses from the 19th century, many of them the post 1870s one along York and Clarence Street north of the Town Hall.[49]

It was in this Darling Harbour area that the old names of Sydney's engineering fraternity - Eugene Nicoll, Richard Dawson, Peter Russell and Thomas Mort pooled resources and finances from the 1860s to develop refrigeration. This would transform the local food industry as well as generate exports of frozen meat. [50] Cold stores were built at Darling Harbour and in Ultimo.

[49] 'Policy for the Management of Warehouse/Courtyard Complexes in Central Sydney', City of Sydney, 2001.
[50] Alan Barnard, 'Mort, Thomas Sutcliffe,(1816 -1878) *Australian Dictionary of Biography*, ANU, http://adb.anu.edu.au/biography/mort-thomas-sutcliffe-4258/text6777.

3.3.2 Western

In the 1850s Pyrmont arrived as a major player in the manufacturing stakes. When the Australian Steam Navigation Company (ASNC) built a large patent slip on Darling Island in 1855 and the Pyrmont Bridge connected the peninsula to Market Street in 1858, development seemed possible. By the 1860s the government's demand for Pyrmont sandstone became insatiable and Charles Saunders, who had earlier described himself as a part time quarryman and publican of the Quarrymen's Hotel, embarked on what would become an enormous undertaking. Eventually much of the stone of the western half of the peninsula would be carted away from Saunders' Quarries to supply the state's huge public works program and to build the fine buildings located in more elegant parts of town - Sydney University, the GPO, Lands Department, Sydney Town Hall and so on. The list of 19th century buildings constructed of Pyrmont yellow block is long, with many still standing.

30. ***By the 1880s Robert Saunders was employing about 300 men as well as 27 cranes to shift his stone, as well as sawing machines that used water and sand as cutting agents beneath steam powered iron blades.*** *Source: Town and Country Journal 8 December 1883, p.27.*

31. ***Carmichael Park, below Distillery Drive, Pyrmont. Site of the most northerly of Saunders quarries.*** *Photograph: Shirley Fitzgerald, 2013.*

Aside from the quarries the biggest industrial impact on Pyrmont was made by the Colonial Sugar Refinery (CSR) which moved from Chippendale to the end of the Pyrmont peninsula in 1879. Its Chippendale premises in the old 1826 Brisbane Distillery were by now inadequate in size and not well positioned in relation to the company's growing number of sugar ships from the canefields of northern NSW and the Pacific that could now tie up at the end of Pyrmont next to the refinery. The Sugar Company had left Chippendale against a backdrop of public protest at the pollution and stench associated with its operations and the foul condition of the old distillery dam which it utilised in its cooling processes. Pyrmont offered a more secluded locale.[51]

The refinery was built for the long haul and its expansion over the following decades steadily covered the end of the peninsula.[52] The expansion of this sugar monopoly in the last years of the 19th century was rapid as was the development of subsidiary industries using the by-products of its refinery, so that by the end of the century the whole area was built out with small and large manufacturers and workers housing. The City Ironworks, foundries, galvanisers and tin smelters serviced the refinery and the shipyards. Pyrmont was well on the way to becoming heavily industrialised.

Next door in Ultimo by the end of the 1870s belated solutions to property wrangles released land which was immediately attractive to those in the business of storing wool. Not only was there space, but the Darling Harbour Goodsyards and the extension of rail lines and feeders around the peninsula gave direct access to the wool trains from the rural hinterland. Richard Goldsborough's 1883 store built on the corner of Fig and Pyrmont Streets, was the first of twenty large woolstores that would be built during the next 50 years. At five storeys and serviced by hydraulic lifts, it set the bar high. Other 19th century stores included R B Walker, Geddes, Waite & Bull, Winchcombe & Carson and the Farmers & Graziers. These woolstores had by far the largest floor space of any warehousing in Sydney, and as they proliferated they ate up the land, which meant that the population of the whole peninsula was actually falling after the 1890s.

These Darling Harbour goodsyards encouraged the location of other firms including the large depots/warehouses of Mort's Fresh Food and Ice Company and the Farmers & Dairyman's milk depot

[51] Shirley Fitzgerald, *Chippendale: Beneath the Factory Wall*, 2nd Edition, Halstead Press, 2008, pp.40-45.
[52] For a detailed time line for CSR expansion in Pyrmont see Shirley Fitzgerald & Hilary Golder, *Pyrmont & Ultimo: Under Siege*, 2nd Edition, Halstead Press, 2009, pp. 132-135.

on Harris Street. These kinds of plant revolutionised the distribution of food products and spelt the demise of older forms of urban land use including dairies which had previously been ubiquitous throughout the whole city.

32. Detail: Map of the Municipalities of The Glebe [etc]... Higinbotham and Robinson, 1886, Sydney *Source: Historical Atlas of Sydney, City Archives.*

The creation of Wentworth Park at the head of the Blackwattle Swamp had transformed this area which had previously been one of Sydney's worst localities for small noxious industries. A new Bridge Road skirted the park at the water's edge of Blackwattle Bay, providing direct access to The Glebe. By the early 1880s the Auckland Timber Company, later the Kauri Timber Company, shown on the accompanying map, had taken up land in an old quarry at the head of the Bay[53] and during the following decade a number of depots for coal and timber began to appear in this locality. This was a foretaste of what would become of Glebe which was still mostly undeveloped and residential by the end of the century. There were a few small food and drink manufactories, as there were in neighbouring Camperdown where Fowlers Pottery, after a stint in Glebe, was manufacturing drain pipes on Parramatta Road between Australia Street and Denison. Stuart Brothers, the largest building contractor in Sydney had a steam joinery works off Missenden Road.

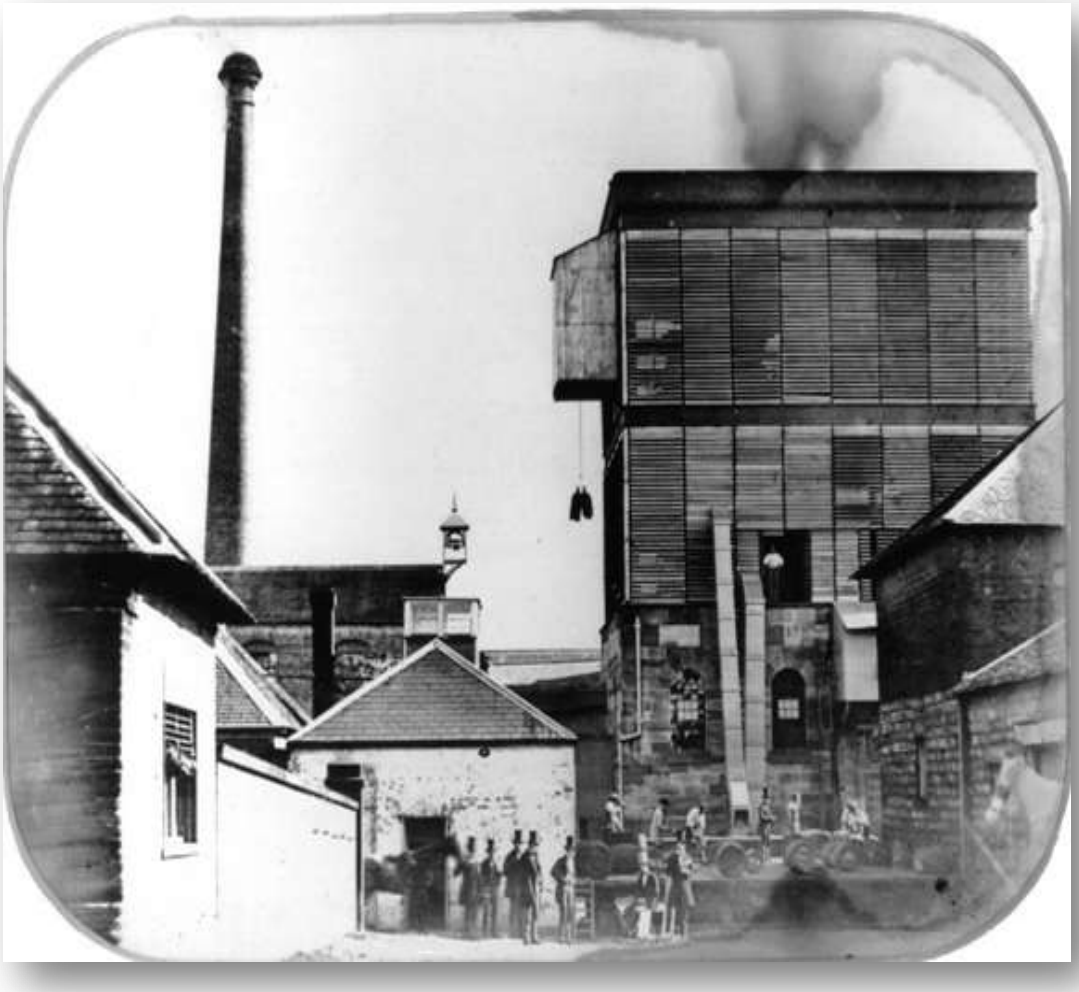
3.3.3 Southern

The arrival of the Colonial Sugar Refinery in 1855 had sealed Chippendale's role as an industrial area. It took over the Cooper's Brisbane distillery on Parramatta Street and utilised the water from the dam for reticulation through parts of its plant. This did not require the water to be kept clean, and by the time the refinery decamped to Pyrmont in 1879 there had been years of vociferous complaints about the foul stench of the dam and of the refinery. The old refinery buildings were demolished and the land put up for auction in 1882; in the following year the adjoining Shepherd's Nursery Estate was also subdivided for housing. For a time Chippendale embarked on a tentative period of residential building but industry could not be kept at bay, and by the end of the century this housing was

[53] The company is listed in the city in 1882 and advertised as at Blackwattle Bay in *Sydney Morning Herald*, 14th June, 1883. p.9.

honeycombed with small engineering and printing plant, food manufacturers and leatherworks – bootmakers and saddlers.

Tooths consolidated its interests through buying up housing in all the streets surrounding its Kent Brewery, ready for trouble-free expansion. A bottling plant was added to its complex after a change in the licensing laws in 1882 closed the pubs after 11pm and on Sundays, making bottled beer more popular and as it now manufactured the bottles it also began manufacturing aerated waters in 1883.[54]



33. Tooths Kent Brewery yard c 1860- 70. *Source: Powerhouse Museum.*

South of Chippendale the Redfern Estate was subdivided for sale in 1842 and small workers cottages featured in parts of this area. In 1855 the railway line was opened from Redfern to Parramatta and workshops employed increasing numbers of workers until inadequate accommodation forced the construction of new works and carriage works at Eveleigh, which were opened in 1887, to great acclaim. These would come to dominate the suburb of Redfern for the best part of the next century. In adjoining Macdonaldtown gas works were constructed in 1892 to service the railway workshops and rolling stock, with two large gasholders and underground piping between the gasworks and the workshops. [55]

[54] Shirley Fitzgerald, *Chippendale: Beneath the Factory Wall*, Hale & Iremonger, 1991, p. 64.
[55] Godden MacKay Logan, 'Australian Technology Park', Draft Report, 2012. section 2.6.4.

34. The Turning and Machine Shop, Eveleigh. *Source: Illustrated Sydney News 18 July 1891, p11.*

In 1891 the Redfern Municipal Council established the first domestic electricity power station in Sydney, well over a decade earlier than the City of Sydney's electrical supply came on line. This powerhouse remains today at the corner of Renwick and Turner Streets.[56] It was once occupied by Rolling Stone magazine.

The eastern edge of Redfern included the northern catchment of Shea's Creek and the presence of water resulted in the establishment of several large nurseries in the 1840s. The dominant manufacturer in the area was William Alderson, whose property in Bourke Street incorporated saddle, boot harness and collar factories as well as his tannery. This was part of a larger enterprise that included fellmongering and a woolwash on the Alderson Dam further south along Bourke Street in Waterloo. Alderson & Hall had originally operated a tannery in Castlereagh Street and their relocation to Redfern was in response to the government's ultimatum to vacate the city. Alderson was one of Sydney's largest tanners. His neighbours were not impressed with the odours that emanated from his six acres of buildings and 92 tanning pits, nor by the runoff from the works that polluted Shea's Creek. He told the Royal Commission on Noxious and Offensive Trades in 1883 that the 193 men, 33 boys and 29 girls he employed turned out about 1500 hides and pelts a week.[57]

By the 1870s most of Sydney's tanners had opted for a southern location and along with the tanneries went the associated boot, saddle and harness manufacturers.

[56] The powerhouse was designed by J E Kemp. Listed in State Heritage Register, City of Sydney LEP, 2012.
[57] Rosemary Annable and Kenneth Cable in Tropman & Tropman, 'South Sydney Heritage Study', Volume 2 - Historical Material, for South Sydney Council, November 1995, p. 132.

Table 5.1 Sydney's bootmakers, 1870/71

Firm	Location	Number of employees	Output (per week)
Wright, Davenport & Co.*	Brickfield Hill, City	220 (est.)	3000
Alderson*	Bourke St, Redfern & Elizabeth St, City	180	2500
J. Vickery*	Barrack St, City		1500
Ellison	Botany St, Waterloo	80	1500
Dadswell	King St, City	70	1000
Forsyth*	Parramatta Rd, City	20	800[l]
Tebbut	Riley St, Wooll'oo	40	800
E. Vickery	Pitt St, City	53	750[k]
Griffiths	Botany Rd, Redfern	30	600
Dryhurst	Botany St, Waterloo	20	400
Orr & Son	Botany St, Redfern	—	—
Hilder & Abigail	George St, City	—	Probably both closed 500–1000
McMurtrie	Pitt St, City	—	pairs each week[m]

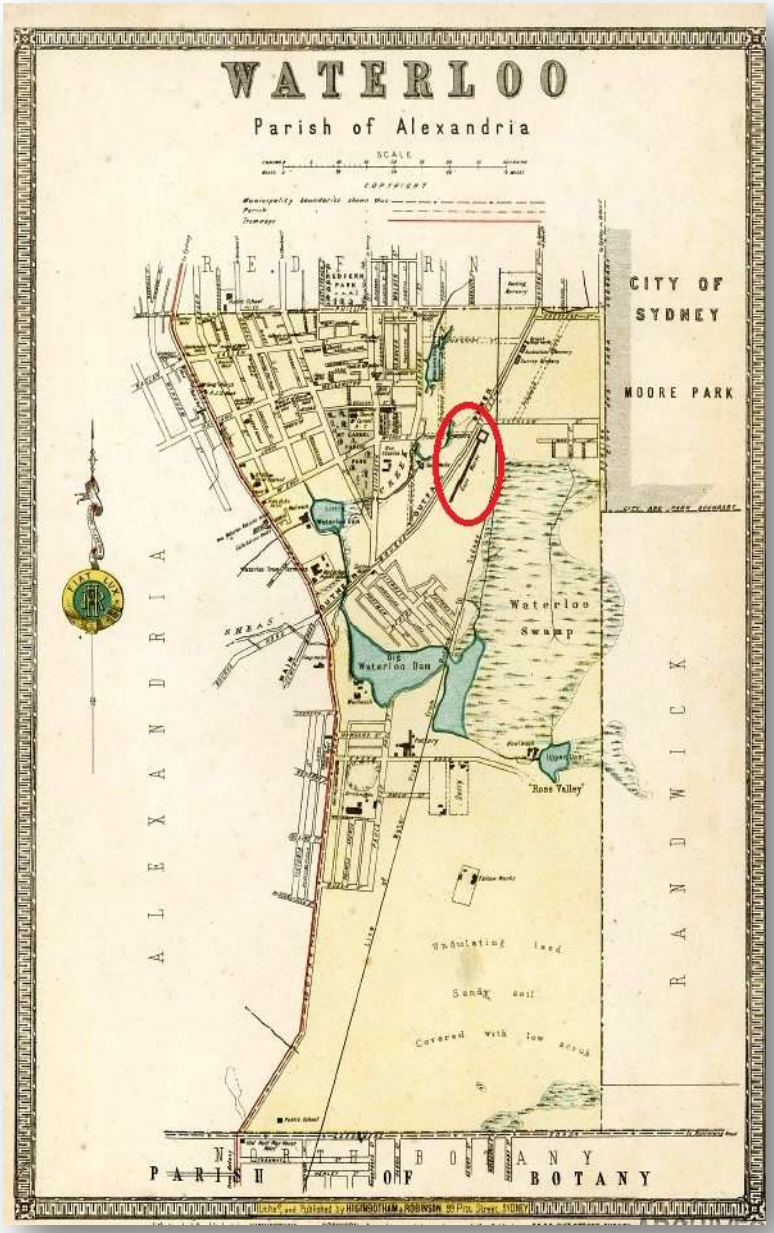
35. Sydney's Bootmakers 1870/71 *Source: Shirley Fitzgerald, (1987). Rising Damp: Sydney 1870-90. OUP, Melbourne, 1987, p.148. Extracted from 'The Industrial Progress of New South Wales', Government Printer, Sydney, 1871.*

Redfern grew rapidly in the last part of the century. Its population had been recorded at a mere 1,205 people in the 1851 Census, and by 1901 there were 24, 219 people living there. This made it residential, but it was also industrial partly because of the expansion of leather and food production along with a plethora of smaller industries and partly due to employment and supporting industries associated with the railways. As well as direct work in the railway workshops, the private timber firm of Hudson Bros. manufactured railway carriages in addition to provided building materials for the fairly high proportion of Redfern houses that were constructed of timber.

The Waterloo area was also lightly populated in 1851, with similar population to Redfern but it did not boom as Redfern did and by 1901 had only 9, 609 residents. The Higinbotham & Robinson map of the Municipality of Waterloo produced c.1885 showed a lightly settled area, with extensive swamps and a number of industries –three soap works, a small flour mill, two small breweries, omnibus stables and a woolwash on each of three dams on Shea's Creek labelled the Little, Big and Upper Waterloo Dams. North of these, Alderson's dam served his woolwash and fellmongery. South, in Epsom Road, there was Goodlet & Smith's large brick pit and pottery. This was described in 1877 as using modern methods to pulverise slate taken from an area of about an acre, and a steam driven geared winching system to pull truckloads to the surface.[58] Other clay-associated works included John Paul's Pottery in Zetland. Forsyth's Australian Rope Works, which have been ringed on the map below, were located at Bourke and Lachlan Streets for over 100 years from 1865. This major Sydney establishment employed 150 workers by 1888. It boasted that it was a 'local 'industry employing local

[58] *Town & Country Journal* 3rd February, 1877, cited in Scott Cumming, 'Chimneys and Change' in *Histories of Green Square*, p. 36.

Waterloo people. [59] Archibald Forsyth was the first president of the Chamber of Manufactures of NSW in 1885.



36. Waterloo. Parish of Alexandria. Higinbotham & Robinson, Sydney. The rope walk has been ringed. *Source: City Archive, Atlas of the Suburbs of Sydney, c. 1885-1890.*

While ropemaking was an ancient trade, the refining of shale oil was a new industry that arrived in Sydney with the construction of the Western Kerosene Company's refinery on about ten acres of the semi-rural Waterloo Estate near the Waterloo Swamp in 1868. It was set up to refine shale oil mined at Hartley Vale in the Blue Mountains into kerosene, paraffin and heavy oils, products that had previously been imported. The operations of this industry involved volatile chemicals and extreme

[59] Macmillan, David S *One hundred years of ropemaking, 1865-1965: Archibald Forsyth and Company*. A. Forsyth and Co, Sydney, 1965.

heat and community concern at the locating of this plant in proximity to population resulted in the appointment of a state Inspector of Kerosene in 1871.

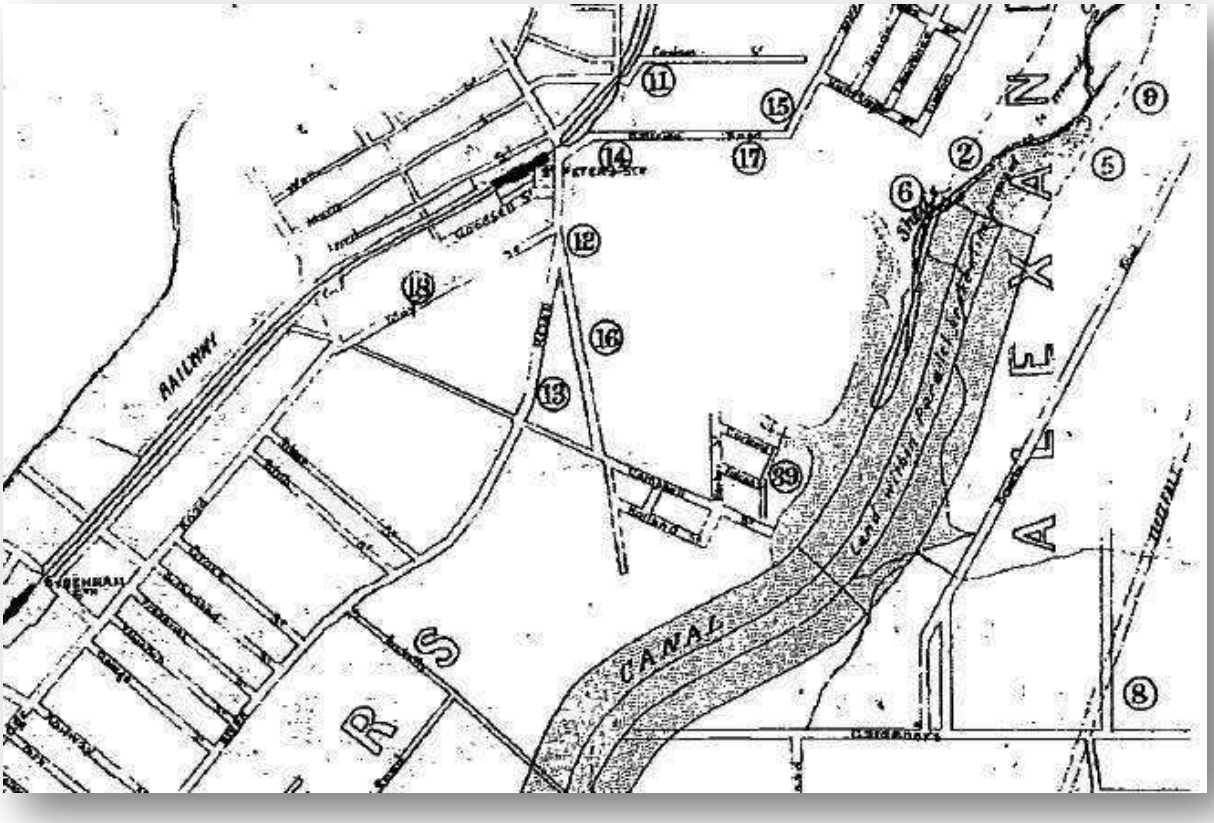
The men involved in the establishment of the refinery were the same men who dominated much of local industry in this period – Eugene Nicolle, TS Mort and Peter N Russell. The cast iron head of the refinery's 200 feet tall chimney shaft, installed by engineer Norman Selfe, was claimed a one of the last castings made by the venerable Richard Dawson at his old established Sydney Foundry in the city.[60]

The initial fifteen retorts grew to around eighty six years later, and by the end of the 1870s there were claims that the company, now the NSW Shale Oil Company, employed over 200 workers at its Waterloo plant.[61] Many of them would not have been employed in the refinery, but in the associated workshops that made the four gallon kero tins that became ubiquitous for many decades into the 20th century. But competition with imported products, especially from the United States kept this industry marginal. The symbolism of it as a precursor to the oil refineries that eventually located around Botany Bay in the 20th century give it a significant place in the manufacturing history of the area.

West of Waterloo the Municipality of Alexandria was even more rural, with swampy terrain, much of it still tied up in unsubdivided estates. Here the ambitious scheme of digging the Alexandra Canal had begun in 1887. This widening of the Shea's Creek provided a waterway for the district's output from mills and brickworks but its promise did not live up to expectations. Claims that it would eventually cut through to Sydney Harbour were fanciful, and work on the canal was halted in 1900. By then it had reached a short way across Gardner's Road into Alexandria, where market gardens and poultry farms were still more common than anything representing industrial sites although there were some 'noxious trades.' These were concentrated along Sewer Road (O'Riordan Street) which held a number of boiling down works, glue makers, bone dust mills and soap makers. These industries were all by-products of the ailing sheep industry where production exceeded exports during the depressed 1890s. The main retailing area along Botany Road was dotted with several small manufacturing works, including a foundry on the corner of Sewer Road.

The south- western section of Alexandria, between the Alexandra Canal and the railway line near St Peters station was largely given over to brick fields. The following map, produced at the time the canal was constructed shows a cluster of six brickworks in this locality.

[60] *Sydney Morning Herald*, 29th April, 1865, p. 6; *Evening News*, 3rd February, 1886, p.3; *Empire* 29th April, 1870, p.2.
[61] *Singleton Argus*…7th May, 1879, p.4.



37. ***Mid 1890s map of Shea's Creek showing brickfields.*** *Source NSW Legislative Assembly Votes & Proceedings, 1894-95, vol. 5, "Shea's Creek Works. Minute Requesting Government Land Valuer to Report On." pp.771-774.*

11	**Beulah Brickworks**	**Coulston St, St Peters.**
12	**Bedford Brickworks**	**Barwon Park Rd, Alexandria**
13	**Carrington**	**Barwon Park Rd, Alexandria**
14	**Patent Plastic**	**Barwon Park Rd, Alexandria**
15	**St Peters**	**Barwon Park Rd, Alexandria**
16	**Vulcan**	**Barwon Park Rd, Alexandria**
17	**Warren**	**Waterloo Rd, Alexandria**
18	**Spears**	**May St, Newtown**

The Beaconsfield Workingman's Model Township, established in 1884, generated some residential development, but with the Goodlet's brick pits across the Botany Road and soap works and the kerosene works nearby, it held limited appeal as a 'model'. [62]

[62] Rosemary Annable & Kenneth Cable, in Tropman & Tropman, 'South Sydney Heritage Study' Vol 2 –Historical Material, for South Sydney Council, 1995, p 220.

4 1900 – 1945

4.1 Overview of Trends

In 1901 the population of Sydney had reached almost half a million people, making it both a large city by the standards of the day, and a city that was the metropolitan centre of a highly urbanised NSW where around 60% of the population lived in cities.

Australian Federation in 1901 ended inter-colonial tariffs and created an enlarged 'common market' for Australia which benefitted the development of industry in Sydney. The depression of the 1890s had reduced imports of British capital and subsequent diversification of rural production resulted in an increase of related manufacturing for agriculture, mining, refrigeration and transport. Up until World War 1 secondary industry was in areas naturally protected from competing imports such as perishables, food and construction. For Australia as a whole, the period from Federation to World War 1 saw an increase in the percentage of workers employed in manufacturing.

The war underscored Australia's isolation and the vulnerability of depending too much on imports. Shortages of many materials had an impact on the local construction industry in particular. Commodity shortfalls fuelled the emergence of new industries, and with a return to high prices for wool and grain the immediate post war period was an expansionary one. The manufacturing share of GDP rose from 8.6% in 1891 to 13 % a decade later and to 16 % by World War 1. 'The growth of manufacturing in this period was quite remarkable'. [63] For Sydney, the figures were far higher.

Expansion of manufacturing provided opportunities for women to participate in the paid workforce. Another take on this is that increased female participation provided the manufacturing sector with cheap labour. In 1918 the NSW Board of Trade decreed that the official living wage for women should be half that of male breadwinners. At the end of WW1 almost 60% of female workers in Sydney were employed in the clothing and textile sector and 72% of the workforce in this sector was female. A further 17% of female workers were employed in manufacturing food, drink and tobacco. These industries paid the lowest wages and employed a high percentage of minors. [64] They were heavily concentrated in Surry Hills and the southern localities of Newtown, Redfern, Alexandria and Waterloo. Another low paid section of the manufacturing workforce were the Chinese. The so called 'White Australia' policy introduced by the new federal government in 1901 resulted in a slow and steady decline of Sydney's Chinese population, so that by the 1930s the total was down to between two and three thousand, but the fact that the range of jobs they were permitted to work in was restricted resulted in a concentration in the manufacture of furniture. 19th century inner city locations for Chinese manufacturing employment contracted while those south of the centre grew, particularly in Alexandria.

Along with these traditional industries Sydney's industrial base consolidated with increasing manufacture in metals, engineering, especially light machinery, and some development in chemicals and drugs, automobiles, white goods, leather and glassware. By the end of World War 1 capital formation in the manufacturing sector exceeded the proportion going to rural production for the first time. The London capital market which had previously favoured rural enterprises flowed money directly into the urbanising process, with loans going to infrastructure undertakings including the massive undertaking of electrification of the city's homes, offices and factories as well as its train and trams. Power houses were built in Pyrmont and Ultimo in the first years of the century, the first for electric lighting, and the second to run the trains and trams which were converting from steam. 'The

[63] Peter Cochrane, *Industrialisation and Dependence, Australia's Road to Economic Development*, UQP, 1980. p. 3-10.
[64] Peter Spearritt, 'Women in Sydney Factories, c. 1920-50', *Labour History*, No 29, 1975, pp. 31-46.

sheep's back now shared pride of place in the Australian economy with the assembly line and the smokestack.'[65]

While the state built the electricity infrastructure for the transport system, it was the Sydney City Council that undertook the supply of domestic and industrial power for the city and adjoining suburbs. There had been active discussion over how best to electrify the city from the 1880s and there were several interests vying to get control of this function. The Redfern Municipal Council had actually gone it alone by setting up an electricity supply powerhouse in 1891, well before the City's first electric street lights were switched on from its new power house in Pyrmont in 1904. The importance of this work was such that Hugh McKay, who was the General Manager of the City's Electricity Department, was eventually paid a larger salary than his boss, the Town Clerk.

