

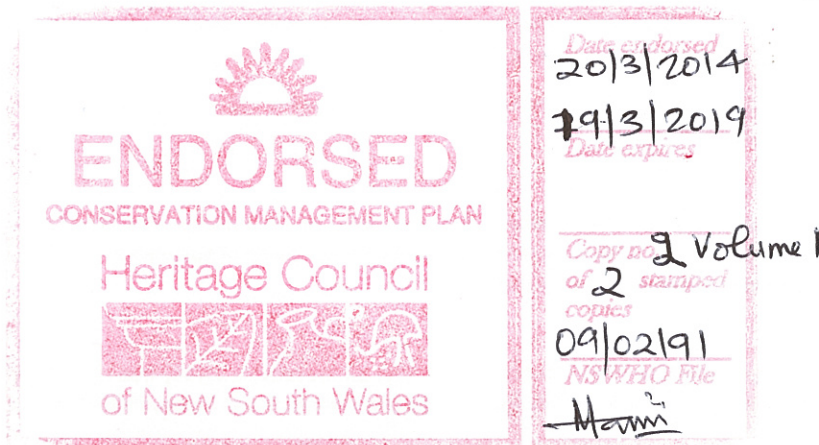
Godden Mackay Logan

Heritage Consultants



Australian Technology Park Conservation Management Plan Volume 1

Report prepared for Australian Technology Park Sydney Ltd
December 2013



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Report Register

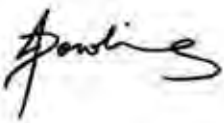

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Quality Assurance

GML Heritage operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

The report has been reviewed and approved for issue in accordance with the GML quality assurance policy and procedures.

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Issue No.	6	Issue No.	6
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Position:	Senior Consultant	Position:	Partner
Date:	20 December 2013	Date:	20 December 2013

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Executive Summary

The Eveleigh Locomotive Workshops operated between 1885 and 1986. The Locomotive Workshop together with North Eveleigh Carriage Works, located across the Main Western Railway line, formed the Eveleigh Railway Workshops.

The historic buildings, structures and machinery now within Australian Technology Park (ATP) are an eloquent testament to the huge nineteenth-century public enterprise that the Eveleigh Railway Workshops represents. It is within these buildings that complete steam locomotives were manufactured and assembled, as were the tools to make them.

ATP is currently managed by Australian Technology Park Sydney Ltd (ATPSL), a government-owned company. ATPSL have developed the following Conservation Vision Statement that provides an overarching direction and vision for the conservation and management of the ATP site.

ATP is a workplace which has always been characterised by technical achievement and contemporary best practice. Today ATP is a site of State heritage significance which combines the rich and evocative history of more than a century of rail industry with inspiring adaptation of historic buildings, innovative new development and cutting-edge technology. While retaining links with the past and social value to former workers, ATP also has strong connections with the current community of workers, residents and visitors.

ATP will be managed to:

- deliver high quality **custodianship** of a major public asset;
- facilitate ongoing **evolution** of the place itself and ever-changing technology through new uses and appropriate development while retaining the heritage values of the ATP site and the Eveleigh Railway Workshops site as a whole;
- **engage** with workers both past and present, local people and the wider community; and
- **present** the old and new Eveleigh/ATP stories in an engaging way—both on and off site.



Custodianship

ATP will be managed, conserved and developed in a way which retains and adds value—both the heritage value of the site and the economic and social value of the asset.

All heritage management actions and decisions will comply with ATPSL's constitution, relevant legislation, the Burra Charter, the policies of the ATP Conservation Management Plan and the NSW Government policy, as appropriate.

Evolution

ATP will continue to develop in a manner which respects and conserves the existing heritage values of the place, but which encourages exciting new development that is of sympathetic design.

Innovative commercial uses which use new technologies and deliver good heritage outcomes—in relation to both physical conservation and interpretation—will be encouraged.

Engagement

Interested people, including current or former workers, residents, special interest groups and the wider public, will be encouraged to connect with ATP both on and off site.

Engagement will continue to occur through on-site interpretation, publications, access to common areas, events and direct delivery of information.

Presentation

The history and heritage of ATP will be presented on and off site to inform and inspire workers and visitors.

Interpretation will embrace the concepts contained in the ERW Interpretation Plan and will use the historic fabric of the place itself, landscape elements, artwork and signs, as well as electronic media. Tenants will be encouraged to communicate and celebrate the special nature of this extraordinary place.



(Source: All photographs by GML 2010)

1.0 Introduction

1.1 The Purpose of this CMP

Australian Technology Park Sydney Ltd (ATPSL), a government-owned company, has commissioned Godden Mackay Logan Pty Ltd (GML) to prepare a Conservation Management Plan (CMP) for the Australian Technology Park (ATP). This CMP reviews and replaces the 1995 CMP and the Draft 2002 CMP for the Locomotive Workshops to reflect the changes that have occurred to the site since then.

The CMP is the principal conservation management document for ATP and provides the guiding conservation policies for the site. Other conservation documents, such as the S170 Heritage and Conservation Register and the Interpretation Strategy, provide additional information for managing the heritage significance of ATP and are supporting documents for the CMP.

The CMP should also be used in the development consent process for the site. As the ATP is part of a broader area listed on the State Heritage Register (SHR), the NSW Heritage Council must be consulted prior to approval being given to any alterations to the site. The Heritage Council would expect to see a CMP prepared to guide any substantial works. This CMP provides guidance for ATPSL and the Heritage Council in making decisions about matters that may affect the heritage values of ATP.

The CMP has been prepared as a high-level policy document to guide future planning for the site with regard to its heritage value and to provide clarity on future heritage requirements.

1.2 Overview

The area of land now known as ATP is the amalgamation of two parcels of land that originally contained the Eveleigh locomotive workshops and the Alexandria goods yard. The border of the ATP site does not correspond exactly to the boundaries of either, but rather reflects the areas of land where the original use had become obsolete. Consequently, the area of the Eveleigh Railway Workshops that contained the engine running sheds and the Large Erecting Shed are on railway land still owned and operated by Rail Corporation New South Wales (RailCorp). Part of the land used for the Alexandria Goods Yard was transferred to the Housing Commission of NSW (now Housing NSW) in the 1980s for the development of medium- and low-density public housing.

The ATP site is also the result of the physical and operational division of the Eveleigh railway workshops. The workshops were designed as a binary site with the carriage workshops on the northern side of the western rail line and the locomotive workshops on the southern side. In recent years, this division has been reinforced by the division of management of the two workshops areas. Both parts of Eveleigh today are vastly different to the railway workshops of the past, with new buildings, new uses and new owners.

This CMP must therefore address the difference between the site in the past (the Eveleigh locomotive workshops and other railway functions) and the site as it is today (ATP) as well as acknowledging that ATP is part of a broader area of related land listed on the SHR.

1.3 Site Identification

The ATP site is located on land south of Redfern railway station, approximately 3.6km southwest of Sydney CBD. The site is bounded by Garden and Cornwallis Streets to the east, Henderson Road to the south, Rowley Street and RailCorp land to the west and the western railway to the north. The ATP site is located within the boundary of the Redfern-Waterloo Authority operational area. The location of the site and its boundary is shown in Figures 1.1 and 1.2.

1.4 Heritage Listings

The site is listed as a whole and in part on a number of statutory and non-statutory heritage registers. These listings are outlined below and discussed in detail in Section 7.0 of this report.

1.4.1 Statutory Listings

The Eveleigh Railway Workshops and Eveleigh Railway Workshops Machinery are listed on the following heritage registers under the *Heritage Act 1977 (NSW)* (the Heritage Act):

- State Heritage Register; and
- Australian Technology Park S170 Heritage and Conservation Register (ATP S170 Register).

The Eveleigh Railway Workshops and its components, such as the machinery, were listed on Regional Environmental Plan No. 26—City West and South Sydney Local Environmental Plan 1998. Due to changes to the statutory context of the site, outlined in Section 8.0 of this report, these listings no longer apply.

The following items are also listed on the ATP S170 Register:

- Eveleigh Locomotive Workshops Precinct
- Eveleigh Locomotive Workshops Machinery Collection
- Engine Shop (former)
- Locomotive Workshops Building
- Works Managers' Office (former)
- Water Tower

1.4.2 Non-Statutory Listings

Eveleigh Railway Workshops and Eveleigh Railway Workshops Machinery are also listed on the Register of the National Estate and on the National Trust of Australia Register.

1.5 Methodology and Terminology

This CMP builds significantly on previous heritage plans prepared for only part of the site by addressing all heritage elements included on the ATP Heritage and Conservation Register (ATP s170 Register), including movable items. It also responds to the current planning framework for the site.

Because the history and fabric of the site reflects two strongly different phases before and after the creation of ATP, this report is also structured to reflect those two phases, as follows:

- Part A describes the operational aspects of the Locomotive Workshops within the context of the broader Eveleigh Railway Workshops operations.
- Part B addresses all aspects of the site as ATP today.
- Part C of the report brings together the previous parts in a significance assessment, including a review of existing heritage listings.
- Part D describes the constraints and opportunities on policy development and states conservation policy.

Preparation of the CMP has involved consultation with a range of external and internal stakeholders who are integral to future planning for the site. The consultation included a specific workshop held on 7 December 2010 to discuss the significance of the site and issues affecting its management. The following reports have been prepared previously for the Eveleigh Railway Workshops:

- Eveleigh Railway Workshops Heritage Study, prepared by Don Godden & Associates for the State Rail Authority of NSW, 1986.
- Eveleigh Railway Yards Locomotive Workshops Conservation Management Plan, prepared by Heritage Group, State Projects, NSW Department of Public Works, for the City West Development Corporation, June 1995.
- Eveleigh Workshops Management Plan for Movable Items and Social History, prepared by Godden Mackay for City West Development Corporation, State Rail Authority and Department of Urban Affairs and Planning, July 1996.
- Eveleigh Locomotive Workshops Conservation Management Plan (draft), prepared by Otto Cserhalmi and Partners for the Sydney Harbour Foreshore Authority, September 2002.
- Section 170 Heritage and Conservation Register—Australian Technology Park, Eveleigh—Overview Report and Inventory, prepared by Futurepast Heritage Consulting for ATPSL, June 2008.

Additional reports referred to in the preparation of this CMP are listed in Section 10.0 of this report.

This CMP has been prepared with regard to the methodology outlined in the *NSW Heritage Manual* (Heritage Council of NSW, November 1996, as amended July 2002). It is consistent with the relevant principles and guidelines of *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 1999* (the Burra Charter). The report has also been prepared in accordance with the requirements of *the Heritage Act 1977 (NSW)*. The terminology used in this report is consistent with the NSW Heritage Manual and the Burra Charter.

1.6 Limitations

The historical overview has been limited to previous reports and the vast collection of photographs and plans of the site available. Little additional primary research was conducted for this report.

1.7 Authorship

This CMP has been prepared by the following consultants:

- Geoff Ashley, Senior Associate, who was the Project Manager and co-ordinated the preparation of the report;
- Julia Dowling, Consultant, who prepared the historical overview, significance assessment, constraints and opportunities and policies;
- Lyndon Patterson, Archaeologist, who prepared the preliminary archaeological assessment, Aboriginal cultural values assessment and led the Aboriginal stakeholder consultation;
- Randa Cotterell, Research Assistant, who prepared the site analysis and assisted with all aspects of the report;
- Tony Brassil, Associate, who contributed to the assessment of movable heritage; and
- Prof. Richard Mackay, AM, Partner, who led the stakeholder consultation process and reviewed and edited the report.

1.8 Acknowledgements

GML gratefully acknowledges the assistance provided by the following people:

- Roy Wakelin-King, Managing Director, Australian Technology Park Sydney Limited
- Chris Saunders, General Manager, Australian Technology Park Sydney Limited;
- Graham Stevens, Director, Property Services, Australian Technology Park Sydney Limited;
- Kathy Tilbury, Property Manager, Australian Technology Park Sydney Limited;
- The staff of the (then) Redfern–Waterloo Authority who participated in the community consultation workshop, including Juliet Suich;
- Maclaren North, Futurepast Heritage Consulting;
- Lucy Taksa, Historian;
- Geoff Turnbull, REDWatch; and
- Guido Gouverneur and Wendie McCaffley, Wrought Artworks.

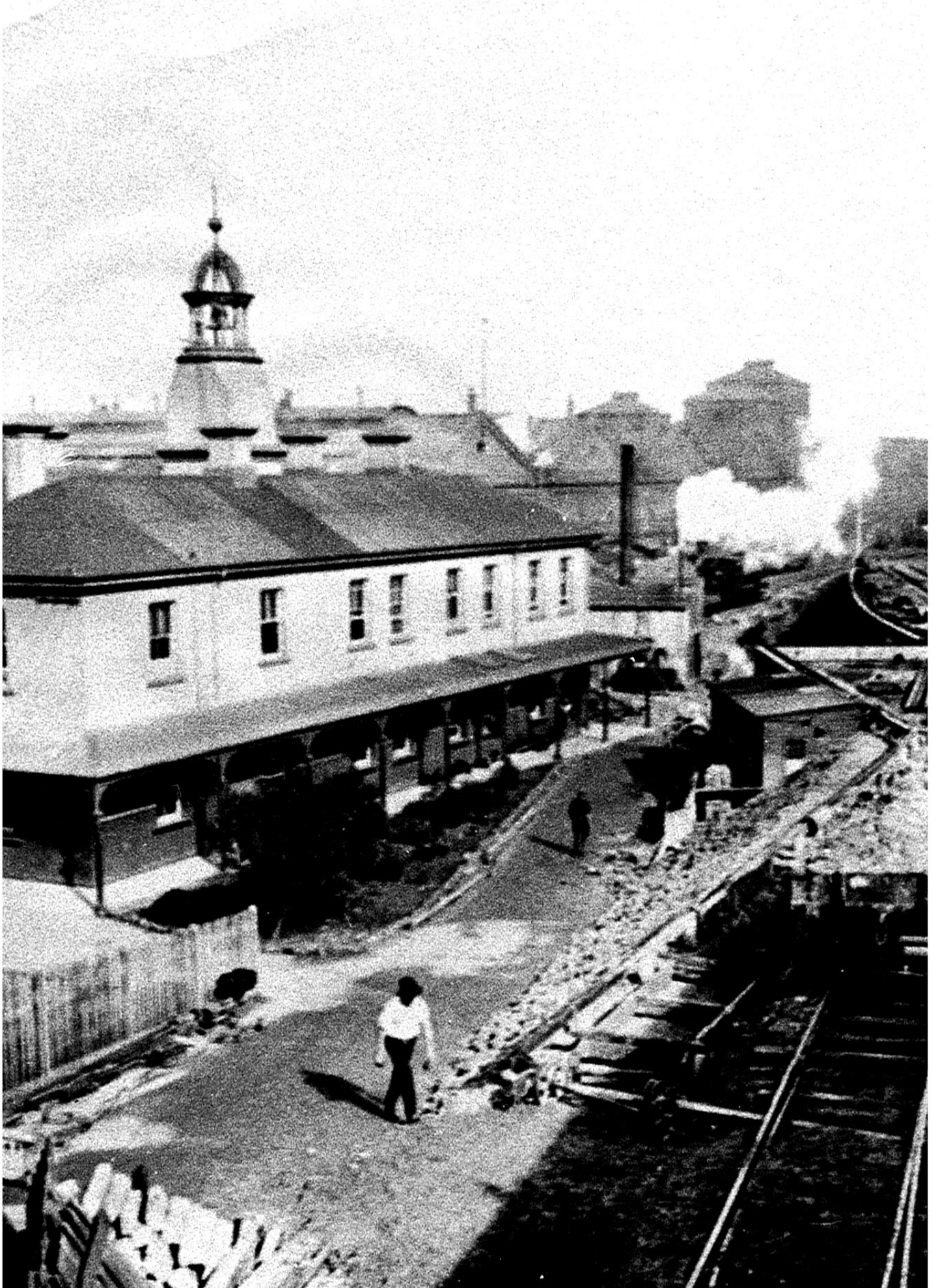


Figure 1.1 Site location plan. The boundary of the site is shown in Figure 1.2, on the following page. (Source: Google Maps 2009 with GML overlay)



Figure 1.2 Site plan. (Source: Google Maps 2009 with GML overlay)

PART A: HISTORICAL OVERVIEW



2.0 Historical Overview

2.1 Introduction

The current ATP site was occupied by a large complex of rail workshops and yards throughout the late nineteenth and most of the twentieth century. The northern part of the ATP site, next to the western rail lines, was occupied by the Eveleigh Locomotive Workshops, while the southern part of the site was occupied by the Alexandria Goods Yard.

The industrial processes of the Eveleigh Locomotive Workshops are revealed in its physical form and the ability to understand its history is intertwined with the history of the railway workshops as a whole. However, the relationship of the locomotive workshops to the carriage workshops has been severed, at least for management purposes, and this historical overview focuses on the locomotive workshops and the goods yard.

Detailed historical overviews of the Eveleigh Railway Workshops can be found in previous heritage reports, particularly the heritage study prepared by Don Godden & Associates in 1986 while the workshops were still in operation, and the management plan for movable items and social history prepared by Godden Mackay Heritage Consultants in 1996. The purpose of this historical overview is to examine the role of the Eveleigh Railway Workshops and the Alexandria goods yard in their local and regional context, including their effect on the surrounding area (both in terms of population and physical form), and more broadly, on NSW.

The site as it is today will be examined in Part B Section 3.0–6.0 of this report.

2.2 Pre-European Occupation and Use

More than thirty different Aboriginal groups are recorded as having occupied the Sydney region prior to contact. Estimates of the number of Aboriginal people living along the coast between Broken Bay and Botany Bay at the time of contact place the number at approximately 1,500 people. Similar estimates have been made for the inland groups occupying the Cumberland Plain to the west.¹ However it is difficult to make any certain estimate of population numbers, with researchers placing the total pre-contact number of Aboriginal people within the Sydney region anywhere between 4,000 and 8,000.²

The available evidence suggests that the area of Redfern today forms part of a wider expanse of land traditionally occupied by the Cadigal (or Gadi, Gadigal) people. Historic accounts suggest these people lived in the area from South Head along the southern side of Sydney Harbour to the cove adjoining this settlement (Long Cove).³ To the west of the Cadigal were the Wangal people and to south, on the shores of Botany Bay, lived the Gameygal people.

The boundary between the Cadigal and neighbouring Wangal remains unclear, with considerable ambiguity in the historical records. Thus it will probably never be possible to say for certain where the physical boundary between these two groups was. The Cadigal and Wangal clans had strong associations with the harbour landscape, and the available evidence indicates that the study area may have been part of an area which formed the border between these two groups. For example, records by Phillip Gidley King in 1793 state:

The tribe of Cadi inhabit the south site, extending from the south head to Long-Cove; at which place the district of Wanne, and the tribe of Wangal, commences, extending as far as Par-ra-matta, or Rose-Hill.⁴

However this is contrasted by records made by Governor Arthur Phillip in 1790, which describe a different common boundary between the two groups:

From the entrance of the harbour, along the south shore, to the cove adjoining this settlement the district is called Cadi, and the tribe Cadigal; the women, Cadigalleon. The south site of the harbour from the above-mentioned cove to Rose Hill, which the natives call Parramatta, the district is called Wann, and the tribe Wanngal.⁵

King's account would place the tribal boundary at Long Cove (Iron Cove), probably along the ridgeline which forms the eastern watershed of Iron Cove, in which case the study area would be within Cadigal land. In some contrast, Phillip's account would place the boundary along the ridgeline of Darling Harbour or Blackwattle Bay (assuming the 'cove adjoining settlement', which he refers to, is Darling Harbour). In this case the study area would lie close to the western boundary of the Cadigal. Cadigal country extended across most of the Sydney peninsula, and today is generally defined as taking in the land between Darling Harbour and South Head and including Port Jackson, Botany Bay and Port Hacking.⁶

Records from 1790-92 state the Gameygal people were said to occupy the area around *Ka-may*, the local name for Botany Bay⁷. At the time of arrival of Europeans in the Sydney region, the area between Redfern and Botany Bay was said to be covered by huge swamps, tea tree country and sand dunes, this area characterised by the Botany Lowlands physiographic region today.