Substations were built initially in the city at Town Hall, Taylor Square, Woolloomooloo and Ultimo. In subsequent years places such as Glebe, Newtown and Camperdown were added to the network, with suburbs beyond the boundaries of the city also being connected. In the midst of a steady building program there was a flurry of construction around 1913/14, especially in the southern areas of the city after the City brought out the Redfern undertaking. By 1915 the Council was supplying 23 municipalities; gaslights were going out all over Sydney.[66] Wherever possible, substations were placed at optimum location to serve users and as industry was a large user, many were located in proximity to large plants. [67]

> The proportion of machine power in NSW factories driven by electricity increased at a phenomenal rate, from less than 1 per cent in 1901 to 50 per cent by 1921 and 77 per cent by 1936. The rate of electrification of industry was just as rapid as in the USA. In 1906 the average electric motor power per NSW factory worker was 0.12 horse power, but by 1950 it was 2.7hp (2k/w).[68]

Much of the capital needed to underpin manufacturing expansion came from an economically battered Britain which was contracting its investments away from the global stage and into its colonies. 'Imperial trade preference' for each other in an Empire focusing on exchange of 'men, money and markets' was aimed at buttressing both countries against the rise of the newly powerful United States. [69] For Sydney it meant high levels of British immigration – needed after the high attrition rate for young adults in the war from death and maiming - and robust expansion of manufacturing in the short run. But when the Great Depression arrived in 1929 and British capital dried up, local manufacturing was hard hit. Growth had stalled in the mid to late 1920s with an oversupply of motor vehicles and electrical goods. Building and construction contracted, and the agricultural sector made low demands on Sydney's factories producing machinery.

The World War 1 experience of commodity scarcity had resulted in strong government acceptance of the need to encourage manufacturing through trade protection and the erection of high tariff walls. The response to the depression was to push these even higher, to devalue the currency and to cut wages severely. The percentage of unemployed workers passed the 30% mark in Sydney and marginal industries went under.[70] In inner city areas such as Redfern and Glebe the unemployment rates were even higher. Larger firms, however, could benefit from cheap takeovers and there was some consolidation especially in the newer metal and machinery industries.

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[65] Peter Cochrane, *Industrialisation and Dependence, Australia's Road to Economic Development*, UQP, 1980 p. 3.
[66] George Wilkenfield and Peter Spearritt, *Electrifying Sydney*, Energy Australia, 2004, p. 36. www.ausgrid.com.au/Common/.../~/.../**ElectrifyingSydney**100Years.ashx
[67] James Pennington, *Electricity Substations of the Sydney Municipal Council and other authorities*, self-published, 2012. This study provides details of individual substations, including photographs of demolished and extant buildings.
[68] George Wilkenfield and Peter Spearritt, *Electrifying Sydney*, Energy Australia, 2004, p. 60.
[69] Peter Cochrane, *Industrialisation and Dependence, Australia's Road to Economic Development*, UQP, 1980 p.11-12.
[70] Peter Spearritt, *Sydney's Century: A History*, UNSW Press, 2000, pp.57-59.

The Depression: Melocco Brothers, located just outside the city boundary but chose to advertise as located in Forest Lodge, found very little call for their fine work in marble and terrazzo such as the interiors of the State Theatre, built in 1926 in Market Street, City. The firm instead kept afloat by taking government road building contracts, establishing a concrete batching plant in Wigram Road, Glebe and weathering scurrilous attacks from some sections of the press that claimed mafia control of government contracts. By the end of the 1930s demand for their traditional product had returned with this firm bequeathing to Sydney iconic work such as the Tasman map in the floor of the vestibule of the State Library (1939-41) and the representation of the Book of Kells in the crypt of St Mary's Cathedral (1951).

While the national wisdom during the Great Depression was to 'tighten the belt', the Labor controlled City Council borrowed heavily on London to build a new electricity power station at Bunnerong. For its pains it was sacked by the state government, but it is not unreasonable to suggest that this investment placed Sydney in a good position to come back after the depression. 'Direct and unambiguous commitment of British manufacturers to participate in a broader Australian manufacturing development' assisted recovery as jobs in the manufacturing sector recovered in the 1930s. [71] This commitment relied on a secure source of electrification for the expanding industrial plants it was funding. Demand for electricity had been increasing at 15% per annum over the period of 1910-1928. The new power station was more efficient than the Pyrmont one, and once it came on stream Pyrmont was shut down in periods of low demand.[72]

Telecommunications developed rapidly in the first half of the 20th century and from the 1920s local production of cables and other equipment began to displace imported manufactures as the number of exchanges and miles of overhead wires grew. In 1923 the first radio broadcast was made in Sydney, and by 1926 Standard Telephone & C had commenced manufacturing wireless receivers and transmitters. [73]

By the 1930s the organisation of work under the impact of the motor vehicle had begun to alter radically. In 1901 56% of people in Sydney walked to work, but as the 20th century progressed so did the network of trams and, from the 1930s, buses. The number of horses in Sydney probably peaked in the second decade of the century, with motorised vehicles for commercial work beginning to make serious inroads into the distribution field by the 1920s.

NUMBER OF COMMERCIAL VANS IN SYDNEY

YEAR	MOTORISED	HORSE DRAWN
1910	--	1247
1920	250	1627
1929	2274	182

Source: extracted from figures based on NSW Police Department Annual Reports. Lester Hovenden, 'The impact of the motor vehicle', in Garry Wotherspoon, ed. Sydney's Transport, p.142.

[71] Shirley Fitzgerald, *Sydney, 1842- 1992*, Hale & Iremonger, 1992, pp. 232-7.
[72] Roger Vine Hall, 'Bunnerong Distribution System', Australian Institute of Engineers, *Journal*, Vol XI, 1930, pp. 1-27.
[73] A detailed chronology of communications development is at 'Broadbanding the Nation', https://sites.google.com/a/politicalscience.com.au/home/Home/chronologies/australian-chronology

38. Resch's Delivery Truck outside 123 Botany Road, Waterloo, 1937 *Source: SLNSW hood_15972r*

The exit of the horse often meant that the stables and paddocks simply changed over to become garages and car parks. The Postmaster General's horse yards in Myrtle Street Chippendale became its 'Transport Branch', the Bay Street Depot in Pyrmont, once stables for horses to pull the city's garbage carts, now housed motorised cleansing vehicles, and so on. Ancillary industries disappeared – saddlers, chaff mills and farriers, replaced by motor garages and engineering services to the new technology. George Kiss's Horse Bazaar on George Street closed in its open spaces to become a regular city commercial building (the present George Hotel still retains the name Kiss's Buildings on its facade).Both the growth of electricity and motorised transport contributed new dangers to the work place and accidents were commonplace.[74]

At the start of World War 2 in 1939 manufacturing was sufficiently developed to play a much greater role than it had in the First World War. With imports again interrupted Australia filled a role supplying British countries east of Suez, producing 'munitions, ball bearings, machine tools, ships, aircraft, chemical … and optics. [75] The Sydney plant of the British firm of Standard Telephone & Cables (STC) was manufacturing equipment for verbal and morse-code transmission. Expansion of naval facilities at Garden Island provided skilled work. Warehousing was commandeered for storage of munitions in places like Pyrmont as well as on several islands in the harbour.

There was full employment in domestic industries which were subject to new efficiencies as government 'manpower' regulations swung into play. An increasing number of women participated in the workforce. They worked in war effort areas such as those mentioned above, and also in traditional areas such as textiles and food processing. This kind of production was linked to the provision of clothing and food for the troops, and once the war moved into the Pacific after 1942 Sydney was well

[74] Further research could be done on this using the City Council's archival employment and health records.
[75] Colin Clark, Timothy Greer, Barry Underhill, *The Changing of Australian Manufacturing*. Staff information paper for Industry Commission, Commonwealth of Australia, 1996, p.7. *uat.pc.gov.au/ic/research/information/?a=8885* Historical material cited here is based on B Carroll, *Australian Made: Success Stories in Australian Manufacturing Since 1937*, Institute of Production Engineers Australian Council, 1987 (not seen.)

placed to fill these orders. [76] Although the war provided some opportunity for improved wages, nevertheless by 1950 women remained overwhelmingly employed in a narrow range of jobs, with 66 % still employed in the low paying clothing and textile sector.[77]

4.2 Political constraints/opportunities

The aim of government policies after World War 1 to increase the size of the Australian population could not have been achieved without the development of manufacturing under a large protective tariff umbrella. Eventually this would permit the manufacturing sector to absorb a rapidly growing population and to contribute to substantial improvements in average living standards.. [78]

At the beginning of the 20th century the state government resumed and cleared much of the housing in The Rocks and Millers Point in the name of plague prevention, but despite the rhetoric, the bubonic plague of 1900 was just the perfect excuse the politicians were looking for in order to justify massive state intervention to modernise the waterfront to encourage trade and shipping. The new authority set up to do this, the Sydney Harbour Trust, (SHT) was given sweeping powers to resume and rebuild. This not only took the waterfront out of private hands, but also much of the housing in waterfront precincts. Some of these resumptions and demolitions were undertaken with a future harbour bridge in mind. The government, through the SHT and later the Maritime Services Board, (MSB) thereby became a major landlord during this period. In 1906 further resumptions and demolitions were required to build Central Railway on the site of the old Devonshire Street Cemetery. The City Council too resumed large tracts of housing in Chippendale, Ultimo and Surry Hills to create wider roads and streets and to provide cleared sites for factories and warehouses. This resulted in falling population in these areas and concentrated manufacturing in direct contrast to the trend of later decades.

A large and interventionist public works program, including the creation of the Walsh Bay wharves, the building of the Harbour Bridge and the underground railway led to increased demand for engineering work, equipment and materials. So too did the generation and distribution of electricity.

Electricity altered the Sydney landscape not only through the construction of enormous power stations, but through the construction of many substations which ranged from large buildings several stories high to smaller domestic style structures, as well as forests of poles and overhead wires. The design of substations was varied to meld with the surrounding area and today some of them carry heritage listings.

[76] Megan McMurchy et al., *For Love or Money: a pictorial history of women and work in Australia*, Penguin, 1983. This contains many images of women working in factories during the war.
[77] Peter Spearritt, 'Women in Sydney Factories c. 1920-50, *Labour History*, No. 29, 1975, p. 33.
[78] Graeme Snooks, 'Manufacturing' in *Australians, Historical Statistics*, Fairfax, Syme & Weldon Associates, 1987 p. 286-7.

39. ***Sub Station Cafe 124 McEvoy St Alexandria, NSW Source https://www.facebook.com/SubStationCafe***

40. ***Electricity substation No 117, 16 Euston Road, Alexandria, 1921*** *Source:* http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=3430491

41. ***1 Electricity Substation No 133, 32 Goodchap Street, Surry Hills, 1922*** *Source:* http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=3430401

During the 1920s legislation was passed to allow the railway's supply which was excess to transport demands to power some suburbs. Because the provision of electricity was a source of profit to the Council this was seen as a combative move by a government which was gearing up to establish a state based electricity authority. This was indeed the case, with the Sydney County Council being set up in 1936 under a new act, the Gas and Electricity Act, 1935. The County Council was the provider until 1991.[79]

The provision of electricity generated a large workforce with new skill sets. The crucial need for the power supply to flow uninterrupted enabled the Electrical Trade Union to influence the way the industry evolved and there were close links between it, the Metropolitan Employees Union (MEU) and Labor politicians. These unions were at the forefront of establishing conditions and rates of pay for the industrial sector in general. Despite job contractions during the Depression which also coincided with the completion of construction at Bunnerong, the ETU achieved a 44 hour week in 1935.[80]

Other workers were not so privileged, and while this period of strong manufacturing growth saw the growth of trade unions, the manufacturing unions were less organised and less militant than unions in heavy industry and on the waterfront. Nevertheless, more workers were unionised in this fifty year period than in any other period of Sydney's history. Many of these unions operated out of the Trades

[79] George Wilkenfield and Peter Spearitt, Electrifying Sydney, Energy Australia, 2004, pp.22-25.
[80] Shirley Fitzgerald, *Sydney, 1842-1992*, Hale & Iremonger, 1992, pp 234-7.

Hall, opened in 1895 at 4 Goulburn Street near Darling Harbour, but over these decades a number of unions established their own headquarters in localities more associated with industrial expansion, in Surry Hills and Redfern.

Major industrial actions during this period included the 1917 general strike which commenced at the Eveleigh workshops, lasted for months and affected many industries across the country. The timber workers strike of 1929 commenced at Hudsons on Pyrmont Bridge Road in Glebe (site of present Blackwattle Campus of Sydney Secondary College) and eventually involved workers in about seventy timber mills and yards. There were various major waterfront confrontations as workers, including warehouse workers struggled for improved conditions on and around the wharves.[81] There were several strikes of textile workers, overwhelmingly women, with the workers at the Alexandria Spinning Mills leading the fray in 1941 and again in 1943. Strikers from here and other mills including the Bradford Cotton Mills in Newtown demanded pay increases against the recommendations of the union officials who argued for a no strike policy for the 'war effort'. [82]

4.3 Development by locality

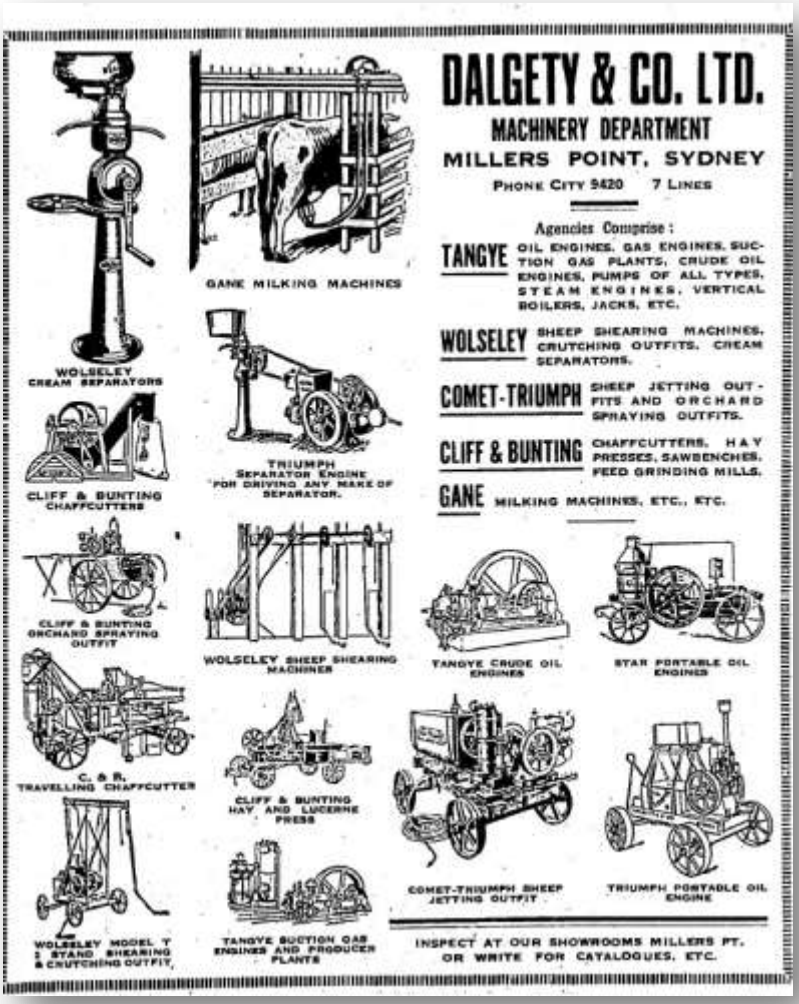
4.3.1 City & East

The Sydney Harbour Trust substantially rebuilt the waterfront from Woolloomooloo in the east to Rozelle Bay in the west. The most far-reaching interventions were at Millers Point where at the peak of operations around 1000 men were employed rearranging the foreshore to create a modern system of double level wharves connected to extensive shore sheds. A new Hickson Road (named for the chairman of the Trust) was designed to service the wharves, connect back to the goodsyards at Darling Harbour and provide direct access to the Pyrmont Bridge which was the link between the wool ships that docked at the new Walsh Bay and the woolstores on the Pyrmont peninsula. Large finger wharves and on-shore sheds were built from west Circular Quay around Darling Harbour to the end of the Pyrmont peninsula. [83]

After a shakeup of the three major companies operating out of Walsh Bay only the Central Wharf Co (Pier 8/9) had been a presence prior to the resumptions. Burns Philp operated out of Wharves 6/7 and the Commonwealth Government's Line of steamers from Wharves 4/5. Other companies rented space here and at the SHT run Wharves 1/2. [84]

The now thoroughly modern Millers Point retained some of its older stock of warehouses and stores, with new ones built by the SHT. The old warehouse in Munn Street, and the 'new' 1870s one next to it, probably both built by Cuthbert who took over Munn's old boatbuilding establishment, were spared by the demolition team. To these the SHT added a third building in 1908. This made it the largest warehousing complex on the waterfront. In 1913 the three buildings were leased to Dalgety & Co which retained these warehouses until the end of the 1960s. [85]

[81] This topic is beyond the scope of this report. Terry Irving & Rowan Cahill, *Radical Sydney: Places, Portraits and Unruly Episodes*, UNSW Press, 2010 is a source for many site specific events that occurred in Sydney, with location maps.
[82] Jane Stone, 'Women, Unions and Militancy in the Second World War', http://www.anu.edu.au/polsci/marx/interventions/rebelwomen/homefront.htm
[83] Shirley Fitzgerald & Christopher Keating, *Millers Point: The Urban Village*, Halstead Press, 2nd edition, 2009, pp.73-95.
[84] Paul Davies, 'Millers Point & Walsh Bay Heritage Review', for City of Sydney, 2006.
[85] Godden MacKay Pty Ltd, City of Sydney Heritage Inventory, 1996 described this as 'a rare and imposing complex'. State Heritage Register listing, for Munn Street Bond Stores, Item no.00526, gazetted 2nd April, 1999.



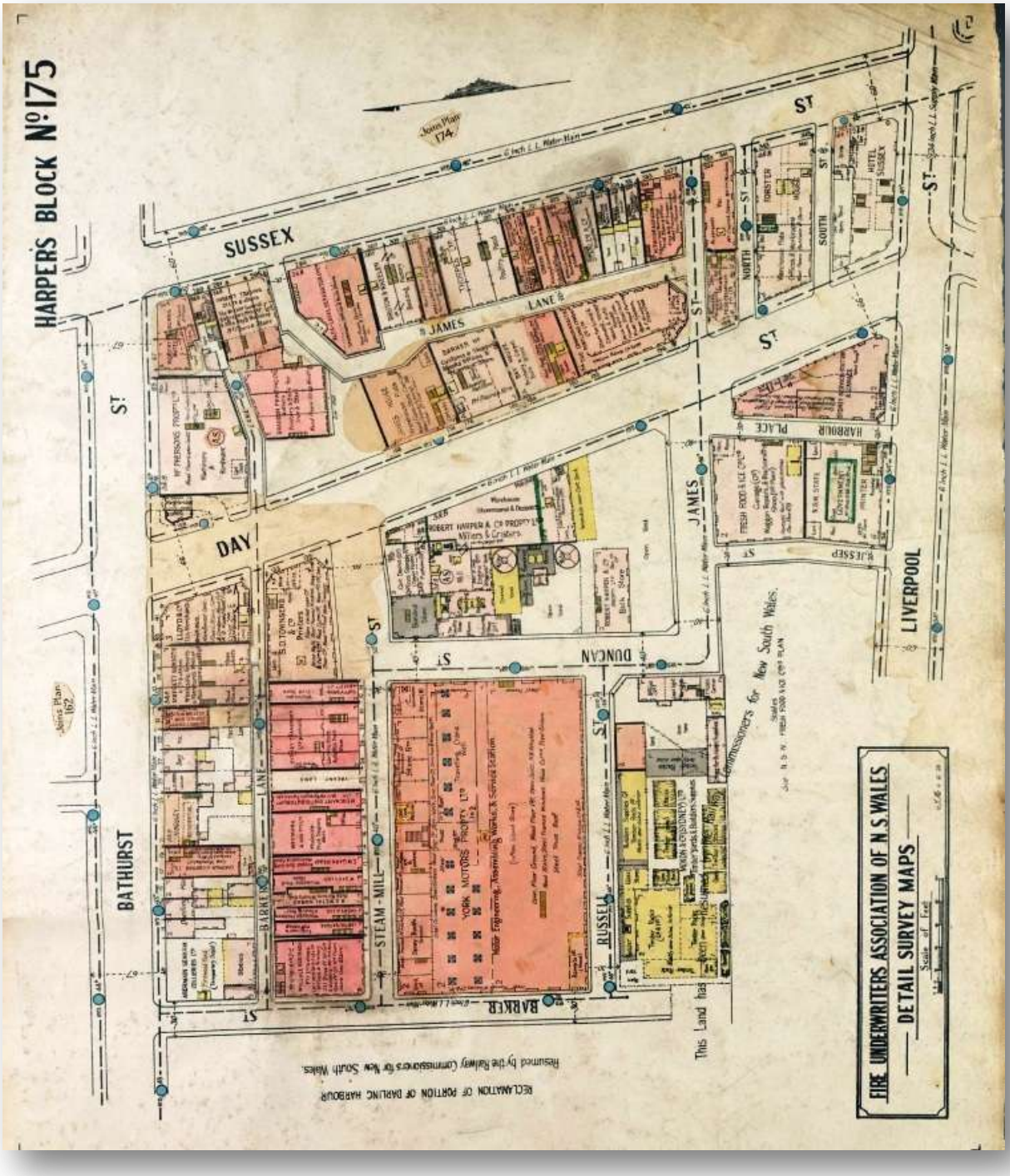
42. Advertisement for Dalgety Machinery Dept, Millers Point *Source: frontispiece Sands Directory, 1925.*

The whole of the redevelopment had not been complete by the time World War 1 arrived, and shipping declined so that in 1920 tonnage was only half the level it had been at the outbreak of the war – a clear indication of the health of local manufacturing. By the time shipping did reach its pre-war levels in 1928 the Depression was starting to cut into all levels of production. As well, there were the beginnings of structural changes that would eventually have a devastating impact on the waterfront. Ships were getting larger, with 8, 366 ships in 1927 carrying the same amount of cargo as 10,142 ships had carried in 1914.[86] More motor vessels meant less coal lumping and coal storage. Increased road transport meant less coastal shipping going into Darling Harbour. These were trends that by 1950 still had a long way to run.

The Sydney Harbour Bridge was built from 1926 and opened in 1932 with accommodation for trains and trams as well as cars. A modernist four storey railway substation which stands next to the Bridge and close to the old Garrison Church was built around 1930.

[86] Figures based on Maritime Services Board annual reports, quoted in Shirley Fitzgerald & Christopher Keating, *Millers Point: The Urban Village*, 2nd edn., Halstead Press, 2007, p. 95.

In the streets behind Darling Harbour the extensive warehousing and manufacturing tracked the changes in the sector. Engineering works, machinery stores and timber yards remained amongst the wharves and so too did the waiting rooms and hotels that had long characterised the waterfront, but there were more clothing and fancy goods workshops and factories, along with automobile garages. Several large warehouses of seed merchants serviced the spread of the new 'house and garden' suburbs.



43. Prime urban land was redeveloped for the new industries associated with the manufacture of parts, servicing ad showrooms for the motor car. Fire Underwriters Plans ca 1917-1939 Block 175 *Source: online in Historical Atlas of Sydney, City Archives.*

Industrial Fires

Factory fires were possibly no more common than fires in other buildings, but the consequences were greater, and given the dangerous materials located at some plants they had the potential to be more destructive than other kinds of fires. When a fire broke out in the papers stores of the printing firm of Gibbs Shallard and Co in 1890, it quickly spread to an adjoining warehouse as well as a bank, a club and several other buildings in Moore Street facing the GPO. The destruction of several city blocks here eventually led to the widening of this narrow street to form Martin place. A fire at Cameron's Tobacco Factory at the corner of Pitt and Liverpool Streets in 1886 completely destroyed the building, along with stockpiles of dried leaf and manufactured products which no doubt assisted the conflagration.[87] At Gibbs Bright & Company's wharf 80,000 cans of kerosene went up in 1890, Hudson's Timber Yards at Glebe caught alight in 1926, woolstores ignited and burnt with ferocity on various occasions, including the great Goldsbrough Mort conflagration at Pyrmont in 1935 as well as a group of stores in Ultimo in 1978. 20,000 tons of newsprint went up in flames at Fairfax's paper stores in Pyrmont (site of present Fishmarkets) in 1971.[88]
Along with recriminations and official investigations, factory fires often resulted in hardship for workers who were instantly laid off.

Elsewhere in the city manufacturing became less evident as the period progressed, although a great deal of small scale output was carried out in the upper floors of the new multi-storey buildings that presented at street level as commercial chambers or retailing.

The new Central Railway opened in 1906. It was largely built over the old Devonshire Street Cemetery, but alterations to surrounding streets and approaches to the station radically changed this part of the city. One of the most ambitious 'improvements' involved the resumption of housing around Wexford Street in 1908 in order to push through a 'new broad street' called Wentworth Avenue from Central railway station to Oxford Street. This would provide a 'safe and seemly means of access … and increase the facilities for traffic'.[89]

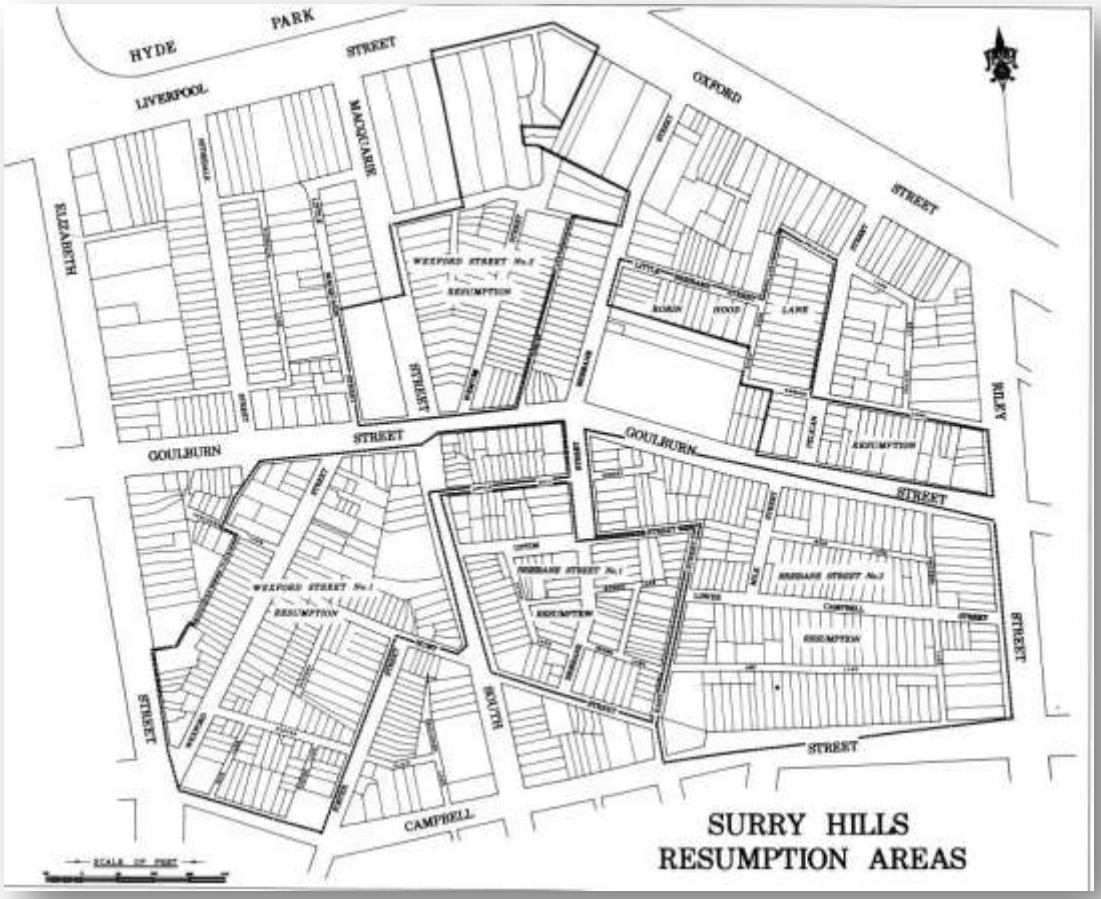
This was part of a concerted effort on the part of the City Council to get housing out of the city and make it 'efficient' for industry. Blocks were leased on the resumed land only on condition that premises erected cost over a specified sum which effectively excluded any residential construction. Griffiths Bros tea company and the manufacturing chemists Soul Pattinsons moved in along with numbers of motor showrooms and clothing factories. By 1931 there were 34 motor industry firms and 27 textile and clothing firms operating on Wentworth Avenue.[90] Other industries relocating to Surry Hills included the printing industry, and warehousing of a wide range of products was widespread in the area.

[87] *Sydney Morning Herald*, 24th September, 1886, p.5.
[88] Colin Adrian, *Fighting Fire: A Century of Service*, George Allen & Unwin, 1984, pp.193-221.
[89] Keating, Christopher (1991). *Surry Hills: The city's backyard*. Hale & Iremonger, Sydney p.72.
[90] as above.

44. A thoroughly commercialised new street, Wentworth Avenue in 1930s. *Source: City Archives SRC21955*

The success of engineering this and other new manufacturing localities encouraged the City Council to carry on with enthusiasm in this area. Between 1910 and 1911 Elizabeth, Goulburn and Campbell Streets were widened for tram and traffic purposes, Oxford Street, on the Darlinghurst northern side in 1916 and Devonshire Street was extended to Bourke. Some older industries disappeared too, like Goodlet & Smiths pottery. The clay pit that stood in the middle of where a new Belvoir Street was planned had been worked out in any case, and the old landmark stack was demolished in 1916.

The extent of resumed land in Surry Hills is contained in the following diagram.