Archaeological and ethnohistoric information provides many details of Aboriginal life in the Sydney basin prior to contact with European settlers. The Cadigal subsisted on the wide resource base of the local area, including terrestrial, estuarine and marine resources, although archaeological and ethnohistorical evidence indicates that the Sydney Aboriginal economy is likely to have been predominantly marine-oriented. Food was obtained through fishing, shellfish collection, hunting and gathering of small plants and animals. These activities would have been conducted in the vicinity of the study area; indeed it is likely that the nearby swamps, estuarine mud flats and bays would have provided a relatively reliable, predictable and concentrated range of fish, shellfish and crustacean resources. Fishing was conducted either with lines or spears, although traps and stone weirs may also have been used.⁸ As well as the range of plant and animal foods, the landscape would have provided a range of medicinal plants, as well as raw materials used for the manufacture of tools, weapons and shelters and for ceremonial purposes including body decoration.⁹

The Cadigal were the earliest Aboriginal people to be impacted physically and socially by the European colonisation of Sydney. Early contact started on a relatively positive note, with a range of historic accounts detailing the friendly relations between European and Aboriginal people during this period. Governor Phillip had been instructed 'by every possible means to open an intercourse with the natives and conciliate their affections'.¹⁰ Phillip's policy in dealing with the Aboriginal people was to treat them with the greatest humanity and attention, ensuring that every precaution be made to prevent them from receiving insults.¹¹

However, these intentions of peaceful cohabitation were difficult to enforce, and friendly relations did not last. Many of the early settlers did not share the sentiments of the governor, being less morally inclined than him in relation to the local Aboriginal population. Incidents of conflict soon emerged and this, combined with European expansion and land and resource use, placed pressure on traditional Aboriginal practices. The local Aboriginal population became increasingly dispossessed of their traditional lands and food and plant resources, leading to inter-tribal conflict, starvation and the breakdown of traditional cultural practices.¹²

The Aboriginal population of the Sydney region declined significantly following the arrival of Europeans, as they brought with them diseases to which the Indigenous inhabitants had little or no resistance. The smallpox epidemic of 1789 was particularly deadly and spread throughout the Aboriginal population. The Governor of New South Wales, Arthur Phillip was reported to note dead Aboriginal elderly people and children around Sydney Harbour in 1789.¹³ Smallpox had quickly spread west to the Cumberland Plain by the time of Governor Phillip's expedition to the Hawkesbury–Nepean River in April 1791. The smallpox epidemic is thought to have caused the death of well over half of the Aboriginal population of the Sydney region within one year.¹⁴ Butlin argued that prior to the 1780s Aboriginal people in southeastern Australia had not been exposed to smallpox and estimated that 80 percent of them died.¹⁵ The widespread death from smallpox would have had an enormous impact on the social life of Aboriginal people in the Sydney region at the time, including mourning the family members who perished, the loss of elders' knowledge, the survivors fleeing inland to escape the disease and the depopulation of some areas.

Despite these pressures on the local Aboriginal population, there is historical and archaeological evidence that Aboriginal people maintained a continued presence within the Sydney region following European settlement. For instance, four shards of blue and white ceramic transfer ware found in association with flaked stone within Aboriginal occupation layers at a site in East Darling Harbour provide evidence that Aboriginal use of this area continued well into the historic period.¹⁶ Historical records of blanket distribution lists of the 1830s show that:

apart from a group living in government boatsheds at Circular Quay, few people identified as Aboriginal were living in Sydney. Many had moved to places such as La Perouse on Botany Bay, south of the city.¹⁷

Places such as Happy Valley at La Perouse continued to be a focus for Aboriginal people through the nineteenth century and into the twentieth century. From the 1930s, Aboriginal people were attracted to working class suburbs like Redfern, Glebe, Pyrmont, Balmain and Rozelle where they could find work on the nearby railways, including Eveleigh Railway Workshops and factories. Many Aboriginal people migrated from northern and western New South Wales into these suburbs for new work opportunities.¹⁸ Particularly Redfern and Glebe became communities with sizable Aboriginal populations and many organisations developed to service the needs of these communities. Today, the Redfern area is the home of many Aboriginal organisations including the Metropolitan Local Aboriginal Land Council, Native Title Services and Redfern Aboriginal Corporation.

2.3 The Chisholm Estate

The site of the Eveleigh Railway Workshops was formerly an area of land granted to James Chisholm in 1835, and subsequently known as the Chisholm Estate. The grant comprised 60 acres of land on the southwestern side of Chippendale's grant.¹⁹ Chisholm, a former member of the NSW Corps, built a house in the northeastern area of the site and named it Calder House after his birthplace in Scotland. Parts of the estate were farmed. Chisholm died in 1837 and his widow remained at Calder House. The estate was bisected by the western rail line to Parramatta in 1855 and the Calder House was leased for a school. Plans from c1875 indicate that the estate was undeveloped, containing only Calder House, a cottage in the estate's northwestern area and a group of stables in its southeastern corner (Figure 2.3). The group of stables were located in what is now the ATP site (see Section 5.0 Archaeological Assessment).

2.4 The Role of Eveleigh Railway Workshops

2.4.1 Background

The Eveleigh Railway Workshops were established in response to the rapid growth of rail transport during the second half of the nineteenth century and the need for a local, government-owned maintenance facility for the many locomotives that serviced the new railways. Prior to 1855, private enterprises had been relied on to establish a rail network in NSW. Due to the significant costs involved in railway and locomotive construction, reliance on private companies failed to establish any comprehensive railway network for NSW. Following an enquiry in 1854 which revealed the need for a rail system for the state, the NSW government took control of the state's railways in 1855.

The first government-constructed rail line opened in 1855 and linked the first Redfern station (located on Devonshire Street to the south of the present Central Station) to Parramatta. A small group of government-owned rail workshops was established at the southwestern end of the old Sydney railway yards to service the locomotives (Figure 2.11), but the manufacture of rolling stock and much of the locomotive repair and overhaul work continued to be carried out by private companies. Demand for rolling stock soon outstripped supply and it became apparent that the NSW government would need to expand its own repair and maintenance operations to keep up with demand. An 1871 proposal to expand and upgrade the established government-owned rail workshops was initially carried out, but the workshops were swiftly outgrown. A larger site that could accommodate foreseeable future expansion was required.

Chisholm Estate, located southwest of the old Sydney railway yards, was selected as the site for the new railway yards in 1875. The estate was already bisected by the western rail line to Parramatta and mainly undeveloped. The NSW government resumed 64.5 acres of the estate for the construction of the new railway workshops in 1878.²⁰ Land clearing and building construction commenced in 1882.

2.4.2 The Eveleigh Railway Workshops

The Eveleigh Railway Workshops were separated into two main functional areas—the carriage and wagon workshops on the northern side of the western rail line and the locomotive workshops on the southern side (Figure 2.4). This arrangement enabled each side to communicate with the main lines without interfering with each other or interrupting traffic.²¹ The operations of the Locomotive Workshops area was then divided into two main sections—the locomotive workshops and the running sheds, as were the Carriage Workshops—the carriage and wagon shops, and the paint shop and stores. Each of these sections operated quite separately with little crossover of workers or tasks.

Locomotive Workshops

The engine running shed was the first building to be constructed, and was put into operation in 1885 (Figures 2.12 and 2.13). Bays 1–4 of the locomotive workshops soon followed. Demand for locomotive repairs was so high that Bays 1–4 were put into operation as soon as they were completed and while Bays 5–15 were still under construction. The locomotive workshops were constructed of English bond brickwork with sandstone details (Figure 2.17). Each bay was supported by cast-iron columns laid out in double rows. Bays 1–4 and 5–15 were separated by an annex which contained tinsmiths and coppersmiths, a sand store and core stoves for the foundry.

The intended function of each workshop bay was part of the design of the building. Bay 1 contained the steam hammer shop, Bay 2 the blacksmith's shop, Bay 3 the boiler shop and Bay 4 the foundry. As for Bays 5–15:

Bay 5 was the tender repair shop and had a 25 ton overhead crane installed. Bays 6, 7 and 8 contained the engine repair or erecting shop, with the traverser in Bay 7 distributing locomotives to the bays on either side, each of these having a 25 ton overhead crane. Bay 9 contained the wheel shop and the machine and fitting shop occupied Bays 10 and 11. Each of these bays had a 5 ton overhead crane installed. Bays 12 and 13 contained the paint shop with the traverser in Bay 13 to move locomotives in and out. Brick walls inserted instead of columns at the junctions with either adjacent bay isolated the Paint shop from the rest of the workshops and, in the absence of any overhead crane, only a single row of columns divided the two bays. Bay 14 contained the pattern and joiners shop and a brick wall also separated this from Bay 15 containing the locomotive store which supplied all manner of parts and tools used in the workshops. Two annexes were built at the rear of Bays 9 and 10, one being the cleaning shop and the other a second boiler house²²

A works manager's and timekeeper's office was constructed to the northeast of the locomotive workshops. Originally a small masonry building with sandstone lintels and wrought iron balconies, the office was marked by a bell tower at the top of the building which called the beginning and end of each working day (Figures 2.19–2.20). The works manager's and timekeeper's office handled the payroll for all areas of Eveleigh.

Carriage and Wagon Workshops

On the northern side of Eveleigh, construction of the Carriage and Wagon Workshops commenced in 1885 and eventually opened late 1887. The workshops consisted of 10 bays, numbered 16–25, almost identical in overall design and materials to the locomotive workshops. Similarly, bays or groups of bays of the carriage workshops were allocated to specific functions. The workshops were put into operation straight away, constructing new carriages and wagons as well as carrying out repairs. The carriage workshops site also contained the chief mechanical engineer's office, 'under whose supervision the whole workshops operated'.²³

2.4.3 The Effect of the Eveleigh Railway Workshops on the NSW Railways

The size and capacity of the Eveleigh workshops allowed the centralisation of maintenance and overhauls of locomotive engines and carriages in Sydney and its establishment led to a period of sustained growth in rail transport in NSW. Eveleigh became the central repair facility for New South Wales for both locomotives and carriages. The workshops had always built new carriages, but locomotives were generally imported from England or America and assembled at Eveleigh. Eventually, from 1915–1924 and again from 1945–1952, the workshops at Eveleigh manufactured new locomotives.

By the end of the nineteenth century approximately 1500 men were employed at the Eveleigh Railway Workshops.²⁴ By 1900 the Eveleigh Railway Workshops was one of the biggest employers in the state, counting for 10% of the total rail workforce in NSW. A total of 3,720 workers were employed at Eveleigh by 1912. At its peak, the Eveleigh Railway Workshops employed more than 7000 workers on site.²⁵

2.4.4 Early Expansion

The Locomotive Workshops expanded greatly throughout the 25 years following its opening and experienced almost constant growth. During the same period the Carriage Workshops experienced

sustained work, but did not expand at the same rate. Figure 2.2 provides a graphical summary of the changes to the Locomotive Workshops during the period 1887–1984.

The demand for locomotives continued to rise and a new erecting shop (known as the 'Large Erecting Shed') was constructed by 1899 to augment the works of the existing erecting shop in Bays 6–8 of the Locomotive Workshops. The Large Erecting Shed is shown in Figure 2.14. A new foundry was constructed first on land adjacent to the site of the Large Erecting Shed (Figure 2.5) and the paint shop was removed from Bays 12 and 13. The Large Erecting Shed was extended from 1900–1906 and the traverser from Bay 13 was moved outside Bay 15 to serve it.

Increasing demand for locomotives and repairs continued to push growth of the Locomotive Workshops. Expansion was accommodated by reconfiguring the internal arrangement of the workshops as well as adding new buildings and annexes. Each expansion and reconfiguration had a 'domino effect' on the workshops, as the function of each bay was carefully arranged in relation to the adjacent bays and to the workshops as a whole. An example of the effects of expansion occurred when the capacity of the blacksmiths and boiler shop had to be increased in 1905. The blacksmiths shop was expanded from Bay 2 to fill both Bays 1 and 2 of the Locomotive Workshops. The annex between Bays 4 and 5 was roofed over and walled in to accommodate the expanded boiler shop, which filled Bays 3 and 4 and this new section, named Bay 4a. A new coppersmiths and tinsmiths shops were erected subsequently on the southern side of Bays 5–9 and a new spring shop and steam hammer shop (which formerly occupied Bay 1), erected to the east of Bay 1 in the area now known as Innovation Plaza. Many of these new annexes and shops were constructed quickly using corrugated iron.

The process of electrification of the workshop machinery began in 1901 (due to the new AC power supply provided by the Ultimo Power Station) and was carried out gradually over the next 15 years.²⁶ A major advancement was the conversion of the original rope-driven cranes to electric motor drives and the electrification of the ground traversers in 1907. The electrification process was a major undertaking of the years 1914–1916, when the machinery in Bays 8, 9 and 14 were electrified. All boilers were replaced or refurbished from 1908–1910.

2.4.5 Manufacturing Locomotives 1908–1925 and 1945–1952

Local manufacturers of locomotives could not keep up with the demand for new rolling stock, nor compete in price with imported stock. The NSW Government decided in 1907 that new locomotives should be manufactured at the Eveleigh Railway Workshops due to its size and established workforce, which could be 'effectively adapted to the task.'²⁷ The Locomotive Workshops were already operating at capacity at this time, so new workshops had to be constructed to accommodate the additional workload. The New Locomotive Shop was completed by the end of 1908 and, for the first time, locomotives were manufactured at Eveleigh.

The New Locomotive Shop was extended in 1914, six years after it opened (Figure 2.22). A new foundry and a pattern shop were erected on the southern side of the Locomotive Workshops by 1919, requiring the resumption of two acres of land at the southwestern end of the site to allow construction of a new rail siding that connected to the foundry and pattern shop. The steel foundry was extended in 1922, only three years after it began operation (Figure 2.6). The old foundry adjacent to the Large Erecting Shed was converted for use as a boiler repair shop.²⁸

The Eveleigh Railway Workshops were working at capacity and further expansion could not be accommodated. After 153 locomotives had come out of Eveleigh, the manufacture of new

locomotives ceased in 1925. The New Locomotive Shop was subsequently used for repairs. New railway workshops opened in the western Sydney suburb of Chullora in 1927. The inability of Eveleigh to keep up with the demand for locomotive repair works saw boiler repair work transferred from Eveleigh to Chullora in 1927, but this alleviated only a little of the pressure on the Locomotive Workshops.

It was intended that Chullora would eventually take the place of Eveleigh. While the new Chullora workshops gradually took on much of the repair work undertaken at Eveleigh (a new locomotive repair shop opened there in 1937)²⁹, there continued to be enough work for both workshops to remain in operation.

2.4.6 Progress at the Eveleigh Locomotive Workshops

Eveleigh saw little expansion during the Depression, but the New South Wales rail system continued to grow. Rail lines in NSW were gradually electrified during the mid-1920s and diesel trains were introduced in 1935. The diesel engines were made overseas and maintained locally. The change in technology had a long-term impact on the workshops, seeing a shift in technology and a need to retrain workers. Overhauling diesel engines was a much simpler process than overhauling locomotives. A diesel engine could be overhauled and back in operation within five days, while it took up to 12 weeks to overhaul a locomotive.³⁰

Demand for locomotive repairs still outstripped supply during the 1930s and as a result an increasing number of contracts were given to private companies. The ideology of government-owned industries was losing ground.

2.4.7 Eveleigh and the War Effort

An attempt was made during World War I to manufacture field gun shells at Eveleigh on its machinery, but the process was deemed unsatisfactory for the army and the railways alike. The war had not reduced the demand for locomotive repairs and it was difficult to accommodate the additional work required to produce ammunition for the army. Modification of machinery at Eveleigh to make it suitable for use in ammunition manufacturing was found to be difficult and costly.

The Eveleigh Railway Workshops were again used for manufacturing for World War II from 1941. This time the Department of Defence supplied its own machinery for the manufacture of 25lb field-gun shells. The machinery was installed in Bays 5 and 6, which were temporarily cleared of railway machinery, and a timber mezzanine level constructed in Bay 5. Bay 8 was used as a munitions annexe and, for a short time, tanks were assembled in the New Locomotive Workshop. The workshops at Eveleigh also produced the machinery needed for the manufacture of Bren guns. Concrete air raid shelters were added to both sides of the Eveleigh Railway Workshops in 1942-43 and some Department of Defence workers were accommodated at the Carriage Workshops. The Defence machinery was removed from the Locomotive Workshops in 1945 at the end of the war and the workshops resumed normal operations.³¹

2.4.8 Decline and Closure

Locomotives were again manufactured at Eveleigh from 1945 to 1952, this time in the Large Erecting Shed. The pattern of combining repairs and maintenance with manufacturing and assembly was drawing to a close during the 1950s. Contracts continued to be granted to private companies and Eveleigh lost large numbers of experienced workers to the better wages offered by private companies. This resulted in labour shortages that in turn led to further contracting.³²

Attempts were made throughout the second half of the twentieth century to keep the Eveleigh Railway Workshops in operation. Machinery was updated and workers retrained in repairing and overhauling diesel engines. In 1968 a cleaning and servicing shed was added to the Locomotive Workshops on the site of the Engine Running Sheds.

The Locomotive Workshops closed on 27 June 1986 and the entire Eveleigh Railway Workshops closed for good in February 1989. Paddy's Market occupied the Locomotive Workshops for a short period before the creation of Australian Technology Park was announced in 1991. This was a joint venture between the University of NSW, University of Sydney and University of Technology, Sydney. More information about this change is provided in Section 3.0.

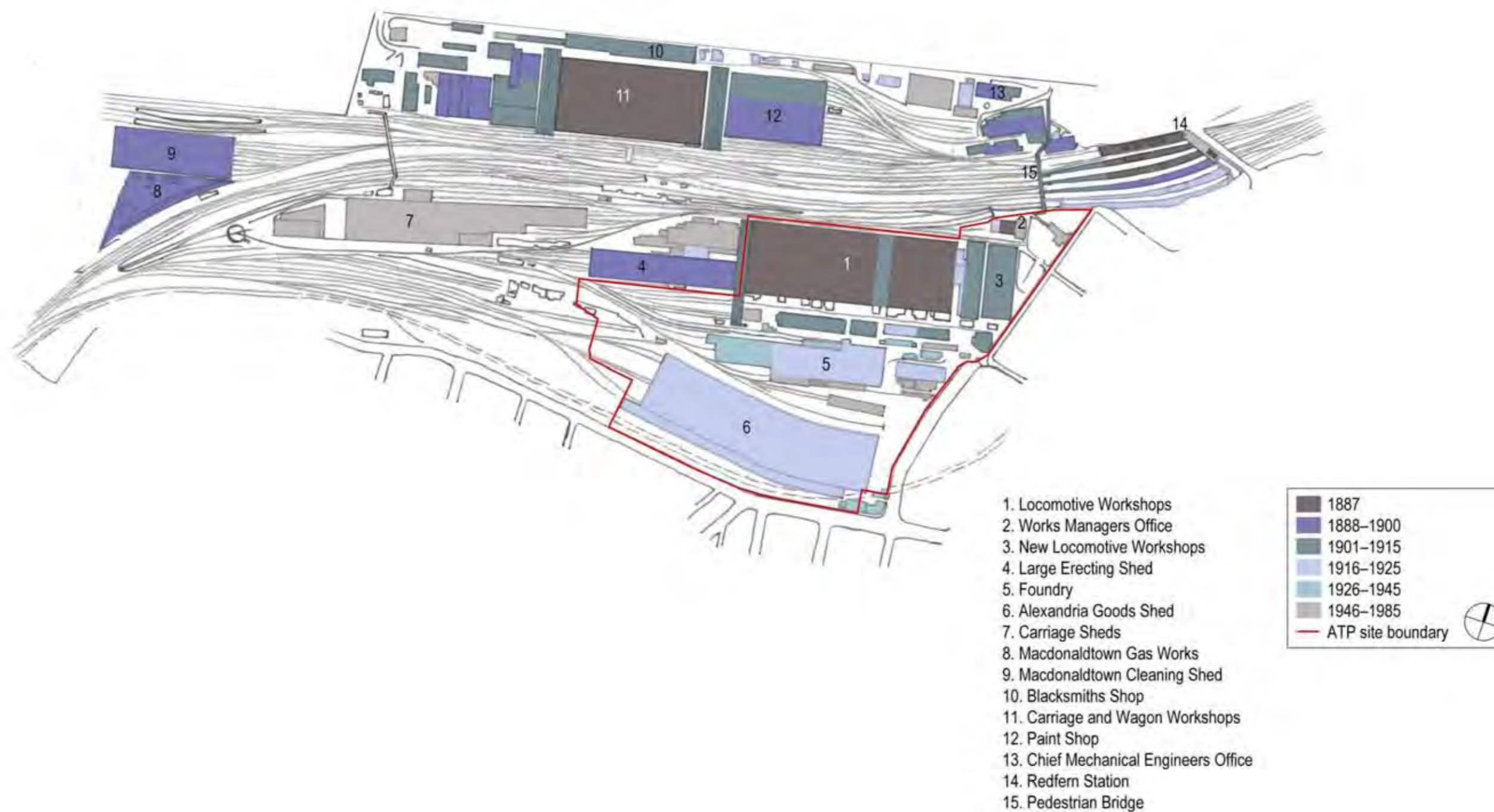


Figure 2.1 Plan of the entire Eveleigh Railway Workshops and associated places when fully operational c1970. The plan indicates the evolution of the area and the sheer scale of the Eveleigh Railway Workshops. The current ATP site boundary is also included to demonstrate the railway land and uses that were amalgamated when the ATP site boundary was set. (Source: GML 2010)

2.5 Operations of the Locomotive Workshops

2.5.1 Functional Divisions

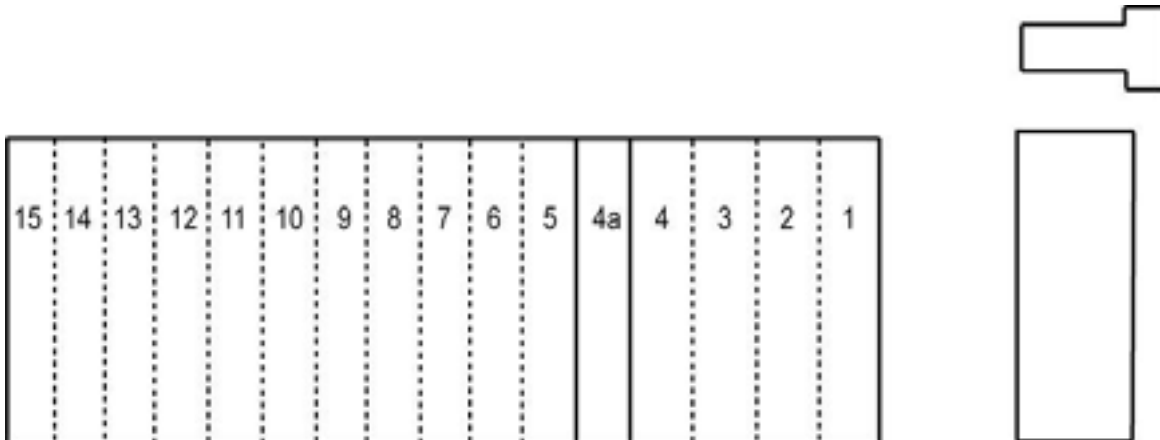
As mentioned in Section 2.2.2, the Eveleigh Railway Workshops were separated into two main functional areas—the Carriage and Wagon Workshops on the northern side of the rail line and the Locomotive Workshops on the southern side—and four main sections: the locomotive workshops, the running sheds, the carriage and wagon shops, and the paint shop and stores.³³

The Locomotive Workshops operated in the following way:

- Locomotive Workshops: Manufacture and repair of parts were carried out in the Locomotive Workshops. Engines were put together in Bays 6–8 of the workshops.
- Large Erecting Shed: After 1899 engines were also put together in the Large Erecting Shop.
- Engine Running Sheds: Locomotive servicing, cleaning and repairs were carried out in the engine running sheds. The sheds were capable of holding 126 engines at any one time.³⁴
- New Locomotive Shop: Locomotives were manufactured in the New Locomotive Shop from 1908.