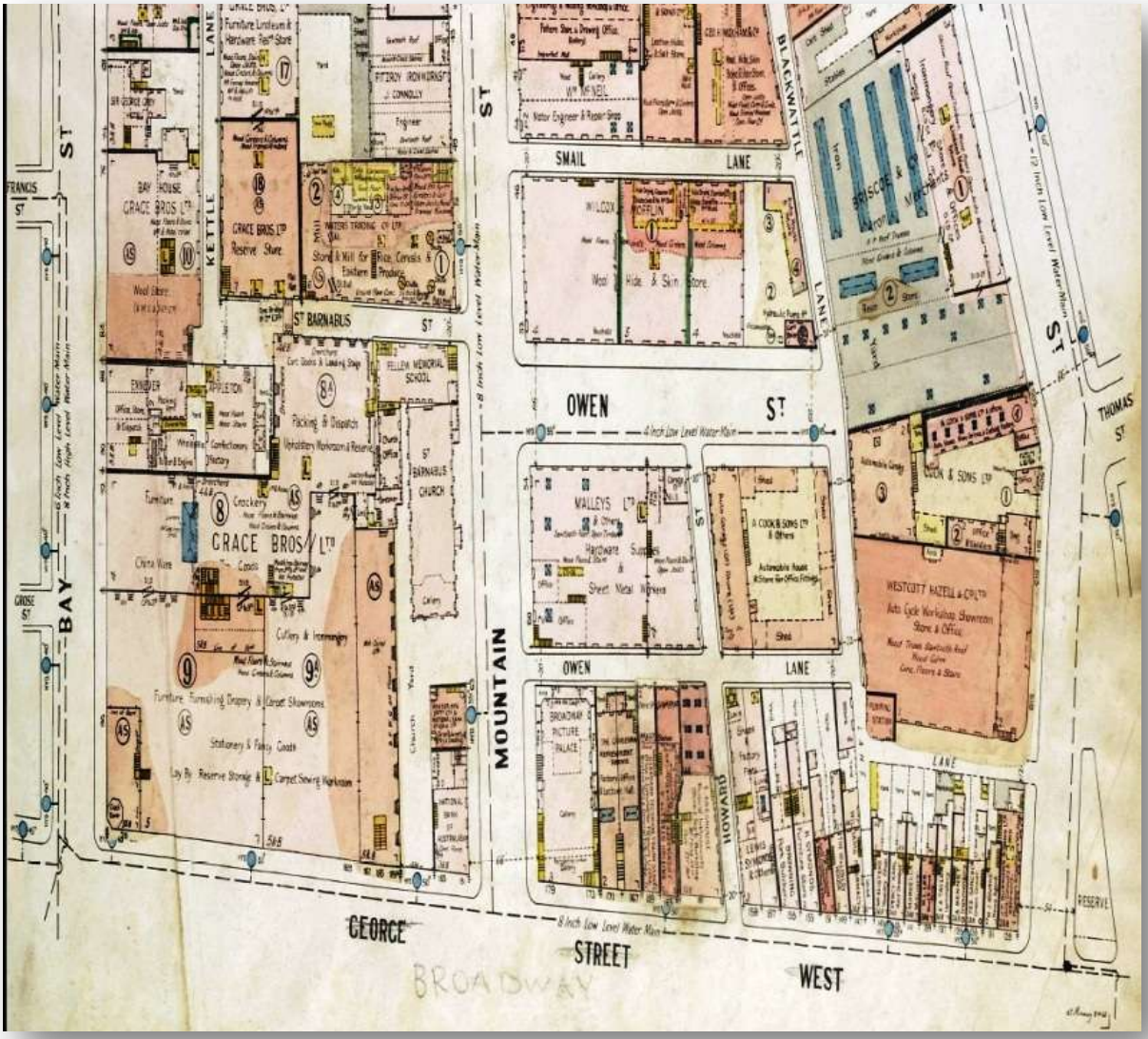
45. 2 Map of Surry Hills Resumption areas *Source: Christopher Keating, (1991). Surry Hills: The City's Backyard. Ist edition, Hale & Iremonger, Sydney. 1991, p.76.*

Resumptions in Surry Hills continued right up to the end of the 1920s when not only were houses being knocked down, but older warehouses as well. By now, however, planning for an inner city covered with manufacturing and warehousing came up against the reality of the Depression. When a large tract of land known as the Brisbane Street Resumption No 2 was put up for sale on 50 year leases in 1928 not one block sold and the land stood vacant for many years until the state government finally bought it in 1954. This failure was only partially a measure of the depth of the Depression. Probably more significant was the attraction to manufacturers and warehousers of cheaper and more spacious land to the south in the burgeoning industrial areas of Alexandria, Waterloo and Zetland.

4.3.2 West

The declining population of Pyrmont and Ultimo which had begun in the 1890s continued to accelerate in the 20th century as industrial uses colonised the land. The process was assisted by the expansion of the CSR which built a distillery (1901), a Co2 plant (1905) and a char plant (1910). A cartage company, McCaffery's housed 152 Clydesdale horses, 44 drays and 35 lorries by the start of

World War 1. [91] The CSR continued to expand in Pyrmont for the rest of the 20th century, privatising streets and demolishing housing to accommodate its needs. At the other end of the peninsula in Ultimo the City Council's resumptions of swampy land around Blackwattle Creek behind Wentworth Park resulted [92] in the demolition of over 400 buildings and the eviction of around 2, 000 people. The land was drained and some of it taken for Council purposes, with the rest leased for factories, stores and warehouses.



46. All of this area behind the Grace Brothers stores on Broadway was repurposed through resumptions and demolition of housing. This section shows a number of warehouses for foodstuffs, wool and hides, ironworks and engineering firms.
Source: Fire Underwriters Plans of Sydney, c. 1917-39, Block 205, Sec 3. Available online in Historical Atlas of Sydney, City Archives.

[91] Shirley Fitzgerald & Hilary Golder, *Pyrmont & Ultimo: Under Siege*, 1st edition, Hale & Iremonger, 1994, p. 90.
[92] Known as the Athlone Place Resumption, it was one of the earliest, as this locality was considered one of the worst in Sydney.

Woolstores continued to grow in number until the Farmers' and Graziers' second store was built in 1936, the last multi storey woolstore to be built in Sydney.[93] Other land hungry uses included flour mills. Gillespie Bros Flour Mill relocated from the old milling location at the foot of Bathurst Street in the city to 52 Union Street, Pyrmont in 1921. At that stage it employed 70 mill hands and was one of the most impressive mills in Australia. [94] In keeping with the practice of preferencing industry over residential land use, houses were demolished to build it. The mill was expanded in 1940s and operated continuously on three shifts grinding the wheat that arrived at the mill via rail.

47. Gillespie Brothers Anchor Flour Mill, and grain storage, Union Street, Pyrmont c. 1930. It took the old name of Anchor from mills of a much smaller scale located at the foot of Bathurst Street*. Source: Michael R Matthews, Pyrmont & Ultimo, A History, p.61.*

The City Council's Wattle Street plant was one of the most innovative industries on the peninsula. It was sited in an old quarry and connected by rail to the city's sources of road building materials. Asphalt was manufactured at the plant from 1929 until the end of the 1980s and the laboratory there was instrumental in developing new road surface technology. In the 1930s the City pioneered the use of dry rolled concrete roads. During World War 2 the Wattle Street Depot supplied asphaltic panels to protect merchant ships with the laboratory contributing new knowledge to this manufacture. [95]

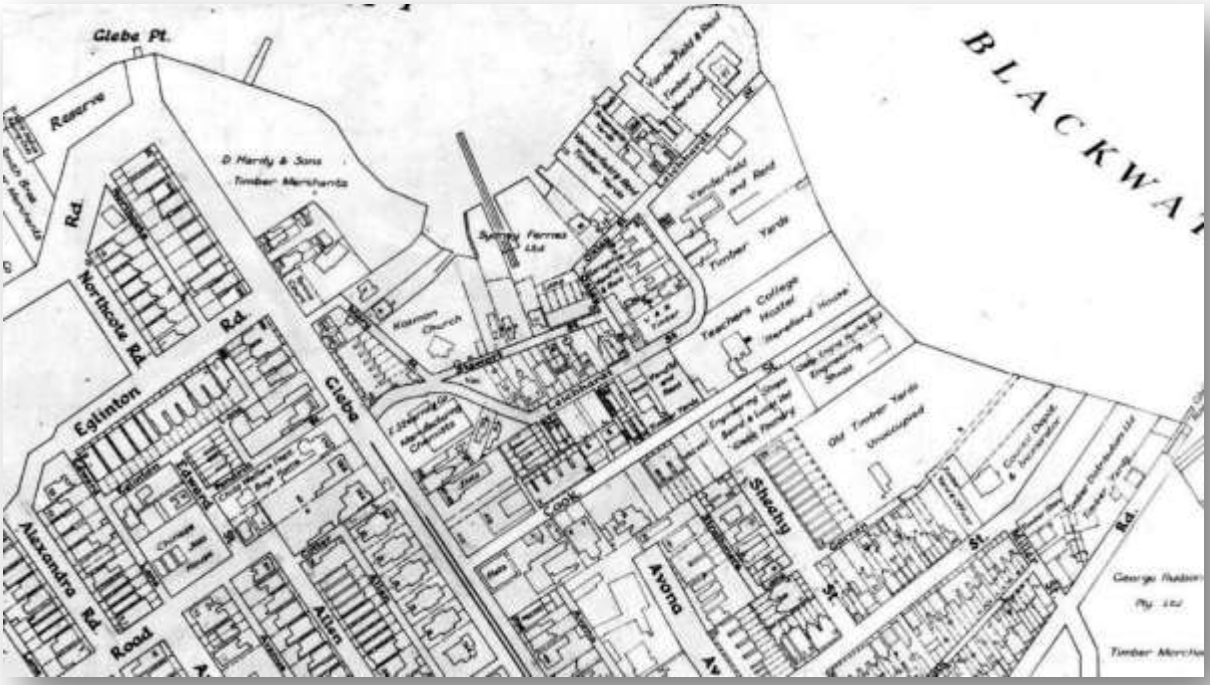
The dramatic expansion of industry across the peninsula and the related collapse of population was thrown into strong relief in 1933 by the closure of the imposing public school in John Street, abandoned for lack of pupils. In 1916 there were 600 students. By 1933 there were 245. These were obliged to now attend the Ultimo school which was suffering similar decline in enrolments. Besides, the John Street School was required as a hostel for the unemployed.

World War 2 was a constant presence on the peninsula with troop and prisoner-of-war movements from 'Pyrmont 13' wharf, and when the war moved into the Pacific, American troops also arrived here. In Ultimo the government's Wool Committee built temporary storage sheds across Wentworth Park.

[93] Michael R Matthews, *Pyrmont & Ultimo: A history*, self-published, 1982, p.77.
[94] Michael R Matthews, *Pyrmont & Ultimo*, p.61.
[95] City Engineers Minute, 2 January 1990CRS 326/509/00004, quoted in Shirley Fitzgerald, *Sydney, 1842-1992,* Hale & Iremonger, 1992, pp. 247-8.

Glebe was linked to the city by ferries and by trams along Glebe Road and into Forest Lodge. While much of the suburb was working class residential, with a population of about 22, 000 in 1911, there were many small factories and workshops, many of them clothing factories, especially at the Forest Lodge end of the suburb and spilling into Camperdown which also manufactured foodstuffs such as jams and biscuits. Camperdown also provided warehousing for Grace Brothers, a large retailer on Broadway. Other locations for industry in Glebe were along Parramatta Road past Grace Brothers' department stores and along Bridge Road where it came off the Pyrmont Bridge across Darling Harbour.

The 1916 goods line passed through Wentworth Park here, at the head Blackwattle Bay. Today there remains a run of 1920s warehouses on Bridge Road, and the remnants of one of the three large coal depots which lined the head of the Bay. However, it was the timber industry that dominated Glebe, with large firms' timberyards dotted along the shores of both Blackwattle and Rozelle Bays.



48. Glebe toward the end of this period. Timber yards of Hudson's, Vanderfield & Reid and Hardy & Sons dominate the foreshore of Glebe Point. Further around this map and into Rozelle Bay there are five more timber firms. *Source: Housing Improvement Board, The Glebe Occupational Survey, 1939 available online in Historical Atlas of Sydney, City Archives.*

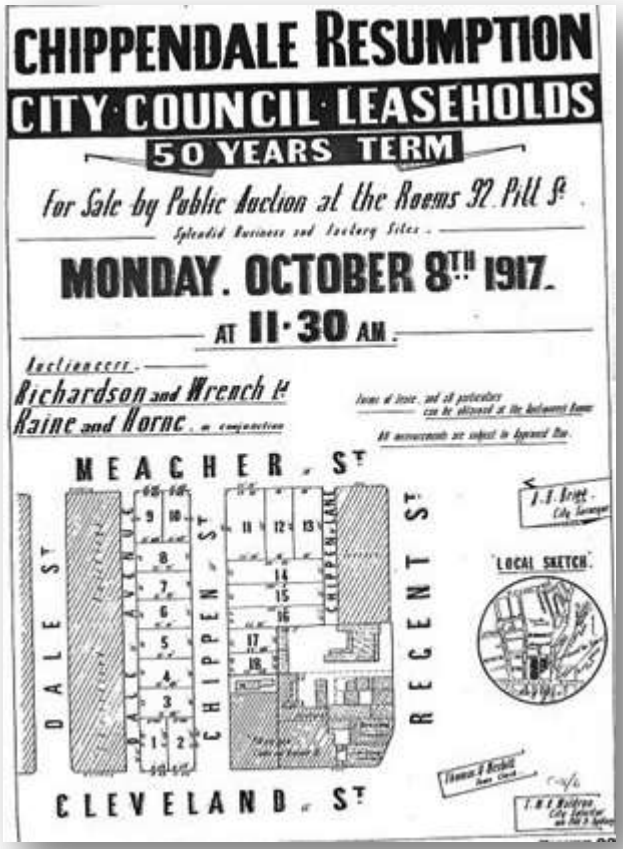
49. Stack of timber at Blackwattle Bay, 1930s *Source: SLNSW hood_03584*

This waterfront was shared with boat storage and with the 1921 Strides ship breaking works, labelled on the 1939 map above as 'Breaking up Yards'. An old Strides crane and remnants of docks in the Sydney Ferries location remain today. Further west the heritage listed1906 Rozelle Tram sheds are still standing, currently earmarked for a mega supermarket development. [96]

4.3.3 South

In Chippendale, as in Surry Hills, land was resumed and houses demolished for industry. Resumptions did not go unprotested. There were public rallies and the Council received petitions, one with 600 signatures opining that 'the disposal of the area for factory sites would practically ruin many deserving citizens.'[97]

[96] http://www.jamieparker.org.au/harold-park-tramsheds-residents-unite-to-fight-developers-plan/
[97] Petition to reserve Chippendale subdivision for residential purposes, NSCA, CRS 28/2519/19



50. This subdivision advertised 'Splendid Business and Industrial Sites'. *Source: SLNSW ML Chippendale Subdivision plan no. C18/6*

New industrial land was taken up by a range of small and large factories. The new technology relating to telecommunications was represented by Standard Telephone & Cables Pty Ltd which commenced operations as an importer of Western Electric products 1923 and by 1926 it was manufacturing radios under the brand of STC at Myrtle House in Myrtle Street (currently apartments). This location proved too restrictive as the firm rapidly expanded, and by 1937 it had moved to Alexandria where a new factory and warehouse was built at 258-274 Botany Road between Mandible and Wyndam Streets, (now incorporated within the 'Hudson' apartment development, Green Square, Jackson & Cottier). The old firm of J C Goodwin & Co which had been located in Abercrombie Street from 1875 opted to deal with expansion by occupying multiple stores on small blocks, adding four extra stores in Abercrombie and Myrtle Streets by the 1930s. This was the era when department stores engaged in some manufacturing as well as retailing. Grace Bros had a tailoring factory in Knox Street and Anthony Hordern's an embroidery factory in Regent Street. Berlei House, 'home of the famous Australian made Berlei corsets' was an elegant six storey factory built at 39-47 Regent Street in 1911.[98]

The strongest industry group in Chippendale was in the provision of food and drink. The Bendollar Chocolate Company on Abercrombie Street, cereal food producers H L Bushell and Co. in Meagher Street, (later White Wings), the Phoenix Biscuit Company on Cleveland Street, the warehouses of Moran & Cato, wholesale grocers … the list goes on.

[98] For a detailed listing of factories see Architectural Projects, 'Chippendale Heritage Conservation Study,' for South Sydney Council, 1999, Vol. 2.

> 'I can never think of Chippendale without smelling the sweet smell of leather'…The White Wings cake factory in Meagher Street had different baking days – vanilla days, orange days, while kids would walk pat the Mac Robinson's factory just for a smell of Cherry Ripe …Chippendale did not so much have weather as smells'. [99]

And overriding these all, the smell of the hops mashing at the ever expanding Tooths brewery.

Chippendale also housed printeries and clothing factories and several boot factories, including Fostars in O'Connor Street, established by Harry McEvoy. The same kinds of industries were located in other southern parts of the city. Food production was scattered through Redfern and Alexandria as well as Chippendale and a study of the photographic record of corner shops would reveal that most of the products being advertised on their painted walls were produced locally

It could be argued that the council's deliberate policy of providing industrial land in parts of Ultimo, Chippendale and Surry Hills had retarded the development of industrial land use of areas further south, but growth was strong here too, with many investors preferring cheaper land and the more generous space available.

From the late 19th century food preparation and food manufacturing that had in earlier decades been part of domestic home-based production were continually moving to commercial operations. This included mechanised production of bread and pastry products, with the southern areas of the city coming to house commercial bakeries, along with canning and bottling plants for a range of food and drink products.

Refrigeration also encouraged a shift of additional products to commercial production. The new product of ice cream was introduced on a commercial scale to Sydney when Peters 'American Delicacy Company' commenced production of ice cream in Paddington in 1907, with a new plant built in George Street, Redfern in 1923. It was claimed that the plant turned out 5,000 gallons of icecream and 25,000 cones a day, distributed by a fleet of 33 trucks, the largest private fleet in Sydney. The factory was allegedly 'the largest of its kind in the British Empire' and 'if it is not the cleanest and the most up-to-date then cleanliness and up-to-dateness are unknown things.'[100] The headquarters of this company eventually shifted to Melbourne, but the Redfern plant continued to supply 'the health food of a nation' for many decades. Until his death in 1937, its founder, Frederick Peters, continued to live in Sydney where he was on the board of the local South Sydney Hospital for many years.[101]

Many of the old established firms that clustered around the tanning industry continued to locate in the southern part of the city, churning out boots and shoes from many small and medium plants such as those of McMurtries , John Hunter & Sons, the Centennial Boot Company and the Standard Boot Company; all in Redfern. There were others in Newtown, Waterloo and Alexandria where there is a McEvoy Street, indicating that this bootmaker was located there as well as in Chippendale. During World War 2 this firm manufactured boots for the armed forces at the rate of 2000 pairs a day. [102]Bootmaking classes began at Sydney Technical College in 1908 and in 1916 the Department of Public Instruction purchased the old boot factory of LJ Bowen on the corner of John and Cope Streets, Waterloo for its Tanning School. The school operated until 1999.[103]

Notwithstanding the varied range of products manufactured in Redfern, in large part the suburb's fortunes continued to be tied up with the growth of the Eveleigh carriage workshops and locomotive works. These were electrified from 1901 when the railways power house at Ultimo came on stream.

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[99] Reminiscences, Shirley Fitzgerald, *Chippendale, Beneath the Factory W*all, Hale & Iremonger,1st edition, 1991, pp. 867.
[100] *Sunday Times*, 9th December, 1923, p.28.
[101] G P Walsh, 'Frederick Augustus Boles Peters,(1866-1937)', *Australian Dictionary of Biography*, Australian National University, http://adb.anu.edu.au/biography/peters-frederick-augustus-bolles-8027/text13993 , accessed online 8 April 2014
[102] *Sydney Morning Herald*, 11 December, 1941.
[103] Mark Dunn, 'Waterloo Tanning School', Dictionary of Sydney, 2011 http://www.dictionaryofsydney.org/entry/waterloo_tanning_school_ Accessed November 2013

Manufacture of locomotives began in 1907, and the workforce grew enormously over the next few decades, with 230 houses being demolished towards the end of World War 1 to permit construction of the Alexandria goods yards, completed in 1917.[104]

In August of this year, 1917 the most famous industrial strike in Sydney' history commenced when workers at Eveleigh walked off the job in response to a threatened introduction of a 'card system' which workers feared would result in speeding up and deskilling of processes (Taylorism) and in victimisation when new positions of sub-foremen were established, thus breaking ranks and potentially leading to victimisations. Outsiders and journalists represented the 'card system' as a trivial concern, but the events that followed told a different story. Within one week 30, 000 workers in many factories were on strike, mainly in Sydney, and at its peak there were around 70,000 on strike across NSW. The strike lasted for 82 days with almost daily demonstrations at the Domain where numbers swelled to around 100,000 on Sundays. The workers achieved very few gains but their sustained anger and frustration set the scene for industrial actions for decades to follow. [105] Sources vary in their estimate of numbers of men who went out at Eveleigh from 1,200 to 3000. [106]

Locomotive production at Eveleigh ceased in 1925, but the site kept on expanding. During World War 2 the workshops were converted to support for the war at home as well as overseas, as parts of the plant were given over to the manufacture of shells and ammunition and air raid shelters. [107]

The majority of Alexandria, Zetland, Waterloo and Rosebery were in one large estate until the early 20th century and although there were various noxious industries and brick pits dotted across the area it was not until the eve of World War 1 when the land was subdivided and put up for sale, that things began to really move. [108] These areas were more attractive to industry than for residential use, with the exception of the Rosebery Model Workingman's Estate, subdivided in 1912 by the Town Planning Company of Australia on 273 acres of the Waterloo Estate. At this time most of this land was under market gardens and the estate was laid out with a mixture of residential and industrial sites, all in garden settings. The residential blocks created an enclave of quality workers housing in what was to become Sydney's most industrial area and many of the businesses that took up land on the estate developed so called 'model factories' which paid attention to architectural excellence as well as production efficiency.

The industries that were attracted to Rosebery by 1921 included the Rosella Canning Factory (85 Dunning Ave, currently a restaurant conversion), Henderson's Hat factory (Hayes Road), Noyes Brothers, which manufactured 'Gypboard' and roofing materials, John Turnbull & Company's asbestos department, Mark Foys knitting factory, the Australian warehouse (1919) of the Chicago chewing gum firm Wrigley's, makers of 'Juicy fruit' and 'Spearmint' gum and Parke Davies & Company's chemical factory. [109]

These last two stood opposite the enormous James Stedman-Henderson's Sweets Ltd built in 1917-1919 in Rothschild Street. Steadmans was an old 19th century Sydney firm which relocated from the inner city to allow for expansion. Its 'model factory', known as Sweetacres, produced confectionary with household names such as 'Jaffas' and 'Minties.' This site is now occupied by the RTA.

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[104] These dates may be approximate. See note 14.
[105] There are many sources relevant to this strike, including publications, websites, oral history reminiscences, CDs and songs. For example, Taksa, Lucy, 'Defence not defiance: Social protest and the NSW General Strike of 1917', *Labour History*, vol. 60, 1991, pp. 16-33; Robert Bollard, 'The General Strike of 1917', *Socialist Alternative*, May, 2007.
[106] 3D Projects, 'Eveleigh Railway Workshops Interpretation Plan and Implementation Strategy,' for Redfern Waterloo Authority, 2012, p. 19
http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0006/139911/130509_CSPC_ITEM10_ATTACHMENTC.PDF
Bathurst Times, 25th August, 1917 etc.
[107] Godden MacKay Logan, 'Australian Technology Park', Draft Report, 2012 gives an overview of the history of the workshops.
[108] Scott Cumming, 'Chimneys and Change' in Grace Karskens & Melita Rogowsky, *Histories of Green Square*, UNSW, 2004, pp. 36-7.
[109] *Building*, 12 July, 1917: 11 January, 1919, quoted in Scott Cumming, 'Chimneys and Change' in Grace Karskens & Melita Rogowsky, eds. *Histories of Green Square*, UNSW, 2004, p. 37.

Other firms that moved from inner localities included Dunkley's Hat Mills, makers of the famous 'Akubra' hats. This firm was established in Crown Street, Surry Hills in 1911 and relocated to 846 Bourke Street, Waterloo, just south of Forsyth's ropeworks. Another deserter from Surry Hills was Eveready Batteries (1901) which relocated to a large block on the Rosebery Estate bounded by Harcourt Parade, Rothschild Street and Mentmore Ave. In 1937 when its new plant was opened, an article in *Building & Construction* claimed that it was the largest dry battery plant in the southern hemisphere.

The building, designed by Kell & Rigby, made of reinforced concrete designed for 'exceptionally heavy loads' had three floors with sufficient strength to add a fourth when required. It claimed to have over nine miles of steel window sections, each window 9 feet high, designed by J Connolly. Sprinklers were by Wormald Bros, lifts by White elevators, and electrical & lighting by D H Handley. Battery manufacture was dangerous and the firm claimed to have a 'fully equipped hospital on site in charge of a graduate nurse.' [110]

51. Eveready batteries – 'for the flashlights in every home'. View of the exterior of the Eveready factory, opened in 1937. *Source: SLNSW hood_08774h*

The building is three stories in this image, but it got its extra floor, and its scale makes it a dominant building facing residential Harcourt Street. It was positioned as 'modern' but it could be suggested that its multi level layout was a hangover from the way factories were built in earlier decades. It remains today as an exception in the area; very few industrial buildings in Rosebery are more than two storeys.

[110] 'New Factory, Modern Plant for Battery Work', *Building & Construction*, 27th Oct, 1936.

52. The former Eveready building is used for offices. *Source: Alexandria Real Estate advertisement for Leda Business Centre 2013.*

One of the earliest firms to signal that Alexandria would become an area of large scale and heavy industry was the British firm of Hadfields, established in 1915 in Mitchell Road. In the mid- 1940s Hadfields employed 500 men. It smelted steel to produce castings for railways, tramways, shipbuilding, and mining operations. This kind of heavy industry was buoyed by the high levels of urban infrastructure being constructed in the post WW1 decade. In 1925, for example, Hadfield's poured some of the first steel castings for the Sydney Harbour Bridge, while a neighbouring firm of McPherson's Bolt & Nut Works supplied rivets and bolts.[111]

[111] City of Sydney, Corporate, Finance, Properties and Tenders Committee, 7 May 2012 – item 6. 'Naming Proposals – Streets and Parks in Green Square & the Ashmore Neighbourhood'. Attachment E, (Author: Lisa Murray). http://meetings.cityofsydney.nsw.gov.au/council/about-council/meetings/archive/2012/Committiees/070512/finance.aspx
Jane Kelso, 'Companies Involved in Building the Bridge' in Caroline Mackaness, ed., *Bridging Sydney*, Historic Houses Trust, 2006. Companies mentioned by Kelso in the City of Sydney include Allen Taylor, timber merchants of Pyrmont; British General Electric Company; Cockatoo Island Dockyards; Commercial Steel, Missenden Road, Camperdown; Hadfield's Steel Works, Alexandria; Maxwell Porter and Sons, Redfern; Neuchatel Asphalt Co, Waterloo; Ormonoid Roofing and Asphalts, Waterloo.

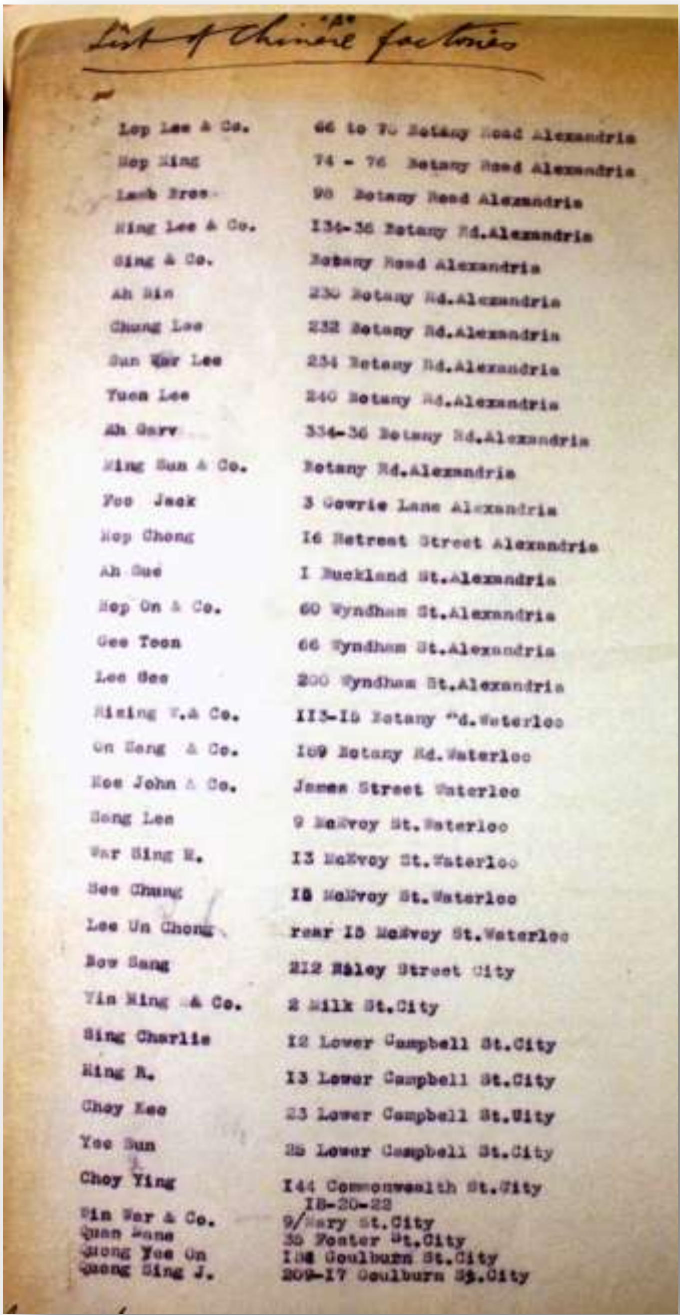
53. Pouring first steel casting at Hadfield's Works 1925. The man in a suit on right is thought to be JJ Bradfield. *Source: State Records Series No 12685*

In 1928 a number of paper companies combined to form Reed Paper Products. It covered 13 acres in O'Dea Street, Waterloo, and by 1938 it employed 600 people here and at its second factory in Redfern. This made it the largest manufacturer of paper amongst several in the district. The firm manufactured playing cards and cardboard containers in a variety of shapes and sizes, from shoeboxes and food packaging to display cartons and furniture packaging. [112]

One of the wonders of Waterloo was the huge Australian Glass Manufacturers (AGM) on South Dowling Street, south of the Resch's Brewery. AGM was formed in 1915 out of a merger of two older companies, the rundown Sydney Glass Bottle Works on the Dowling Street site and the Waterloo Glass Works, which were subsequently closed down. Over the following years several other smaller local factories were absorbed and closed and by the 1920s AGM dominated the NSW market. The latest American methods of glass production were employed to manufacture all types of glass including toughened sheet glass for the car industry. The decorative output of Crown Crystal Glass, acquired in 1924, remains collectable and the company's art deco1938 factory at 851 South Dowling Street is heritage listed. It was designed by in-house engineer Mitchell Potter. In 1939 the firm was restructured as Australian Consolidated Industries. By then the company had diversified into iron, coal, tools, machinery parts and steel fabrication. [113]

[112] City of Sydney, Corporate, Finance, Properties and Tenders Committee, 7 May 2012 – item 6. 'Naming Proposals – Streets and Parks in Green Square & the Ashmore Neighbourhood'. Attachment E, (Author: Lisa Murray). http://meetings.cityofsydney.nsw.gov.au/council/about-council/meetings/archive/2012/Committiees/070512/finance.aspx.
[113] Gordon Rimmer, 'Smith , William John, 1882-1972, *Australian Dictionary of Biography*, National Centre of Biography, ANU, first pub, Vol 11, 1988.