The four main buildings were supported by a range of ancillary operations carried out in other buildings around the site. At its peak, the locomotive workshops contained the engine running sheds, locomotive workshops, the large erecting shed and the new locomotive shop, iron, steel and copper foundries, a spring shop (which manufactured all springs used in the workshops), an oliver shop for the oliver hammers (used to manufacture tools and brake keys), a boiler shop, tinsmiths, coppersmiths, a pattern shop, plumbers shop and the works manager’s office (see Figure 2.2 evolution diagram).

Table 2.1 Functions of the Locomotive Workshops buildings remaining on the ATP site since 1887.



Building	Bay	1887	1905	1924	1984	2009
Locomotive Workshops	1	Steam hammer and spring shop	Blacksmiths shop	Blacksmiths shop	Blacksmiths shop	Blacksmiths workshop
	2	Blacksmiths shop	Blacksmiths shop	Blacksmiths shop	Blacksmiths shop	Blacksmiths workshop

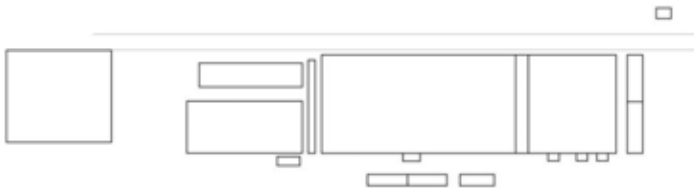
Building	Bay	1887	1905	1924	1984	2009
	3	Boiler shop	Boiler shop	Boiler shop	New spring shop/Heat treatment	Offices
	4	Foundry	Boiler shop	Boiler shop	Fabrication shop	Main entry
	4a	Annex containing tinsmiths and coppersmiths, sand store and core stoves for the foundry	Boiler shop	Boiler shop	Fabrication shop	Offices
	5	Tender repair shop	Erecting shop	Tender shop	Canteen (south) /Fitting shop (north)	Offices
	6	Erecting shop	Erecting shop	Tender shop	Millwrights shop/Bar store	Offices
	7	Erecting shop and traverser	Erecting shop	Wheel shop and traverser	Fitting shop	Offices
	8	Erecting shop	Erecting shop	Tender shop	Fitting shop	Offices
	9	Wheel shop	Wheel shop	Machine shop	Axle and wheel shop	Offices
	10	Machine and fitting shop	Machine and fitting shop	Machine shop	Machine shop	Exhibition space
	11	Machine and fitting shop	Machine and fitting shop	Machine shop	Machine shop	Exhibition space
	12	Paint shop	Paint shop	Machine shop	Machine shop	Exhibition space
	13	Paint shop and traverser	Paint shop and traverser	Machine shop	Machine shop	Exhibition space
	14	Pattern and joinery shop	Pattern and joinery shop	Tool room/Brass finishers	Tool room/Air brakes	Offices
	15	Locomotive store	Locomotive store	Millwrights	Store/Rail motor test room	Offices
New Locomotive Shop		N/A	New locomotive manufacture	New locomotive manufacture (until 1925, then locomotive repairs)	Rail motor engine maintenance	National Innovation Centre
Works Managers Office		Works managers, timekeepers, cost estimators	Works managers, timekeepers, cost estimators	Extended 1922 and again in 1940s	Works managers, timekeepers, cost estimators	International Business Centre



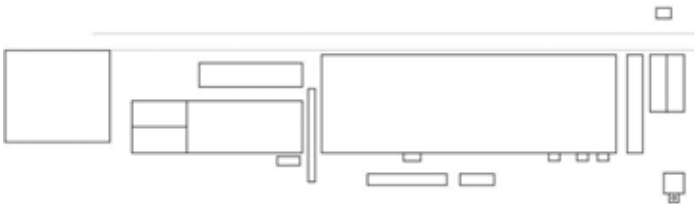
1889 Locomotive Workshops and Engine Running Sheds (ERS) to the east.



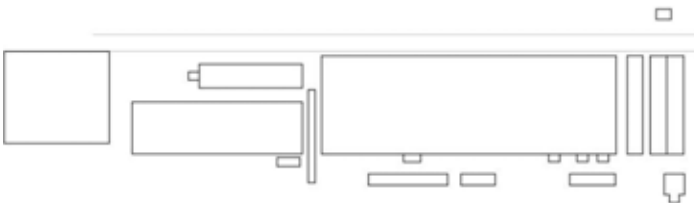
1900 Large Erecting Shop (LES) to the east of the Loco Workshop. New Foundry north of the LES and new Laundry south of the LES.



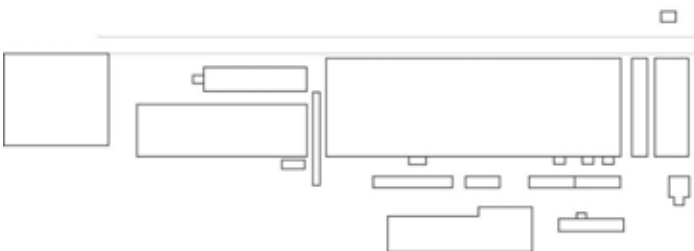
1905 Bay 4a has been enclosed. The new Tinsmiths and Coppersmiths Shops constructed south of the Loco Workshop. The Steam Hammer and Spring Shop established on the eastern side of Bay 1.



1910 The New Loco Shop to the east and Compressor House to the south east have been constructed. The LES and its Traverser to the west, extended.



1915 The New Loco Shop has been extended on the southern end. The new Oliver Shop has been established south east of the Loco Workshop. The Compressor House has been added to the western side of the Foundry.



1920 New Foundry and Pattern Shop constructed to the south of the workshops.

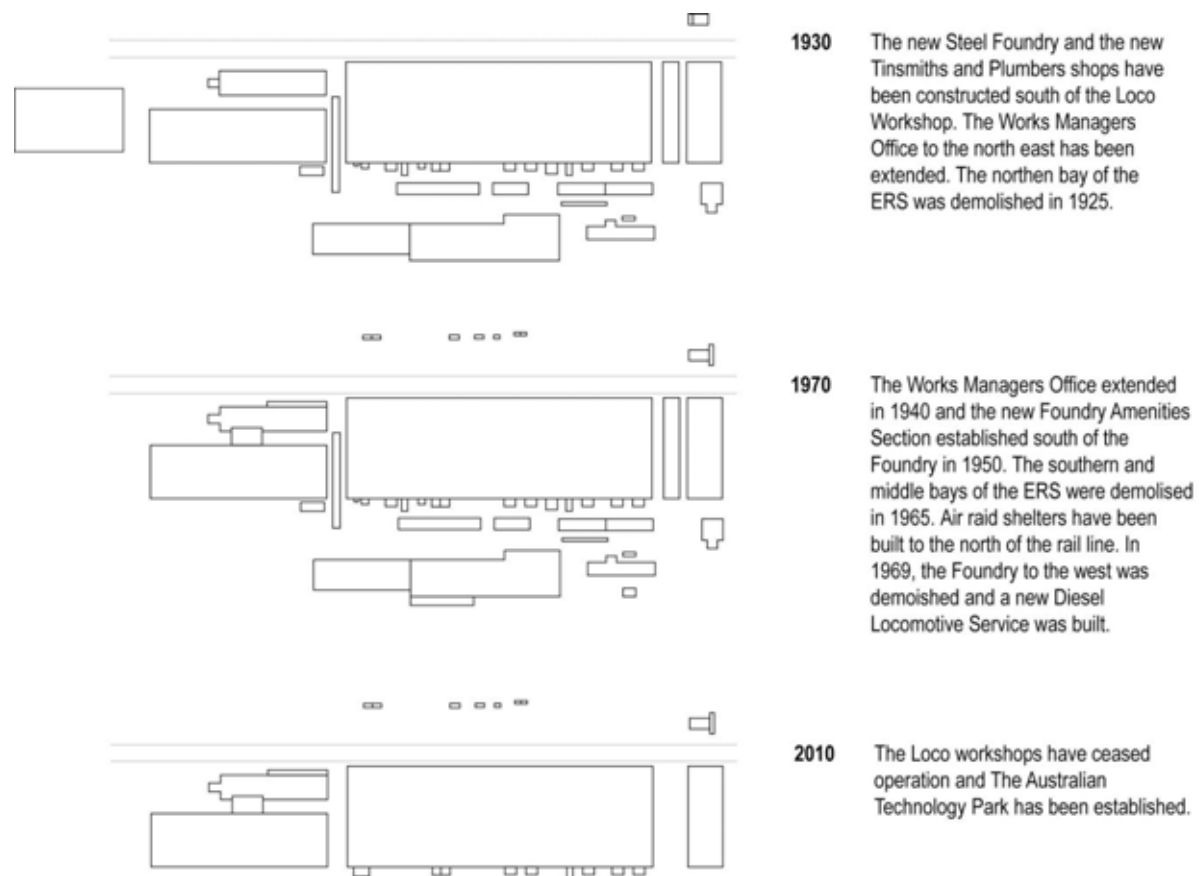


Figure 2.2 Locomotive Workshops site plan showing the evolution of the site from 1889 to 2010.

2.5.2 Machinery

Machinery and equipment necessary to undertake the repair and maintenance of railway track, buildings, structures and rolling stock was installed in the workshops from their opening. Individual items of machinery and equipment were maintained, removed or replaced and new items acquired over the ensuing years of operation.

The term 'machinery and equipment' covers a wide range of items, each specific to performing a task or range of tasks needed to keep the railway system in operation. Machinery and equipment can be grouped by a number of characteristics but the most important distinguishing characteristic for the type of items installed in a large workshop complex is the nature of the power delivery system by which the machine is actuated. The power delivery system and the machine itself form an operational group of related artefacts or structures that rely on each other to function effectively.³⁵

Three main types of machinery power systems operated in the Eveleigh Locomotive Workshops. These systems include hydraulic, steam and belt-drive from lineshafts and counter shafts. Lineshafts at Eveleigh were originally driven by steam engines but were converted to electric motor drive in the early twentieth century.³⁶ In the latter half of the twentieth century, many belt-driven machines were converted to being driven by their own dedicated electric motor and new machines were designed and built according to this approach.

Hydraulic System

Hydraulic power in the Locomotive Workshops is evident today in the spring buckling presses, spring stripper and Ryerson spring formers in Bay 1.³⁷ The hydraulic power generating system is located in Annex 6, south of Bay 3. The Hydraulic Power system was originally driven by steam supply from the steam system but was later converted to electric power.

The Hydraulic Power annex contains a steam engine direct-connected to a pressure pump and an electric motor driven pressure pump, both supplied with water from an overhead riveted steel tank³⁸ which is speculated to date from 1887.³⁹ The reservoir supplies water to the pumps by receiving water through a low pressure return pipe and supplying water through a 4 inch diameter low pressure pipe. The reservoir is constructed of a three piece cast iron unit placed on a timber platform and supported by columns. It is also fitted with a volume indicator for determining the supply of water.⁴⁰

Located to the west of Annex 6 are two hydraulic accumulators which form an integral part of the hydraulic system. These are comprised of large boiler sections filled with scrap iron and sandstone, supported by heavy vertical guide-frames and contain valves and safety override equipment.⁴¹

Steam System

Steam played an important role in the function of the workshops, powering a large number of machines such as hammers, presses and punches.⁴² The C36 locomotive steam boilers now located outside Bay 2 in close proximity to the reservoir were the main source of steam.⁴³ They were installed at some time between 1924 and 1927. The boilers generated high pressure steam which was sent to the machinery which required steam to operate via the various steam lines and valves. The steam was then released in the atmosphere rather than being returned to the system.⁴⁴

The boilers have 4m high steel stacks and large steel locomotive front plates and were originally fed coal to the grates from the rear. They were later adjusted to be fired by force fed oil.⁴⁵ It is the third boiler set in place since the opening of the workshops and it is thought that it is able to operate at a higher pressure than the previous sets. It is also believed that the steam lines were replaced when the new boilers were put in place.⁴⁶

One of the most notable machines that operated with steam was the Davy Press located in Bay 1 north. The 1500 ton Davy Press was installed in the Blacksmiths Shop in 1925. The press stands at 5m tall and 3m wide and includes ancillary equipment, such as two steam reservoirs, a steam intensifier, a hydraulic unit and a number of large balanced tongs, dies, anvils, fullers and swages. An oil-fired furnace served the Davy Press located in Bay 1 North within the northeast corner and an overhead crane was used to carry material that needed to be forged.⁴⁷ The Davy Press originally utilised its own two dedicated boilers installed nearby, which were removed during the 1990s and later, was connected directly to boiler No 4 in the Boilerhouse Annex.

A number of powered hammers were served by the steam system including the 40 cwt arch steam hammer, the 20 cwt steam hammer and the 8 ½ cwt steam hammers. All three types of hammers include an assemblage which contributes to their operation, comprised of items such as tongs, fullers, swages and anvils.⁴⁸

The 40 cwt arch steam hammer is over 4m high and 2m wide at the base. Two vertical guide rails are cast into the main frame and it has a single vertical cylinder. The operating lever determines how much steam is passed to the cylinder, controlling the strength and speed of the hammer blow.⁴⁹

The 20 cwt steam hammer is 3.5 metres high with a stroke of 1m. It sits on top of and is bolted to a brick and concrete plinth. This hammer was built for the NSW Government and the initials NSWG are cast into the iron casing. There are four 8 ½ cwt general purpose hammers made by Davis and Primrose, also with the initials NSWG cast into the iron casing.⁵⁰

The two surviving Oliver Hammers are powered by compressed air and emulate the work of a human striker. Pedal-operated by the blacksmith, they were used for small forging jobs and for sharpening various tools.⁵¹

The steam-driven Rootes Blowers are located against the southern wall of Bay 1 south. They produced large volumes of low pressure air circulated in underground pipes to the forges that were located within Bays 1 - 4.⁵²

Line Shafts and Counter Shafts

Line shafts and counter shafts were situated between each bay along the row of double columns. A number of machines operated from this system including the electric shears, the impact punch, the continuous forging machine and the overhead and wall cranes.⁵³ Many of the items that operated under this system have already been (or have the potential to be) converted to unit electric-motor drive.

The Bretts impact punch dating from 1899 located at Bay 1 South, was originally operated via an overhead line shaft and was later converted to electric-motor drive. The electric motor is mounted on top of the machine and operates a flywheel through a pulley. The punch is operated via pedals that provide alternating blows to the working tables alongside the machine.⁵⁴ Similar to the impact punch, the De Burg electric shears were also converted to electricity with a dedicated electric motor. It is believed that both of these machines were relocated to Bay 1 from the old boiler shop.⁵⁵ The Ajax Continuous Forging Machine was operated by a belt and also is provided with a separate electric motor.⁵⁶

Integral to the operations in the workshop were the overhead and wall cranes. These had a part in manoeuvring items in the workshops, as well as acting in an ancillary capacity for various machines, such as the use of the overhead crane with the Davy press. The wall cranes also assisted in the movement of material from furnaces to hammers and to other machines or onto trolleys for transport around the workshop.⁵⁷

2.6 The Surrounding Area

2.6.1 Character of the Surrounding Area

Before the railway workshops were established at Eveleigh, the area was known as Chisholm's Estate. This estate and neighbouring estates were undeveloped farmland until the late nineteenth century. The effect of the new railway workshops was to transform the area dramatically—a previously pastoral area of land⁵⁸ (at that time a dairy) became a site of heavy industry.

When the Eveleigh Railway Workshops were established, the surrounding land was gradually subdivided and developed into one- and two-storey terraces and cottages, shops and small warehouses (Figures 2.8–2.9 and 2.35–2.36). The suburb of Redfern was already one of Sydney's highest-density areas by the 1880s. By the 1940s, three quarters of Sydney factory workers worked within a three-mile radius of Redfern Station, and many commuted to work by train.⁵⁹

The Eveleigh Railway Workshops dominated the area, physically and socially. Surrounding areas, such as Darlington (Golden Grove), Chippendale and Erskineville filled with workers' housing and boarding houses. As Lucy Taksa and Joan Kent explain in their social and oral history of the workshops, it was common for Eveleigh's workers to live in the surrounding area in close proximity to the workshops.⁶⁰ Many boarding houses were established nearby and were common lodgings for workers, particularly those who moved from the country to find work at Eveleigh. Golden Grove estate, located on Wilson Street to the north of the Eveleigh Carriage and Wagon Workshops, was the result of a subdivision of Hutchinson's Estate for workers' dwellings in 1881. Similarly, land immediately south of the Locomotive Workshops filled with streets of terrace houses and shops during the late nineteenth century⁶¹ (see Figure 2.9).

As the workshops expanded, land to the south and southeast of the original workshop boundary was resumed. A large area was further resumed for the Alexandria Goods Yard in 1917, but a row of houses and shops remained along the northern side of Henderson Road, with their backyards abutting the southern boundary of the goods yard⁶² (see the 1943 aerial photograph of the site in Figure 2.10). These houses and shops remained until the late 1940s, when they were demolished for the construction of the Eastern Suburbs railway line. The only early building that remains along this section of Henderson Road is the Alexandria Hotel at the corner of Garden Street.

Rosemary Annable and Kenneth Cable (1995) note that the area around Eveleigh was dominated by two main activities—residential and rail.⁶³ As the workshops declined and many of its functions were relocated west to the workshops in Chullora, a corresponding decline occurred in the population and relative prosperity of the surrounding area.

2.6.2 Alexandria Goods Yard

In 1913, a long strip of land along the southern border of the Eveleigh Locomotive Workshops was resumed to establish the Alexandria Goods Yard. This area, which stretched from Garden Street to west to the western rail line, was occupied by about four blocks of terrace houses, cottages and shops (see Figures 2.8 and 2.9 showing the areas of housing removed). Most were resumed and demolished for the yards—approximately 230 buildings in total⁶⁴—except for the single row of houses and shops noted in Section 2.6.1 above.

The Alexandria Goods Yard opened in 1917 and consisted of two long corrugated-iron sheds with a gable roof and a series of small ancillary buildings (Figures 2.7 and 2.10).⁶⁵ The yard was served by rail lines that connected to the Bankstown suburban rail line north of Erskineville Station. Freight services to Melbourne were loaded at the Alexandria Goods Yard and travelled along the Bankstown suburban rail line before heading south. Many trains used for moving goods for the war effort were loaded at Alexandria during World War II. The yard closed in 1980 and the western part of the site was transferred to the Housing Commission of NSW to redevelop as public housing. The eastern part of the site, near Garden Street, was turned into a carpark for Paddy's Markets in 1988. This land was incorporated into ATP land in 1991.

2.6.3 Redfern Station

Redfern Station was originally known as Eveleigh Station and was established in 1884 to serve the new railway workshops. The original station consisted of three island platforms serving four lines (Figure 2.4). The ticket office was located on the corner of Lawson Street and Rosehill Street, with stairs down to each individual platform. Rosehill Street was demolished to make way for the later expansion of Redfern Station to the east, while the ticket office survived and was later extended.

The construction of Redfern Station was overseen by the office of John Whitton, engineer-in-chief of the NSW Railways. Whitton had been appointed in 1856 at the beginning of the NSW railway development and remained in the position until 1890, overseeing the establishment of the main body of the NSW system.

The station was extended to accommodate the quadruplication of the main suburban lines not long after it opened in 1891-92. Platforms 5, 6 and 7 were built during this period. Platforms 8 and 9 were added in 1919 and platform 10 in 1924/25. Further extensions occurred in the mid-twentieth century for the Eastern Suburbs Railway and Illawarra line. Construction of these underground platforms began in the late 1940s but subsequently stopped as the program came to a halt, but were partly rebuilt from 1967 as the Eastern Suburbs Railway was restarted, and completed in 1979.

The two sides of the Eveleigh Railway Workshops were connected in 1913 by a narrow metal pedestrian bridge that stretched over the rail lines and connected via stairs to each of the platforms of Redfern Station, providing the workers direct access to their place of work⁶⁶ (Figures 2.23 and 2.34). The bridge entered the Locomotive Workshops at their northeastern corner, near the Works Manager's Office. This bridge was demolished c1994⁶⁷ and, as a result, the strong connection between the Eveleigh Railway Workshops and Redfern Station has been lost.

An engine dive was constructed to take locomotives under the suburban rail lines to the Locomotive Workshops. A series of brick chimneys were constructed near the ends of the Redfern Station platforms to ventilate the dive, which comes to the surface just to the north of the Works Manager's Office.

2.6.4 Macdonaldtown Gas Works

The Macdonaldtown Gas Works (also known as the Eveleigh Gas Works) were constructed in 1891–1892 to serve the Eveleigh Railway Workshops. Gas from the works was used for lighting in carriages and in the railway workshops themselves. The Macdonaldtown Gas Works were established between the Bankstown and Inner West lines, just south of Macdonaldtown Station (Figure 2.1).

The gas works produced two types of gas: one plant manufactured gas from coal for general lighting use and the second plant produced gas from shale for use in carriage lighting. The shale-based gas provided a much brighter illumination than the coal-based gas. The works consisted of two gas holders, a retort house, a coal store and a purifier shed. Gas was conveyed to the Eveleigh Railway Workshops in underground pipes.⁶⁸

On-site production of gas ceased in the 1950s and the gas producing plant was demolished in 1958.⁶⁹ The gas holders continued use to store gas from the Mortlake Central Distribution Plant. After the 1950s, the works were used as a pumping and gas equalisation plant until the mid-1970s. Only one of the two original gas-holders is extant.⁷⁰

2.7 Labour and Community History

2.7.1 Eveleigh as a Place of Work

In 1996, a series of oral histories of former Eveleigh workers were recorded by Lucy Taksa and Joan Kent for Godden Mackay. The social history prepared as a result and the interview transcripts have informed this section of the historical overview.

By all accounts, the Eveleigh Railway Workshops was a difficult and dangerous place to work. The intense heat generated by the machines and forges in the workshops, not to mention the constant noise, dirt and dust, made working at Eveleigh a tough job. Figures 2.28–2.30 show workers in the Locomotive Workshops in 1938 and 1945. Workers' conditions were not deemed a priority and many battles fought at Eveleigh by its workers and associated unions over its 100-year history were for improved conditions, such as breakfast breaks, and basic amenities, such as indoor toilets and proper facilities for washing.

Due to the highly technical nature of the work at Eveleigh, the need to employ and keep highly skilled workers meant that the workshops were a place of long-term employment. Many workers were employed as apprentices and learnt their trade at Eveleigh, then remained at the workshops for their entire working lives. The workshops also tended to employ relatives of workers, so in many cases entire families were employed at Eveleigh.

Social divisions between different sections were marked, even between the running sheds and the locomotive workshops, to the extent that social events were held separately for the different sections of Eveleigh.⁷¹ Management of the workshops was shaped by the desires of the NSW Railways Department.

2.7.2 Unions and Eveleigh Railway Workshops

Due to the pattern of long-term employment at the workshops and unity within craft divisions, trade union membership at Eveleigh was high. The first trade union action at Eveleigh occurred in 1882, when the Boilermakers Union made claims for overtime on behalf of workers in the Locomotive Workshops.⁷² The All-Grades Railway and Tramway Union was formed in 1886. Industrial action such as strikes occurred at the workshops since the early years of their operation. The industrial action and work by the union resulted in many improvements in working conditions: the workshops closed on Saturdays from 1892 following union negotiations and indoor toilets were eventually provided for workers in 1910. The Eveleigh Railway Workshops were the site of approximately 21 strikes between 1915 and 1917.

During World War II the NSW Department of Railways made moves to introduce new ways of managing labour in the workshops. The Taylor system, which had been imported from factories in the US, was touted as a means of improving worker efficiency. The system involved standardising the methods by which workers performed each task by providing standardised tools and instruction cards to workers. Surveillance of workers was also increased by hiring additional sub-foremen to supervise the workshops. The sub-foremen also recorded the time taken for each task performed by a worker, replacing the established system at Eveleigh that allowed workers to record this information themselves on timesheets.

The introduction of this last measure sparked a general strike, which commenced 2 August 1917, with a total of 5780 workers downing tools to protest the introduction of the Taylor system. By the end of the week, 10,000 workers were involved in the strike and by 22 October, after other unions became involved, 77,350 workers were on strike in NSW, representing an astonishing 14% of the State's total workforce. Of 48,000 workers employed by the NSW Railways and Tramways Department, only 15,000 did not strike.⁷³ Large protests were held in Sydney throughout the strike. Figure 2.29 shows idle locomotives outside the Engine Running Sheds during the strike and Figures 2.32 and 2.33 show the empty workshops.

The All-Grades Railway and Tramway Union strike ended officially on 10 September 1917, though other workers such as coalminers remained on strike. The general strike had a profound effect on workers at Eveleigh. The Taylor system was retained and many strikers lost their jobs or were reinstated on lower pay levels or with reduced responsibility.

Union membership in the workshops remained high after the strike and throughout the next 70 years until the workshops closed. The unions maintained a strong presence in the workshops and were instrumental in providing work and social services, including language classes, as detailed in Section 2.74 below, to advocacy for the improvement of working conditions and workers' rights.

2.7.3 Aboriginal Workers at Eveleigh

The Eveleigh Railway Workshops was a major employer of Aboriginal workers. Due to government policies that restricted Aboriginal people's access to education and training, Aboriginal workers in the city were generally employed as unskilled labourers in factories and workshops and as fitters and labourers for the railways.⁷⁴ Aboriginal workers at the Eveleigh Locomotive Workshops were generally employed in the foundry and boiler shops and also at the Alexandria Goods Yard in unskilled labouring jobs such as loading crates and kegs into goods train carriages.⁷⁵ Aboriginal workers were also paid less than their white co-workers at Eveleigh and elsewhere.⁷⁶ Interviews held in 1996 with former Eveleigh workers revealed a number of memories of Aboriginal workers in the locomotive workshops and that the unions and shop committees were active in supporting them.

2.7.4 Migrant Workers at Eveleigh

The number of migrant workers employed at Eveleigh rose sharply after World War II. These workers moved into the neighbouring suburbs of Alexandria, Redfern and Newtown, taking the place of local workers who had moved to suburbs further out of the city centre over the previous 20 years. Through the efforts of the Australian Railway Union, the railway workshops worked hard to integrate the new migrant workers. English language classes were provided at Eveleigh from 1969.⁷⁷

2.8 Key Historical Figures

2.8.1 John Whitton and George Cowdery

The founding of the Eveleigh Railway Yards was driven by two important figures in the history of New South Wales: John Whitton and George Cowdery. Whitton was the Engineer-In-Chief of the Railways and Cowdery the Deputy Engineer for Existing Lines.

John Whitton arrived in Australia from England to take up the position of Engineer-In-Chief of the Railways in 1856. His task was to oversee the expansion of the NSW rail system. Despite his task, many of Whitton's proposals for the improvement of NSW rail were denied, including extension of the railway to Hyde Park from its then terminating station at Redfern, and adoption of the same railway gauge as Victoria and South Australia.⁷⁸ Whitton fought for the establishment of new railway workshops for many years and recommended the purchase of the Chisholm Estate for this purpose in 1875. Other sites were suggested by the government, including an area of land that later became the Chullora workshops, but Whitton insisted on the Chisholm Estate. Whitton was responsible for the construction of the southern railway to Goulburn, the Blue Mountains railway and completing the connection between Queensland, NSW, Victoria and South Australia's railways. He retired in 1890.

George Cowdery also came to Australia from England in 1856. Cowdery first worked on surveying new railway lines in Victoria and was appointed District Engineer of the Great Southern Railway in NSW in 1863 by Whitton, whom Cowdery had met previously in England. Cowdery was made Deputy Engineer for Existing Lines in 1878 and Chief Engineer for Existing Lines in 1880. He was responsible for the detailed design of the Eveleigh Railway Workshops including the engine running sheds, for which he used an arched truss roof, reputedly the first use of such a system for an engine shed.⁷⁹ Whitton and Cowdery were often in conflict, with Whitton considering the engine running sheds extravagant.

2.8.2 NSW Premiers JJ Cahill and James McGowen

John Joseph (JJ) Cahill worked at the Eveleigh Locomotive Workshops as a fitter. He grew up in the railway community around the workshops and was hired as an apprentice fitter in 1907. Cahill was heavily involved in the trade unions at Eveleigh and was an officer of the Amalgamated Society of Engineers. Cahill lost his job at Eveleigh as a result of his involvement in the General Strike of 1917, where he was seen as one of the main agitators and instigators of the strike. He was re-employed on the railways in 1922 following five hard years without permanent work. Cahill was elected to NSW parliament in 1925 as the member for St George and served as premier from 1952 to 1959.⁸⁰

James McGowen was the first Labour Premier of the state of NSW. He worked at the Eveleigh Railway Workshops as a boilermaker until 1891. During his time at Eveleigh, McGowen became an active member of the trade union, serving on the executive of the New South Wales Trades and Labour Council from 1888–1891. McGowen was the president of the Eight Hours Demonstration Committee in NSW. As a member of the Trades and Labour Council, McGowen joined the Labor Party and won a seat in Redfern, which he held until 1917. He became leader of the NSW Labor Party in 1894 and Premier of NSW when the party won the 1910 State elections. He was replaced in 1913 following friction with trade unions and members in the party and was expelled from the Labor Party in 1916 because of his support for conscription in World War I.⁸¹

2.9 Comparative Analysis

The comparative analysis below compares the historical form and operation of the Eveleigh Locomotive Workshop area with other railway workshops in Australia from the same period. This comparative analysis focuses on sites that have contributed to the Australian industrial landscape historically. Section 3.8 provides a comparison of the current form and condition of the Locomotive Workshops and other relevant former industrial sites, including former railway workshops.

2.9.1 Newport Railway Workshops, Victoria

Initially built to solely service rolling stock, the Newport Railway workshops were immediately involved in the actual construction of rolling stock. They were constructed between the Geelong Railway and the Williamstown Railway in the mid-1880s and were the principle construction and maintenance workshops in Victoria before ceasing operation in 1992.⁸²

The workshops design was based on British railway workshops with a central clock tower and masonry main wings with a steel internal structure. The collection of buildings are sprawled across the site and like Eveleigh were the main construction and maintenance workshops for the state. Unlike Eveleigh, the workshops are associated with the use of timber with timber used in trusses and roof purlins. The site also contains a significant timber shed that was part of the original Carriage Workshops in Williamstown. The site also contained a large tarpaulin shop which was

constructed with a high roof to allow for the tarpaulins to be hung inside and has an extensive amount of internal timber.

2.9.2 Inveresk (Launceston) Railway Workshops, Tasmania

The Inveresk (Launceston) railway workshops were established in the 1870s to service locomotives and the construction of wagons and carriages. The workshops were integral to the evolution of Tasmania's industrial environments, in particular demonstrating the beginning of wartime industries for the state, and were closed in 1993. Initially containing an engine shed and a blacksmith shop, the site expanded over time as the demand for rail increased and additional buildings were added. Post World War II, the workshops played a role in the increasing demand of defence and produced items to accommodate this change, such as shells.⁸³

Similar to Eveleigh, the workshops demonstrate technological innovation with a large reinforced concrete building constructed by E.G. Stone in 1923 to house the main workshops. They were also the first in Australia to be converted to diesel power in the 1950s with the construction of the Diesel Workshops group to service new locomotives.⁸⁴ As with Eveleigh, the workshops became redundant in the 1990s and were subsequently shut down. Currently, they house the Queen Victoria Museum and Art Gallery discussed in Section 3.7.1 of this report.

2.9.3 North Ipswich Railway Workshops, Queensland

The North Ipswich railway workshops in Queensland operated from 1864 to 1995 and were the first railway workshops in Queensland, built to serve the State's first railway line. Like Eveleigh, the initial task of the workshops was to assemble and maintain locomotives and parts imported from England and later began manufacturing its own locomotives for use on Queensland's railways.⁸⁵

The workshops initially consisted of two cast-iron, pre-fabricated erecting shops, both imported from England. These buildings were later replaced with brick workshops. As the North Ipswich railway workshops carried out similar functions to Eveleigh, the site retains a range of buildings of similar use, including locomotive workshops, carriage and wagon workshops, a boiler house, pump house, administration buildings and a Chief Mechanical Engineer's Office, as well as a range of equipment such as a traverser and turntable.

The workshops were shut down in 1995 following the transfer of remaining functions to the railway workshops in Redbank. The North Ipswich Railway Workshops now house the Workshops Rail Museum.

2.10 Figures

The figures below have been oriented with north up the page for consistency with current ATP plans. Many of the historical plans for the area have been oriented with north down the page and so are presented upside-down in this section.

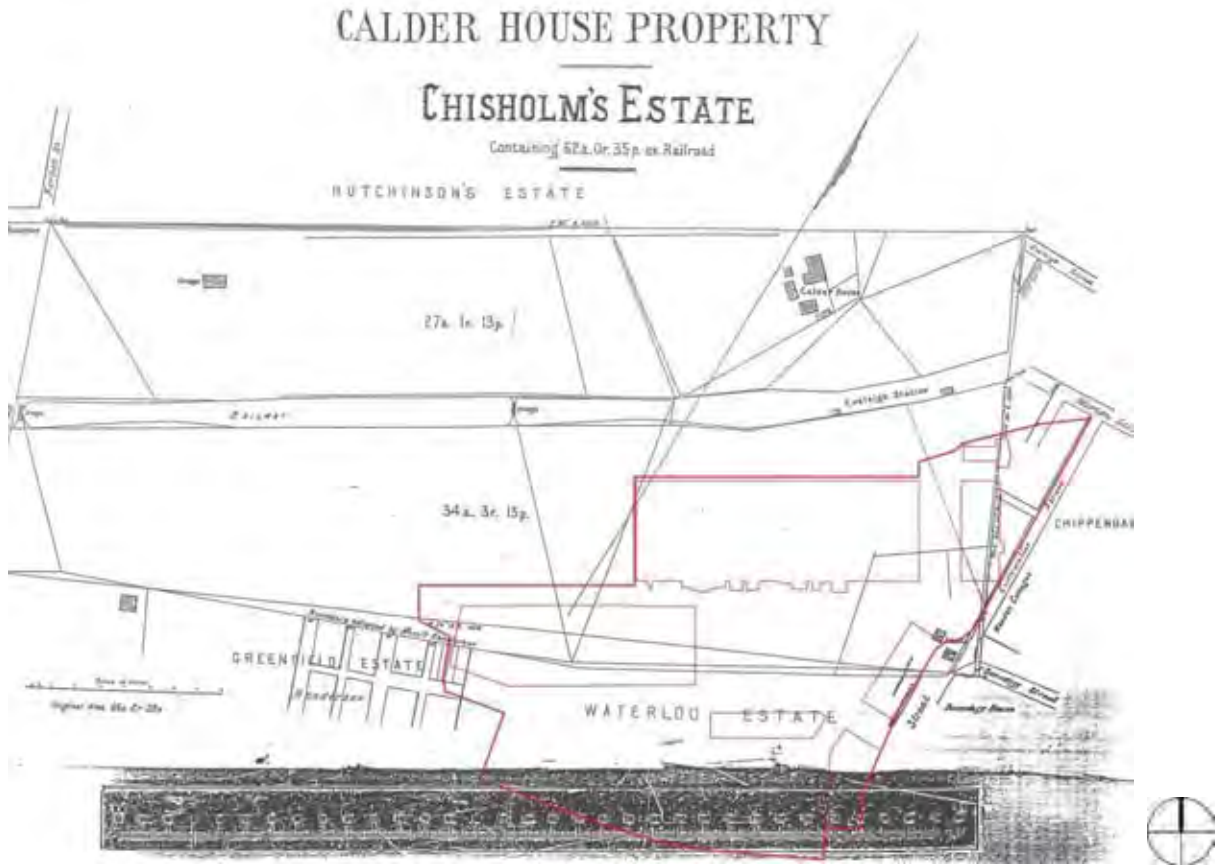


Figure 2.3 Plan of the Chisholm Estate c1875 with an overlay of the current ATP site boundary and buildings. (Source: State Rail Authority Archives)

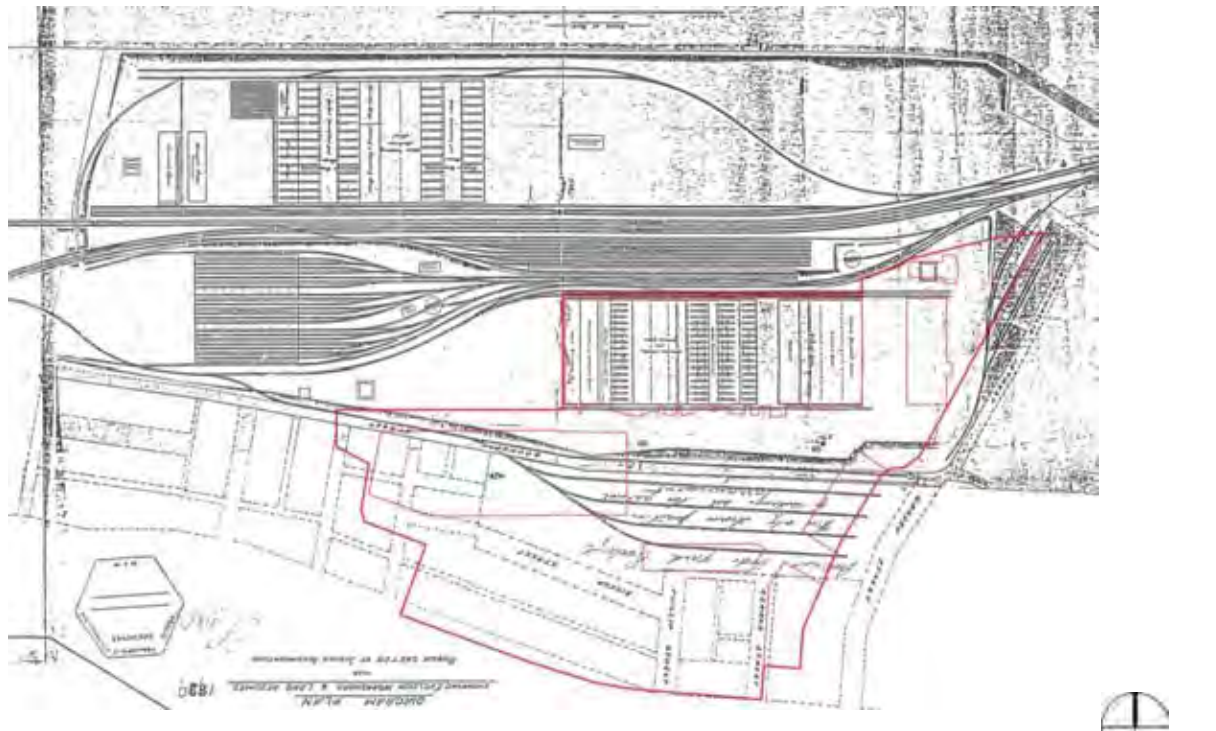


Figure 2.4 'Diagram plan of Eveleigh Workshops & land resumed. Also rough sketch of siding accommodation', possibly from The sketch south of the workshops is labelled 'Proposed goods yard Eveleigh'. Streets of housing that had been constructed around the same time as the establishment of the workshops is shown dotted south of the goods yard sketch. (Source: State Rail Authority Archives)

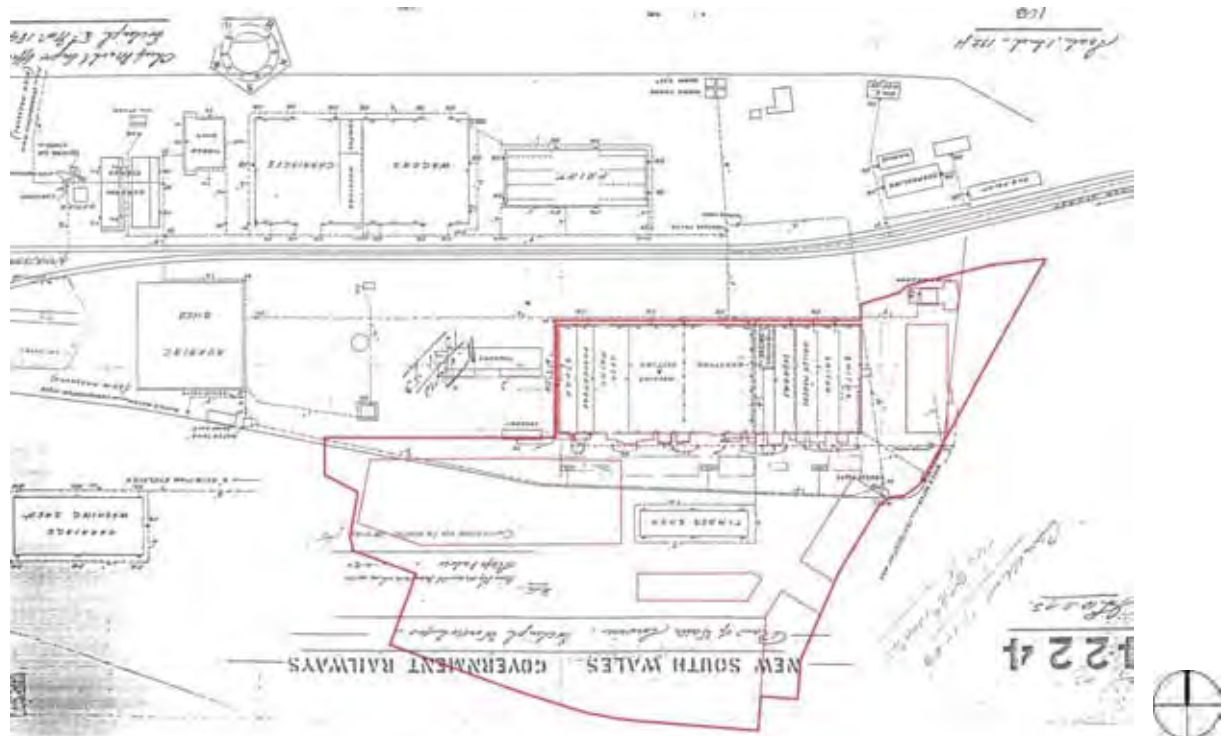


Figure 2.5 'New South Wales Government Railways: Plan of water service Eveleigh Workshops' from 1898. The new foundry building can be seen to the west of the Locomotive Workshops. (Source: State Rail Authority Archives)