In contrast to giants like AGM there were hundreds of small concerns which supplied parts, materials and construction services to the larger plants. Others produced the traditional domestic products demanded by a growing urban place.



List of Chinese factories

Lop Lee & Co.	66 to 70 Botany Road Alexandria
Hop Hing	74 - 76 Botany Road Alexandria
Lamb Bros.	90 Botany Road Alexandria
Hing Lee & Co.	134-36 Botany Rd.Alexandria
Sing & Co.	Botany Road Alexandria
Ah Sin	230 Botany Rd.Alexandria
Chung Lee	232 Botany Rd.Alexandria
Sun War Lee	234 Botany Rd.Alexandria
Tuen Lee	240 Botany Rd.Alexandria
Ah Garv	334-36 Botany Rd.Alexandria
Hing Sun & Co.	Botany Rd.Alexandria
Foo Jack	3 Gowrie Lane Alexandria
Hop Chong	16 Retreat Street Alexandria
Ah Gue	I Buckland St.Alexandria
Hop On & Co.	60 Wyndham St.Alexandria
Gee Toon	66 Wyndham St.Alexandria
Lee See	200 Wyndham St.Alexandria
Rising W.& Co.	II3-I5 Botany Rd.Waterloo
On Hang & Co.	109 Botany Rd.Waterloo
Hoe John & Co.	James Street Waterloo
Hong Lee	9 McEvoy St.Waterloo
War Sing H.	I3 McEvoy St.Waterloo
See Chung	I5 McEvoy St.Waterloo
Lee Un Chong	rear I5 McEvoy St.Waterloo
Bow Sang	212 Riley Street City
Yin Hing & Co.	2 Milk St.City
Sing Charlie	I2 Lower Campbell St.City
Hing R.	I3 Lower Campbell St.City
Choy Kee	23 Lower Campbell St.City
Yee Sun	25 Lower Campbell St.City
Choy Ying	I44 Commonwealth St.City
Yin War & Co.	I8-20-22 9/Mary St.City
Quan Sang	35 Foster St.City
Quong Yee On	I34 Goulburn St.City
Quong Sing J.	209-I7 Goulburn St.City

54. List of Chinese factories in Sydney in the mid 1920s. Alexandria and Waterloo dominate. *Source: Federated Furnishing Trade Society New South Wales Branch deposit 1, ANU Noel Butlin Archives Centre ANU**.***

In the vicinity of Retreat Street where a Chinese temple had been built by the market gardening community of the previous generation, small Chinese factories and workshops dominated and perhaps as late as the 1940s the temple's 'lion' danced along the Botany Road to celebrate the Chinese New Year. At the Census of 1901 there were more Chinese-born residents in Alexandria, Waterloo and Botany than in the better recognised Chinese population in the centre of the city.

Although the overall numbers were not great, the concentration of Chinese involved in furniture manufacture makes them an important part of the industrial heritage of this area. In 1925 the Federated Furnishing Trade Society of NSW listed 17 Chinese factories in Alexandria and a further seven in Waterloo.[114]

A snapshot of Alexandria in 1933.

Sands 1932-3 pages for Alexandria present a mish mash of manufacturing enterprises that served past life ways as well as the latest in manufacturing and everything in between. Along with some remnant rural –urban land uses such as poultry farms and market gardens, the locality was scattered with ice agents, horse stables, farriers and blacksmiths. Saddlers and boot factories continued traditional activities in the area, as did soap and candle manufacturers, blacking manufacturers and several large brick works.

The building industry was served by not only the brick works, but a marble works, a plate glass manufacturer, along with makers of stoves, bedsteads and furniture, including Yeo Sun & Co at 60 Wyndham Street, a reminder that this locality once housed many Chinese settlers. There were a small number of food producers - meat preservers and condiment manufacturers -, a perambulator maker and a few plants linked to the rag trade –dyeing and bleaching – but these industries were not a strong presence.

Numerous foundries, working in brass, iron and steel as well as tin-platers, galvanisers, smelters, wire producers and lithographic printers are listed. Some of these were no doubt using the latest technologies; some would have been using more traditional methods. But new kinds of industries were also making their mark – oxywelding and various engineering firms along with modern names such as the Quickstryp Chemical Company and James Hardie, the fibrous plaster manufacturer. Electricity substations heralded the new technology, with electrical contractors, battery makers, the Automatic Engineering Company, the National Motor Springs Ltd and oxywelding firms all upstaging stables and blacksmiths. The M&B Equipment Co advertised that it installed petrol pumps, manufacturing chemists and 'Hygenic Containers. '

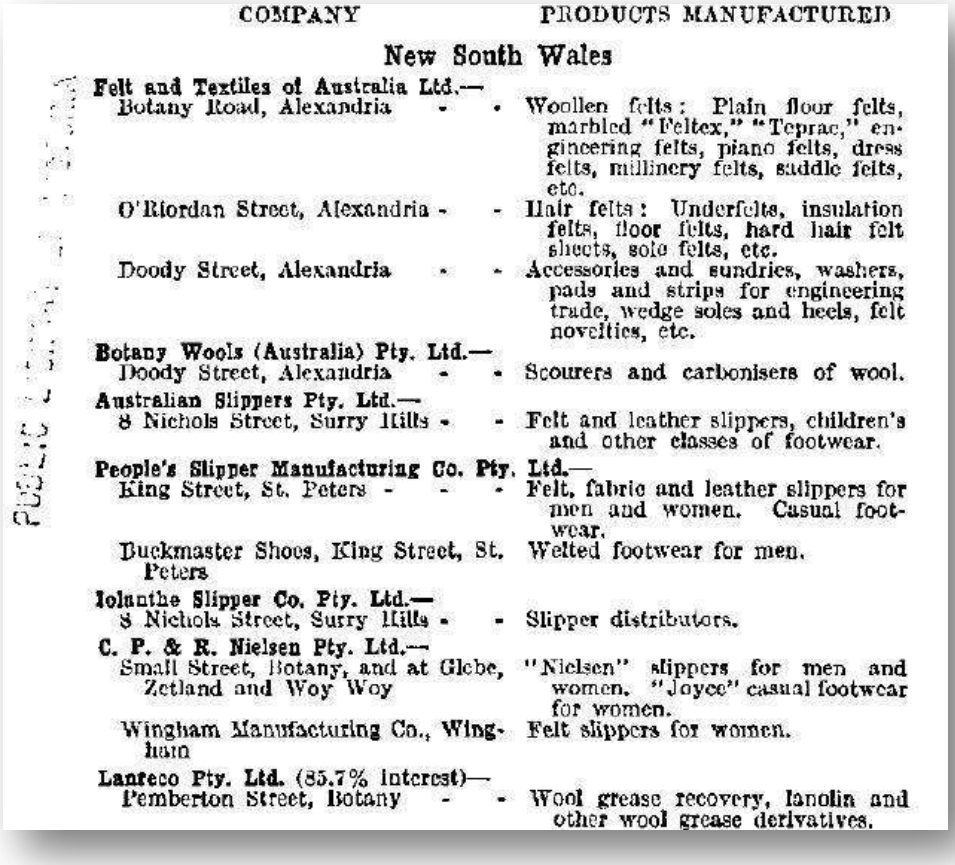
The Zetland swamp area, eventually bounded by Epsom Road, Joynton Avenue, O'Dea Avenue and South Dowling Street was purchased by Joynton Smith in 1904, drained and made into the Victoria Racecourse. The privately owned course provided entertainment for local residents with pony races and motor races. In 1909 it was the site of one of Australia's first aeroplane flights. Horseracing commenced in 1908 and finished in 1942 when the course was taken over for use by military forces during World War 2. In 1945 it was reopened for horse training but by now proprietary racing had been outlawed, so no further races were held.[115] In 1948 it was purchased for industry (see section 1.5 - 1945 -1980s).

During the Second World War many industries in Waterloo and Alexandria turned their production to support for the war effort, often suspending their own production to make munitions and weapons. This was not only the case with engineering and machinery shops that manufactured hardware, but

[114] Federated Furnishing Trade Society New South Wales Branch deposit 1, ANU Noel Butlin Archives Centre, T11-17, NSW Factories and Shops Act, Chinese labour in furniture factories: reports, correspondence etc, 1925-6.
[115] Erik Nielsen, 'A Course of Action: working class sporting culture at Victoria Park Racecourse, 1908-1943' in Grace Karskens & Melita Rogowsky, *Histories of Green Square: A History*, UNSW, pp. 71-8.

also clothing firms such as Felt & Textiles of Australia Pty. Ltd. which suspended some of their regular lines in felt products to supply clothing to the armed forces. Food factories also did the same. Some factories swung over to different products, like the sporting goods company Slazengers (Australia) Pty. Limited, which took up contracts to provide pre-fabricated huts.[116]

Felt & Textiles of Australia had sixty five factories across Australia by 1949, and these included a number in Alexandria as the following list indicates. They also manufactured footwear in Surry Hills, St Peters, Zetland and Glebe.

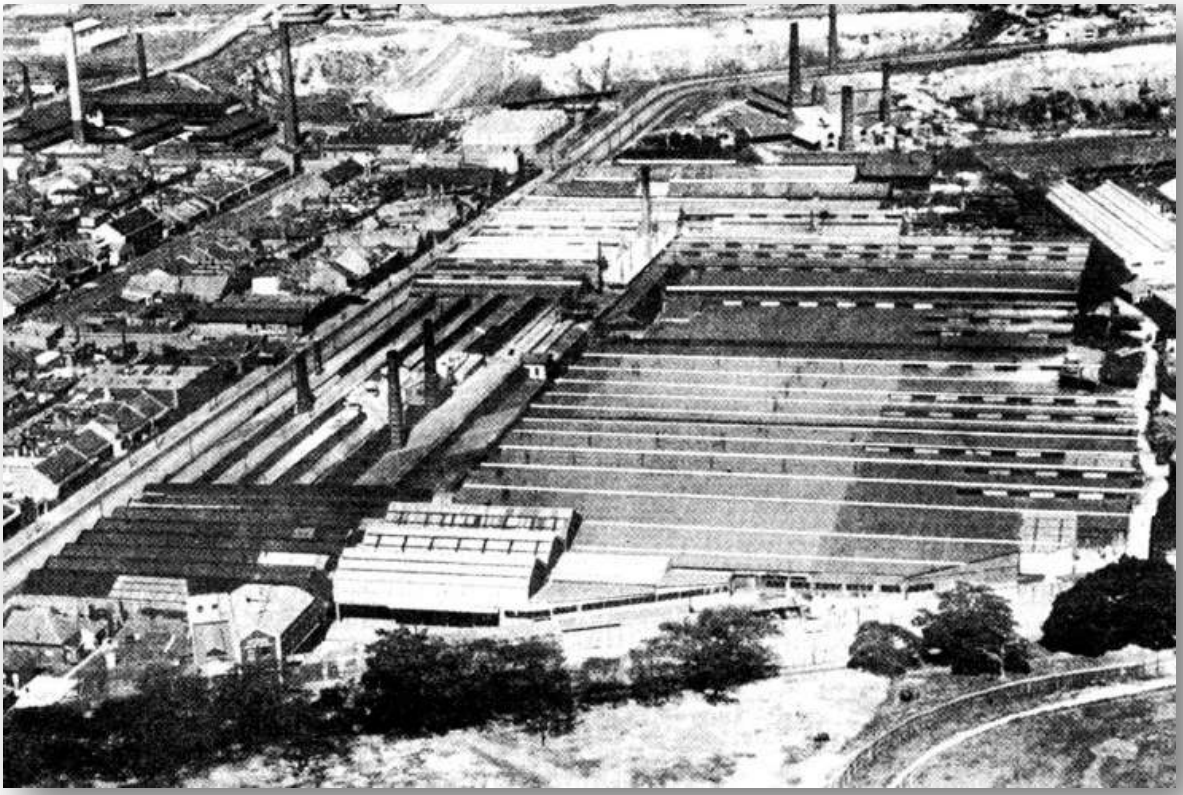


COMPANY	PRODUCTS MANUFACTURED
New South Wales	
Felt and Textiles of Australia Ltd.—	
Botany Road, Alexandria	Woollen felts: Plain floor felts, marbled "Feltex," "Teprac," engineering felts, piano felts, dress felts, millinery felts, saddle felts, etc.
O'Riordan Street, Alexandria	Hair felts: Underfelts, insulation felts, floor felts, hard hair felt sheets, sole felts, etc.
Doody Street, Alexandria	Accessories and sundries, washers, pads and strips for engineering trade, wedge soles and heels, felt novelties, etc.
Botany Wools (Australia) Pty. Ltd.—	
Doody Street, Alexandria	Scourers and carbonisers of wool.
Australian Slippers Pty. Ltd.—	
8 Nichols Street, Surry Hills	Felt and leather slippers, children's and other classes of footwear.
People's Slipper Manufacturing Co. Pty. Ltd.—	
King Street, St. Peters	Felt, fabric and leather slippers for men and women. Casual footwear.
Duckmaster Shoes, King Street, St. Peters	Welted footwear for men.
Iolanthe Slipper Co. Pty. Ltd.—	
8 Nichols Street, Surry Hills	Slipper distributors.
C. P. & R. Nielsen Pty. Ltd.—	
Small Street, Botany, and at Glebe, Zetland and Woy Woy	"Nielsen" slippers for men and women. "Joyce" casual footwear for women.
Wingham Manufacturing Co., Wingham	Felt slippers for women.
Lanreco Pty. Ltd. (85.7% interest)—	
Pemberton Street, Botany	Wool grease recovery, lanolin and other wool grease derivatives.

55. Factories in Sydney owned or associated with 'Felt and Textiles of Australia'
Source:Felt & Textiles of Australia:Brief History … 1949, p.9

By 1943 Alexandria Council's celebratory publication which was grandly called *Alexandria, The Birmingham of Australia* [117] claimed that the suburb contained not less than 550 factories, listing 'asbestos, aircraft, batteries, brushes, soap and tallow, fertilisers, steel springs, furniture, paint' - the list goes on. This publication's hero shot of the Metter factory has been much reproduced both as a symbol and as an over- blown representation of the area at this time.

[116] Susannah Frith, 'From Tanning to Planning: an Industrial History of Green Square', in Grace Karskens and Melita Rogowsky,eds. *Green Square: A History*, UNSW, 2004, p. 52.
[117] Municipality of Alexandria, *Alexandria, The Birmingham of Australia: 75 Years of Progress, 1868-1943*, Alexandria, 1943.



56. Meters Ltd, Alexandria 1943 *Source: Alexandria, the Birmingham of Australia: 75 years of progress, 1868-1943. Alexandria Municipal Council, 1943.*

Metters established a plant in Alice Street in Newtown in 1902 to assemble stoves made at the parent plant in Adelaide, but by 1907 had moved to Alexandria to commence manufacturing stoves, baths and sinks. They eventually occupied 26 acres of land in Mitchell Road, Alexandria and employed thousands of people nation-wide. Its expansion in the 1940s swallowed up the McPherson's bolt factory, established in the 1930s. The Metters factory operated until 1974.[118]

[118] City of Sydney, Corporate, Finance, Properties and Tenders Committee, 7 May 2012 – item 6. 'Naming Proposals – Streets and Parks in Green Square & the Ashmore Neighbourhood'. Attachment E, (Author: Lisa Murray). http://meetings.cityofsydney.nsw.gov.au/council/about-council/meetings/archive/2012/Committiees/070512/finance.aspx

57. 1928 Early Kooka Stove No 3*. Source: Griffith Italian Museum/Migration Heritage Centre* *http://www.migrationheritage.nsw.gov.au/exhibition/objectsthroughtime/kooka/*

By the end of World War 2 the greater proportion of Alexandria was covered in factories.

58. Mostly factories. In the top right hand corner are a few of the houses in Beaconsfield which was advertised at the time of sale in 1884 as a 'Working Man's Model Township.' *Source: Civic Survey, 1950, City Archives on-line Historical Atlas of Sydney.*

5 1945 – 1980s

5.1 Overview of Trends

During World War 2 manufacturing in Australia reached its highest level of employment: 24.7 % of the national workforce. The vast majority of these jobs were located in New South Wales and Victoria. These two states accounted for around 70% of all manufacturing jobs for over one hundred years from the 1870s, but Victoria's early lead over NSW was eroded during the 20th century. According to the 1947 Census, the level reached a high of 45.2% in NSW, when Victoria's share was 33.1%. Thereafter the gap between these two states narrowed.[119]

Manufacturing jobs were concentrated in the major cities. 1950 to 1970 was a period of economic growth where rising productivity in the manufacturing sector sustained expansion. Metropolitan Sydney accounted for 31 % of all manufacturing jobs in Australia, while Melbourne, with 29% was a close runner up. Sydney had a greater concentration in engineering and metal industries, oil refining, petrochemicals and food processing while Melbourne led in textiles, clothing, footwear, motor vehicles and auto parts. By the mid 1970s Melbourne was pulling ahead of Sydney in overall manufacturing

[119] Graeme Snooks, 'Manufacturing' in Wray Vamplew, ed. *Australians: Historical Statistics,* Fairfax, Syme & Weldon, 1987, p. 287.

output, but of greater significance was the fact that by the end of the 1970s and into the 1980s the percentage of workers employed in the manufacturing sector declined, and eventually the absolute numbers came down as well. [120]

In his study of industrial change in Sydney during these years, Robert Fagan describes how the inner areas, which he takes to be more or less the City of Sydney and south to Botany Bay, at first slowed their growth relative to areas further out where land was cheaper. Then by the second half of the 1960s instead of growing more slowly, these inner areas were beginning to shed jobs. Between 1970 and 1985 nearly 178,000 manufacturing jobs were lost in Sydney, with the proportion falling more rapidly than in Melbourne. Nevertheless, in 1970 manufacturing still employed 24% of Sydney's workforce - roughly one in every four workers - and the central zone held 42% of manufacturing jobs.[121]

Following the austerity years of the war, industrial growth post 1950s was fuelled by high levels of immigration. This was a period of boom for the mining and construction industries which boosted production in iron and steel manufactures. These, along with electrical and chemical industries, spearheaded Australian manufacturing growth during the 1950s and 1960s.

Almost three-quarters of the increases in the labour force in the 1950s were provided through immigration. There was a growing consumerism in a society where the motor car became ubiquitous, as did electrical and electronic goods. Car ownership increased rapidly in Australia, from 100 cars per 1, 000 persons in 1945 to almost 500 cars per 1, 000 persons in 1971, when 78% of households in Sydney and Melbourne owned at least one car. [122] This was the era of mass consumption of kitchen appliances, cars, electronics – radios, record players, televisions. Local companies manufactured products with brands such as Admiral, AWA, EMI, A.G. Healing, A.W.Jackson, GE-Kirby, Kriesler, Philips, Pye, STC, Stromberg-Carlson and Thorn.[123]

Motorised transport generated new kinds of manufacturing, including car building plants and supporting industries, some of them in the southern parts of the City of Sydney, but at the same time the dominance of the car permitted locational choices outside the older industrial areas and the spread of manufacturing to suburban locations.

By the seventies, with a few exceptions in the southern area, there was literally no room in the inner city for the large scale of many of the new metal fabricators, heavy engineering firms and industrial equipment manufacturers. These firms increasingly located in semi-rural places like Liverpool and Bankstown.

At the beginning of this period the purchase of motor vehicles was beyond the reach of many workers, and the inner city remained well serviced by public transport. One estimate gives the proportion of workers travelling to work in 1970 by train or bus as 32%, with 60% using private cars – almost the same proportion as those who walked in 1900. However, in the inner city reliance on walking and public transport was considerably higher than for Sydney as a whole, while cars permitted workers from outer areas to travel more readily into the city for work. The shift from trams to buses as well as the shift to cars had profound ramifications for urban land uses for vehicle storage, (tram depots, locomotive manufacture, car plants and so on) and for road-building, with freeway construction gaining momentum in the 1960s.

By 1980 manufacturing was operating in a context of low profitability and job shedding. Reduced immigration generated a slower domestic market for goods while the rise of manufacturing around the Pacific Rim, particularly in Japan, provided increased competition.

[120] Robert Fagan 'Industrial Change in the Global City: Sydney's new spaces of production' in John Connell, Ed. *Sydney: The Emergence of a World City*, Oxford, 2000, p.145.
[121] Fagan, p.149.
[122] Department of Infrastructure & Transport, Discussion Paper, Chapter 2, Our Cities in Transition, p.16-17. http://www.infrastructure.gov.au/infrastructure/mcu/urbanpolicy/ourcities.aspx
[123] B Carroll, *Australian Made: Success Stories in Australian Manufacturing Since 1937*, Institute of Production Engineers Australian Council, 1987 p. 77.

5.2 Political constraints/opportunities

At the end of World War 2 there was still widespread acceptance of the need for a high tariff wall to protect manufacturing, but by the 1970s this was in dispute.

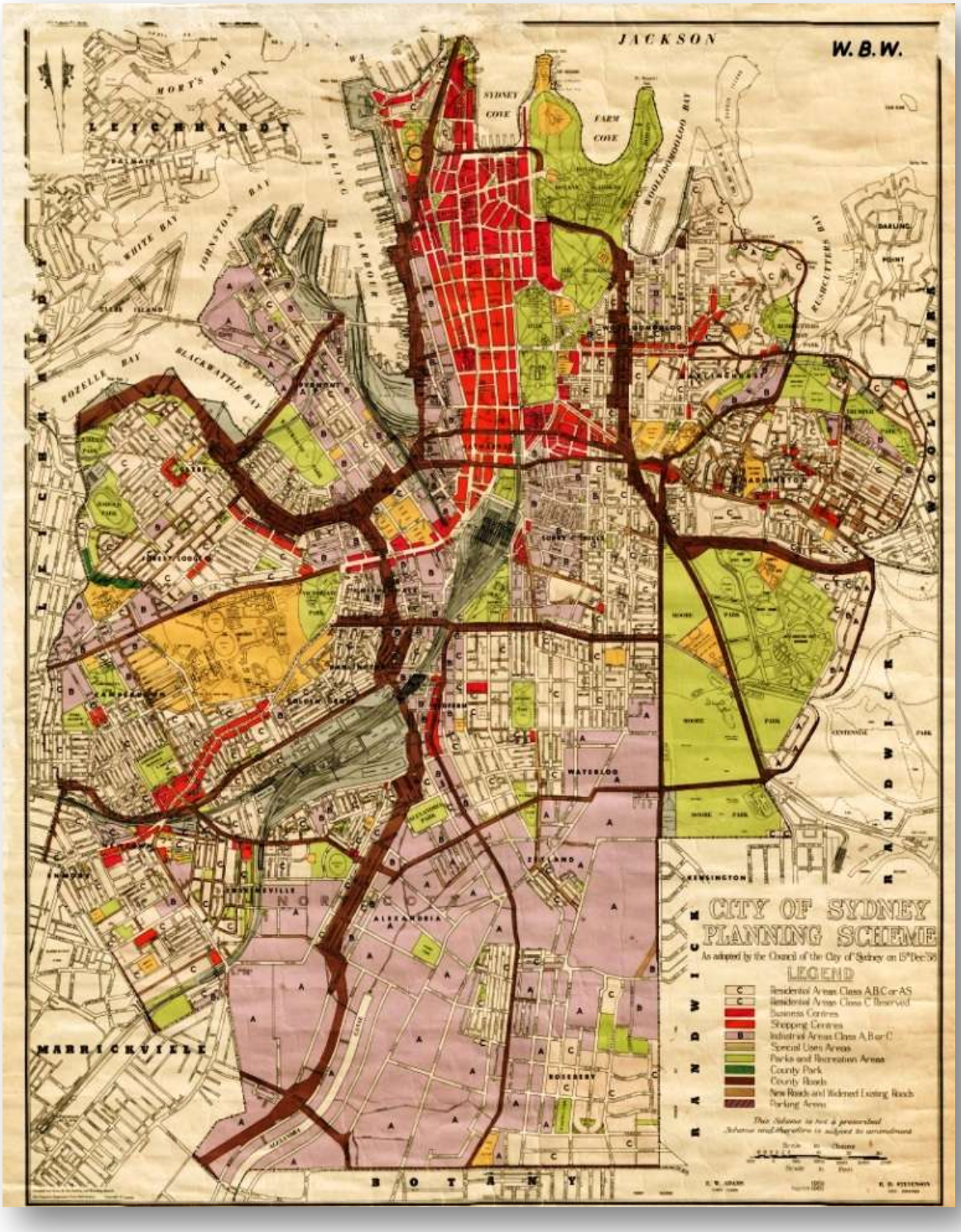
Australia's trade links with Britain weakened during the 1950s and 1960s and Australian producers increasingly looked to Asia for new markets. There are good arguments that despite protection, Australian producers were losing their edge to Japan and later to Korea. So called 'cheap Japanese rubbish' such as crockery and similar low value products were soon augmented by higher quality goods and in the area of electronic goods Japan was rapidly becoming a world leader. Competition from Asia in general was intensified during this period.

An across the board tariff cut of 25% in 1973 was followed by continuing cuts, most rapidly in the 1990s in line with global trends encapsulated in the GATT (General Agreement on Tariffs and Trade) and APEC (Asia Pacific Economic Co-operation). When the Australian dollar as floated in 1983, its immediate depreciation resulted in a pick-up of manufacturing for a brief period but overall, since the 1980s the pace of de-industrialisation has been rapid.

Shortages of building materials following World War 2 meant firms were often granted temporary exemptions from the building codes which allowed use of sub-standard material in exchange for payment of a bond. This was intended to ensure that buildings were upgraded within a specified timeframe, but it also became a case of buying the right to flaunt the law. Numerous so called 'temporary' additions to factories and warehouses remained for years.[124]

The establishment of the Cumberland County Council in 1945 had planning ramifications for some areas of the City which were zoned for the first time, with several areas being allocated exclusively for industrial use. [125] These are coloured in pink on the following map.

[124] Examples of this are recorded in the City's files –for example NSCA CRS 34/1500/51:34/3333/42.
[125] For a detailed narration of the machinations leading up to the adoption of the City of Sydney's 1958 plan, see Paul Ashton, 'A Race between Planning and Chaos', Chapter. 4, *Accidental City: Planning Sydney Since 1788*, Hale & Iremonger, 1993, pp. 62- 81.



59. The City of Sydney's 1958 Planning Scheme which was eventually adopted by the government. This plan both reflected current trends and strengthened them, particularly in relation to the southern area, now politically and administratively earmarked for industrial only uses with the small exceptions of residential settlements already in place such as the Beaconsfield and Rosebery estates.
Source: City of Sydney Planning Scheme adopted 15th Dec 1958, City of Sydney Archives.

Following a 1949 government report that recommended the systematic phasing out of trams, the system was gradually converted to buses. The changeover was rapid in the late 1950s, with the last tram running in 1961.

By the 1960s inversion layers of industrial smog frequently blanketed the city in the mornings, and industrial run-off into waterways including Shea's Creek and Cooks River as well as the inner reaches of Sydney Harbour had risen to alarming levels. In 1970 the State Pollution Control Commission (SPCC) was established, followed by a Clean Air Act and Clean Water Act in 1974. Throughout the 1970s and 1980s, the SPCC took on increasing responsibility for environmental matters. [126] This had ramifications for industries.

The City of Sydney boundaries were enlarged in1948 to take in the surrounding municipalities of Alexandria, Redfern, Waterloo, Darlington, Newtown, Camperdown, Glebe and Paddington. All of these new additions were shed in 1968, with the first six forming a new municipality of South Sydney, Glebe going to Leichhardt and Paddington to Woollahra. South Sydney was reamalgamated with the City in 1982, jettisoned again in 1988 and brought back into the fold in 2003/4, along with Glebe. This level of political disruption at the local level has been at the behest of the state government in an effort to control the City politically. Until the end of the 1980s a rough rule of thumb was that the larger the City the more likely its constituents would return Labor candidates and this, theoretically favoured industrial and worker interests, including housing, over what is known colloquially as 'the big end of town'. [127]

5.3 Development by locality

5.3.1 Central & Eastern

In the 1950s the Port of Sydney was humming, shipbuilding at the Commonwealth shipyards on Cockatoo Island was in full swing and the Maritime Services Board was located in pride of place in its new premises on the site of the old Commissariat buildings at west Circular Quay. In the 1970s the port authorities remodelled the waterfront along Darling Harbour, altering it from finger wharves to on-shore berths to accommodate larger ships, but with the evolution of ever larger roll-on roll-off shipping the writing was already on the wall for the Port and by the 1980s things were beginning to wind down.

New manufacturing was less likely to choose an inner city location after the war but there were still many factories and workshops, especially in the southern areas around Central Railway and Surry Hills, many of which were still viable in this period of expansion. Statistically though, it was the southern areas of Waterloo and Alexandria which dominated this sector.