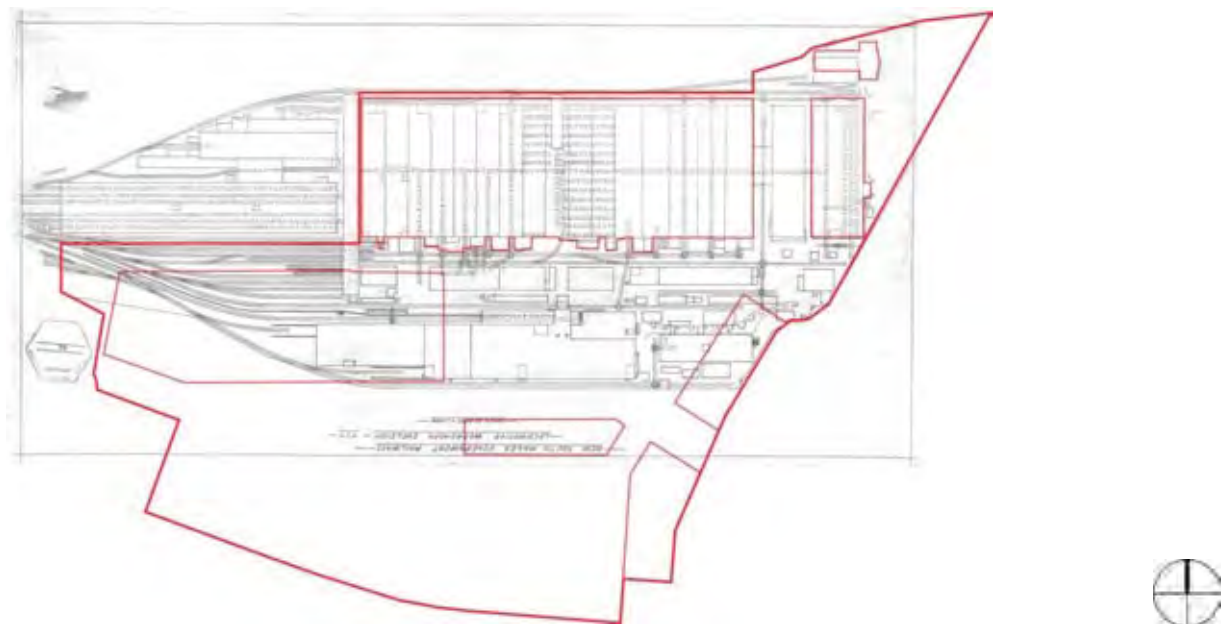


Figure 2.6 'New South Wales Government Railways: Locomotive Workshops Eveleigh', undated, but most likely 1930s. Comparison of this plan with Figure 2.3 shows the immense growth of the workshops over 30 years. The Large Erecting Shed and New Locomotive Shops are both shown. (Source: State Rail Authority Archives)

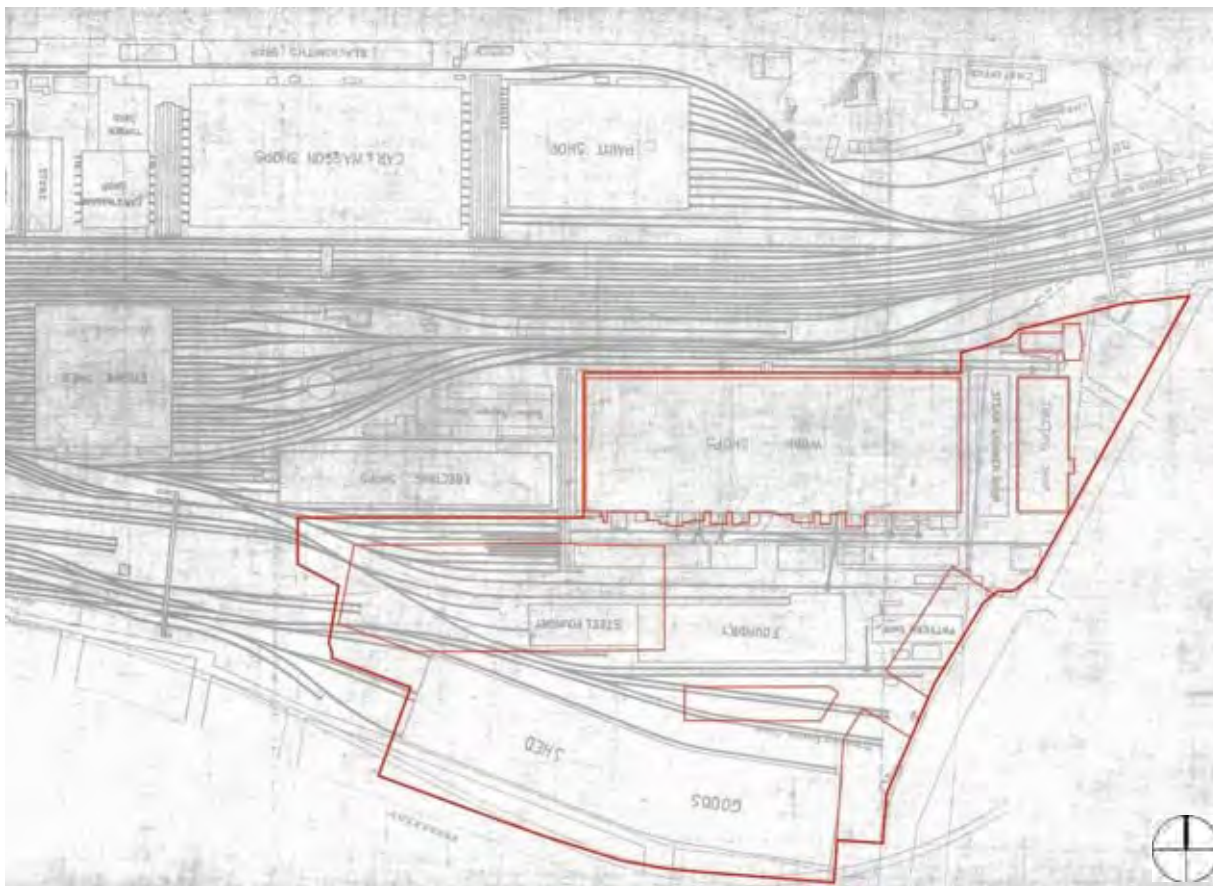


Figure 2.7 Detail of a plan of the Eveleigh Railway Workshops and Alexandria Goods Yard, undated but probably the 1940s. The course of the Eastern Suburbs Railway is shown curving along the base of the image. (Source: State Rail Authority Archives)

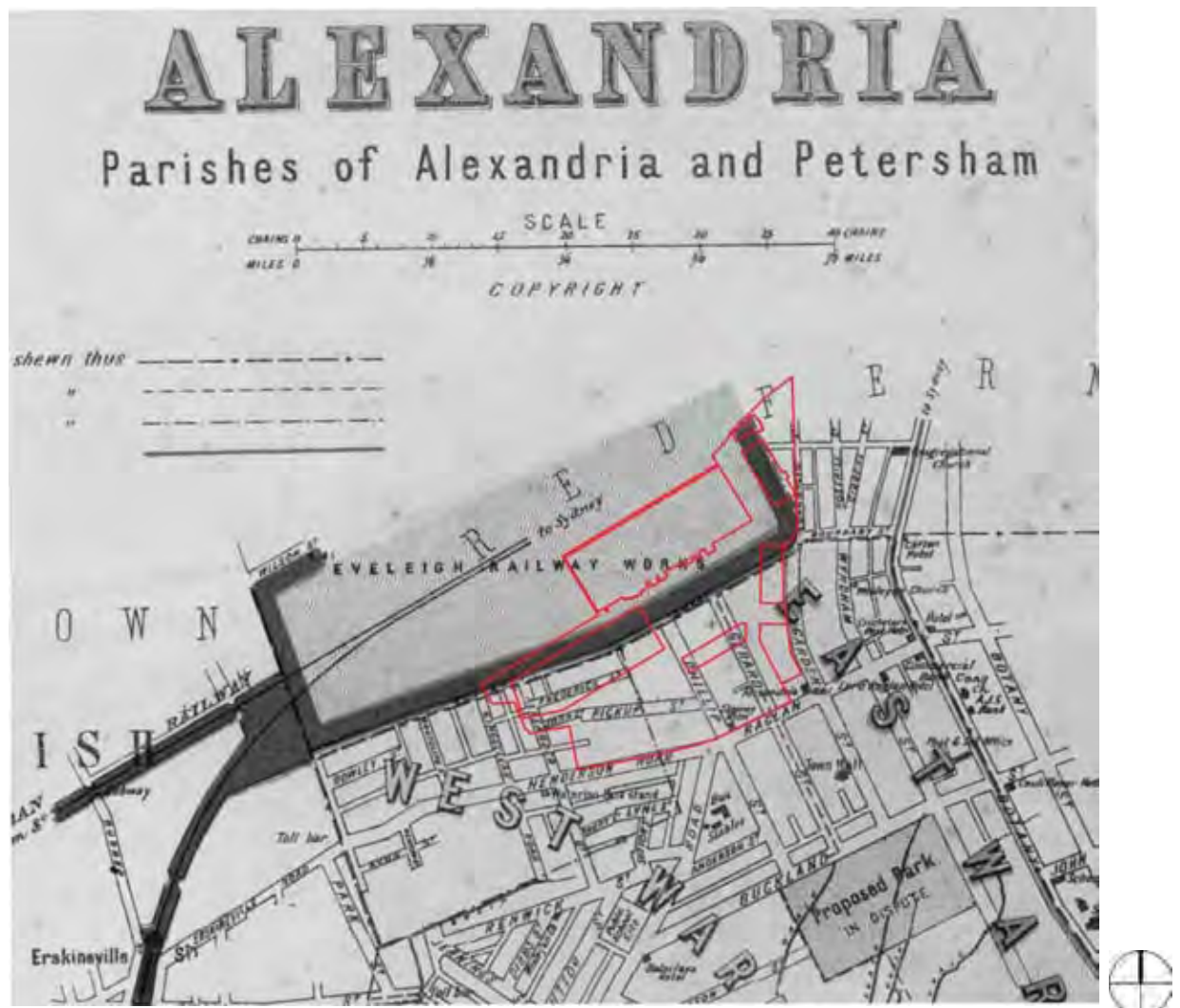


Figure 2.8 The present boundary and extant buildings of the ATP site (outlined in red) overlaid on the c1890 Atlas of Suburbs plan of Alexandria, Parishes of Alexandria and Petersham. This image shows the streets of housing that were resumed. (Source: Atlas of Suburbs, Alexandria 1890, with GML additions in red outline)



Figure 2.9 The present boundary and buildings of the ATP site (outlined in red) overlaid on three Metropolitan Detail Series—Alexandria Sheet 11 Plans dating from 1889, 1893 and 1895. The area inside the red boundary shows in detail the areas of housing that were resumed for the expansion of the Eveleigh Locomotive Workshops and Alexandria Goods Yard in 1917. (Source: Metropolitan Detail Series—Alexandria Sheet 11 Plans dating from 1889, 1893 and 1895, with GML additions in red outline)



Figure 2.10 The Locomotive Workshops and Alexandria Goods Yard in 1943, showing the row of housing along the northern side of Henderson Road that was demolished during construction of the Eastern Suburbs Railway line. (Source: NSW Land and Property Management Authority)



Figure 2.11 The first Sydney yard, which was located further towards the current location of Central Station. (Source: State Rail Authority Archives)



Figure 2.12 The original Engine Running Sheds at Eveleigh. (Source: State Rail Authority Archives)



Figure 2.13 Interior of the Engine Running Sheds. (Source: State Rail Authority Archives)



Figure 2.14 The Large Erecting Shed in 1910. (Source: Government Printing Office collection, State Library of NSW)



Figure 2.15 Interior of the locomotive workshops, date unknown. (Source: Government Printing Office collection, State Library of NSW)



2.16 Outside the Large Erecting Shed in 1938. (Source: Hood Collection, State Library of NSW)



Figure 2.17 View of the locomotive workshops before 1910, looking southwest. The curved rooves of the Engine Running Sheds can be seen in the distance. (Source: State Rail Authority Archives)



Figure 2.18 View of the locomotive workshops in 1910. The inscription on the image claims that it is a view of the New Locomotive Shop, but it appears to be a view of the Locomotive Workshops, with what was the Spring Shop on the left. (Source: Government Printing Office collection, State Library of NSW)



Figure 2.19 View of the works manager's office and the locomotive workshops some time between 1905 and 1922. The New Locomotive Shop has been constructed, but the Works Manager's Office has not yet been extended. (Source: State Rail Authority Archives)



Figure 2.20 View of the works manager's office and the locomotive workshops pre-1940s. The locomotive dive has been constructed. (Source: State Rail Authority Archives)



Figure 2.21 View of the Works Manager's Office in the late 1940s. (Source: State Rail Authority Archives)



Figure 2.22 The locomotive workshops c1940s. The building in the centre of the image is the New Locomotive Shop. The long sheds of the Alexandria Goods Yard can be seen in the background. (Source: State Rail Authority Archives)



Figure 2.23 The locomotive workshops in c1940s, showing the workmen's bridge connecting the two sides of the Eveleigh Railway Workshops and Redfern station. (Source: State Rail Authority Archives)



Figure 2.24 The locomotive workshops in 1986, showing the traverser between the locomotive workshops and the large erecting shed. The building just visible on the right was the old Wheel Press Shop. (Source: Don Godden & Associates)



Figure 2.25 The locomotive workshops in 1986. The New Locomotive Shop can be seen in the distance. (Source: Don Godden & Associates)



Figure 2.26 The locomotive workshops from Garden Street in 1986. The oliver smiths shop is the building on the left. (Source: Don Godden & Associates)



Figure 2.27 Entrance to the Locomotive Workshops from Cornwallis Street in 1986, showing the New Locomotive Workshops in the background. (Source: Don Godden & Associates)



Figure 2.28 Workers in the locomotive workshops in 1938. This photograph is one of a series of Eveleigh workers at work taken by Sam Hood for the *Century* newspaper. (Source: State Library of NSW)



Figure 2.29 Workers in the locomotive workshops in 1938. This photograph is one of a series of Eveleigh workers at work taken by Sam Hood for the *Century* newspaper. (Source: State Library of NSW)



Figure 2.30 Construction of a C3806 locomotive at the Eveleigh Locomotive Workshops in April 1945, most likely in the Large Erecting Shed. (Source: State Records NSW)



Figure 2.31 Idle locomotives in front of the engine running sheds during the General Strike in 1917. (Source: State Library of NSW)



Figure 2.32 The locomotive workshops in 1917 during the General Strike. (Source: State Library of NSW)



Figure 2.33 The locomotive workshops in 1917 during the General Strike. (Source: State Library of NSW)



Figure 2.34 View of Redfern Station from the workmen's bridge connecting both sides of Eveleigh in 1954. (Source: State Records NSW)



Figure 2.35 A resumed property on the corner of Wyndham Street and Henderson Road in 1926. (Source: State Library of NSW)



Figure 2.36 View along Henderson Road in 1938, showing the Alexandria Hotel on the right. (Source: State Library of NSW)



Figure 2.37 View west along Henderson Road in 1927, showing the railway sheds of the Alexandria Goods Yard to the right, adjacent to the Alexandria Hotel. (Source: State Library of NSW)



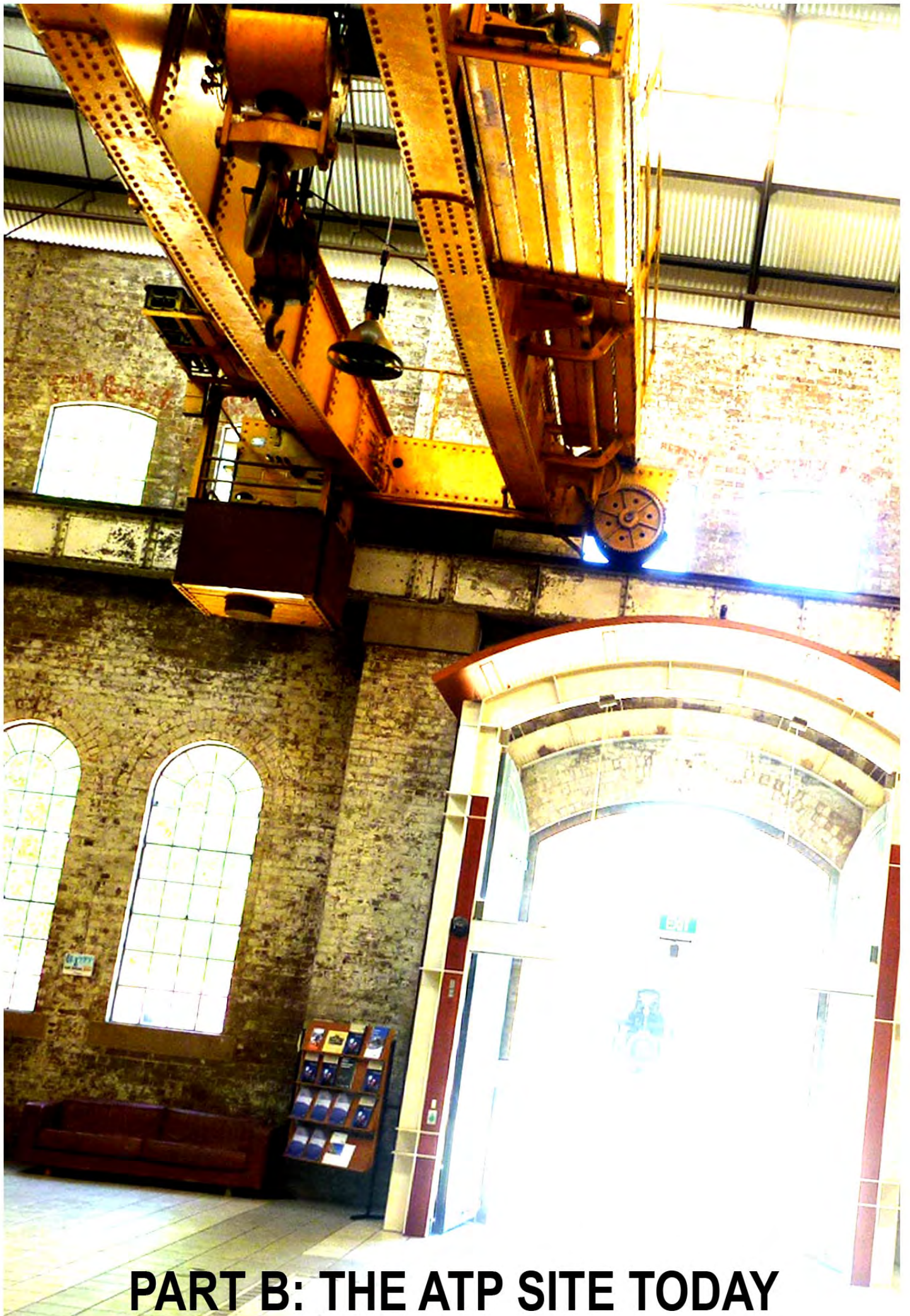
Figure 2.38 'First passenger express train to run on the new standard gauge line from Sydney-Melbourne ready in Alexandria Goods Yard' in 1962. Other sources have indicated that this may be a freight train. (Source: State Library of NSW)

2.11 Endnotes

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PART B: THE ATP SITE TODAY

3.0 Australian Technology Park Today

3.1 Overview

The ATP site reflects an amalgamation of railway land gradually resumed since 1878. Areas of land once occupied by the Alexandria Goods Yard and resumed for the construction of the Eastern Suburbs Railway tunnels and extensions of the Eveleigh locomotive workshops are contained within the ATP site in addition to the land initially resumed for the locomotive workshops. The site boundary does not correspond with the boundary of the Eveleigh Locomotive Workshops nor does it reflect any particular historical management area. Figure 3.1 shows the site today.

The ATP site excludes some buildings and areas of land that have historically been part of the Eveleigh Railway Workshops, including some previously intrinsic to its function. For example, the Large Erecting Shop, which is still in use by RailCorp, is not within the ATP site boundary. The full extent of the Alexandria Goods Yard is not reflected in the boundary of the ATP site either—a large portion of the goods yard land to the east was redeveloped by the Housing Commission of NSW in the 1980s and some land was turned into a park. The area of the goods yard contained within the ATP site has been redeveloped into a sports oval, landscaping, tennis courts, carparks and landscaped verges, as well as the site for the Biomedical and RTA buildings.

Three of the four most significant buildings of the Eveleigh Locomotive Workshops have been retained within the ATP site—the locomotive workshops, the new locomotive shop and the works manager's office. The location of the foundry is still evident from the high retaining wall that cuts across much of the site from west to east. Most of the ancillary buildings that occupied the Eveleigh Locomotive Workshops have been demolished. These buildings comprised a range of small and large sheds of various materials which would have provided a sense what the workshops were really like when they were functioning, but would have been difficult to adapt to a new use.

Eveleigh was formerly surrounded by a boundary wall that separated the workshops from the surrounding streets. This has been removed and replaced by building form and landscaping. The pedestrian overbridge that connected the two sides of the Eveleigh Railway Workshops was demolished c1994. The historical physical connection that existed between the workshops and Redfern Station has been lost through the removal of this bridge.

The adaptive re-use of the workshops has been carried out sensitively, but inevitably with such a substantial change in use—railway workshops to technology park—the character of the site as a whole has changed. Physical remnants of past use is generally confined to the workshops buildings remaining and the machinery collections contained within, with some machinery and rail lines located throughout the site. Existing interpretation at the site is a product of its time and does not give a coherent story about the site as a whole. However, the significant elements that remain within ATP offer great potential for the powerful and important social history of Eveleigh to be communicated and remembered.

An Interpretation Plan for the entire former Eveleigh Railway Workshops site has been recently prepared and its implementation will communicate the powerful story of Eveleigh. Details of the plan, including proposals to reinstate former pedestrian connections between the two former sides of Eveleigh, are included in Section 8.0 Constraints and Opportunities.

3.2 Built Heritage and Management Context

ATP began as a joint venture between the University of New South Wales, the University of Sydney and the University of Technology, Sydney, supported by the NSW State Government and the Commonwealth Government. In July 2000, the site was transferred to and managed by the Sydney Harbour Foreshore Authority and in January 2005 ownership was transferred to the Redfern-Waterloo Authority (RWA) (now UrbanGrowth NSW Development Corporation (UGDC)). As a result, the ATP is a wholly owned subsidiary of UGDC. The RWA managed land and property as well as infrastructure in the Redfern-Waterloo area and promoted commercial growth for local businesses. The ATP is one of the state significant sites that forms part of the RWA development strategy.¹

The ATPSL have developed comprehensive criteria for tenants of the ATP based on the Constitution for ATPSL, prepared in 2000. The RWA (now UGDC) has also prepared the Redfern Waterloo Built Environment Plan (Stage one) 2006, to assist with planning for the future of the site. This plan is discussed further in section 8.4.5 of this report.

The Eveleigh site as it stands today has undergone significant change with the addition of new commercial and educational buildings; however, the original buildings that remain are largely intact externally. The site comprises of the Eveleigh Locomotive Workshop building, the National Innovation Centre (the formerly the New Locomotive Workshops), the International Business Centre (former Works Manager's Office), the new Global Television and Pacific Magazines building, the National Innovation and Communications Technology Australia (NICTA) building and the Biomedical building. These are shown in context of each other in Figure 3.2.

Internally, there has been a series of office fitouts that are largely reversible and do not impact significantly on the original structure. Spatial volumes are retained in a number of internal plaza areas and circulation spaces (Figure 3.3).

3.3 Original Buildings

There are three original buildings in the precinct which are situated around the Innovation Plaza. The Innovation Plaza connects the National Innovation Centre with the Locomotive Workshops, and with the International Business Centre (see Figure 3.4). The plaza is lined with trees and is paved with brickwork. Parts of the old rail lines are visible and have been maintained to express what was once the function of the area with an old carriage displayed on one of the tracks as an interpretive element.

3.3.1 Locomotive Workshop

The most prominent building on the site is the Locomotive Workshop, a two storey sandstone brick structure of Neo Classical form consisting of 16 equally sized bays, internal hollow cast iron columns and wrought iron trusses, and corrugated iron roofing. Initially, it was built as two structures with Bays 1-4 being one structure and Bays 5-15 a second structure with the space in between acting as a laneway. This was later filled in and the two buildings were connected with a new Bay, 4a. Later, the numbering system changed to Bays 1-16 converting Bay 4a to Bay 5 and the internal wall was demolished. Externally, arched openings pierce through the 460mm thick brick walls which once allowed for trains and machinery to exit and enter the building. The openings are now solid, glazed or operable.

Together with the internal trusses, columns and internal downpipes, the roof acts as a system working as one unit. It is clad with a mixture of original and new corrugated iron sheeting, with original sheeting largely in place in Bays 1 and 2. Each bay has a clerestory window in the centre of the roof with a curvilinear profile, also clad in corrugated iron. Original louvers have remained on the sides with added glazing allowing for natural light throughout the building.

The building remains predominately intact and in a fair to good condition with each bay expressing its long period of intensive use with a certain degree of weathering that has occurred over time. The eastern Bays 1 and 2 communicate of the original condition of the building with the addition of very little new fabric. These bays house 'Wrought Artworks', a private blacksmith workshop at the southern end and a large number of movable heritage items at the north end, including the Davy Press.

Within Bays 3, 4 and 5 are new infill offices that house the ATP Office as well as other tenants and a lecture theatre at the southern end of Bay 5. These bays act as a whole, with a large atrium space in the middle at Bay 4 and offices built around the edge in a u-shape at the northern end. They have been built into three levels to utilise the height, with stairs exposed to the central atrium and the floor lined with carpet throughout. Each floor has a mezzanine walkway that looks over the open space, with the first floor walkway being the widest and extending out the furthest as shown in Figure 3.5. Two large openings, which have been infilled with glass, form an access point at the southern end of Bay 4. This southern end has remained open with a mezzanine walkway for the upper level shown in Figure 3.6 and the public is able to walk through and view the new use of the space, then continue to Bay 6-9.

The centre of the Locomotive Workshop building houses further office space and a thick brick wall with a large opening that divides the space between Bay 5 and 6 shown in Figure 3.7. On either side are two levels of infill offices leaving a corridor of open space through Bays 6 and 7. Within this corridor is another overhead travelling crane and a new lift shaft. The office spaces are lined with plasterboard and contain some openings made up of glass and a steel frame. The corridor then leads to Bay 8 which is of a similar design to Bay 4, having the central space open with a cafe and two levels of office space around the edges at the northern end. There is also a large glass opening at the southern end forming another access point from the south (Figure 3.8). Similarly to Bay 6 and 7, Bay 9 contains two levels of office space and a ticket window (Figure 3.9) on the ground floor where it leads into the exhibition space of Bay 10-14.

An open hall is set up in Bays 10–14 (Figure 3.10) leaving the large space of the Locomotive Workshop open with some machinery grouped as an interpretive display at the northern end of Bay 10 (Figure 3.11). The original structure is left exposed expressing the cast iron columns and wrought iron roof trusses and each bay has two sets of columns joined together by steel girders (Figure 3.12). It is envisaged by ATP that this space will remain an exhibition space for the public to view the movable heritage items. These are the only bays that have not been retrofitted and the entire structure is exposed.

Originally Bays 15-16 were separated by a brick wall which has remained. They have now been infilled with three and two levels of new office space respectively. Centrally, the original structure is exposed with the new structures on either side. These are connected by walking bridges on level two and three (Figure 3.13 and 3.14). Most of the new infill areas are lined with timber or plasterboard and constructed of steel and timber while the floor is lined with carpet.

A series of annexes once lined the southern wall of the building, consisting of 21 annexes of brick, timber and corrugated iron. Today, there are nine original annexes remaining and three new that have been constructed of contemporary material. Annexes 1 to 6 are original and currently house (from 1 to 6): a machinery/workshop area, blacksmith shop, blacksmith shop access and fuel tanks, boilers (Figure 3.15), commercial kitchen access and pump room. Annex 8a is an original structure with heavy modifications and currently houses the ATP security office, while 9a is an external space with air conditioning fan coil units on a platform. Annex 10a houses office space within a modified original structure. Annexes 12, 13 and 20a are new structures clad with corrugated iron and house the plant room.

As noted above, Annex 6 houses the pump room. Comprising of a brick and stone structure with a lantern roof, it has been recently restored and interpreted. The hydraulic pump inside has been repainted in its original colours and the room itself has been kept in its original form with various hand tools and other machinery in place as it would have been originally. This interpretation of the pump room allows the visitor to have a sense of how it once operated (Figure 3.16).

3.3.2 National Innovation Centre

To the east of the Locomotive Workshops is the National Innovation Centre which was once known as the New Locomotive Workshops, where locomotives were constructed on site. This building is also of masonry construction and contains a frame of steel columns, roof truss structure and corrugated iron roof. The building consists of two long bays and is considerably smaller than the locomotive workshops. The northern section was built first, in 1907. This comprised of two long bays running north south with openings on either end to allow the locomotives in and out of the building and divided into eight bays east west. In 1914 an extension was constructed which extended the building to the south with a further seven bays running east west and a sawtooth roof facing south.

The majority of the building has been retrofitted internally with three levels of office space and a central atrium, which exposes the original structure. Within the central space, a row of old wash basins remain as interpretation of the working conditions of the past and suspended above is an overhead travelling crane (shown in Figure 3.17). The retrofit allows for much of the structure to be exposed throughout as the new design is integrated with the old (Figure 3.18).

3.3.3 International Business Centre

The old Works Manager's Office, now known as the International Business Centre, is situated opposite the National Innovation Centre. Externally, it is largely intact with major internal modifications that have changed the configuration to house small offices and meeting rooms. The building forms a T-shape in plan and is constructed of masonry, rendered and painted an off-white colour with maroon trimmings (Figure 3.19). Although it has been heavily modified internally, externally it retains its original form of the 1940s.

3.4 New Buildings

3.4.1 Biomedical Building

Following the closure of the workshops in 1988, one of the initial new buildings built on the site was the Biomedical Building (Figure 3.20), completed in 2000. It is a purpose-built scientific facility and was designed by TGP Architects & Planners Pty Ltd. The facility is situated opposite the Locomotive Workshops on the southern end of the site and is four storeys high with a reinforced

concrete structure and external stainless steel walkways.² The wedge-shaped building is split into two facades, the western laboratories are shaded with sunscreens at the steel walkways and the eastern façade houses the offices. In keeping with the industrial nature of the site, the air handling equipment is exposed on the roof of the building.³

3.4.2 National Information & Communications Technology Australia (NICTA)

Construction began in 2007 for the NICTA research facility following a design by Cox Richardson Architects and was completed in 2008 (Figure 3.21). The building is located south of the locomotive workshop building in close proximity to the Biomedical Building. Externally, there are six service cores on the western and eastern facades expressing the internal mechanics and vertical ventilation system while providing shade from the low angle sun. Internally, the building adopts a large open plan and allows for flexibility in workspace arrangements. The materiality of the building responds to the historical and industrial context with the use of weathered steel cladding on the service cores and off-form concrete throughout the building, along with recycled hardwood and polished concrete floors internally.⁴

3.4.3 Channel 7, Global Television and Pacific Magazines (Media City)

A new media complex, designed by PTW Architects, has recently been completed to the southwest of the Eveleigh site in the vicinity of the Biomedical Building. The new media complex will house the Seven Network, Pacific Magazines and Global Television. The building is broken up into eleven storeys of office space and four separate studios externally, shown in Figure 3.22. In response to the nearby NSW Department of Housing apartments, the southwest wing of building is four storeys high to minimise impact.⁵ The building is of reinforced concrete frame construction and curtain wall glazing, particularly the expansive southern side, as can be seen in Figure 3.23. The northern side consists of smaller coloured window bays with shading devices.

3.4.4 Sydney Ambulance Centre and the NSW Transport Management Centre

The building housing the Sydney Ambulance Centre and the NSW Transport Management Centre was conceived in 1997 and subsequently built and is one of the first buildings built on the site since the closure of the Workshops. It is a three-storey brick building that fronts onto Garden Street south of NICTA and to the east of the biomedical building. A pub is located to the south, on the corner of Garden Street and Henderson Road, but does not form part of the ATP site.

3.5 Water Tower

The Water Tower is a wrought iron and steel structure with a square, open-topped elevated reservoir that once supplied water for the site (Figure 3.28). It is located opposite the International Business Centre on the boundary of Cornwallis Street and acts a landmark for the area. Figure 3.29 shows the Water Tower in context to the street and to the railway line.

3.6 Landscaping

Landscaping is a major component of the site with various planned hard and soft landscaping areas. The entry point from Cornwallis Street closest to Redfern Station is a landscaped area with grass and trees lining the edges. A large staircase leads down to the Innovation Plaza and past the Water Tower which is discussed in section 3.8. The Innovation Plaza is lined with two rows of deciduous trees, while the ground comprises diagonal brickwork with intact remnants of the old rail lines. A number of movable planter boxes and benches constructed of steel and timber, (originating

on the site) are set out in the plaza. The path along Locomotive Street and the edge around the various carparks are lined with trees and shrubs. A paved area in front of the NICTA building also contains trees. Paved areas lead down into the southern end of the site and past the media complex and the biomedical building. A large grassed area with trees lining the edge defines the southern edge of the site.

3.7 Heritage Interpretation

The ATP lends itself to be interpreted for its past use with the aid of machinery displayed throughout the site. To this end, there is interpretation scattered across the site, generally in the form of panels and signs in front of the workshops buildings or next to items of machinery that have been restored and put on display.

There are 44 interpretive panels throughout the site with 12 external signs and 18 in the internal circulation spaces, with the remainder being in Bay 10. Most of the panels accompanying the machinery displayed describe the item and its historical use, while some cover more general historical themes such as the original blacksmiths shop. Figure 3.26 shows the Davy Press on display and Figure 3.27 shows an original external urinal with an interpretive panel.

Public access is available to most of the site with access to the exterior unrestricted and the interior restricted to areas that are unoccupied by tenants. Bays 3 through to 9 and 15–16 are accessible and Bays 10-14 are available for functions.

The site interpretation is informative, but it is a product of its time—interpretation philosophy and methods have developed greatly over the past decade. For example, the placing of machinery does not appear to have been organised with any overarching strategy that would allow the items to be understood in a meaningful way. Each item is displayed with an interpretive panel that describes the original use of the machine and its history, but does not provide a connection with the social history of the Eveleigh Locomotive Workshops or a sense of how it operated within the site as a whole.

There are a number of more successful examples of interpretation at the site. The display of the overhead traveling cranes throughout the locomotive workshops building, the restoration of the pump room and the machinery in the blacksmith shop (Figure 3.24), are good examples of interpretation which provide a representation of how the machines would have once operated, rather than being displayed in isolation as seen in Figure 3.25. Original rail lines have been interpreted through the use of lines marked on the carpet within the locomotive workshop building from Bay 3 to Bay 9, continuing the line from the blacksmith shop in Bay 1 and Bay 2. As noted in Section 3.1, an Interpretation Plan for the entire former Eveleigh Railway Workshops site has been recently approved (see Section 8.0 for more details) and some measures have been implemented or are underway, including the ATP Open Day and Eveleigh Railway Film Festival, fit-out of Bays 1 and 2 north for interpretation, new interpretation signage and a walking guide and window graphics to Innovation Plaza.

3.8 Planning For Future Development

The approved subdivision plan for ATP allows a number of further development lots on the site. The planning context for the site is described further in Section 8.0 Constraints and Opportunities.

A Concept Plan for the former Carriage and Wagon Workshops (now known as North Eveleigh) was approved in 2009 and allows for a mix of residential and commercial development. Redfern Station will be redeveloped with funds from the sale of the North Eveleigh.

3.9 Comparative Analysis—Contemporary Adaptive Reuse

The Eveleigh Locomotive Workshop area is an industrial site that has been transformed and given a new purpose. A comparative analysis is provided here of adaptively re-used buildings and sites which share key features, characteristics and historic themes including railway sites that have been adaptively re-used and industrial sites that have been given a new use. The purpose of this comparative analysis is to provide a better understanding of a site's significance, in accordance with the NSW Heritage Council document *Conservation Management Plan (CMP) Assessment Checklist September 2003*.

3.9.1 Queen Victoria Museum and Art Gallery—Launceston Railway Workshops

The evolution of Eveleigh as railway workshops is similar to the story of other railways around Australia. The Launceston Railway Workshops are no exception. Established in the 1870s, they ceased operation in 1993 and have since been reactivated as a cultural precinct for Inveresk, Tasmania.⁶ The workshops were key to the evolution of Tasmania's industrial environments, in particular demonstrating the beginning of wartime industries for the state. Today they house the Queen Victoria Museum and Art Gallery, where the original buildings have been retrofitted with new uses while maintaining the distinction between the old and the new (see Figure 3.30). The new works take advantage of current technology and allow the museum to maintain a stable environment through the use of double glazing and an air conditioning system with geothermal heat exchange. Similar to Eveleigh, the blacksmith workshop has been retained as an interpretation of the past use of the site along with the Weighbridge.⁷

3.9.2 Canberra Glassworks

Industrial sites such as the Kingston Power House demonstrate that they can be successfully adapted into a new use. This particular site is now a glass art workshop and production centre and while the new use of the site is quite different to the original, the industrial character of heat, sound and light remains (see Figure 3.31). Originally, the Power House and the Fitters Workshop were the first to provide power to Canberra in 1915 and demonstrate the beginning of electricity generation for the city. Unlike Eveleigh, the life of the Power House was short and shut down in 1929, with reactivation occurring in short periods between 1936 and 1942.⁸

3.9.3 North Eveleigh CarriageWorks

North of the Eveleigh workshops is the CarriageWorks, which has been converted into a performance centre for the arts. A 'raw' approach has been taken with this similarly historic site, with a simple take on adaptive re-use (Figure 3.32). Here, the building has been left in its state of weathering, with the original structure and materials remaining exposed. The space has been divided into two flexible theatre spaces, training rooms, office space and large workshops.⁹ Situated within the open space of the foyer are new structures which have been placed to house amenities. The new structures do not touch the original fabric, but simply exist within it and are constructed of raw materials. There is also a weekend market, managed by ATPSL, which is held for the community and visitors. Future residential development has been incorporated into the masterplan design of the overall site to respond to demand in the area. Overall, the site has retained its industrial character despite it now housing performing arts.

3.9.4 Cockatoo Island

Cockatoo Island is a prime example where an industrial site has been taken the 'keep as found' approach while making use of the site as a stage for concerts and events. Although the site holds a maritime history, it is similar to Eveleigh in its industrial nature and ceased operation in 1997. The island was an imperial prison, industrial school and reformatory gaol and during the twentieth century it was Australia's largest shipyard which was built by convicts in 1857. With this substantial industrial history behind it, the original buildings remain on the site with accommodation available in Federation period houses on the island. It is also a popular camping ground, where visitors have the opportunity to camp and take heritage tours of the site or conduct their own tour (see Figure 3.33). There are no permanent activities aside from regular guided tours by knowledgeable tour guides and a regular school programme.¹⁰

3.9.5 Civic Railway Workshops—Honeysuckle, Newcastle

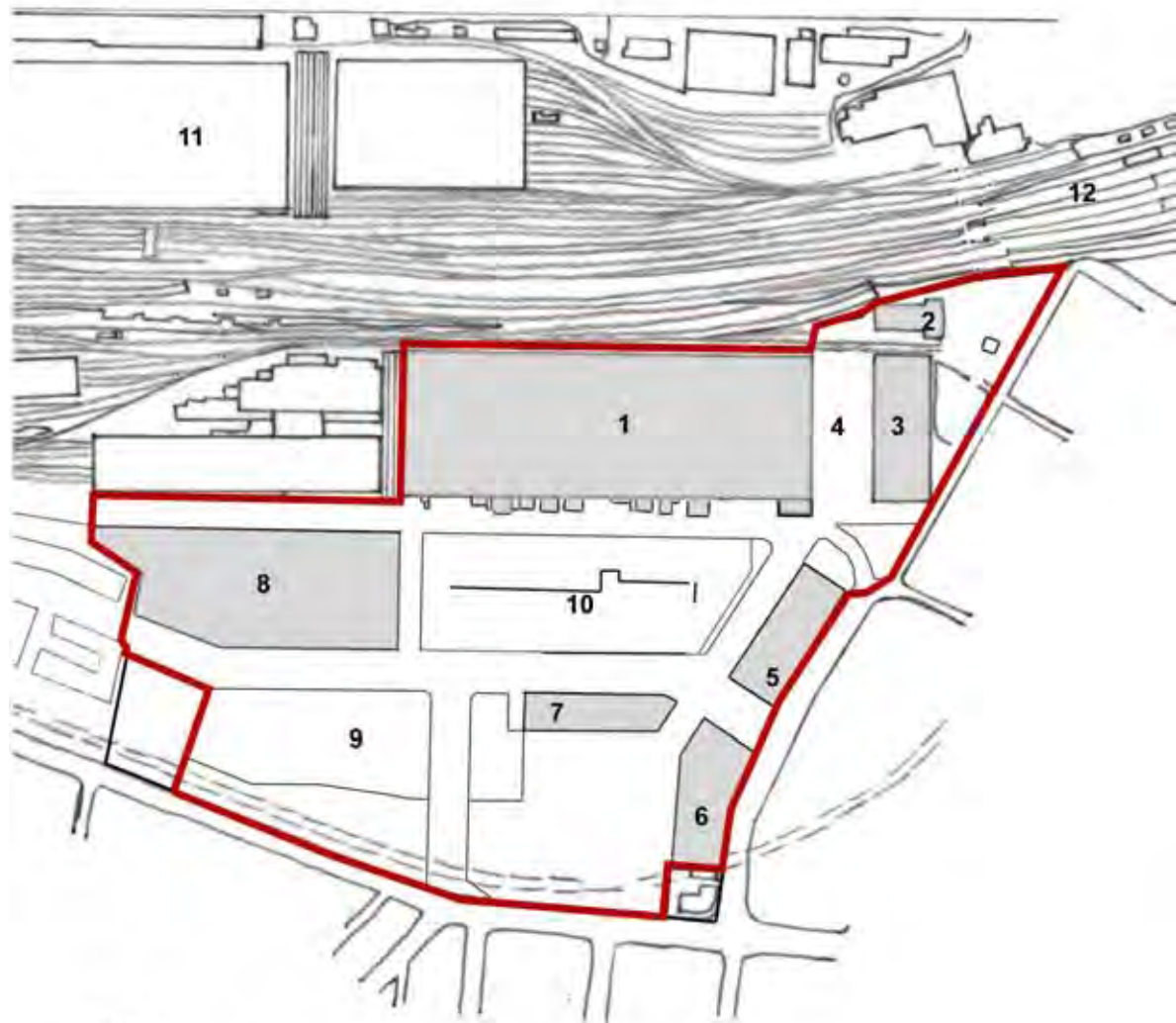
The Civic Railway Workshops are relatively smaller in scale to the Eveleigh Locomotive workshops and were constructed between 1874 and 1886. They are integral to the historical evolution of railway in the area having allowed for separation from the Great Northern Lines in the main rail system. Currently they have been transformed into a new social centre for the area with a mixture of restaurants, cafes, culture and public space and will soon house the Newcastle Regional Museum. As the site is situated near the water, this has been used as an advantage to allow for tourists to visit a historical setting with contemporary activities (see Figure 3.34). The boiler house and machine shop are currently occupied by the Hunter Valley Wine Society while the blacksmith's shop and wheel shop are occupied by tenants, all of which have been restored.¹¹ In a similar way to ATP, new office buildings have been added within the Honeysuckle site.