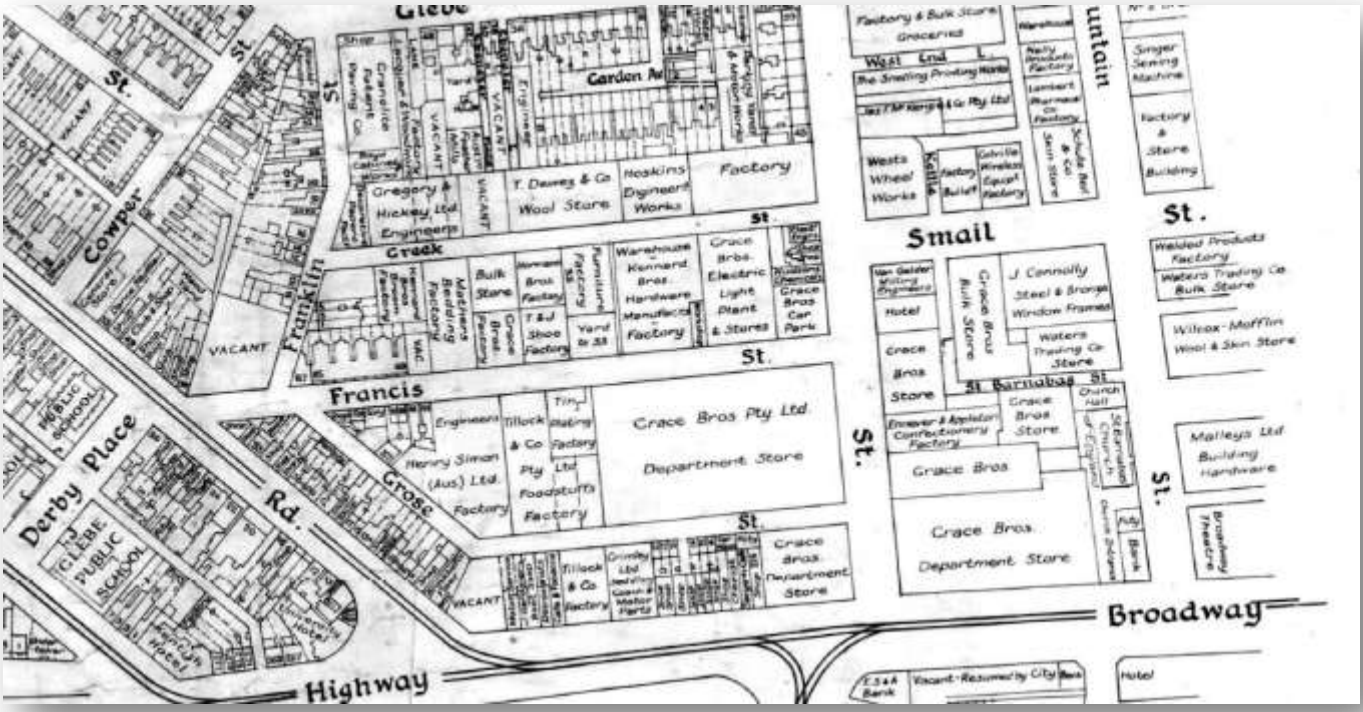
Politicians and planners who had worked to encourage manufacturing in the early part of the century now argued that old housing needed to make way for dense high rise public housing. Grand schemes for the total rebuilding of whole precincts drawn up immediately after the war did not eventuate. However, some housing along with some industries were replaced by public housing including the extensive Northcott Place in Belvoir Street Surry Hills and several tall residential tower blocks in Waterloo, all built in the 1960s.

[126] Dan Coward, *Out of Sight: Sydney's Environmental History*, ANU 1988 was an early study of this topic and an indication of the level of concern for issues of urban pollution in the preceding decades.
[127] Hilary Golder, *Sacked: Removing and Remaking the Sydney City Council*, City Of Sydney, 2004.

5.3.2 Western

Pyrmont and Ultimo missed out on the post-war economic boom, at least as far as rising standards of living went. In planning terms the whole peninsula was zoned 'County Centre' which meant any land use was acceptable, which in turn meant continued industrial expansion. Housing continued to be demolished with the population reduced to just several thousand by the 1980s. It was widely believed that if it was possible to move out, it would be a wise move.

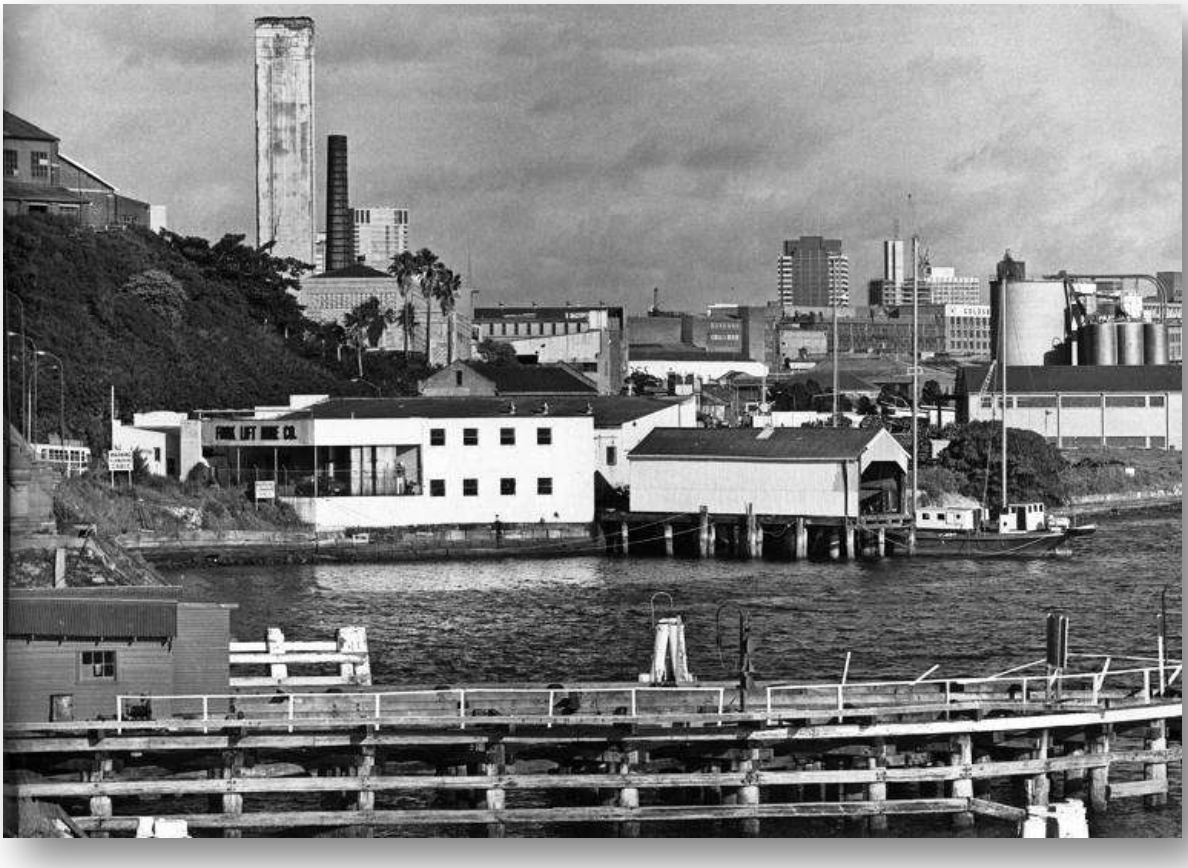
The presence of the Colonial Sugar Refinery gave Pyrmont the industrial edge over Ultimo, but an examination of the following plan indicated a plethora of industrial sites in Ultimo along with warehousing and housing.



60. Warehouses, woolstores, engineering, fabricating and hardware, along with a department store, houses and a hotel*. Source: The Glebe Occupational Survey, Housing Improvement Board of NSW, 1939 Historical Atlas of Sydney, City Archives*

61. ***3: The end of the Pyrmont peninsula, c 1945. A few houses remain, as do the remnants of the once loved Pyrmont Baths which were demolished in 1946. There are two ships tied up at the Colonial Sugar Refinery at the back of the image, and one at Jones Bay Wharf, served by rail. Industrial buildings date from the late 1870s to newly erected sheds and there are five smoke stacks visible.*** *Source: SLNSW (Kent, M) 1940s ML ON 297/156*

In the 1950s the City's Wattle Street Depot was busy providing materials for the building of the Cahill Expressway, a second power station was built in Pyrmont in 1955 and the large Government Printing Office opened in Ultimo, facing Darling Harbour. In 1956 Fairfax occupied a new newsprint factory at the head of Blackwattle Bay which later became the Sydney Fish Markets. In 1982 when local alderman Michael Matthews and a group of residents compiled a history of the peninsula, there were still several working flour mills – Gillespie's in Union Street and N B Love Flour Company, (formerly Davey's Flour Mill), on the corner of Allen and Jones Streets, as well as the Dairy Farmers milk warehouse on Harris Street. The powerful stack of the Walter Burley Griffin Incinerator, decommissioned in 1971, still dominated the view.



62. Pyrmont from Glebe Island Bridge, 1976 with the Walter Burley Griffin smoke stack.
Source: City of Sydney Archives, SRC 725.9 SYDN

Many plans for industrial expansion in the decades following the war remained unfulfilled as the attraction of the railhead began to wane. The phasing out of the tramways resulted in closure of the Ultimo powerhouse in 1963, a flour mill was demolished in Bulwarra Road in 1965 and by the 1970s new wool-handling facilities at Yennora led to the emptying out of the woolstores which had dominated the peninsula for almost a century. Winchcombe and Carson's store on the corner of Fig and Jones Streets was demolished to make way for a new North Western Freeway in 1974, as were the houses on Fig Street. If all of the freeway plans on the books had gone ahead Ultimo would have become little more than a giant traffic interchange.

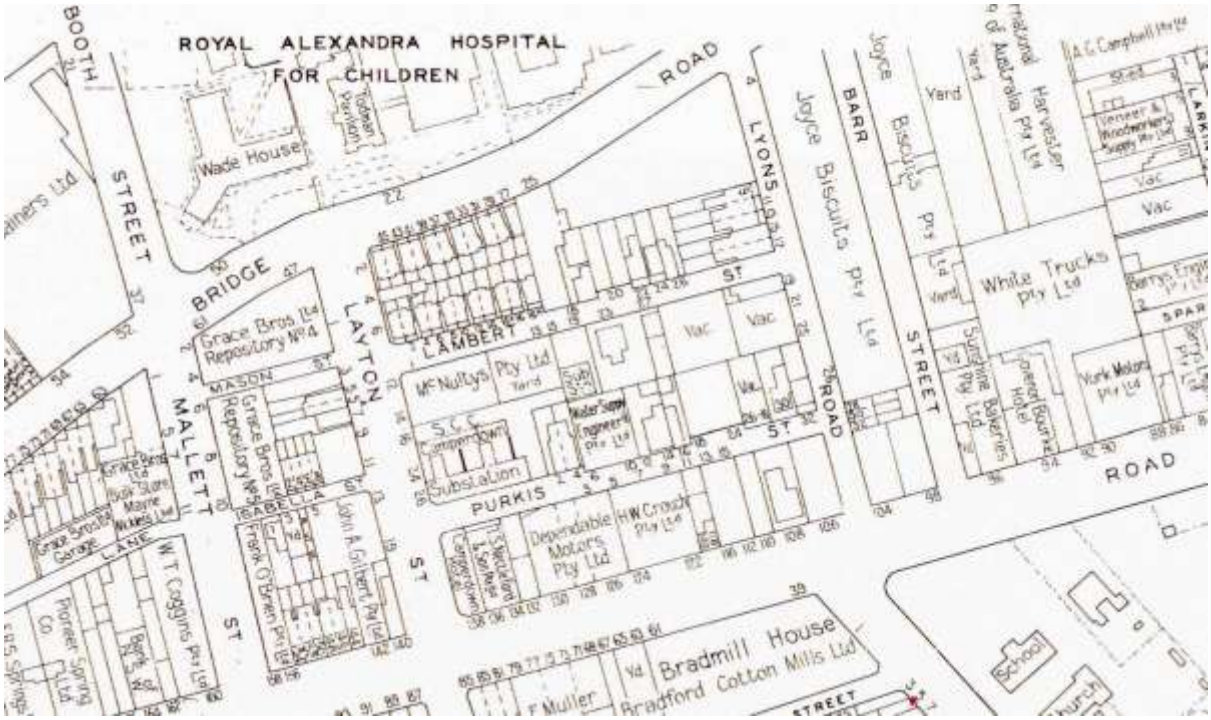
There were strenuous resident actions against the destruction of these places, but by the 1980s, the area was full of derelict sites, abandoned workplaces and a small population of old-timers who were in shock over the brutal manner in which the fabric of the place was being torn down.

The first sign of the new peninsula rising also came in the 1980s with removal of the now obsolete Darling Harbour goodsyards. A symbol of industrial might was demolished to make way for a leisure and entertainment precinct. At the other end of the peninsula, however, the Colonial Sugar Refinery was continuing to expand. It demolished a row of National Trust listed houses in 1981 and privatised several streets between 1980 and 1985. Finally, in the early 1990s it too was on the way out, with the site employing only 50-60 workers in 1993, mostly in warehousing and distribution.[128]

[128] Shirley Fitzgerald & Hilary Golder, *Pyrmont & Ultimo: Under Siege*, 2nd edition, Halstead Press, 2007, pp. 123-35.

Beyond Ultimo the primarily residential suburb of Glebe had over 150 factories at the end of World War 2, many of them small to medium sized and with a weighting towards women's clothing manufacture. Similar patterns of use applied to Camperdown which also contained a number of food producers of biscuits and jams and along the Pyrmont Bridge Road there were several large warehouses, including the one built for the Grace Brother Department store.

The following plan shows a number of factories that had intruded into an area which was earlier mostly residential, with a school church and hospital. Some of these structures remain today, including Grace Brothers warehouse and Joyce Biscuits which operated as Westons Biscuit Factory from 1951. George Weston Foods is a large multi-national conglomerate which manufactures across a range of foods and chemicals, mills and livestock plant. In 2004 it sold off many of its biscuit brands including its famous 'Waggon Wheel', and at this time its factory was closed and converted to apartments.



63. Figure 4 This part of Camperdown shows all the signs of an old residential area where manufacturing has taken hold by the mid 20th century. There are several food processors, the household name Bradmmill cotton mills and firms servicing the motor industry. *Source: City Building Surveyors's Detail Sheets ca 1956, Sheet 13.*

The timber industry remained active along the waterfront of Blackwattle and Rozelle Bays until it too started to pull out in the 1970s. Hudson Brothers timber yards were acquired by the Education Department for a high school in 1974 and Vanderfield and Reid's timber mills and extensive yards were sold to a developer for home unit development in 1975. Around on Glebe Point Hardy Brothers timber drying sheds survived another twenty years as studio space for artists and crafts people, but then it too succumbed to apartment development. Container storage along part of the foreshore remained until the beginning of the 21st century when it was replaced by a residential development with units supposedly imitating containers. As Glebe historian Max Solling observed' 'this period of waterfront development represents an elite phase of gentrification.' [129]

[129] Max Solling, *Grandeur & Grit: A History of Glebe*, Halstead Press, 2007, pp. 274-5.

5.3.3 Southern

Unlike the older western localities, much of the southern area was still infilling with factories in the immediate post war period of rapid industrial and manufacturing expansion. Beyond the mostly residential Newtown and the mixed area of Redfern, new factories were more likely to utilise semi-rural land rather than encroach on built up residential areas. The oldest locality of Redfern had by far the most dominant industry: the Eveleigh Railway Workshops. Nevertheless much of Redfern was residential, while areas further south, especially Alexandria, were almost entirely given over to manufacturing and storage. The landscape was typically low rise and low density with scattered patches of old and newer housing. By 1971 manufacturing accounted for around 30% of all jobs in Sydney and over 40% of those jobs were located in the South Sydney to Botany area.[130]

> *'three-quarters of the County of Cumberland's factory employees lived within a three and a half mile radius of Redfern station. In Redfern about four times as many people worked in the area as lived in the suburb. In Alexandria the figure reached about ten times the population'.* [131]

The most built up area was Redfern, which had mixed industry, aging housing stock and little space for expansion.[132]

64. Construction of C3806 locomotive at the Eveleigh Railway Workshops 1945 Source: State Rail Authority Archives SRO Series NRS 17420

[130] ABS(2008) ABS(2010) *Our Cities*, background paper, Ch. 2, 'Our Cities in Transition', p. 17.
[131] Tropman & Tropman, Architects, South Sydney Heritage Study', 1998, Vol. 2, p138, referencing the County of Cumberland Planning Scheme 1948.
[132] Max Neutze, *People & Property in Redfern*, Urban Research Unit, Research School of Social Sciences, ANU, 1972.

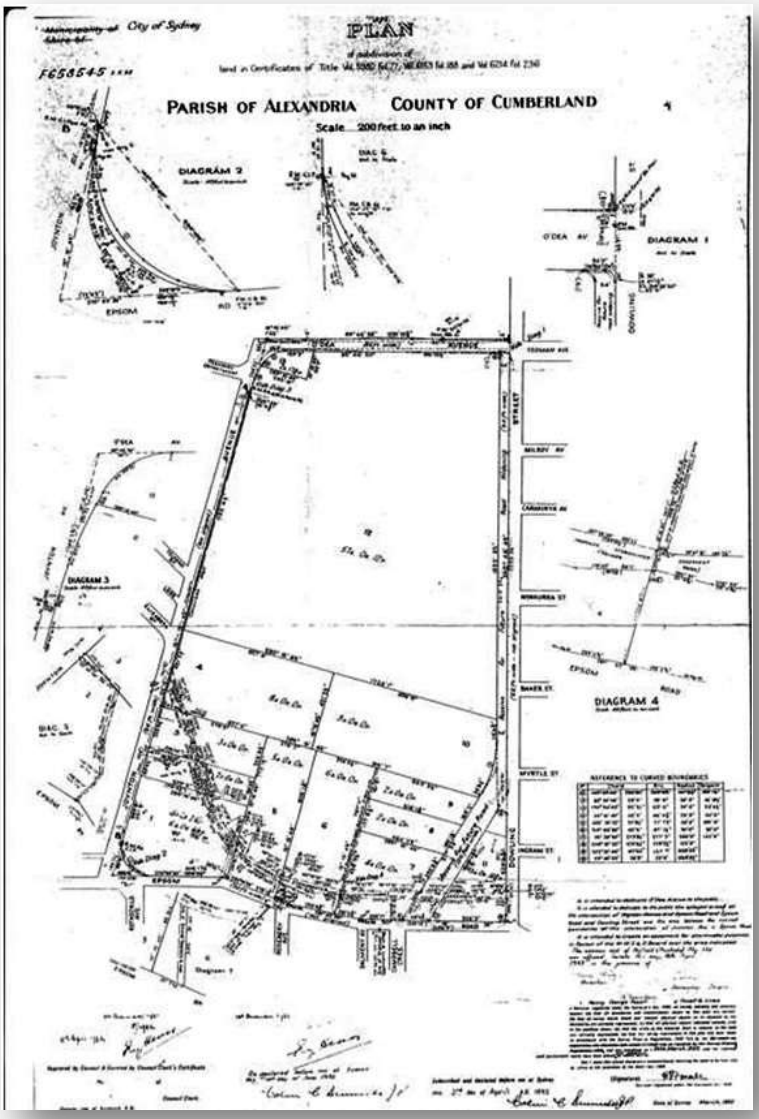
65. Town Plan, Redfern, 1948 Factory Employees *Source: Historical Atlas of Sydney, City Archives.*

The above plan of manufacturing in Redfern is dated 1948. It shows factories, with numbers of employees, from Resch's Brewery in the bottom right hand corner employing between 400-500 workers down to plants with fewer than 20 employees. The map is incomplete, with many factories west of the Eveleigh Railway Workshops outlined in pink which signified 'figures not yet available'. Eveleigh was the giant on the block, employing 6,414 workers. Immediately following the war locomotive production was resumed but only until 1952.[133]

While there was some concern over housing and the provision of public amenities, the more dominant interest of the government was to facilitate industrial development of the southern areas of the city. Unusually, for an inner city area, there was a large amount of excess land available in the form of the Victoria Racecourse in Zetland, once the Waterloo Swamp. This was purchased in 1948 by William (Lord) Nuffield of the car manufacturing firm British Motor Corporation (BMC). The company's intention was to develop part of it as a motor manufacturing plant, and to subdivide the remainder for mixed residential and industrial uses. [134] However the residential component provided for in initial subdivision plans submitted to the City Council was rejected on the advice of the new Cumberland County Council which had zoned this area for industrial uses only. The final subdivision for industrial uses was approved by the City Council in 1951**.**

The attached plan shows the 1952 subdivision of 57 acres by Nuffield Aust. Pty Ltd. The northern part of the site became the British Motor Corporation (Australia) site.

[133] Gooden MacKay Logan, 'Australian Technology Park Conservation Management Plan', Draft Report, Oct, 2012. For detailed descriptions of work processes, Lucy Taksa and Joan Kent, for Godden Mackay, 'Eveleigh Workshops Plan of Management for Moveable Items and Social History', Vol. 11, *Social & Oral History*, July 1996.
[134] NSCA, CRS 144/3175/50.

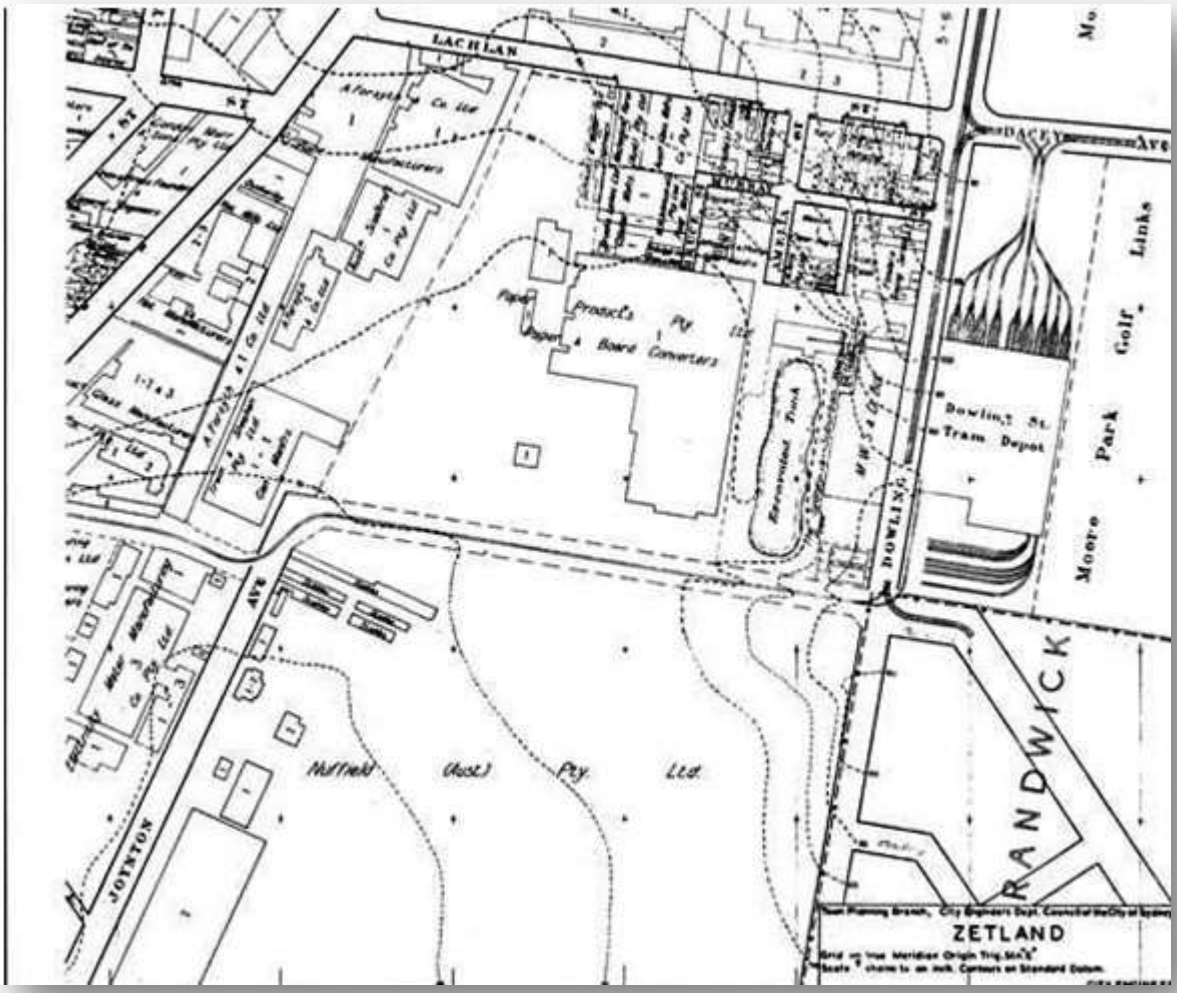


66. Subdivision of Nuffield's land, 1952. *Source: Certificate of Title Vol. 5980 Fol. 77, Vol. 6153 Fol. 188 and Vol. 6214 Fol.236*

The following map shows the northern end of the site in 1952. The areas surrounding the site, facing Joynton Avenue, and north of Lachlan Street are densely occupied by manufacturing.

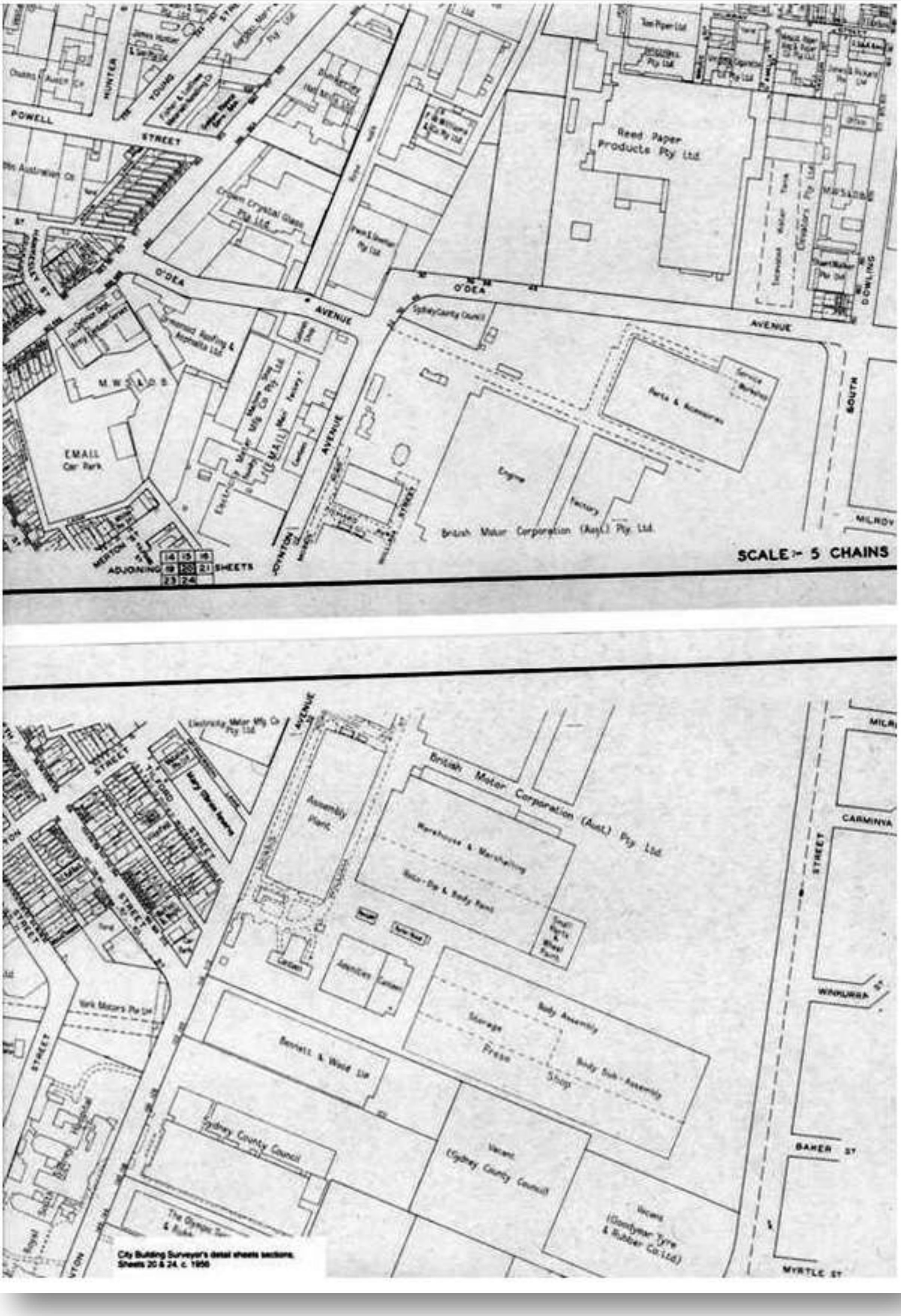
At the time of subdivision (1952) a tram line ran along the northern boundary of the site, but with many prospective workers arriving by private car the City Council agreed to build a new street here, with Nuffields making only an amount of £6.10.0 towards forming what became O'Dea Street. This amount is referred to in Nuffield's correspondence as a 'token' payment – a clear example of official facilitation of industrial development in this area. [135] On the southern perimeter the state reserved land amounting to just over five acres for the future road widening of South Dowling Street, a main artery to the airport at Mascot.

[135] NSCA CRS 34/6223/50



67. *Source: Detail from City of Sydney Civic Survey, 1938 +, Zetland, 1952. Online atHistorical Atlas of Sydney, City Archives.*

Nuffields began operations in a small way with temporary buildings on Joynton Avenue. The information contained on the following plans, c.1956 show that the site was filling up with buildings spreading out towards the South Dowling perimeter of the site.



City Building Surveyor's detail sheets sections. Sheets 20 & 24, c. 1950

68. *Source: Detail from City of Sydney, City Building Surveyor Detail sheets, C 1956. Online at Historical Atlas of Sydney, City Archives.*

The factory commenced as an assembly plant with about 150 employees prior to 1954, and from then on expanded, with the construction of the machine shop in 1959, permitting a move into full production. The plant was fully expanded by the mid 1960s, with a total workforce of around 4000. Eventually it was running 24 hours a day with three shifts of workers and in these years the total workforce, including office and professional staff, reached a peak of between 5,000 and 5,500. [136]

This series of plans also shows the other industries that took up the southern portion of the old racecourse site. These included the Sydney County Council (electricity) and several tyre companies.

For example, in 1955 the Olympic Tyre & Rubber Company relocated from Stanley Street in Darlinghurst to new warehouses and offices on Joynton Avenue, Victoria Park, 'adjacent to large manufacturing establishments in the area.' A point of comment on this new factory was the rubber flooring, which also lined the lower sections of the walls. Trade journals now routinely described the architectural qualities of this kind of ultra-modern factory (architect F E Feledy; builders Kell & Rigby Pty Ltd). Nearby, on the same street Feledy had also designed the new premises for James Kirby Company which produced 'Champion' spark plugs, while the large premises of Joseph Lucas, (Aust.) Pty Ltd on the corner of Epsom Road produced electrical and fuel injection equipment used in motor and aviation industries.

In describing these factories the trade journal *Building* provided lists of suppliers of material used in construction and it is striking how many of these were also located in this the southern area. Subcontractors to Joseph Lucas included Melocco Brothers (terrazzo louvers), Wormald Bros (sprinkler systems), James Hardy (asbestos roofing) and so on. [137]

[136] pers. com, Norm Jones , employment officer, British Leyland plant, Zetland, 1954-74, March 2011.
[137] 'Joseph Lucas (Aust.) Pty Ltd', *Building: Light Engineering*, Dec 24 1955; Olympic Tyre and Rubber Company Pty Ltd, *Building, Light Engineering*, November 24 1956: 'James N Kirby Automotive Pty Ltd and Champion Spark Plug Factory', *Building: Light Engineering*, December 24 1955.