3.9.6 The Workshops Rail Museum Queensland—North Ipswich Railway Workshops

Established in 1864, the north Ipswich railway workshops were the first in Queensland and hence are important in documenting the transport development of Queensland.¹² With funding from the Queensland Heritage Trail Network, the workshops have been redeveloped into a 'living history' experience for the visitor, including interactive interpretation detailing the history of rail in the state, the workers and their stories as well as looking into the future of rail technology with simulations (see Figure 3.33). The museum includes close up exhibitions of rolling stock and a model railway as well as the chance for visitors to watch workers restore parts of steam locomotives.¹³

3.9.7 Midland Atelier—Midland Railway Workshops

The workshops were built in 1904 and were the largest industrial workshops in Western Australia. The old Pattern Shop and Foundry have been converted into a creative industries centre, the Midland Atelier (Figure 3.36). The Atelier utilises modern technology and is environmentally friendly, powered by 201 solar panels. This innovation continues one of the original uses of the workshops which once had a power house that assisted in the repair of locomotives and provided electricity to Perth's east. Like Eveleigh, the workshops are evolving as technology evolves, now with a contemporary use.

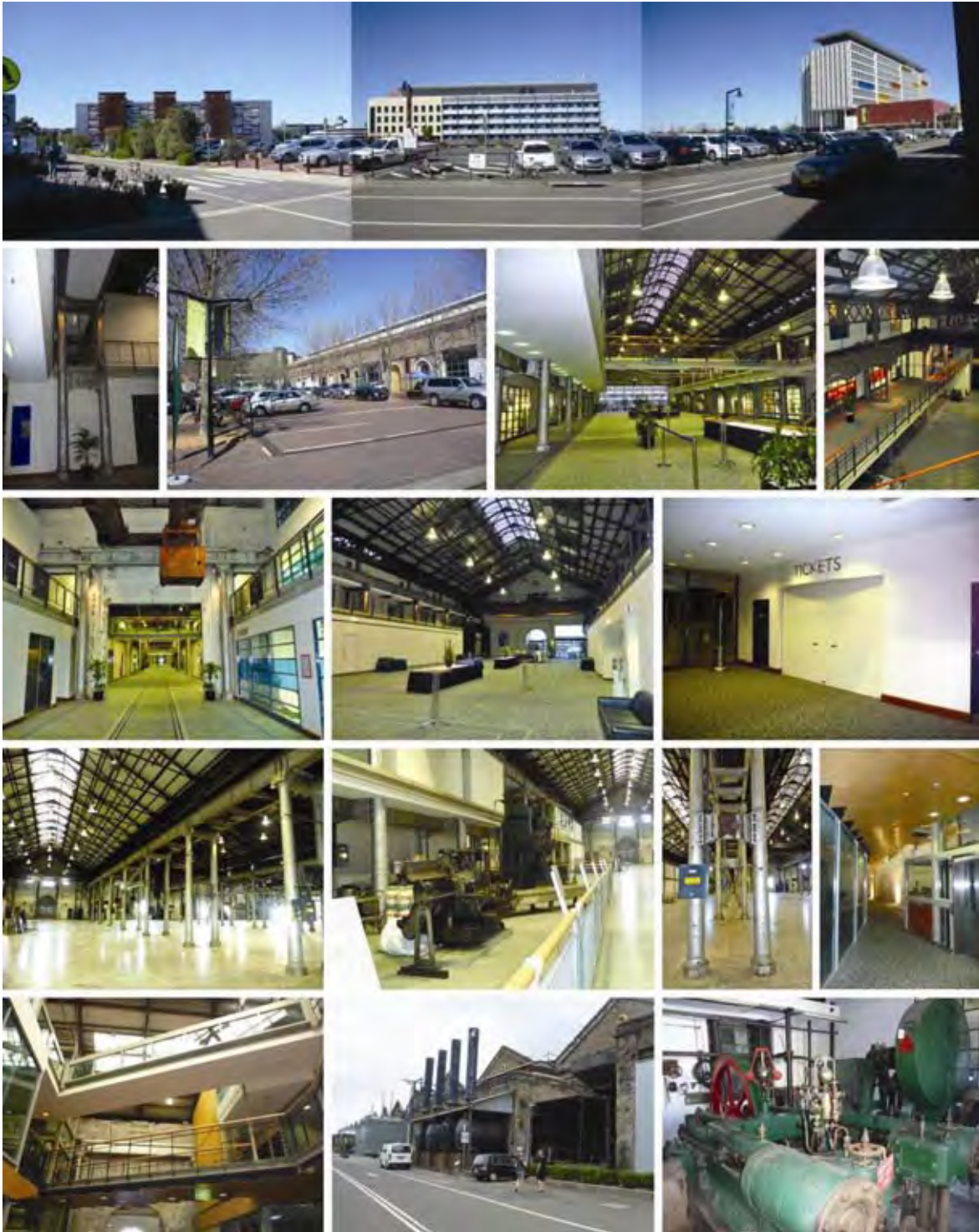
**KEY**

1. Locomotive Workshop
2. International Business Centre (IBC)
3. National Innovation Centre (NIC)
4. Innovation Plaza

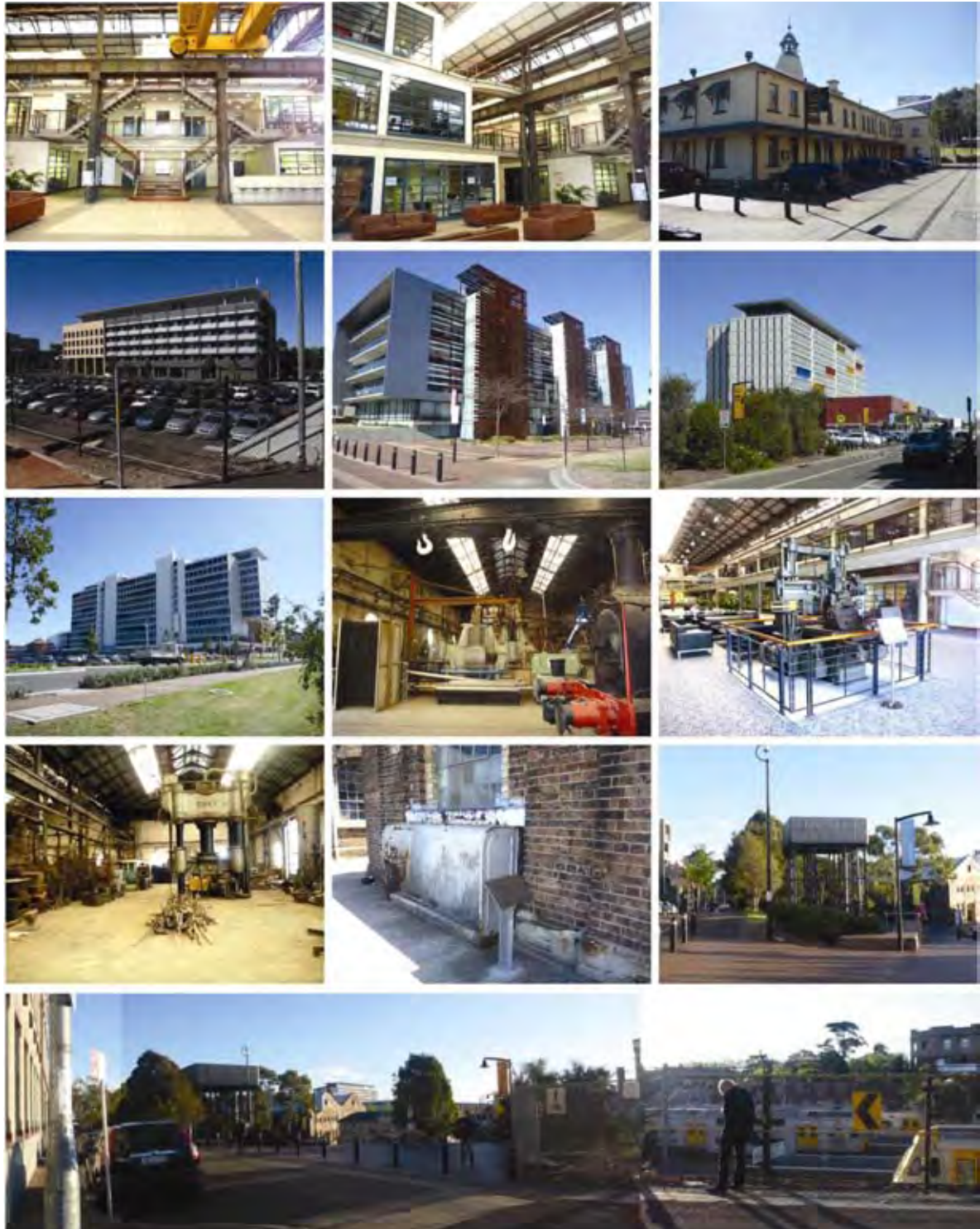
5. National Innovation and Communications Technology Australia (NICTA)
6. Sydney Ambulance Officers Centre and RTA Transport Centre
7. Biomedical Building
8. Media Complex
9. Southern Carpark
10. Central Carpark

11. Carriageworks
12. Redfern Station

Figure 3.1 The ATP Site today showing the new and existing buildings. The railway tracks are to the north and Redfern Station is to the north east. The ATP is outlined in red. (Source: ATP base plan with additions by GML May 2010)



Figures (left to right) 3.2 Panorama of new buildings, NICTA, Biomedical Building and the Media Complex; 3.3 Internal circulation space; 3.4 Innovation Plaza; 3.5 Mezzanine Walkway; 3.6 View from top Mezzanine level; 3.7 Brick dividing wall and overhead crane; 3.8 Internal space and southern glazed opening; 3.9 Ticket window; 3.10 Bays 10-14 open hall; 3.11 Interpretive display at northern end of Bay 10; 3.12 Steel Columns; 3.13 Internal fit out; 3.14 Bays 15-16 connected by walkways; 3.15 Boilers on the southern wall of the Locomotive Workshop; 3.16 The Pump Room;



Figures (left to right) 3.17 Internal space with overhead crane and washbasins to the right; 3.18 Exposed structure with new fit out to the left; 3.19 External view of the IBC; 3.20 External view of the Biomedical Building; 3.21 External view of NICTA; 3.22 Media complex with four separate studios to the right; 3.23 Media Complex with curtain wall glazing to the south; 3.24 Blacksmith Shop machinery; 3.25 Machinery Display; 3.26 The Davy Press; 3.27 External urinal with interpretation panel; 3.28 Water Tower; 3.29 Entry to the ATP from Gibbons Street with the Water Tower to the left and the railway to the right.



Figures (left to right) 3.30 Queen Victoria Museum and Art Gallery, former Launceston Railway Workshops (Source: Department of the Environment and Heritage, Adaptive Reuse, The Queen Victoria Museum and Art Gallery, 2004); **3.31** Canberra Glassworks; **3.32** CarriageWorks, North Eveleigh (Source: Architecture Australia, CarriageWorks, John De Mannicor, Jul/Aug 2007); **3.33** Cockatoo Island (Source: Sydney Harbour Federation Trust, <<http://www.cockatooisland.gov.au/>>); **3.34** Civic Railway Workshops, Honeysuckle (Source: GML 2008); **3.35** The workshops rail museum Queensland, North Ipswich (Source: Queensland Museum <<http://www.theworkshops.qm.qld.gov.au/>>); **3.36** Midlands Atelier (Source: Heritage Matters brochure, Heritage Council of Western Australia, 2010)

3.10 Endnotes

- 1 Australian Technology Park Annual Report, 2008
- 2 AW Edwards <<http://www.awedwards.com.au/projects/australian-technology-park-biomedical-resear.php?filter=clients>>
- 3 Architecture Australia <<http://www.archmedia.com.au/aa/aaissue.php?article=5&issueid=200001&typeon=1>>
- 4 AIA <http://www.architecture.com.au/awards_search?option=showaward&entryno=2008023833>
- 5 Planning NSW <http://www.planning.nsw.gov.au/asp/pdf/06_0149_atp_seven_concept_plan.pdf>
- 6 Australian Heritage Places Inventory
- 7 Department of the Environment and Heritage, Adaptive Reuse, The Queen Victoria Museum and Art Gallery, 2004
- 8 ACT Heritage Register <<http://www.act.gov.au>>
- 9 Architecture Australia, CarriageWorks, John De Mannicor, July/August 2007
- 10 Sydney Harbour Federation Trust <<http://www.cockatooisland.gov.au/>>
- 11 Heritage Council of New South Wales. <<http://www.visit.heritage.nsw.gov.au>>
- 12 The Queensland heritage Register, Department of Environment and Resource Management <<http://www.epa.qld.gov.au>>
- 13 Queensland Heritage Trail Network <<http://www.heritagetrails.qld.gov.au/attractions/ipswich2.html>>

4.0 Movable Heritage

4.1 Introduction

The Eveleigh Locomotive Workshops Machinery Collection is listed in the State Heritage Register for the contribution it makes to the significance of Eveleigh Locomotive Workshops. The Collection comprises selected examples of the machines and equipment installed in the Workshops at the time that it closed and includes individual items dating from the late nineteenth century through to the mid-twentieth century. An overview of the systems in place and the machinery used when the workshops were operating is given in Section 2.5.2.

Many machines evolved during their lifetime at the workshops with changing technology. Conversion of fuel and drive mechanisms was a common process for many of the machines. The steam boilers which once powered large numbers of machines within the workshops articulate this evolution in technology, having been switched from coal to fuel-oil to natural-gas firing during the middle of the twentieth century.

When the workshops first shut down in the late 1980s, a small number of movable items from the workshops were deemed to be of high cultural or historical value and were put into the railways memorabilia collection or donated to organisations such as the Powerhouse Museum. Consequently, these have not been included in any of the subsequent machinery inventories associated with Eveleigh Railway Workshops and are not documented (outside of their museum records) in relation to their role in the Locomotive Workshops. At the same time, large numbers of other machines were deemed to be of little heritage value and were sold or discarded and their role in the operations of the workshops is also unrecorded. The machinery and equipment remaining in the Workshops is what is now known as the Eveleigh Locomotive Workshops Machinery Collection.

Some of the machinery is still being used today at the blacksmiths workshop which operates in Bays 1 and 2 of the locomotive workshop building. Other machinery is displayed throughout the site with various interpretation panels. In particular, a number of machines are displayed in the northern part of Bay 10.

A number of the remaining machines played a significant role in the operations of the workshops, including the Davy Press in Bay 1 North, blacksmith's hammers, presses, associated hand tools and other small items in both Bays 1 and 2, milling and planing machines in Bay 10, the four boilers in Annex 2 and the hydraulic pumping machines in Annex 6.

ATPSL have completed a Heritage and Conservation Register for the site, which includes an inventory of the machinery collection, listing all the machinery and movable heritage items that are of heritage significance which are either located on-site, off-site or have been disposed of since the early 1990s. These lists do not contain much information on the current condition and integrity of the items and additionally, where the list does mention whether they are operational or not, it does not provide any details of the circumstances.

4.2 Management Plan for Movable Items 1996

The primary management policy document in relation to the management of the movable heritage collection at Eveleigh Locomotive Workshops prior to the ATP S170 Register has been the *Eveleigh Workshops Management Plan for Movable Items and Social History*, prepared by Godden Mackay Pty Ltd for City West Development Corporation, State Rail Authority and Department of Urban

Affairs and Planning in July 1996. This report provided important background information and policies for the collection and is noted as a reference document in the movable collection's S170 Register listing. Section 7.0 of the management plan established a set of management policies for the movable items. The primary relevant policies identified for management of the movable items are set out in Policy 7.6: Conservation Approach. This section states, *inter alia*:

- *The collection of significant equipment and machinery, the majority of which is currently in Bays 1-4A of the Locomotive Workshop, should be conserved in ways which protect and enhance its cultural significance, continue its useful life and contribute to the activities at Eveleigh as both an engineering and educational resource. Long term conservation of the outstanding cultural significance of the Eveleigh machinery collection should be an important component of the future use and management strategies.*
- *Future developments should take into account the need to integrate the retention and conservation of the machinery within the development of the site as a whole.*
- *The Eveleigh Locomotive Workshops should house machinery and relics provenanced to the site or judged appropriate for inclusion in the collection on site by this report, but should not become a repository for 'antique' railway machinery.*
- *The machinery and associated tools should remain together on site as assemblages, collections or systems.*
- *No part of an assemblage should be removed from the parent relic. This includes all tools, stands and operating equipment.*

Other sections within Section 7.0 provide policies to cover a range of potential issues, including possible restoration and operation of the machinery. Policies relevant to the current management environment include:

- NSW Government responsibility for management and costs associated with Eveleigh Machinery Collection (Policy 7.3)
- Responsibility to Interpret the Eveleigh Machinery Collection (Policy 7.4)
- The appointment of a specialist Machinery Supervisor to oversee the management of the Eveleigh Machinery Collection (Policy 7.5)

While the last of these policies has not been implemented, ATPSL funds the management and maintenance of the movable heritage collection and seeks expert advice where required.

4.3 Development between 1996 and the Present

4.3.1 General

Since 1996, the Locomotive Workshops buildings have been substantially redeveloped as commercial office space, with associated support activities, such as coffee shops and conference rooms. Bays 10–14 have been developed as a large flexible function space.

In this context, individual machines have been cleaned and put on display, particularly in the central corridor, with interpretation signage providing identification and historical information about the item. Most of the machinery on display has been given some preservative treatment and is in relatively

good condition. The operation of any individual machine is not (or, only superficially) explained, nor is the display of any machine given any dimension in terms of the input and output materials, power systems, peripheral elements or operator actions. This context could be provided through interpretation.

Two recently completed works are the conservation of the hydraulic pumping plant in the Bay 3 South Annex (Figure 4.1) and the conservation, reassembly and display of a steam crane and the Wheel Shop Pivot Crane in Innovation Plaza. The Bay 3 South Annex containing the hydraulic pumping plant is normally locked and available to the public only by prior arrangement or as part of specific tours. This protects the authenticity of the display, wherein the tools, maintenance materials and normal machine conditions have been kept in place. The proposed Bays 1 and 2 North interpretation display and implementation of the Interpretation Plan generally will communicate to the public the significance of the movable collection.

While recommendations in the 1996 Management Plan regarding the creation of a management committee and specialist supervisor have not been implemented, the recent increased involvement of stakeholders through such avenues such as the Redfern Waterloo Heritage Taskforce and the Eveleigh Steering Committee and through the Eveleigh Interpretation Plan process, as well as the volunteer program, provides opportunities to access specialist knowledge through a specialist reference committee, or similar—see Policy Section 9.0 in this regard.