SWEEPING LINES HAVE DRAMATIC GRACE

The fine corner site has been used to excellent advantage and the bold curve of the façade with its sweeping lines has a dramatic grace. The continuous line of vertical sun vanes over the windows plays a vital part in giving character to this striking façade.

69. Joseph Lucas, (Aust.) Pty Ltd located at the corner of Joynton Avenue and Epsom Road, Zetland. This building housed workshops, storage and showrooms for the company's architect F E Feledy. *Source: Building: Light Engineering, Dec 24 1955.*

One thoroughly modern industry that went wrong was the Redfern Mail Exchange, opened on Cleveland Street, at Pitt Street in 1965. Hundreds of old houses had been resumed and demolished to make way for this multi-storeyed building which was intended to lead the way for the whole country in the rollout of mechanised and centralised mail sorting. From the start it was a site of major union strikes, linked to issues of pay and conditions as female workers who had been employed as clerks were reinvented as 'coding machinists', on lower rates of pay. Centralisation meant that one strike could paralyse all NSW mail distribution. Along with industrial disputes, the actual process of mechanisation proved to be a nightmare, with considerable actual loss of mail at the hands of the now named Redfern Mangler.[138] In 1985 the exchange was decommissioned and the sorting system reverted to a network of decentralised exchanges. A different building was constructed on the site as the headquarters of Australia Post, previously located in the GPO in Martin Place.

The following aerial photograph of the original Nuffield's subdivision shows the plant and neighbouring residential Randwick at the time the British Leyland Motor Corporation of Australia closed in December 1974. The plant was taken over by the Australian Government as a naval stores depot, with much of the same fabric remaining. The whole site was demolished and cleared in the mid 1990s and is now being redeveloped with high density residential buildings.

[138] Lynda Boland - Papers, 1959 -1996, State Library of NSW, accessioned 1996. Boland was the leading trade unionist at the Redfern Mail Exchange in the 1970s and these papers contain material relating to industrial disputes at the Exchange.

1. ***The Leyland plant, c. 1975 The Leyland plant, c. 1975*** *Source: BMC in Australia site http://jlrover.tripod.com/ accessed Jan 2012.*

By the 1970s the Eveleigh Railway Workshops were also in a state of flux and various attempts to keep them going were ultimately unsuccessful. The Alexandria Goods Yards closed in 1980 and the Eveleigh Workshops in 1986 (Australian Technology Park 1991). [139]

By the 1970s modern management of factories was rendering some of the old and not so old plant in the southern districts obsolete.

> *'some of the old factory buildings which are structurally sound but not well designed for modern manufacturing techniques (horizontal assembly lines and the use of forklifts, for example) provide suitable cheap storage space. These activities have often been forced out of the central business districts by high rents.'* [140]

The closure of industries such as Hadfield's Steel Works and foundry on Mitchell Road in the early 1970s was symbolic of the departure of heavy industry, and in real terms such closures returned a higher quotient of clean air to the district.

6 1980 to the present

6.1 Overview of trends

At the time of the 1981 Census the manufacturing sector of the old industrial inner city areas had just experienced a dramatic decade of contraction. According to Fagan, the percentage of Greater Sydney's manufacturing employment located in what he called the 'inner area' - which coincided

[139] See E R W Interpretation Plan and Implementation Strategy. Redfern Waterloo Authority, 3 D Projects, 2012. http://www.ugdc.nsw.gov.au/sites/default/files/file_root/PDFs/Precincts/Redfern_Waterloo/ERW_IP_only_final.pdf

[140] Max Neutze, *People & Property in Redfern*, Urban Research Unit, Research School of Social Sciences, ANU, 1972, p.122.

roughly with the City of Sydney and south to Botany Bay, had fallen sharply from 42% to 25%. Thereafter, it fell more slowly to reach 20% at the 1996 census. Furthermore, this was in the context of Greater Sydney's share of national manufacturing also falling, down from 31% in 1970 to 27% in 1985.[141]

The trends already commenced in the previous two decades accelerated as Sydney's economy moved to a phase of serious deindustrialisation, with falling employment across all manufacturing sectors. The most recent employment figures (2006/11) available for the City of Sydney are contained in the following tables. It should be noted that these are for a smaller area than that of the 'inner area' used to calculate the figures in the paragraph above. It has already been pointed out that official census figures are not arranged in sectors that neatly cover those required to measure the levels of city workers employed in the industries of interest to this study. In any case, numbers of people employed bears no specific relationship to the number, size and types of buildings and structures that manufacturing and warehousing generate at any given time. The current figures are provided here only to provide a rough snapshot of the current situation, against which trends since 1980 can be measured.

Percentage of residents employed in select sectors, City of Sydney, 2006, 2011.

	City of Sydney		Greater Sydney	
	2006	2011	2006	2011
Manufacturing	4.0	3.6	9.7	8.5
Transport, postal & warehousing	3.1	3.7	5.4	5.3
TOTAL	7.1	7.3	15.1	13.8

Source: Australian Bureau of Statistics, Census of Population and Housing. Extracted from City of Sydney website: Community Profile, prepared by **id**. http://profile.id.com.au/sydney/occupations, accessed October 2013.

In the 21st century manufacturing and warehousing, once the major employers of labour, became a very small part of the lived experience of people actually living within the City of Sydney. As the large majority of workers in the City live outside the City and commute to work, these figures do not tell us how many workers there are in the factories and warehouses of the City, but the overall figures for Greater Sydney also indicate a collapse of manufacturing employment. The largest employment sectors in the City of Sydney in the Census 2011 were in the categories of 'Financial & Insurance, with 19.7% and 'Professional, Scientific & Technical, at 18.6%. The following table has broken down the employment figures of workers living in the City of Sydney into the southern, western and central and eastern areas of the City.

[141] Robert Fagan, 'Industrial Change in the Global City: Sydney's new spaces of production,' in John Connell, Ed. *Sydney: The Emergence of a World City*, Oxford, 2000, pp. 146 -50.

	Manufacturing		Transport, postal & warehousing	
	2006	2011	2006	2011
Southern				
Alexandria/Beaconsfield	4.8	4.7	5.9	5.2
Erskineville/Eveleigh	4.8	3.9	4.9	3.6
Newtown	3.6	3.2	2.4	2.9
Redfern	4.8	4.1	4.7	4.2
Rosebery	6.8	5.3	9.2	7.0
Waterloo/Zetland	4.9	4.2	5.4	4.8
Western				
Camperdown	3.2	3.3	2.0	2.1
Glebe/Forest Lodge	4.7	3.3	2.3	2.0
Pyrmont	4.2	3.4	2.8	2.9
Ultimo	4.1	3.6	3.8	3.1
Central and East				
Sydney	3.6	3.2	3.1	2.5
Centennial Park/Moore Park	3.6	2.7	2.7	3.3
Elizabeth Bay	3.3	2.2	2.2	2.1
Darlinghurst	3.1	2.9	3.5	2.2
Kings Cross	3.3	2.6	2.4	2.7
Potts Point	2.8	2.5	3.4	2.7
Rushcutters Bay	3.7	2.4	2.8	1.6
Surry Hills	4.0	3.4	2.9	2.9
The Rocks/Millers Point	3.4	2.7	3.2	1.9
Woolloomooloo	3.4	2.9	3.6	2.1

Source: Australian Bureau of Statistics, Census of Population and Housing. Extracted from City of Sydney website: Community Profile, Industries, prepared by id. http://profile.id.com.au/sydney/occupations, accessed October 2013.

While these figures underscore the collapse of manufacturing and warehousing, they nevertheless maintain the traditional distribution, with the southern area holding the highest proportion of people employed in these jobs - 12.3% in Rosebery in 2011, and 9.9% in Alexandria/Beaconsfield. The central and eastern areas maintained their low representation, although the old manufacturing area of Surry Hills retained a score of 6.3%. This level was similar to the levels in the old industrial area of Pyrmont (6.3%) and Ultimo (6.7%), but given the history of the Pyrmont Peninsula as the heartland of heavy industry, these figures underscore a powerful collapse as this area has, post the 1990s reinvented itself as a different place.

In general it is safe to assume that the numbers employed in both manufacturing and warehousing have declined with the continuing introduction of mechanisation. In the long term this is especially the case with warehousing where motorised fork lifts have removed much of the muscle power from the process. Changes in technology have permitted short run, just-in-time production of many goods and this can result in big reductions in warehousing requirements. So too does a transfer of transportation of goods by air rather than the slower method of sea. On the other hand an increase in importation of goods works to increase warehousing needs. Containerised shipping has further resulted in land hungry container storage requirements around Port Botany on the edges of the City of Sydney.

6.2 Political and legislative constraints/opportunities

Opportunities for industrial development have been severely limited through global competition and the reduction of traditional government support. However, by the 1990s the numbers employed were no longer in free fall, suggesting that 'the decline had bottomed out'.

Following the deregulation of Australian currency in 1983 money flowed into Australia, but it flowed to property development and service industries, not manufacturing. Mergers and takeovers resulted in the collapse of many local firms. This was the case with many of the food processing and brewing industries in the South Sydney area. A smaller, less organised manufacturing labour force became less unionised, with an increase in the casualization of work and a return to old 19th century conditions of long hours and sweatshop conditions, especially in the rag trade.

The clean-up of the environmental damage caused by over a century of industrial waste and runoff has made the City of Sydney more attractive to new economic sectors concerned with finance, information technology, cyberspace and professional services which are the current preferred developments for Sydney. A corollary of this is that new populations are often hostile to secondary industry. Today, when the word 'powerhouse' is used it is usually in the context of becoming a powerhouse of finance, fuelled by human capital and innovation. A 'global city' is a concept tied to function, not size or population, and one measure of it is the attraction a city has for corporate headquarters.

Nevertheless there remains a perceived nexus between growth and population. Net migration from Sydney 2010-2011 was 20,249, the largest domestic out-migration of the major Australian cities.[142]

The Central Sydney Planning Committee was set up by the state government in 1988 to oversee large property developments in the City of Sydney and South Sydney. [143] In 2003 - 2004 these two

[142] State of Australian Cities Department of Infrastructure and Transport, Major Cities Unit. 2013 http://www.infrastructure.gov.au/infrastructure/mcu/soac/index.aspx
[143] Paul Ashton, *Accidental City: Planning Sydney since 1788*, Hale & Iremonger, 1993, pp. 116-8.

LGAs were reunited as the City of Sydney, with some small areas being either hived off to other councils, and Glebe, previously part of the Leichhardt LGA from 1948 coming back into the City. The 1996 South Sydney Heritage Report gave the opinion that the lengthy historical separations of these two areas has resulted in the development of a 'sense of identity' for the South Sydney area separate from Sydney. Whether this sense of separateness will continue, remains to be seen. [144]

It is the large tracts of erstwhile manufacturing land and plant in Waterloo and Alexandria that have been most affected by deindustrialisation in this final period and while some of this has been turned to warehousing and office uses, the future of much of this kind of property remains uncertain. Warehousing needs, in particular, are extremely difficult to predict. The role of the internet in displacing traditional retailing practices may require an increase in real-space warehousing, while the shift of newspapers and communications online is leading to a rapid decrease in the need for both physical printing plant and warehousing. On the other hand some of the new information and communications technologies are absorbing converted warehouse space.

All this generates complex decision making processes for the various levels of government as they attempt to underpin economic development through appropriate planning decisions and controls.

6.3 Development by Locality

6.3.1 City and East

The Port of Sydney continued closing down and the removal of shipping to Port Botany was accelerated. This left excess capacity around the waterfront where industrial plant was dismantled and warehouses were converted for commercial and residential uses. At present a significant new commercial district named Barangaroo is being created along the whole of the eastern side of Darling Harbour. It intends its occupants and owners to be focused on what is called 'the global economy'.

On Elizabeth Street at Central Railway, the old Toohey's brewery was demolished in the 1980s for offices (Centennial Plaza). Factories across Surry Hills and Darlinghurst fell vacant, although some of them were taken up by sweatshops which kept a section of the rag trade in this area.[145] It was said of Surry Hills that if it was built as a house it was now someone's trendy office or artisan workshop and if it was built as a factory or workshop it was now a trendy residential address. Or an art gallery. Or a theatre. Surry Hills is probably the best place in Sydney to study the unstable nature of the built form, although these changes were occurring everywhere.

Gentrification came to different parts of the City at different times. It took its cue from Paddington, where the process began in the 1960s with residential slums becoming sought after properties, and is still occurring in parts of Newtown and Alexandria. But the earliest residential claim on industrial buildings occurred in Surry Hills and in the Chippendale and Darlington areas where old factories and warehouses had no further industrial use. Consider, for example, the fine old building at 35 Richards Avenue in Surry Hills. In 1883 it began life as a steam laundry, then in the 1930's it was transformed with an art deco makeover and occupied by W E Woods Manufacturing Chemists. In 1973 it was turned into offices for an architectural firm, McConnell, Smith & Johnson. [146] A recent real estate advertisement for this space described it as 'adjacent to the Clock Hotel, a 'hot spot', and extolled its

[144] Tropman & Tropman Architects, *South Sydney Heritage Study*, for South Sydney Council, 1995 Vol 1, p. 24. For the politics of the various boundary changes to the City of Sydney, see Hilary Golder, *Sacked: Removing and Remaking the Sydney City Council,* City of Sydney, 2004.
[145] Robert Fagan, 'Industrial Change in the Global City: Sydney's new spaces of production,' in John Connell, Ed. *Sydney: The Emergence of a World City*, Oxford, 2000, p. 148.
[146] Godden Mackay Logan, Heritage Consultants 'Richards Avenue, Surry Hills, Conservation Management Plan' for Candelpas Associates, Final Report, July 2010.

exposed wooden beams and ultra- high ceilings. Its tall smoke stack tells a story of a different Surry Hills.

2. ***A 1920s view of the building at 35 Richards Street, Surry Hills, prior to an art deco make over in the 1930s. The smoke stack remains. The building is listed on the Sydney LEP, 2012.*** *Source: Godden Mackay Logan, 'Richards Avenue, Surry Hills, Conservation Management Plan' for Candelpas Associates, Final Report, July 2010, p.11.*

6.3.2 West

By the 1980s the Pyrmont peninsula was on its knees as heavy and light industry pulled out. The population, already small because of the encroachment of industrial plants that were now surplus to requirements, shrank to under 2,000.

Since the 1990s increasing amounts of the peninsula have been redeveloped for both new housing and for 'high tech' industries including communications and computer industries. The major television and newspaper industries moved here in what became known as a 'hubs' of creativity. Pyrmont was positioned as a new 'media hub' with the Fairfax Press moving to Darling Island, in close proximity to several television stations.

Global Switch's data centre, located on the site of the former Government Printing Office in Harris Street, symbolised the change. In 2004 when the government announced a new six storey Global Switch West data centre to be built next to it, it was claimed it would be 'the largest facility of its type in the Southern Hemisphere.' Data centres such as this provide storage and dedicated servers for local companies, but the 'equipment' both soft and hardware is typically manufactured elsewhere and the ownership is typically not local. Global Switch is the largest wholesale carrier-neutral data centre provider in Europe and the Asia - Pacific, owned by the British Reuben Brothers.[147] At present the demand for this kind of warehousing is growing, but it is too soon to know whether it will eventually go the way of all those electricity substations that dotted the City in the early part of the century.

[147] Carolyn Cummins, *Sydney Morning Herald*, September 18, 2004. http://www.business.nsw.gov.au/news/biggest-data-centre-in-southern-hemisphere

3. ***Detail from Global Switch Sydney website*** *http://www.globalswitch.com.au, accessed November 2013.*

The Pyrmont peninsula is now attractive to new industry for its quality of life, a total turnaround from its pre 1980 persona. In 2012 when Google relocated its Sydney operations within Pyrmont from Harris Street to Pirrama Road it acquired all the things a cutting edge organisation wants – 'we are located on the water at Pyrmont with views of the Sydney Harbour Bridge, The Rocks and Darling Harbour. Our building is the greenest in Sydney'. The Goodman Fielder site at Union & Edward streets became new office space. The erstwhile CSR cooperage became a prestigious commercial address, now capitalised to the Cooperage. Industrial Pyrmont remains more in the shells of buildings and the remnants of machinery that have been recycled as art installations in foyers of office spaces.

4. ***The Cooperage, built in 1901 to make barrels for storing rum and redesigned and rebuilt in 2006 for 'executive commercial suites'. Architect: Howard Tanner.*** *Source:* http://www.jacksonslanding.net.au/history/category/locations/cooperage

6.3.3 South

Chippendale's older industries were also moving away in the 1980s, and some small computer linked firms were moving in, but the main thrust was for small factories and workshops to begin converting to residential and arts uses.

5. ***Factories like this one at 17 Blackfriars Street Chippendale were early to reinvent themselves as residential apartments in the 1980s.*** *Photo courtesy Margaret Watts, reproduced in Shirley Fitzgerald, Chippendale: Beneath the Factory Wall, 1st edition, Hale & Iremonger, 1991, p 107.*

Tooths Brewery, the largest land use remained unusually tenacious, bucking the trend by expanding into additional streets amidst loud community protest. When it was bought out by the Melbourne based brewing giant Carlton & United it had just undergone extensive modernisation and Carlton continued to upgrade until at least 1991, installing new filtration plant and a boiler house. The company claimed it was the most automated brewery in Australia as well as the second largest. The last beer was brewed in 2005 on what is now a major residential development site. [148]

To the whole of the southern area, deindustrialisation brought with it cleaner air and the decommissioning of the Waterloo incinerator, known as the Zetland Monster at Green Square became the symbol of the new residential area to come in south Sydney. The incinerator, owned by the Waverley and Woollahra Councils had been built on the site of the Waterloo and Industrial Brick Co, in 1972, and was instantly controversial. A resident of Zetland from the early 1980s recalled that 'through the eighties and nineties putrid smells associated with the incinerator worsened'. [149] In 1991 the State Pollution Control Commission warned that toxic emissions were way above international

[148] Shirley Fitzgerald, *Chippendale: Beneath the Factory Wall*, 2nd edition, Halstead, 2007, pp. 131-2.
[149] Anne Brown, *Sydney Morning Herald* (*Eastern Herald*) 7 February 1991, cited in Scott Cumming, 'Chimneys and Change' in Grace Karskens & Melita Rogowsky, eds., *Histories of Green Square*, UNSW, 2004, Ch. 3, p. 39.

standards and there were community protests and a Greenpeace occupation of the site in the early 1990s. It was closed in 1997 amidst local objections to having to deal with other people's rubbish. This attitude developed in relation to industry as well as the resident parts of Alexandria and Waterloo began to gentrify – the last parts of the City to do so. Demolition of the Monster occurred after 2007 as a first step in plans to create a new Green Square precinct.

The Alexandra Canal continued to take runoff from a number of premises licensed to discharge directly into it. This polluted its waters and the heavy metal counts for lead, iron and zinc, as well as for mercury were excessively high. In 1998 Sydney Water commenced a clean-up, but the proposed redevelopment of this area is yet to be. [150]

In this period of remaking the southern part of the City some things became clear early on.

- Factories of the 20th century, with some exceptions, are not as attractive for residential reuse as older factories in the older industrial areas.
- The printing industry has been decimated through technological change, resulting in closure of printing presses in Rosebery in early 1980s as electronic production rendered the printing press obsolete. In 2011 News Limited had a DA approved for major new premises at Parramatta, but this was not built, and by mid 2013 the firm announced that it was returning to Surry Hills where its old Holt Street headquarters was to be upgraded and 'restacked' and also include other premises purchased nearby. Workers from Alexandria would be returning to the inner city. The digital Guardian Australia is located just around the corner in what is now being called a 'media precinct'. [151]
- Heavy industry that remains has tended to move further south to Botany, closer to the port and the airport. On the other hand, the expansion of the port has resulted in maintenance and recommissioning of some buildings for warehousing activities to service storage needs.
- New creative and information and communication technology industries are creating a demand for converted warehouse space.
- During this period there had been some unexpected growth in the textiles and clothing sector. The1980s firm of Dolina (Link Road, Rosebery) symbolises a trade that has revived over recent years.

[150] The City of Sydney, Development Control Plan 2012 proposed bicycle paths and recreational upgrades, but currently there is talk of a possible road link to the airport along the side of the canal.
[151] http://news.silobreaker.com/news-corp-shifts-staff-into-surry-hills-5_2266997541503500291
http://www.bandt.com.au/news/media/surry-hills-fits-the-bill-for-guardian-australia-w

7 Timeline

Date	Structure/firm	Events
1788		First contact with European explorers
1789	Rose Hill Packet, first boat built in Sydney, launched from government wharf, eastern side of Sydney Cove.	
1797	Windmill erected on Windmill Hill (Observatory Hill) Dockyard built at on western side of Sydney Cove.	
1798	Sawpits and boatsheds built at docks	
1802	Campbell's wharf and warehouses to north of government dockyard	
1807		The first wool is exported from Australia to England. 40 men working at dockyards
1812	Commissariat Stores, western side of Sydney Cove	Demolished in 1939 and replaced by Maritime Services Board HQ opened in 1952 (now Museum of Contemporary Art.).
1815	Simeon Lord's first Waterloo Mill and millpond to manufacture cloth. Dickson's steam mill near the head of Cockle Bay (Darling Harbour) Leighton operating 3 windmills at Millers Point.	Canned foods first shipped to Australia.
1818	Second mill constructed at Waterloo to manufacture paper.	

Date	Structure/firm	Events
1819	Samuel Terry's Lachlan Mill near Lachlan Swamp (now Centennial Park). William Hutchinson built Waterloo Mill to the west of this.	
1820	New Waterloo Mill built. For grinding grain.	Death of the last of the Eora due to smallpox, influenza & measles.
1821	Stables built at Government House. Waterloo flour mills erected by Daniel Cooper.	
1825	Robert Cooper's Brisbane Distillery, Chippendale.	
1826	Munn's boatyard and slip way, Millers Point.(subsequently Cuthbert's, Dibbs). Thomas Barker and John Smith build windmill on Darlinghurst Hill.	Remnants of slipway uncovered, Barangaroo Delivery Authority, June 2013. Population of Sydney reaches 10,000.
1828	Thomas Barker bought Dickson's Darling Harbour steam flour mill.	
1835	John Tooth & Charles Newnham's Kent brewery, Chippendale	
1836?	Dawson's Australian Iron Foundry, George and Pitt Streets, fronting Sydney Cove	
1838		Work begun on the eastern portion of Circular Quay.
1839	Underground wheat silos constructed on Cockatoo Island.	
1840s		Major depression for several years.

Date	Structure/firm	Events
1841	Australian Gaslight Company works operating from site below Kent Street on Darling Harbour.	Introduction of gas street-lighting in Sydney.
1842	Robert Campbell commended rebuilding warehouses at West Circular Quay. Completed by 1861.	City of Sydney incorporated.
1843	Argyle Cut commenced.	
1844	Circular Quay completed on eastern side of Tank Stream. Customs House moved to site of present building.	
1846		First meat canning in Australia.
1847	Hinchcliff's wool washing mills established at Waterloo. Two dams. 10 acres of drying lawns.	Run off polluted Shea's Creek
1849		Frozen vegetables first processed in Australia
1850	Thomas Mort's woolstores at Circular Quay.	Legislation to establish state run abattoirs.
1850s		Commencement of goods yards at southern end of Darling Harbour, Ultimo.
1855	First railway workshops (Redfern Railway Yard) opened, between Devonshire & Cleveland Streets. Colonial Sugar Refinery (CSR) takes over Brisbane Distillery, Chippendale. PN Russell's Foundry established, Barker Street Darling Harbour.	Railway opened from Sydney to Parramatta.

Date	Structure/firm	Events
1856	Fitzroy Graving Dock on Cockatoo Island.	Stonemasons first NSW workers to win an 8 hour working day.
1857	First Pyrmont Bridge and bridge from Pyrmont to Glebe Island. Glebe Island Abattoirs opened.	
1858		Telegraph connection Sydney/Adelaide/Melbourne.
1859	Circular Quay reaches Cadman's Cottage, west Sydney Cove.	Old dockyards disappear with this event. Redfern Council incorporated. Glebe Council incorporated. Botany Swamps begin supplying water for Sydney.
1860	Gas mains connected to Glebe.	Waterloo Council incorporated. Camperdown Council incorporated.
1861		Eugene Nicolle and Richard Dawson get patent for ice making machine. Ironworkers and moulders at P.N. Russell & Company go on strike in response to a ten percent wage cut, Out for seven months.
1862	Watermains reach Glebe.	Newtown Council incorporated.
1863	Cowper Wharf completed, Woolloomooloo Bay.	The Sydney Ice Co begins selling 7-pound (3 kg) blocks of ice in Sydney.
1864		Darlington Council incorporated.
186?	Mort's stores at corner Phillip St, Circular Quay replaced with larger Blacket designed stores.	Site of AMP buildings. These also took out the Sydney Bond & Free Stores which stood in Phillip St., directly behind Morts.

Date	Structure/firm	Events
1868		Alexandria Council incorporated.
1870	Reclamation of Blackwattle Swamp commenced.	Industrial Exhibition, Prince Alfred Park.
1871		Trades & Labour Council of NSW formed on 25 May 1871.
1872	T S Mort acquires Dawson & Co engineering works, George Street, Circular Quay.	Erskineville (Macdonaldtown) Council incorporated.
1875	Bond store known as Dalgetey's Bond Stores built on corner of Munn St and Unwin St, Millers Point.	Probably built by John Cuthbert, of Cuthbert's wharf, previously Munns Wharf, in Darling Harbour below store. Extant, with partial demolition in 1970s. Used for offices.
1878	CSR relocated from Chippendale to Pyrmont Point. Eveleigh Railway Station opened.(later renamed Redfern)	Dr Bell's telephone patented in Australia. Australia's first telephones trialled in Sydney.
1879	The Eveleigh Railway Yards commence operation.	The first consignment of frozen meat is shipped to Britain by Thomas Mort and Eugene Nicolle. Sydney International Exhibition, Garden Palace.
1879 and 1881		Subdivisions of Blackfriars Estate, Chippendale – some warehousing built here.
1880s		Stone sea walls in Blackwattle and Rozelle Bays.
1880s	First timber yards at Blackwattle Bay.	

Date	Structure/firm	Events
1881		Tramline opened between Newtown and Marrickville. Trade Union Act 1881 recognised NSW trade unions for the first time as corporate organisations. NSW 1881 Influx of Chinese Restriction Act.
1882	First Telephone exchange in Sydney.	
1884	Beaconsfield Workingman's Model Township.	Illawarra railway line opened with stations at Erskineville, St Peters, Marrickville (now Sydenham) and Cooks River (now Tempe).
1885	New Customs House built at Circular Quay (designed: James Barnet).	Glebe Municipality installed sewers. First Factories and Shops Act is passed. Ineffective.
1887	Work commenced on Alexandra Canal, Botany/Alexandria.	
1888		Newtown Telephone Exchange opened. Petitioners in Newtown Municipality complain of smoke from the brickyards. Upper Nepean Water comes on-line
1880 -1889	Eveleigh complex of loco workshops, carriage works and erecting shops at Redfern.	
1890s	Campbell’s new 3 storey warehouse West Circular Quay.	Extant. Used as restaurant. Circular Quay taken up with ferry wharves. All commercial shipping removed to Darling Harbour. Major depression sets in for several years.
1891	Redfern Municipal electricity powerhouse, Renwick Street.	

Date	Structure/firm	Events
1896		Factories and Shops Act. The first comprehensive regulation of working conditions The legislation restricted the working hours of women and children.
1899	Ultimo Power station commissioned.	NSW Board of Health names Erskineville as the suburb with the highest mortality in the colony. Sewer being built to serve the Royal Price Alfred Hospital. Sections of Newton connected. Early Closing Act 1899 restricted the length of working hours for all employees.
1900	Construction work on Alexandra Canal ceases.	Darling Harbour Wharves Resumption Act. Tram depot opens at Newtown.
1901	Ultimo Powerhouse.	Formation of Sydney Harbour Trust. Commencement of major resumptions and clearances in Millers Point and The Rocks The New South Wales Industrial Arbitration Act introduced compulsory arbitration. Factories and Shops Act 1901.
1901 -1920s	Building of Hickson Road and the building of the new Walsh Bay wharves. 1901 – 1920s.	
1902	.New Pyrmont Bridge.	Extant, pedestrian walkway.
1904	New Pyrmont Power Station opened. Rozelle' Tram storage sheds, Forest Lodge.	Electric street lights turned on in City. Joynton Smith purchased and drains Waterloo Swamp to form Victoria Racecourse, Zetland. Telephone link established between Sydney and Melbourne.
1905		Electric power offered to private consumers.

Date	Structure/firm	Events
1906		Non-unionised female laundry workers at Sydney Steam Laundry, Woolloomooloo unsuccessful in claiming a wage increase. Central Railway Station opened.
1907	Peter's Icecream, Paddington. Locomotive manufacture, Redfern.	Sydney & Melbourne connected by trunk line.
1908	Block C of Dalgety's stores, Munn St/ Hickson Road, Millers Point. Wexfrod St demolished to allow construction of Wentworth Ave.	Extant.
1909		Imported Ford Model 'T' cars begin sale.
1910		Royal Commission on the PMG's Department Newtown municipality's gas street lights are disconnected and replaced with 418 electric lights.
1911	John Danks' Foundry est. Chippendale. Dunkerley's Hats, Surry Hills.	Commencement of 'remodelling' of many streets in Chippendale houses demolished and vacant land then sold for industrial use.
1912	Strickland Buildings – workers housing (flats) built by City Council in Chippendale. Rosebery Model Workingman's Estate.	Government aquired AGL site, Darling Harbour. All operations stopped by 1920s.
1914	Waterloo Incinerator site converted to a brickworks. First Australian chocolate manufactured by Ernest Hillier, Pitt Street. Located in Woolloomoloo 1926-1934.	World War 1: Australia at war (1914-18).
1915	Hadfields, Alexandria. AGM, South Dowling Street, Waterloo.	

Date	Structure/firm	Events
1916	Goods line opened through Glebe to Darling Harbour. Line opened to Rozelle Goodsyards and Glebe Island. Tanning School moved to Waterloo.	Railway viaducts across Wentworth Park to Glebe and beyond. Eight Hours Act created a standard 48 hour working week.
1917	Abattoirs closed on Glebe Island. Stedman-Hendersons Sweets commenced building 'Sweetacres', Rosebery. Alexandria Goodsyards opened. c. 1917 [?]	General Strike, initiated by transport workers. Employees at Eveleigh on strike 82 days.
1918	First wheat silo on Glebe Island.	First radio message sent between London and Sydney.
1919		Basic female wage was established at 54% of the male basic wage.
1920s		Fill from excavations for City Circle railway used to extend goods lines into Pyrmont and Darling Island.
1920	Sydney Airport opened at Mascot.	Jubilee Industrial Exhibition, Waterloo.
1921	Berlie built a 6 storey corset factory, Regent Street Chippendale. Rosella canning factory, Rosebery. Gillespie Bros flour mills relocate to Ultimo.	
1922		Population of Sydney passes 1 million.
1923	STC commenced as importer in Chippendale. Reed Paper Products, Waterloo.	First radio station in Sydney begins broadcasting.

Date	Structure/firm	Events
1925		Manufacture of new locos at Eveleigh ceased. (reintroduced 1945-52) First carrier telephone system supplied by STC to PMG's Department.
1926	Sydney Harbour Bridge building commenced. STC began manufacture of wireless receivers.	Electrification of suburban railways commenced.
1927	Strides boat yard, Blackwattle Bay.	Sea walls, crane, cutting machine remain today.Timber workers strike.
Late 1920s	Forstar Shoes est. in Abercrombie Street.	Widespread substitution of factories and warehouses for demolished houses in Chippendale, Surry Hills, Ultimo.
1929	Wattle Street Depot manufactures asphalt.	
1931		The 'Black Friday' eviction battle between police and tenants in Union Street, Newtown.
1932	Incinerator (Burley Griffin) Forsyth Street, Glebe.	Sydney Harbour Bridge opened.
1933	Waterloo Incinerator site: Waterloo Municipality Garbage Destructor established on site with brickworks.	
1937	STC moved to Alexandria. Eveready factory, Rosebery.	Some jobs transferred out of Eveleigh workshops when Chullora Workshops open.
1939	Commissariat building at West Circular Quay demolished.	Declaration of war in Europe.
1940		Industrial Arbitration Act replaced earlier 1912 Act.

Date	Structure/firm	Events
1941		Declaration of war in the Pacific
World War 2	Temporary woolsheds constructed on Wentworth Park and along Alexandra Canal.	Some sheds on Alexandra Canal remain.
1945	Locomotive production resumed at Eveleigh Workshops.	
1947		Amendments to the Industrial Arbitration Act 1940 reduced the standard working week to 40 hours.
1948		County of Cumberland established. City of Sydney enlarged. Takes in South Sydney areas and Glebe.
1949	Waterloo Incinerator site: Garbage Destructor no longer used but Waterloo Firebrick Company & Industrial Brick Co still operational.	
1951	George Weston Foods buy biscuit factory in Camperdown. (formerly Joyce Biscuits).	County of Cumberland Planning Scheme.
1952		Subdivision of Victoria Park Racecourse, Zetland, by Lord Nuffield/BMC.
1953	Last loco manufactured at Eveleigh.	
1954	BMC motor assembly plant opens, Zetland.	
1955	Second power station built in Pyrmont. Government Printing Office, Harris Street, Ultimo. Olympic Tyres relocate to Zetland.	Gov. Printing Office now site of Global Switch.

Date	Structure/firm	Events
1956	Circular Quay Railway completed. STC television sets produced. Fairfax new premises at head of Blackwattle Bay.	Television broadcasting commences. Now the Fish Markets.
1957		Abolition of 150 feet height restrictions on buildings.
1961		Last tram runs in Sydney.
1963	Ultimo Power Station closed.	It and nearby tram yard recycled as Powerhouse Museum in 1980s.
1964		State Planning Authority established.
1965		Steam locomotives ceased to be in use on railways.
1966		Waterloo Incinerator site purchased by Waverley & Woollahra Councils.
1968		Sydney Cove Development Authority est. South Sydney LGA est.
1970		State Pollution Control Commission (SPCC) est.
1971	Yennora Wool Centre.	Car numbers at 500 per 1,000 people.
1972	Waterloo Incinerator begins operating.	On the site of the original Waterloo Mills.

Date	Structure/firm	Events
1970	Demolition of finger wharves on Darling Harbour and redevelopment.	
1973		Leyland P76 launched, Zetland. NSW Equal Pay Decision. 'Across the board' tariff cuts.
1974	Leyland Australia ceases local manufacture of cars.	Clean Air and Clean Water Acts.
1980	Alexandria Goodsyards close.	
1982		South Sydney LGA reamalgamated with City of Sydney.
1983		Deregulation of currency.
1984		Darling Harbour Authority created.
1988	New park built on site of demolished Darling Harbour Goodsyards.	Central Sydney Planning Committee established. South Sydney LGA re-established.
1989	Eveleigh Railway Workshops closed.	
1991	Work commences on Australian Technology Park on site of Eveleigh Railway Workshops.	After community protest, State Pollution Control Commission declares pollution levels at Waterloo Incinerator unacceptable.
1992	Sydney Harbour Tunnel opened. Work began on Anzac Bridge.	Industrial Relations Act 1991 introduced enterprise bargaining, voluntary unionism and increased penalties for industrial action.

Date	Structure/firm	Events
1993	CSR, Pyrmont closed down.	
1995		South Sydney Heritage Study.
1996	Australian Technology park opened, Eveleigh.	Airport rail link through Green Square commenced.
1997	Waterloo Incinerator closed after much community protest.	Glebe Gardens development (Hereford Street) replaced disused warehouse buildings with 90+ townhouses and apartments.
1998		Clean up of Alexandra Canal begun. Maritime Union of Australia members strike when Patrick stevedoring, it is later found, unlawfully conspires to sack an entire workforce for being members of a union.
2003		Apartments replaced timber yard/artists workshops at end of Glebe Point Road.
2005	Carlton Brewery closed, Chippendale.	
2004		Redfern–Waterloo Authority Act.
2006		New Planning Controls for Green Square Town Centre.
2007	Demolition of Waterloo Incinerator.	Carriage Works Theatre opens, Eveleigh.
2011		Meriton acquired Victoria park/Leylands site at South Dowling Street, Zetland, for multiple (400 +) high rise apartment development.

Date	Structure/firm	Events
2012		Meriton acquired a former industrial property in Rosebery and on McEvoy Street Waterloo with plans to build 200+ apartments on each. Repeal of Redfern-Waterloo Authority Act.

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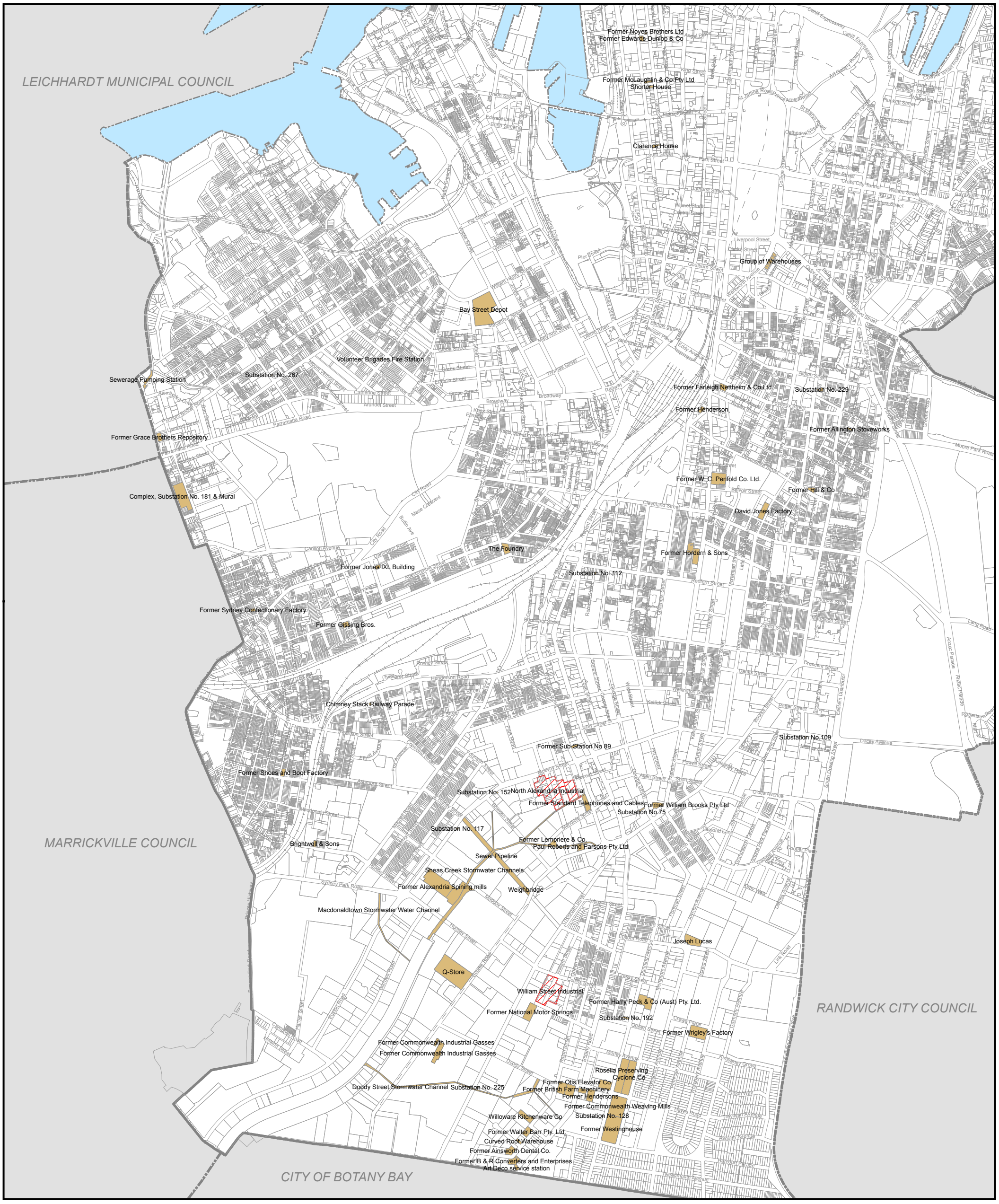
- NSW parliamentary reports and papers.
- Photographs, plans and maps from a number of different sources.

Citations of these records appear in footnotes but are not separately listed in the bibliography.

11.2 MAPS FOR LOCATION OF RECOMMENDED LISTINGS



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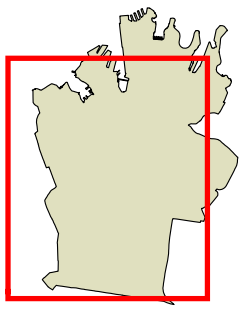
- Conservation Area - General



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11.3 CONTRIBUTION MAPS FOR RECOMMENDED CONSERVATION AREAS

North Alexandria Industrial Conservation Area

CITY OF SYDNEY

Legend

- Contributing
- Detracting
- Neutral
- Recommended Conservation Area

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Metres

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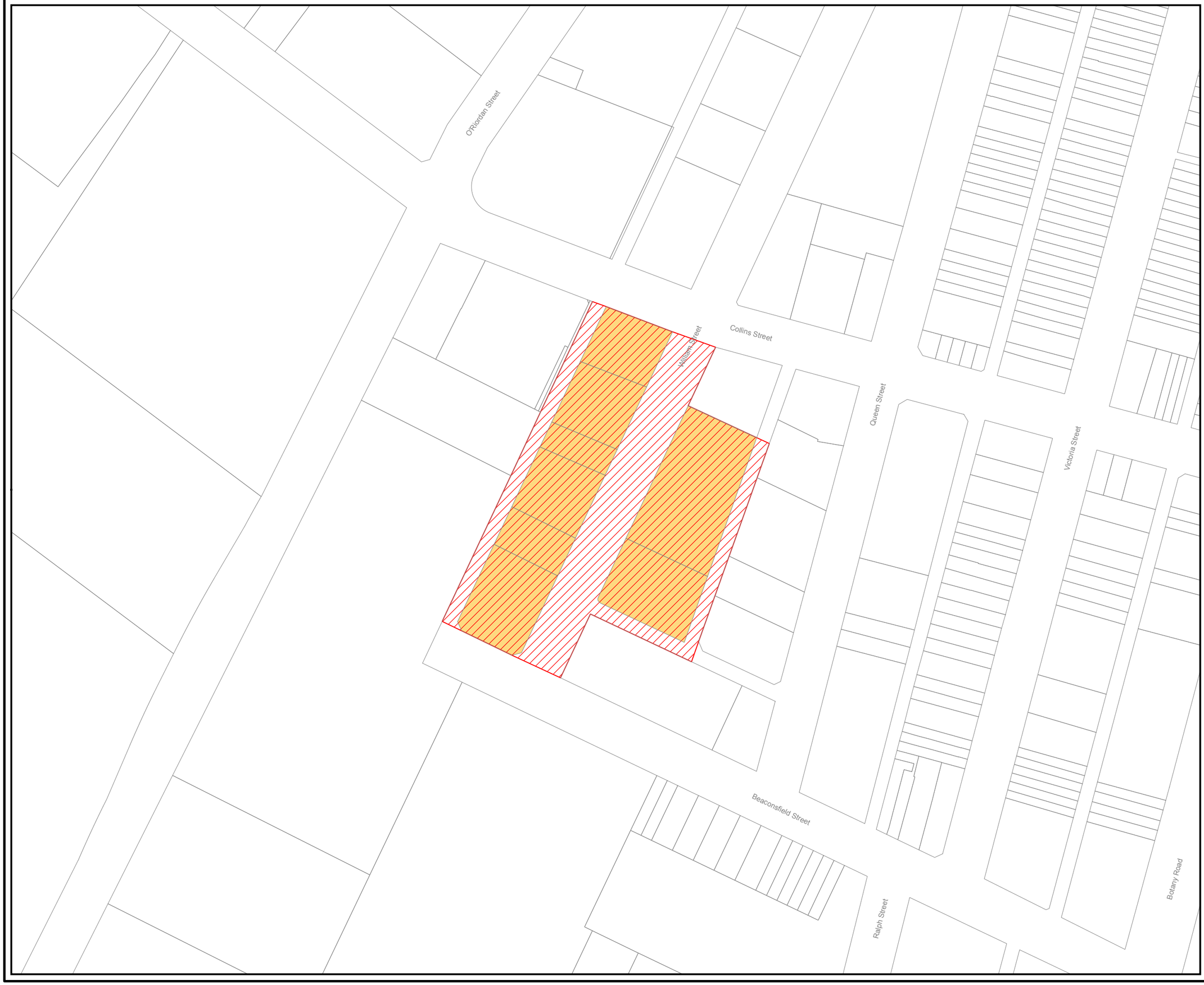
Wyndham Street
Botany Road
James Street
Retreat Street
Stokes Avenue
Mcauley Street
Hills Street
Unnamed Lane
Mandible Street
Bowden Street

William Street Industrial Conservation Area

CITY OF SYDNEY



Legend

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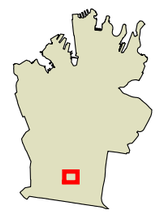
- Detracting
- Neutral
- Recommended Conservation Area



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11.4 INTERNATIONAL CHARTERS & PRINCIPLES FOR INDUSTRIAL HERITAGE

- International Council on Monuments and Sites (ICOMOS), Joint ICOMOS – TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes, “The Dublin Principles", Paris 2011
- The International Committee for the Conservation of the Industrial Heritage (TICCIH), The Nizhny Tagil Charter for the Industrial Heritage, Moscow 2003

Joint ICOMOS – TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes

«The Dublin Principles»

Adopted by the 17th ICOMOS General Assembly on 28 November 2011

Preamble

Around the World, a great diversity of sites, structures, complexes, cities and settlements, areas, landscapes and routes bear witness to human activities of industrial extraction and production. In many places, this heritage is still in use and industrialisation is still an active process with a sense of historical continuity, while in other places it offers archaeological evidence of past activities and technologies. Besides the tangible heritage associated with industrial technology and processes, engineering, architecture and town-planning, it includes many intangible dimensions embodied in the skills, memories and social life of workers and their communities.

The global process of industrialisation observed over the past two centuries constitutes a major stage of human history, making its heritage particularly important and critical to the Modern World. Precursors and beginnings of industrialisation can be recognized in many parts of the world well back into ancient times through active or archaeological sites, and our attention extends to any examples of such process and its heritage. However, for our purposes, these joint principles' primary interests coincide with the common notions of the Modern Era Industrial Revolution, marked by distinctive and dedicated production, transportation and power-generating or harnessing processes and technologies, trade and commercial interactions, and new social and cultural patterns.

Principes conjoints ICOMOS-TICCIH pour la conservation des sites, constructions, aires et paysages du patrimoine industriel

«Les principes de Dublin»

Adoptées par la 17e Assemblée générale de l'ICOMOS le 28 novembre 2011

Préambule

À travers le monde, la vaste diversité de sites, de constructions, de complexes, de villes et d'établissements, d'aires, de paysages ou de routes témoignent d'activités humaines d'extraction et de production industrielles. En de nombreux endroits, ce patrimoine est en opération et l'industrialisation constitue un processus actif chargé de continuité historique ; ailleurs, des ressources archéologiques révèlent les activités et technologies passées. Au patrimoine matériel lié aux procédés et techniques de l'industrie, du génie civil, de l'architecture ou de l'urbanisme, s'ajoute un patrimoine immatériel lié aux savoir-faire, à la mémoire ou à la vie sociale des ouvriers et de leurs communautés.

Le processus global d'industrialisation observé au cours des deux derniers siècles constitue une étape majeure de l'histoire humaine et son patrimoine revêt une importance significative dans le monde contemporain. En plusieurs parties du monde, les précurseurs et les débuts de l'industrialisation sont reconnus, remontant aux périodes anciennes, par des sites archéologiques ou actifs. Ces Principes conjoints s'intéressent à tout exemple de ce processus et de son patrimoine. Toutefois, l'intérêt premier de ces principes conjoints correspond aux concepts reconnus de Révolution industrielle de l'ère moderne, marquée par le développement et l'utilisation de processus et de technologies en matière de production, de transport et de génération d'énergie, d'échanges commerciaux et de pratiques sociales ou culturelles.

The industrial heritage is highly vulnerable and often at risk, often lost for lack of awareness, documentation, recognition or protection but also because of changing economic trends, negative perceptions, environmental issues or its sheer size and complexity. Yet, by extending the life-cycle of existing structures and their embodied energy, conservation of the built industrial heritage, can contribute to achieving the goals of sustainable development at the local, national and international levels. It touches the social as well as the physical and environmental aspects of development and should be acknowledged as such.

Le patrimoine industriel est très vulnérable, menacé de disparaître faute de sensibilité, de connaissance, de reconnaissance ou de protection, sous l'effet d'une économie en mutation, de perceptions négatives, d'enjeux environnementaux ou de sa propre taille ou complexité. La conservation du patrimoine bâti industriel prolonge pourtant la vie utile des constructions et de l'investissement énergétique qu'elles représentent. Sa contribution à la réalisation des objectifs du développement durable local, national et international, à ses dimensions sociales, physiques ou environnementales du développement doit être reconnue.

Over the past decades, growing research, international and interdisciplinary cooperation as well as community initiatives have greatly contributed to a better appreciation of the industrial heritage and increased collaboration between stewards, stakeholders and professionals. This progress has benefitted from the development of a corpus of international references and guidelines by ICOMOS – the International Council on Monuments and Sites, and the implementation of international recommendations and instruments such as the World Heritage Convention adopted by UNESCO in 1972. In 2003, The International Committee for the Conservation of Industrial Heritage (TICCIH) adopted its Nizhny Tagil Charter for the Industrial Heritage, a first international reference text of such recognition to guide protection and conservation in the field.

Au cours des dernières décennies, les progrès de la recherche, de la coopération internationale et interdisciplinaire et les initiatives communautaires ont contribué à valoriser le patrimoine industriel et la collaboration entre les détenteurs, les intéressés et les experts pour sa conservation. Ce progrès a bénéficié d'un corpus de références et d'orientations internationales élaboré par l'ICOMOS (Conseil international des monuments et des sites) et de la mise en œuvre d'instruments internationaux dont la Convention du patrimoine mondial adoptée par l'UNESCO en 1972. En 2003, le Comité international pour la conservation du patrimoine industriel (TICCIH) adoptait la Charte de Nizhny Tagil, un premier texte de référence international pour aider à la protection et la conservation du patrimoine industriel.

Acknowledging the particular nature of the industrial heritage and the issues and threats affecting it as a result of its relation to the contemporary economic, legal, cultural and environmental contexts, ICOMOS and TICCIH wish to expand their cooperation by adopting and promoting the dissemination and use of the following Principles to assist in the documentation, protection, conservation and appreciation of industrial heritage as part of the heritage of human societies around the World.

Reconnaissant la nature particulière du patrimoine industriel et des enjeux et menaces qui l'affectent de par sa relation avec l'économie, les lois, la culture ou les questions environnementales actuelles, l'ICOMOS et le TICCIH étendent leur coopération en adoptant ces Principes conjoints et en encourageant leur application et leur dissémination pour aider à la connaissance, la protection, la conservation et la mise en valeur du patrimoine industriel comme partie du patrimoine des sociétés humaines à travers le monde.

1 Definition: The industrial heritage consists of sites, structures, complexes, areas and landscapes as well as the related machinery, objects or documents that provide evidence of past or ongoing industrial processes of production, the extraction of raw materials, their transformation into goods, and the related energy and transport infrastructures. Industrial heritage reflects the profound connection between the cultural and natural environment, as industrial processes – whether ancient or

1 Définition : Le patrimoine industriel comprend les sites, les constructions, les complexes, les territoires et les paysages ainsi que les équipements, les objets ou les documents qui témoignent des procédés industriels anciens ou courants de production par l'extraction et la transformation des matières premières ainsi que des infrastructures énergétiques ou de transport qui y sont associées. Il exprime une relation étroite entre l'environnement culturel et naturel puisque les procédés industriels – anciens ou

modern – depend on natural sources of raw materials, energy and transportation networks to produce and distribute products to broader markets. It includes both material assets – immovable and movable –, and intangible dimensions such as technical know-how, the organisation of work and workers, and the complex social and cultural legacy that shaped the life of communities and brought major organizational changes to entire societies and the world in general.

modernes – dépendent de ressources naturelles, d'énergie et de voies de communication pour produire et distribuer des biens sur les marchés. Ce patrimoine comporte des dimensions immatérielles comme les savoir-faire techniques, l'organisation du travail et des travailleurs ou un héritage complexe de pratiques sociales et culturelles résultant de l'influence de l'industrie sur la vie des communautés et sur la mutation des sociétés et du monde en général.

2 Industrial heritage sites are very diversified in terms of their purpose, design and evolution over time. Many are representative of processes, technologies as well as regional or historical conditions while others constitute outstanding achievements of global influence. Others are complexes and multiple site operations or systems whose many components are interdependent, with different technologies and historical periods frequently present. The significance and value of industrial heritage is intrinsic to the structures or sites themselves, their material fabric, components, machinery and setting, expressed in the industrial landscape, in written documentation, and also in the intangible records contained in memories, arts and customs.

2 La grande diversité des sites du patrimoine industriel découle de leurs fonctions, de leurs formes et de leur évolution. Beaucoup illustrent des procédés, des technologies ou des conditions régionales ou historiques. Certains constituent des réalisations exceptionnelles ou influentes. Les complexes industriels, les opérations réparties sur de multiples sites ou les systèmes regroupent des composantes souvent d'époques ou de technologies différentes. L'intérêt du patrimoine industriel réside dans les constructions et les sites, dans leurs composantes matérielles et équipements, dans leur contexte et le paysage industriel qu'il forme, dans les documents ainsi que dans les dimensions immatérielles portées par la mémoire, les arts et les coutumes.

I - Document and understand industrial heritage structures, sites, areas and landscapes and their values

I - Étudier et comprendre les constructions, sites, aires et paysages industriels et leur valeur patrimoniale

3 Researching and documenting industrial structures, sites, landscapes and the related machinery, equipment, records or intangible aspects is essential to their identification, conservation, and the appreciation of their heritage significance and value. Human skills and knowledge involved in old industrial processes are a critically important resource in conservation and must be considered in the heritage evaluation process.

3 L'étude et la documentation des constructions, des sites et paysages industriels ainsi que des machines, des équipements, des archives ou de leurs dimensions immatérielles est nécessaire à leur identification, leur conservation et l'appréciation de leur intérêt et de leur valeur patrimoniale. Les savoir-faire liés aux anciens procédés industriels sont d'une grande importance dans la conservation et doivent être pris en compte par les processus d'évaluation patrimoniale.

4 Researching and documenting industrial heritage sites and structures must address their historical, technological and socio-economical dimensions to provide an integrated base for conservation and management. It requires an interdisciplinary approach supported by interdisciplinary research and educational programmes to identify the significance of

4 L'étude et la documentation des constructions et des sites du patrimoine industriel doivent examiner leurs dimensions historiques, technologiques et socio-économiques afin de fonder leur conservation et leur gestion sur une connaissance intégrée alimentée par une approche interdisciplinaire et par des recherches et des programmes éducatifs qui

industrial heritage sites or structures. It should benefit from a diversity of sources of expertise and information including site surveys and recording, historical and archaeological investigation, material and landscape analysis, oral history and/or research in public, corporate or private archives. Research and preservation of documentary records, company archives, building plans, and specimens of industrial products should be encouraged. The evaluation and assessment of documents should be undertaken by an appropriate specialist in the industry to which they relate to determine their heritage significance. The participation of communities and other stakeholders is also an integral part of this exercise.

aident à énoncer leurs valeurs patrimoniales. Cette approche doit bénéficier de l'apport d'une diversité de sources d'expertise et d'information dont les études et relevés de site, les études historiques et archéologiques, les analyses matérielles ou paysagères ainsi que la consultation des archives publiques, d'entreprises ou privées. L'examen et la conservation des archives industrielles, des plans et d'échantillons ou d'exemples de production doivent être encouragés et leur évaluation devrait être menée par des spécialistes du type d'industrie auquel ils sont associés. La participation des citoyens, des communautés et d'autres intéressés est une partie intégrale de cette activité.

5 Thorough knowledge of the industrial and socio-economic history of an area or country or their links to other parts of the world is necessary to understand the significance of industrial heritage sites or structures. Single industry context, typological or regional studies, with a comparative component, aimed at key industrial sectors or technologies are very useful in recognizing the heritage values inherent in individual structures, sites, areas or landscapes. They should be accessible and searchable by the public, scholars as well as managers.

5 Une connaissance approfondie de l'histoire industrielle et socio-économique d'une ville, d'une région ou d'un pays ainsi que de leurs liens avec d'autres parties du monde est nécessaire pour comprendre l'intérêt patrimonial des constructions ou des sites industriels. Des études comparatives, typologiques ou régionales sur certains secteurs industriels ou certaines technologies sont utiles pour évaluer l'intérêt de constructions, de sites ou de paysages particuliers. Elles devraient être accessibles au public, aux chercheurs comme aux gestionnaires.

II - Ensure effective protection and conservation of the industrial heritage structures, sites, areas and landscapes

II - Assurer la protection et la conservation efficaces des constructions, sites, aires et paysages du patrimoine industriel

6 Appropriate policies, legal and administrative measures need to be adopted and adequately implemented to protect and ensure the conservation of industrial heritage sites and structures, including their machinery and records. These measures have to address the close relation between the industrial heritage, industrial production and the economy, in particular with respect to rules for corporations and investments, trades or intellectual property such as patents, and standards applicable to active industrial operations.

6 L'adoption et la mise en œuvre de politiques et de mesures légales et administratives adéquates sont nécessaires à la protection et à la conservation des constructions et des sites du patrimoine industriel y compris leurs équipements et documents. Ces mesures doivent tenir compte de la relation étroite entre le patrimoine industriel, la production et l'économie notamment quant aux règles sur les entreprises et sur les investissements, aux métiers, aux éléments de propriété intellectuelle comme les brevets et aux normes régissant les activités industrielles.

7 Integrated inventories and lists of structures, sites, areas, landscapes their setting and associated objects, documents, drawings and archives or intangible heritage should be developed and used as part of these effective

7 Des inventaires intégrés des constructions, sites, aires et paysages, leur contexte ainsi que des objets, documents, dessins, archives et patrimoine immatériel associés à l'industrialisation doivent être faits et utilisés

management and conservation policies and protection measures. These should benefit from a legal recognition, adequate conservation and management to ensure that their significance, integrity and authenticity are maintained. In the case of industrial heritage identified through fortuitous discovery, temporary protection should be granted to allow time necessary for proper heritage documentation and research.

pour assurer l'efficacité des politiques et des protections. Les biens ainsi inventoriés devraient bénéficier d'une reconnaissance légale et de mesures qui en assurent le maintien de l'intérêt patrimonial, de l'intégrité et de l'authenticité. Dans le cas de découvertes fortuites, des protections temporaires devraient être accordées pour donner le temps nécessaire à une évaluation patrimoniale adéquate.

8 In the case of active industrial structures or sites of heritage significance, it must be recognized that their continued use and function might carry some of their heritage significance and provide adequate conditions for their physical and economic sustainability as a living production or extraction facilities. Their specific technical characteristics and features need to be respected while implementing contemporary regulations such as building codes, environmental requirements or risk reduction strategies to address hazards of natural or human origin.

8 Pour les sites ou ensembles industriels actifs, la continuité de leur usage peut fonder en partie leur intérêt patrimonial et justifier le maintien de conditions adéquates pour leur conservation physique et leur viabilité économique à titre d'installations opérationnelles de production ou d'extraction. Leurs caractéristiques techniques propres doivent alors être respectées en appliquant les normes, exigences ou mesures contemporaines en matière de bâtiment, d'environnement ou de réduction des risques de catastrophes d'origine naturelle ou humaine.

9 Protection measures should apply to buildings and their contents since completeness or functional integrity is especially important to the significance of industrial heritage structures and sites. Their heritage value may be greatly jeopardized or reduced if machinery or other significant components are removed, or if subsidiary elements which form part of a whole site are destroyed. Legal and administrative frameworks should be developed to enable authorities to respond quickly to the closure of operating industrial heritage sites and complexes to prevent removal or destruction of significant elements such as machinery, industrial objects or related records

9 Les mesures de protection devraient s'appliquer aux bâtiments et à leur contenu puisque l'intégrité fonctionnelle constitue un facteur majeur d'intérêt patrimonial pour les constructions et sites industriels. Cette valeur patrimoniale peut être lourdement menacée ou diminuée par l'enlèvement ou la démolition d'équipements ou de parties d'intérêt d'un ensemble. Les cadres légaux et administratifs doivent permettre aux autorités d'intervenir promptement quand des sites ou des complexes industriels patrimoniaux cessent leurs activités pour prévenir le démantèlement ou la destruction de machines, objets, documents ou autres éléments d'intérêt.

III - Conserve and maintain the industrial heritage structures, sites, areas and landscapes

III - Conserver les constructions, les sites, les aires et les paysages du patrimoine industriel

10 Appropriate original or alternative and adaptive use is the most frequent way and often the most sustainable way of ensuring the conservation of industrial heritage sites or structures. New uses should respect significant material, components and patterns of circulation and activity. Specialist skills are necessary to ensure that the heritage significance is taken into account and respected in managing the sustainable use of these industrial heritage sites and structures.

10 Le maintien de l'usage d'origine ou d'un nouvel usage compatible est le mode de conservation le plus commun et souvent le plus viable pour les sites et les constructions industrielles. Les nouveaux usages devraient respecter les éléments d'intérêt du site comme les équipements, les circulations ou la distribution des activités. L'apport d'experts est nécessaire pour voir à ce que la valeur patrimoniale de constructions et de sites industriels soit

Building codes, risk mitigation requirements, environmental or industrial regulations, and other standards should be implemented in an adapted way to take heritage dimensions into account when they are enforced through physical interventions.

respectée dans la gestion de leur usage viable. L'application des codes de construction, des mesures de réduction des risques de sinistre, des réglementations environnementales ou industrielles et d'autres normes devrait être adaptée pour respecter les dimensions patrimoniales lorsqu'elle exige des interventions.

11 Wherever possible, physical interventions should be reversible, and respect the age value and significant traces or marks. Changes should be documented. Reverting to a previous known state may be acceptable under exceptional circumstances for educational purposes, and must be based on thorough research and documentation. Dismantling and relocating are only acceptable in extraordinary cases when the destruction of the site is required by objectively proved overwhelming economic or social needs.

11 Les interventions physiques devraient être réversibles et respecter le caractère historique et les traces qui y contribuent. Les transformations devraient être documentées. Le rétablissement d'un état antérieur connu pourrait être recevable dans des cas exceptionnels à des fins éducatives ; il devrait reposer sur des recherches et une documentation complètes. Le démontage et le déplacement ne sont acceptables que lorsque des besoins impératifs économiques ou sociaux démontrés avec objectivité exigent la destruction du site.

12 In case of prospective redundancy, decommissioning, and / or adaptation of industrial heritage sites or structures, the processes should be recorded including, for example, where components have to be demolished and machinery has to be removed. Their material form as well as their functioning and location as part of the industrial processes should be exhaustively documented. Oral and / or written stories of people connected with work processes should also be collected.

12 En cas d'obsolescence de sites ou de constructions industriels d'intérêt patrimonial, les procédés devraient être documentés, notamment lorsque des composantes sont appelées à être démolies ou des machines retirées. Leur forme, leur fonctionnement et leur position et leur rôle dans le procédé industriel doivent être documentés exhaustivement. L'histoire orale ou les récits de personnes associées à ces procédés et le travail de l'industrie doivent aussi être colligés.

IV - Present and communicate the heritage dimensions and values of industrial structures, sites, areas and landscapes to raise public and corporate awareness, and support training and research

13 The industrial heritage is a source of learning which needs to be communicated in its multiple dimensions. It illustrates important aspects of local, national and international history and interactions over times and cultures. It demonstrates the inventive talents related to scientific and technological developments, as well as social and artistic movements. Public and corporate awareness and understanding for the industrial heritage are important means for its successful conservation.

IV - Présenter et communiquer les valeurs patrimoniales des constructions, sites, aires et paysages du patrimoine industriel pour sensibiliser le public et les entreprises et soutenir l'éducation et la recherche

13 Le patrimoine industriel est une source d'enseignements qui doivent être partagés dans leurs multiples dimensions. Il met en lumière des pans importants de l'histoire locale, nationale et internationale et les échanges de longue durée entre les cultures. Il témoigne des talents et de l'ingéniosité associés au progrès des sciences et des techniques ainsi que de l'évolution de la société ou des arts. L'éveil d'une conscience du patrimoine industriel dans la population et dans les entreprises contribue au succès de sa conservation.

14 Programmes and facilities such as visits of active industrial heritage sites and the presentation of their operations as well as the stories and intangible heritage associated with their history, machinery and industrial processes, industrial or city museums and interpretation centres, exhibitions, publications, websites, regional or trans-boundary itineraries should be developed and sustained as means to raise awareness and appreciation for the industrial heritage in the full richness of its meaning for contemporary societies. These should ideally be located at the heritage sites itself where the process of industrialisation has taken place and can be best communicated. Wherever possible, national and international institutions in the field of research and conservation of heritage should be empowered to use them as educational facilities for the general public and the professional communities.

14 La création et le maintien de programmes et d'équipements de mise en valeur du patrimoine industriel doivent être encouragés ; par exemple, les visites de sites en activité qui en exposent le fonctionnement et les récits ou le patrimoine immatériel associés à leur histoire, leurs machines ou leurs procédés, les musées de ville et les centres d'interprétation industriels, les expositions et les publications, le web ou des itinéraires régionaux ou transfrontaliers. Préférablement, ces programmes et équipements de diffusion devraient être situés sur le site patrimonial où le processus d'industrialisation s'est déroulé et où il peut être le mieux présenté. Autant que possible, les organisations nationales et internationales dans les domaines de l'étude et de la conservation du patrimoine devraient être en mesure d'utiliser ces sites à des fins éducatives pour le grand public et les milieux spécialisés.

The Nizhny Tagil Charter for the Industrial Heritage[1]

The International Committee for the Conservation of the Industrial Heritage (TICCIH)

17 July, 2003

TICCIH is the world organisation representing industrial heritage and is special adviser to ICOMOS on industrial heritage. The text of this charter was passed by the assembled delegates at the triennial National Assembly of TICCIH held in Moscow on 17 July, 2003.

Preamble

The earliest periods of human history are defined by the archaeological evidence for fundamental changes in the ways in which people made objects, and the importance of conserving and studying the evidence of these changes is universally accepted.

From the Middle Ages, innovations in Europe in the use of energy and in trade and commerce led to a change towards the end of the 18th century just as profound as that between the Neolithic and Bronze Ages, with developments in the social, technical and economic circumstances of manufacturing sufficiently rapid and profound to be called a revolution. The Industrial Revolution was the beginning of a historical phenomenon that has affected an ever-greater part of the human population, as well as all the other forms of life on our planet, and that continues to the present day.

The material evidence of these profound changes is of universal human value, and the importance of the study and conservation of this evidence must be recognised.

The delegates assembled for the 2003 TICCIH Congress in Russia wish therefore to assert that the buildings and structures built for industrial activities, the processes and tools used within them and the towns and landscapes in which they are located, along with all their other tangible and intangible manifestations, are of fundamental importance. They should be studied, their history should be taught, their meaning and significance should be probed and made clear for everyone, and

1 U srpnju 2003. godine održana je međunarodna konferencija TICCIH (The International Committee for the Conservation of Industrial Heritage – Međunarodno udruženje za očuvanje industrijske baštine). Tom prilikom je donesena *Nižnijtagilska povelja o očuvanju industrijske baštine*, koju donosimo u engleskom originalu i prijevodu.

the most significant and characteristic examples should be identified, protected and maintained, in accordance with the spirit of the Venice Charter,[2] for the use and benefit of today and of the future.

1. Definition of industrial heritage

Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.

Industrial archaeology is an interdisciplinary method of studying all the evidence, material and immaterial, of documents, artefacts, stratigraphy and structures, human settlements and natural and urban landscapes,[3] created for or by industrial processes. It makes use of those methods of investigation that are most suitable to increase understanding of the industrial past and present.

The historical period of principal interest extends forward from the beginning of the Industrial Revolution in the second half of the eighteenth century up to and including the present day, while also examining its earlier pre-industrial and proto-industrial roots. In addition it draws on the study of work and working techniques encompassed by the history of technology.

2. Values of industrial heritage

I. The industrial heritage is the evidence of activities which had and continue to have profound historical consequences. The motives for protecting the industrial heritage are based on the universal value of this evidence, rather than on the singularity of unique sites.

II. The industrial heritage is of social value as part of the record of the lives of ordinary men and women, and as such it provides an important sense of identity. It is of technological and scientific value in the history of manufacturing, engineering, construction, and it may have considerable aesthetic value for the quality of its architecture, design or planning.

2 The ICOMOS 'Venice Charter for the Conservation and Restoration of Monuments and Sites', 1964.

3 For convenience, 'sites' will be taken to mean landscapes, complexes, buildings, structures and machines unless these terms are used in a more specific way.

III. These values are intrinsic to the site itself, its fabric, components, machinery and setting, in the industrial landscape, in written documentation, and also in the intangible records of industry contained in human memories and customs.

IV. Rarity, in terms of the survival of particular processes, site typologies or landscapes, adds particular value and should be carefully assessed. Early or pioneering examples are of especial value.

3. The importance of identification, recording and research

I. Every territory should identify, record and protect the industrial remains that it wants to preserve for future generations.

II. Surveys of areas and of different industrial typologies should identify the extent of the industrial heritage. Using this information, inventories should be created of all the sites that have been identified. They should be devised to be easily searchable and should be freely accessible to the public. Computerisation and on-line access are valuable objectives.

III. Recording is a fundamental part of the study of industrial heritage. A full record of the physical features and condition of a site should be made and placed in a public archive before any interventions are made. Much information can be gained if recording is carried out before a process or site has ceased operation. Records should include descriptions, drawings, photographs and video film of moving objects, with references to supporting documentation. Peoples' memories are a unique and irreplaceable resource which should also be recorded when they are available.

IV. Archaeological investigation of historic industrial sites is a fundamental technique for their study. It should be carried out to the same high standards as that of sites from other historical or cultural periods.

V. Programmes of historical research are needed to support policies for the protection of the industrial heritage. Because of the interdependency of many industrial activities, international studies can help identify sites and types of sites of world importance.

VI. The criteria for assessing industrial buildings should be defined and published so as to achieve general public acceptance of rational and consistent standards. On the basis of appropriate research, these criteria should be used to identify the most important surviving landscapes, settlements, sites, typologies, buildings, structures, machines and processes.

VII. Those sites and structures that are identified as important should be protected by legal measures that are sufficiently strong to ensure the conservation of their significance. The World Heritage List of UNESCO should give due recognition to the tremendous impact that industrialisation has had on human culture.

VIII. The value of significant sites should be defined and guidelines for future interventions established. Any legal, administrative and financial measures that are necessary to maintain their value should be put in place.

IX. Sites that are at risk should be identified so that appropriate measures can be taken to reduce that risk and facilitate suitable schemes for repairing or re-using them.

X. International co-operation is a particularly appropriate approach to the conservation of the industrial heritage through co-ordinated initiatives and sharing resources. Compatible criteria should be developed to compile international inventories and databases.

4. Legal protection

I. The industrial heritage should be seen as an integral part of the cultural heritage in general. Nevertheless, its legal protection should take into account the special nature of the industrial heritage. It should be capable of protecting plant and machinery, below-ground elements, standing structures, complexes and ensembles of buildings, and industrial landscapes. Areas of industrial waste should be considered for their potential archaeological as well as ecological value.

II. Programmes for the conservation of the industrial heritage should be integrated into policies for economic development and into regional and national planning.

III. The most important sites should be fully protected and no interventions allowed that compromise their historical integrity or the authenticity of their fabric. Sympathetic adaptation and re-use may be an appropriate and a cost-effective way of ensuring the survival of industrial buildings, and should be encouraged by appropriate legal controls, technical advice, tax incentives and grants.

IV. Industrial communities which are threatened by rapid structural change should be supported by central and local government authorities. Potential threats to the industrial heritage from such changes should be anticipated and plans prepared to avoid the need for emergency actions.

V. Procedures should be established for responding quickly to the closure of important industrial sites to prevent the removal or destruction of significant elements. The competent authorities should have statutory powers to intervene when necessary to protect important threatened sites.

VI. Government should have specialist advisory bodies that can give independent advice on questions relating to the protection and conservation of industrial heritage, and their opinions should be sought on all important cases.

VII. Every effort should be made to ensure the consultation and participation of local communities in the protection and conservation of their local industrial heritage.

VIII. Associations and societies of volunteers have an important role in identifying sites, promoting public participation in industrial conservation and disseminating information and research, and as such are indispensable actors in the theatre of industrial heritage.

5. Maintenance and conservation

I. Conservation of the industrial heritage depends on preserving functional integrity, and interventions to an industrial site should therefore aim to maintain this as far as possible. The value and authenticity of an industrial site may be greatly reduced if machinery or components are removed, or if subsidiary elements which form part of a whole site are destroyed.

II. The conservation of industrial sites requires a thorough knowledge of the purpose or purposes to which they were put, and of the various industrial processes which may have taken place there. These may have changed over time, but all former uses should be examined and assessed.

III. Preservation in situ should always be given priority consideration. Dismantling and relocating a building or structure are only acceptable when the destruction of the site is required by overwhelming economic or social needs.

IV. The adaptation of an industrial site to a new use to ensure its conservation is usually acceptable except in the case of sites of especial historical significance. New uses should respect the significant material and maintain original patterns of circulation and activity, and should be compatible as much as possible with the original or principal use. An area that interprets the former use is recommended.

V. Continuing to adapt and use industrial buildings avoids wasting energy and contributes to sustainable development. Industrial heritage can have an important role

in the economic regeneration of decayed or declining areas. The continuity that reuse implies may provide psychological stability for communities facing the sudden end a long-standing sources of employment.

VI. Interventions should be reversible and have a minimal impact. Any unavoidable changes should be documented and significant elements that are removed should be recorded and stored safely. Many industrial processes confer a patina that is integral to the integrity and interest of the site.

VII. Reconstruction, or returning to a previous known state, should be considered an exceptional intervention and one which is only appropriate if it benefits the integrity of the whole site, or in the case of the destruction of a major site by violence.

VIII. The human skills involved in many old or obsolete industrial processes are a critically important resource whose loss may be irreplaceable. They need to be carefully recorded and transmitted to younger generations.

IX. Preservation of documentary records, company archives, building plans, as well as sample specimens of industrial products should be encouraged.

6. Education and training

I. Specialist professional training in the methodological, theoretical and historical aspects of industrial heritage should be taught at technical and university levels.

II. Specific educational material about the industrial past and its heritage should be produced by and for students at primary and secondary level.

7. Presentation and interpretation

I. Public interest and affection for the industrial heritage and appreciation of its values are the surest ways to conserve it. Public authorities should actively explain the meaning and value of industrial sites through publications, exhibitions, television, the Internet and other media, by providing sustainable access to important sites and by promoting tourism in industrial areas.

II. Specialist industrial and technical museums and conserved industrial sites are both important means of protecting and interpreting the industrial heritage.

III. Regional and international routes of industrial heritage can highlight the continual transfer of industrial technology and the large-scale movement of people that can be caused by it.

Eusebi Casanelles — President TICCIH

Eugene Logunov — TICCIH XII International Congress

Nizhny Tagil, 2003

Nižnijtagilska povelja o očuvanju industrijske baštine[4]

Međunarodni odbor za očuvanje industrijske baštine (TICCIH)

17. srpnja 2003.

TICCIH je svjetska organizacija koja predstavlja industrijsku baštinu, te je specijalni savjetnik ICOMOS-a (International Council on Monuments and Sites – Međunarodni savjet za spomenike i lokacije) za pitanja industrijske baštine. Tekst ove povelje ratificiran je na nacionalnoj skupštini TICCIH-a održanoj u Moskvi 17. srpnja 2003. godine.

Preambula

Najranija razdoblja ljudske povijesti opisana su s pomoću arheoloških dokaza o temeljnim promjenama načina kako su ljudi izrađivali predmete. Važnost čuvanja i proučavanja tih materijalnih izvora danas je u cjelini prihvaćena.

Još od srednjeg vijeka izumitelji u Europi na području upotrebe energije, zanata i trgovine doveli su do promjena pri kraju 18. stoljeća, koje su bile jednako tako duboke kao što su bile promjene između kamenog i brončanog doba, i to na području društvenih, tehničkih i ekonomskih uvjeta dovoljno brzih i dubokih da ih možemo nazvati revolucijom. Industrijska revolucija bila je početak povijesnog fenomena koji je utjecao na većinu čovječanstva i drugih oblika života na našem planetu, a koji proces je u tijeku do današnjeg dana.

Materijalni dokazi ovih dubokih promjena imaju univerzalnu vrijednost za čovječanstvo, pa se mora priznati važnost njihova izučavanja i čuvanja.

Delegati okupljeni na Kongresu TICCIH 2003. godine u Rusiji stoga žele potvrditi da zgrade i objekti izgrađeni za industrijsku aktivnost, postupci i alati rabljeni u njima, kao i gradovi i krajobrazi gdje su smješteni, predstavljaju temeljne vrijednosti. Njih treba proučavati, njihovu povijest poučavati, a njihovo značenje i važnost trebaju biti naglašeni tako da budu jasni svakome. Najvažnije primjere i njihove karakte-

4 Nižnij Tagil je industrijski grad u Rusiji u Sverdlovskoj oblasti. Nalazi se na rijeci Tagil, 25 km istočno od zamišljene granice između Europe i Azije na području srednjeg Urala. Ima oko 400.000 stanovnika. Grad je osnovan 1722. godine, nakon što je u blizini bio otvoren bogat rudnik željezne rudače 1696. godine. U gradu je 1833. godine bila izrađena prva ruska lokomotiva.

ristike treba identificirati, zaštititi i održavati u skladu s Venecijanskom poveljom za sadašnju i buduću dobrobit.[5]

1. Definicija industrijskog nasljeđa

Industrijsko nasljeđe se sastoji od ostataka industrijske kulture koja ima povijesnu, tehnološku, društvenu, arhitektonsku i znanstvenu vrijednost. Ovi ostaci sastoje se od zgrada i strojeva, radionica, proizvodnih pogona i tvornica, rudnika i lokacija za obradu i pročišćavanje, skladišta i spremišta, od mjesta gdje se proizvodi, prenosi i upotrebljava energija, sredstava transporta i njegove infrastrukture, kao i od prostora za društveni život povezan s industrijom – kao što su nastambe, vjerski objekti i škole.

Industrijska arheologija je interdisciplinarna metoda za izučavanje svih povijesnih izvora, materijalnih i nematerijalnih, dokumenata, artefakata, stratigrafije i struktura, ljudskih naselja kao i prirodnih i gradskih krajobraza stvorenih za industriju ili od nje. Industrijska arheologija se služi takvim metodama istraživanja koje su najpogodnije za povećano razumijevanje industrijske prošlosti i sadašnjosti.

Povijesno razdoblje od temeljnog interesa počinje dolaskom industrijske revolucije u drugoj polovici osamnaestog stoljeća pa do današnjeg dana, ali industrijska arheologija proučava također i svoje predindustrijske i protoindustrijske korijene. Osim toga, ona se bavi proučavanjem rada i radnih postupaka u okvirima tadašnje povijesti i tehnologije.

2. Vrijednosti industrijskog nasljeđa

1. Industrijsko nasljeđe pruža dokaze o aktivnostima koje su imale i još uvijek imaju duboke povijesne posljedice. Motivi za očuvanje industrijskog nasljeđa temelje se na univerzalnim vrijednostima takvog materijala više negoli na jedinstvenosti izuzetnih lokacija.

2. Industrijsko nasljeđe ima društvenu vrijednost kao dokument o životu običnih muškaraca i žena, i kao takvo pruža važan dokaz o njihovu identitetu. Ono ima tehnološku i znanstvenu vrijednost u povijesti proizvodnje, inženjerstva, izgradnje, a može imati i znatnu estetsku vrijednost na području arhitekture, dizajna i planiranja.

5 Organizcija ICOMOS (Intarnational Council on Monuments and Sites – Međunarodni savjet za spomenike i lokacije) donijela je Venecijansku povelju 1964. godine.

3. Ove vrijednosti su svojstvene svakoj lokaciji, tvornici, predmetu, stroju i radnom prostoru – kako u industrijskom krajobrazu, u pisanoj dokumentaciji, tako i u neopipljivom pamćenju o industriji sadržanom u ljudskom pamćenju i običajima.

4. Rijetki nalazi u smislu ostataka specifičnih postupaka, vrste lokacije ili krajobraza pružaju dodatnu vrijednost i moraju se pažljivo vrednovati. Rani ili pionirski primjeri imaju naročito veliku vrijednost.

3. Važnost identifikacije, evidentiranja i istraživanja

1. Na svakome području treba identificirati, snimiti i zaštititi industrijske ostatke koje želimo sačuvati za buduće generacije.

2. Pregled površina s različitim vrstama industrije treba poslužiti za utvrđivanje veličina industrijskog nasljeđa. Upotrebom tih informacija treba izraditi inventarske popise svih pregledanih lokacija. Oni trebaju biti izrađeni tako da se mogu lako pretraživati i da budu lako pristupačni javnosti. Kompjuterizacija i *on-line* pristup su vrijedni zadaci.

3. Snimanje je temeljni dio izučavanja industrijskog nasljeđa. Treba načiniti potpunu snimku fizičkih svojstava i stanja lokacije i smjestiti je u javni arhiv prije bilo kakve intervencije na terenu. Mnogo informacije može se dobiti ako se snimanje obavi prije prestanka rada tvornice ili djelatnosti na lokaciji. Evidencija uključuje opise, crteže, fotografije i video snimke pokretnih predmeta – s referencama koje podupiru dokumentaciju. Ljudska sjećanja su jedinstveni i nezamjenljivi izvori koje treba snimiti kad god je to moguće.

4. Arheološka istraživanja povijesnih industrijskih lokacija predstavljaju temeljnu tehniku za njihovo izučavanje. Njih treba izvoditi prema istim visokim kriterijima kao i za druga povijesna i kulturna razdoblja.

5. Radi kvalitetnije zaštite industrijskog nasljeđa potrebno je izraditi programe povijesnih istraživanja. Zbog međuzavisnosti mnogih industrijskih aktivnosti međunarodne studije mogu pomoći pri identifikaciji lokacija i njihovih vrsta koje su od svjetske važnosti.

6. Treba utvrditi i objaviti kriterije za ocjenjivanje industrijskih zgrada, kako bi se postiglo njihovo opće prihvaćanje u javnosti i osigurala njihova učinkovitost i trajnost. Na temelju odgovarajućih istraživanja ove kriterije treba primijeniti za identifikaciju najvažnijih preživjelih krajobraza, naselja, lokacija i njihovih vrsta, zgrada, struktura, strojeva i industrijskih procesa.

7. One lokacije i strukture koje su utvrđene kao važne trebaju biti zaštićene zakonskim mjerama koje su dovoljno snažne da mogu osigurati njihovo očuvanje. UNESCO-ov popis svjetske baštine treba naglašavati važnost ogromnog utjecaja što ga je industrijalizacija imala na kulturu čovječanstva.

8. Potrebno je definirati vrijednost važnih lokacija i izraditi upute za buduće intervencije na njima. Treba primijeniti svaku zakonsku, upravnu i financijsku mjeru koja je potrebna da se očuva njihova vrijednost.

9. Ugrožene lokacije treba identificirati, kako bi se mogle poduzeti odgovarajuće mjere za smanjenje takve opasnosti i kako bi se primijenili projekti za njihov popravak ili novu uporabu.

10. Međunarodna suradnja je posebno prikladan pristup za konzervaciju industrijskog nasljeđa putem koordiniranih inicijativa i zajedničkih fondova. Treba razviti usklađene kriterije kako bi se izradili međunarodni inventarski popisi i baze podataka.

4. Zakonska zaštita

1. Na industrijsko nasljeđe treba gledati kao na sastavni dio kulturnog nasljeđa u cjelini. Međutim, njegova zakonska zaštita treba voditi računa o njegovoj posebnoj prirodi. Ta zaštita mora biti u stanju zaštititi tvornicu i njene strojeve, podzemne i nadzemne strukture, komplekse i blokove građevina, kao i industrijske krajobraze. Površine pod industrijskim otpadom treba smatrati arheološkim nalazištima zbog njihove povijesne i ekološke vrijednosti.

2. Programi zaštite industrijskog nasljeđa trebaju biti sastavnim dijelom politike ekonomskog razvoja i sastavnim dijelom regionalnih i državnih planova.

3. Najvažnije lokacije moraju biti zaštićene u cjelini i nikakve intervencije ne smiju se dozvoliti kao kompromis na račun njihova povijesnog integriteta i autentičnosti njihove proizvodnje. Prikladne adaptacije i njihova nova upotreba može biti odgovarajući i financijski učinkovit način za očuvanje industrijskih zgrada, pa takve projekte treba ohrabrivati odgovarajućim zakonskim mjerama, tehničkim savjetima, smanjivanjem poreza i subvencijama.

4. Industrijske zajednice koje su ugrožene brzim strukturalnim promjenama trebaju primati pomoć lokalnih i državnih vlasti. Moguće prijetnje industrijskom nasljeđu od takvih promjena treba predvidjeti unaprijed uz donošenje odgovarajućih planova, kako bi se izbjegle kasnije izvanredne situacije.

5. Treba utvrditi procedure za brzo reagiranje na zatvaranje važnih industrijskih lokacija kako bi se spriječilo uklanjanje ili uništenje važnih dijelova pogona. Odgovarajuće vlasti moraju imati statutarna ovlaštenja da interveniraju kada je potrebno zaštititi važnu ugroženu lokaciju.

6. Vlada bi trebala imati posebno savjetodavno tijelo koje može davati neovisne savjete o pitanjima koja se odnose na zaštitu i očuvanje industrijskog nasljeđa. Njihovo mišljenje valja zatražiti u svim važnijim slučajevima.

7. Treba učiniti svaki napor kako bi se osigurali konzultacija i sudjelovanje lokalnih zajednica na zaštiti njihova industrijskog nasljeđa.

8. Udruženja i društva dobrovoljaca imaju važnu ulogu u identifikaciji lokacija, unapređenju sudjelovanja javnosti u očuvanju industrijske baštine, kao i u širenju informacija i istraživanja – pa su kao takva od izuzetne važnosti na području čuvanja industrijskog nasljeđa.

5. Održavanje i očuvanje

1. Očuvanje industrijskog nasljeđa ovisi o očuvanju njegove funkcionalne cjelovitosti, pa intervencije u nekoj industrijskoj lokaciji moraju imati cilj da tu cjelovitost očuvaju koliko je to god moguće. Vrijednost i autentičnost neke industrijske lokacije mogu biti znatno smanjene ako uklonimo strojeve i ostalu opremu ili ako su prateći sadržaji, kao sastavni dio te cjeline, uništeni.

2. Očuvanje industrijskih lokacija traži temeljito poznavanje svrhe ili razloga zašto su bile izgrađene kao i poznavanje industrijskih procesa koji su se tamo odvijali. Ti procesi mogli su se tijekom vremena promijeniti, ali sve prethodne uporabe moraju se također istražiti i ocijeniti.

3. Očuvanju na licu mjesta treba uvijek dati prednost. Rastavljanje i preseljenje zgrada i drugih struktura dolaze u obzir samo onda kada je razaranje izvorne lokacije neizbježno iz ekonomskih ili društvenih razloga.

4. Adaptacija neke industrijske lokacije za novu uporabu kako bi se osiguralo njeno očuvanje može biti prihvatljiva, osim u slučaju kada se radi o vrlo važnoj povijesnoj lokaciji. Nova uporaba mora uvažavati značajne nalaze i sadržavati originalne opise nekadašnjih procesa i aktivnosti, te mora biti u suglasju s njenom izvornom i prvobitnom namjenom. Preporuča se održavanje površine na kojoj se može vidjeti i prvobitna uporaba.

5. Trajnom adaptacijom industrijskih zgrada izbjegava se gubitak energije i pridonosi se održivom razvoju. Industrijsko nasljeđe može imati važnu ulogu u ekonomskoj obnovi propalih ili zapuštenih područja. Kontinuitet što ga donosi ponovna uporaba tih objekata može pružiti psihološku stabilnost zajednicama koje su dobile iznenadan i dugotrajan izvor zapošljavanja.

6. Intervencije ne bi smjele biti nepovratne i moraju imati minimalan utjecaj. Svaku neizbježnu promjenu treba dokumentirati, a važni predmeti koji su uklonjeni moraju se evidentirati i biti sigurno uskladišteni. Mnogi industrijski procesi nose patinu koja je sastavni dio cjelovitosti i privlačnosti te lokacije.

7. Rekonstrukciju ili vraćanje u prvobitno poznato stanje treba smatrati iznimnom intervencijom koja je prihvatljiva samo ako pridonosi cjelovitosti cijele lokacije, ili ako se radi o razaranju šire lokacije nasilnim putem.

8. Ljudske vještine uključene u stare ili zastarjele industrijske procese su kritično važan izvor čiji gubitak može biti nenadoknadiv. Njih treba pažljivo zabilježiti i prenijeti mlađim generacijama.

9. Treba ohrabrivati čuvanje dokumenata, tvorničkih arhiva, građevinskih planova, kao i primjerke industrijskih proizvoda.

6. Obrazovanje i uvježbavanje

1. U srednjim tehničkim školama i na tehničkim fakultetima treba poučavati metodološke, teoretske i povijesne aspekte industrijskog nasljeđa.

2. Treba izrađivati posebne odgojno-obrazovne materijale o industrijskoj prošlosti i njenom nasljeđu za potrebe učenika osnovne i srednje škole.

7. Predstavljanje i tumačenje

1. Pobuđivanje javnog interesa i ljubavi prema industrijskom nasljeđu i njegovoj vrijednosti najbolji je način za njegovo očuvanje. Vlasti trebaju aktivno objašnjavati značenje i vrijednost industrijskih lokacija putem publikacija, izložbi, televizije, interneta i drugih medija, pružanjem lakog pristupa važnim lokacijama kao i unapređivanjem turizma u industrijskim područjima.

2. Specijalizirani industrijski i tehnički muzeji, kao i konzervirane industrijske lokacije važna su sredstva za zaštitu i tumačenje industrijskog nasljeđa.

3. Regionalne i međunarodne turističke rute po lokacijama industrijskog nasljeđa mogu osvijetliti prijenos industrijske tehnologije i velika kretanja radnika što ih je ona uzrokovala.

Eusebi Casanelles — Predsjednik TICCIH-a

Eugene Logunov — XII. međunarodni kongres TICCIH-a

Nižnij Tagil, 2003. godine