4.3.2 Heritage Operator in Bays 1 and 2 South

The retention of a use within Bays 1 and 2 South that conserves the historical use of the space has been adopted by ATPSL. A heritage operator, Wrought Artworks, has been operating from Bays 1 and 2 South, part of the former Blacksmiths Shop within the Railway Workshops complex, continuously since 1996. Wrought Artworks is a small blacksmithing and decorative iron works specialising in repair and replacement of architectural ironwork.

Some machines have been maintained continuously since the closure of the workshops through the involvement of Wrought Artworks, while others were static for many years before being refurbished and brought back into use by the company. ATPSL recently sponsored a grant application by Wrought Artworks to recommission a Covmac horizontal upsetting machine. Wrought Artworks has also brought several items of machinery and equipment of their own into the workshops, including, for example, a substantial metalworking lathe (a machine that would never have been co-located with blacksmithing machinery in the railway workshops).

Wrought Artworks operate in a semi-public environment, with passing visitors to the ATP also able to look over the low fence to observe the blacksmithing operations. As with many industrial activities, many of the day-to-day actions carried out within this area are mundane and present little spectacle to an audience. As the business operates primarily as a commercial operation, the staff and the nature of the work are not specifically chosen for their display value, hence, with a few notable exceptions, most activities occur with little engagement or interaction with the audience. Nonetheless, it is generally regarded as a positive and interesting experience to observe the smiths at work within their area, with occasional moments 'when sparks fly'. Community engagement through blacksmithing displays is currently being incorporated in appropriate events at ATP.

Wrought Artworks has operated a successful commercial business in the former railway workshop context, from a heritage perspective. It has set out to fit its activities into the existing workshop

environment. This has required a range of compromises to their operations, which are (seen to be) offset against the advantages of location, equipment and beneficial tenancy arrangements.

The current heritage operator is, to a large degree, a business centred on the personalities of the owners, whose individual personal commitments to the successful marriage of their business to its 'railway workshop' context has been central to the acceptability of their operation within the heritage environment.

4.4 Current Situation

Machinery has been displayed in various ways throughout the site. For the purpose of this report, they have been divided into the following categories: In Place (Part of original fabric); In use; On display and Relocated. Refer to Table 1.1 for further details of items on display in public or private areas.

4.4.1 In Place

Most of the machines in Bays 1 and 2 are in the same place in which they were when last used before the closure of the Locomotive Workshops in 1989. The 12 overhead cranes that remain are in their original places throughout the locomotive workshops building (Figure 4.2), although some others have been removed, and one remains in the New Locomotive Shop (now the NIC). The overhead crane in the NIC has been located above the entrance foyer as can be seen in Figure 4.3, allowing an interpretation of the space in which it once operated.

The machinery and equipment in the Boilerhouse Annex and the Hydraulic Pumphouse Annex is all in place and relatively undisturbed, as are several externally mounted ancillary facilities, including the hydraulic accumulators, the compressed-air reservoir and the fuel-oil tanks.

Similarly, there are a number of toilet facilities which have remained throughout the site, such as an external urinal on the southern wall of the locomotive workshop building and a line of wash basins inside the NIC foyer (Figures 4.4 and 4.5).

4.4.2 In Use

Wrought Artworks Pty Ltd is a tenant of Bays 1 and 2 South, operating a commercial metal fabrication business. Wrought Artworks are permitted to use machinery located within these bays for the purposes of their business, in return for the care, maintenance (in certain circumstances) and public display of these machines. Machines within Bays 1 and 2 South which are in use include the De Burgue electric shears, the Ajax Continuous Forging Machine, the Massey electro-pneumatic hammer and the arch hammer. See Figure 4.6 for an overall view of Bays 1 and 2.

4.4.3 Items on display in Public Areas

Some individual items of machinery are on public display in Bays 3, 4, 5, 8 and 10 (Figure 4.7). These are generally displayed as individual machines, disconnected from power sources and lacking in operating components such as drill bits, cutting heads or examples of work (Figure 4.8).

4.4.4 Items on display in Private (Tenant) Areas

Some individual items of machinery are on public display in private (tenanted) areas in Bays 5, 15 and 16. These are generally displayed as individual machines, disconnected from power sources and lacking in operating components such as drill bits, cutting heads or examples of work.

4.4.5 Relocated Items

This category relates to items of machinery and equipment which have been removed from their original location but which are not permanently located anywhere at present, or are currently dissociated from the workshops. The majority of such items are stored at ATP, with some items remaining off site.

Table 1.1 Items that are on display in public and private areas and items that have been relocated.

Items on display in Public Areas			
Bay	Item	Bay	Item
		3	Ryerson Spring Forming Machine (1) Ryerson Spring Forming Machine (2)
4	Smith & Coventry Spring Coiler (1) Smith & Coventry Spring Coiler (2) Fielding & Platt Spring Buckling Press Hydraulic Press and Spring Tester Rice & Co. Hydraulic Spring Buckling Press Craven Brothers Spring Disassembler	8	Societe Genevoise Drilling and Boring Machine 1929 Societe Genevoise Drilling and Boring Machine 1938
10	Richards' Vertical Borer with Dual Heads Craven Axle and Journal Lathe Stirk Planer Timber work bench Herbert Tool and Cutter Grinder Herbert Twin Drill and Borer Bolt Rack Ormerod Vertical Shaper Department Double Floor Grinder Ward Hexagon Turret Lathe Department Lathe Churchill Grinder Spring Shop Rack, Coils and Tools Spring Shop Rack and Mandrels	10	Webster & Bennett 60" Single Vertical Borer Denham Centre Lathe Traverser Whitham Spring Coiler Furnace Wheel Trolley Spring Shop Rack and Mandrels Height - setting table British Electrical Vehicle (BEV) Hoist Hoist Hoist Tangye 48" wheel lathe Rack associated with Tangye Wheel Lathe
Innovation Plaza	Wheel Shop Pivot Crane Stephenson Loco Crane 1083		
Items on display in Private (Tenant) Areas			
5	Lang & Sons Spring Coiler	15	Departmental Grinder BSA Centreless Grinder Cylindrical Grinder Craven Brothers Pedestal Drill Brown & Sharpe Universal Grinder
16	Grinder		

Relocated Items

Compound/ Container	Massey Flange Press Wheel Press White Twin Head Vertical Borer Pattern moulds Bleeder Valve for Fielding and Pratt Pump	BioMed Building Lobby	Robey Smith Bevel Wheel Planer
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4.5 ATP S170 Heritage and Conservation Register 2008

ATPSL, as part of its management procedures and on behalf of the RWA (now UGDC) in fulfilment of its statutory obligations as a government instrumentality under Section 170 of the *Heritage Act 1977*, has a Heritage and Conservation Register survey and assessment of the machinery collection. This study made some key findings regarding the collection:

- *The vast majority of items identified in the 1996 study of the site are still present and, generally, in good condition. A few smaller items cannot be located and some items of machinery appear to have been disposed of previously.*
- *The smaller items, such as racks of hand tools, have never been catalogued in detail and that level of cataloguing has not been undertaken as a part of this exercise.*
- *In total, 482 items, structures or collections of smaller items were assessed by the project, with 403 items recommended for listing on the S170 Register. Of these 403 items, 5 were recommended for listing as items of State heritage significance and 398 as items of local heritage significance.*
- *The remaining 79 items include items identified in the 1996 study which could not be located, or items of no heritage significance which are recommended for disposal.*

The ATP S170 Register report also reviewed and made an assessment of the general condition and situation of each item and made comments with regard to the overall circumstances of the machinery collection.

These comments may be summarised as:

- Most items of machinery are not in operable condition, save for those still in use by the tenants of Bays 1 and 2.
- Those items in use by the tenants of Bays 1 and 2 appear to be in operationally sound condition, although the frequency and nature of maintenance to these items is not known.
- Many of the items in use have had safety guards added, to meet OHS Legislation and Regulations.
- Equipment in Bays 1 and 2 not in use by the tenants has not been used for nearly 2 decades and its suitability for any future operation is not known.
- Many items have been set up for static display purposes around the Loco Workshops, particularly in Bay 4 and Bay 10. This precludes these items being placed into service.

The ATP S170 Register report identifies 37 items which could not be found or identified in the ATP collection. Although no further search has been initiated, it became clear during the course of this

CMP that several of these items remain at Eveleigh but are not presently located within the ATP site area and are therefore not under the ownership and control of ATPSL. For example, the four air compressors identified in the 1996 report as part of the collection are located in the old compressor house within the RailCorp lands west of ATP. It is possible that several of the other items not located in the ATP S170 Register report may also be located elsewhere on the larger Eveleigh Railway Workshops site, again not under the ownership and control of ATPSL. The management of these items is the responsibility of their respective owners.

The ATP S170 Register report also analyses the contents of the machinery collection and makes recommendations regarding its future management. In particular, it makes recommendations for disposal of some items from the collection based upon, variously, their low significance, their poor condition or their lack of direct association with the Locomotive Workshops. Some of these are clearly of low significance and do not have any heritage value. Some of those would, on the other hand, have value as supporting props as part of any museum or period display relating to the workshop machinery (eg old metal lockers). Others might be useful as spare or replacement parts (eg small electric motors). Another group of items relates to machines removed from the Eveleigh Carriage and Wagon Workshops, which the Futurepast report identifies as unrelated to the Locomotive Workshops Machinery Collection and thus recommends that these should be removed from the Collection. The ATP S170 Register report by also includes a Disposal Procedure that would, in the first instance, offer items to collecting institutions including the Powerhouse Museum, Office of Rail Heritage and the Thirlmere Railway Museum.

The key constraint identified in the ATP S170 Register report is that the current situation of static display of the majority of the collection will continue.

4.6 Future Plans

Consultants were engaged by ATPSL to review the present display situation in Bays 1 and 2 and propose a public display interpretation strategy for this area, in accordance with the broad intentions of the 1996 Management Plan. It is understood that a controlled pathway through the Bays is proposed, with static displays and interpretation signage to guide the visitor and explain the machinery collection.

The interpretation proposal is largely focused on Bays 1 & 2 North, with no additional proposals affecting the Wrought Artworks area in Bays 1 and 2 South.

4.7 Issues

A range of specific issues relating to the future management of the Machinery Collection have been identified during the course of this project. These issues provide both constraints and opportunities for the future management of the collection. The primary, overarching issues are:

NSW Occupational Health and Safety Act 2000 Standards

The potential for reinstating some of the machinery to operational condition and use has been proposed in the past and it remains theoretically possible. However, in a number of significant cases, this course of action can be problematic. Much of the machinery does not meet current OH & S safety standards and achieving compliance can be both costly and have a significant impact upon the fabric of the machine itself. These issues were present in the workshops at the time that they closed and were a consideration in the closure of the workshops. Many of the surviving machines had additional safety screens and guards added in their final years of use, some of which

have been subsequently removed as part of their conservation works. Wrought Artworks have had the need to add safety screens to several of the machines that they have kept in use in Bays 1 & 2 South.

Skills

Most of the machinery relies upon skilled operators to function effectively and, particularly for several of the larger items, were of a size and type rarely found in other workplaces. The Railway Workshops were, in their day, a centre of skills training and machine operators were trained on the job by the previous generation of workers. Consequently, the pool of available skilled workers in the community able to operate the machinery is small and is shrinking further, as new machines are typically automated and computer-controlled, producing a different set of skills in the workforce.

Subdivision of ownership of the collection

The original machinery collection was, in 1996, all part of the Eveleigh Railway Workshops. Since that time, the site has been subdivided into areas of different ownership, with different activities carried out in each. The majority of the Locomotive Workshops have been leased to ATPSL, whilst the Carriage Workshops have been redeveloped as an arts and performance precinct. RailCorp retain responsibility for the Large Erecting Shop and a series of minor shops attached to this building, including the Air Compressor House that originally supplied air to the Locomotive Workshops. The Large Erecting Shop has been retained by RailCorp to house repair and maintenance activities associated with its heritage rail vehicle fleet, an activity not dissimilar to that formerly carried out within the Locomotive and Carriage Workshops, though on a much limited scale.

Power Supplies

As described in Section 2.0, machinery at Eveleigh Workshops was powered by one of four power sources: steam, hydraulic, pneumatic or electric. The steam generation plant, being the boilers in Bay 2 South Annex, have not been operated in over two decades and probably no longer are able to be operated without major reconstruction (Figure 4.9). The Hydraulic Power plant in Bay 3 South Annex has been restored but not to operational condition. More significantly though, little of the high-pressure piping remains throughout the workshops and reticulation of this power supply would be a major undertaking. Similarly, the pneumatic reticulation pipework also has only fragmentary remains and the air-compressors are located under a separate ownership.

Ancillaries and Tools

Although many of the blacksmiths' handtools exist within the collection in Bays 1 & 2 North and South, most of the other machines in the collection are missing their ancillary components and peripherals which are essential for their operation. For example, lathes require a wide range of cutters and shaping heads which fit the machine, depending upon the nature of the material being worked and the intended outcome. Cranes require a wide range of slings, hooks and beams that provide the flexibility to undertake the range of tasks that they perform. Instruments were required to measure tolerances and temperatures. Every machine also had its specific operating and maintenance tools, most of which are now missing. Not only are these items difficult to replace, it is unlikely that, in the absence of any original documentation, it will be possible to identify what these should be even if the task of reinstatement was contemplated.



Figures (left to right): 4.1 Hydraulic pumping plant; 4.2 One of the twelve overhead cranes that remains in its original place in the locomotive workshops building; 4.3 The overhead crane in the NIC; 4.4 External urinal on the southern wall of the locomotive workshop building; 4.5 Wash basins inside the NIC foyer; 4.6 Overall view of Bays 1 and 2; 4.7 Item on public display; 4.8 Items on display in Bay 10; 4.9 Boilers

5.0 Preliminary Archaeological Assessment

5.1 Introduction

5.1.1 Preamble

This section presents a desktop summary on the known historical and Aboriginal heritage values of the ATP site. An analysis of the historical and Aboriginal archaeological potential of the site is also presented in this section. The archaeological significance of the site is discussed in Section 7.0. The legislative requirements relating to archaeological are outline din Section 8.0. Policy relating to archaeology on the ATP site is detailed in Policy Objective 6, Section 9.0.

5.1.2 Scope

The preliminary archaeological assessment has been prepared in accordance with the *NSW Heritage Manual's* 'Archaeological Assessment' and the 'Aboriginal Cultural Heritage Standards & Guidelines Kit' of the Department of Environment, Climate Change and Water (DECCW)) (now the Office of Environment and Heritage), in response to the requirements of the *Heritage Act 1977* and the *National Parks and Wildlife Act 1974* (NSW) (NPW Act) respectively. The scope for the preliminary archaeological assessment comprised:

- a search of heritage registers to identify known non-Indigenous archaeological sites;
- analysis of the historical research for the subject site, to determine the locations of any former or existing structures and buildings;
- a search of the Aboriginal Heritage Information Management System (AHIMS) for known Aboriginal objects, sites and places within the vicinity of the study area;
- a review of previous archaeological assessments undertaken in the general area to provide context for the current assessment;
- inspection of the ATP site to identify visible archaeological relics/objects/sites and/or heritage items, sites and places and areas of potential archaeology; and
- preparation of a report that complies with Heritage Council of NSW and DECCW guidelines.

5.2 Historical Archaeological Resource

5.2.1 Site Inspection

The site inspection for historical archaeological sites was undertaken on 2 December 2010 by Lyndon Patterson and Seana Trehy, both archaeologists with GML.

The only archaeological remains that are currently visible on the site are brick footings of most of the northern wall of the foundry and sawn off steel uprights from this building and a shorter section of footings of the eastern and southern wall of the foundry. These footings can be seen in Figures 5.2–5.4.

5.2.2 Historical Archaeological Potential

Chisholm Estate (c1820s–1882)

Based on the analysis of the historical research there were two stable buildings marked on a plan of the Chisholm estate c1875 in the area on or very near to the eastern edge of the current subject land. These buildings were probably simple timber structures which typified agricultural/pastoral buildings of the time. Figure 2.1 shows the present buildings and boundary of the ATP site overlaid on the c1875 plan of the Chisholm Estate. One of the stables appears to be located at the northern edge of the present NICTA building. The other stable lies just east of the ATP area under the present Garden Street. Given the location of these stables, adjacent to the large scale new development, the archaeological potential of these structures remains low. It is unlikely that remnants of either the building foundations or occupational deposits relating to them would have survived.

Residential Development in Eveleigh (c1880s–c1917)

Housing stock constructed c1880s was once present in two areas of the ATP site; in the area north of Henderson Road and the area west of Cornwallis Street. Figure 2.8 shows the present boundary and buildings of the ATP site overlaid on the c1890 Litho Plan of Alexandria, Parishes of Alexandria and Petersham. This image shows the large amount of housing stock that was resumed. This housing stock is shown in detail on three Met Detail Series – Alexandria Sheet 11 Plans dating from 1889, 1893 and 1895, with individual houses visible, shown in Figure 2.9.

The area west of Cornwallis Street has had substantial excavation and landscaping and shown in Figure 5.1. Given this area has been subject to substantial excavation and landscaping, there is low potential for occupational deposits and structures relating to the rows of housing stock dating c1880s west of Cornwallis Street. There is low potential for remains of fences, gardens and yard surfaces to exist at the rear of these buildings. Due to the potential depth of such features, there is moderate potential for wells and cellars to survive in this area.

For the area of former housing north of Henderson Road, two phases of history have impacted on former potential archaeological relics and deposits. Firstly the housing in this area was demolished when resumed by the railways for the Alexandria Goods Yard c1913. The Goods Yard too was demolished and today this area now contains a sports oval, open carpark and basketball and tennis courts. Given this area has been subject to substantial excavation and landscaping, there is low potential for occupational deposits and structures relating to the rows of housing stock dating c1880s north of Henderson Road. There is low potential for remains of fences, gardens and yard surfaces to exist at the rear of these buildings. Due to the potential depth of such features, there is moderate potential for wells and cellars to survive in this area.

Eveleigh Railway Workshops (1882–present)

As mentioned above, only three buildings from the Eveleigh Railway Workshops survive on the ATP land. The remainder of the buildings were demolished or removed from the site. Some of the foundations of the foundry building are clearly visible on the surface in the centre of the ATP site. There is moderate potential for remains of the foundations of the Pattern Shop, Goods Shed, Steam Hammer Shop and small stall buildings to remain buried on site where they have not been impacted by the construction of the modern buildings including the new media complex, NICTA building and the Biomedical building. These buildings would have had steel frames with dirt floors; as such there is moderate potential for deposits and relics relating to these buildings. There is high potential for

rail stock to be present across the site in the locations that are shown on a plan of the site dating to c1940s (see Figure 2.7).

Figure 2.7 shows the present boundary and buildings of the ATP site overlaid on a plan of the maximum extent of the Eveleigh Locomotive Workshops and Alexandria Goods Yard dating to c1940s. This overlay shows the Channel 7 building covers the smaller steel foundry building in the west of the ATP site. The deep foundations of the media complex would have removed any archaeological potential for this building.

The modern NICTA building covers approximately the eastern half of the former Pattern Shop. Any archaeological remains from the eastern side of the former Pattern Shop would have been removed during the construction of the modern building.

The historical archaeological potential of the ATP site is shown in Figure 5.5.

A summary of the potential for historical archaeology from the different phases to exist is shown in Table 5.1 below.

Table 5.1 Summary of the potential for historical archaeology from the different phases of the subject land to exist.

Phase	Historical Archaeological Potential
1. Chisholm Estate c1820s–1882	Two buildings are shown, with the word stables next to them on an early undated plan of the area. There is very low potential for occupation deposits and structures relating to these two buildings given the extensive later development of the site for railway use, the construction of the NICTA building and excavation for and paving of Garden Street.
2. Residential Development in Eveleigh c1880s–c1917	Low potential for occupational deposits and structures relating to the rows of housing stock dating c1880s north of Eastern Suburbs Railway tunnel and also west of Cornwallis Street. Low potential for remains of fences, gardens and yard surfaces to exist at the rear of these buildings. Moderate potential for wells or cellars associated with the housing stock.
3. Eveleigh Railway Workshops 1882–present	Moderate potential for structures and occupation deposits relating to the former buildings on the site in areas where there are no modern buildings. High potential for rail stock to be present beneath the ground across the site.
4. Modern Development of the ATP Site 1988–present	Phase relates to the modern and present buildings on site.

5.2.3 Impact of Later Buildings on Earlier Features

The clearing of the land for railway use and the construction of the goods shed, foundries and other buildings would have had considerable impact on the survival of the two buildings likely to be stables from the Chisholm Estate period, and as such the remains of these buildings are unlikely to have survived.

The survival of remnants of the housing stock would have also been impacted by the later industrial and rail use of the site. The archaeological resource of the housing stock immediately to the north of Henderson Road would have been removed when the eastern railway line tunnel was put in during the 1970s. The method used for the eastern railway tunnel in this section would have been cut and fill, thus removing all potential archaeology in this location.

The leveling of land for the two carparks, the creation of the recreational oval in the south east of the subject and the construction of modern buildings including the media complex building in the most recent decade would have all had an impact on the survival of potential earlier archaeology that may have once existed on the site including the housing stock and the rail buildings and rail lines.

The survival of potential archaeology on the site cannot be ascertained without further archaeological investigation such as excavation.

5.2.4 Research Potential

The potential archaeological resources of the ATP site are assessed here primarily in terms of their archaeological research potential, that is, their ability to contribute to knowledge of an aspect of New South Wales and the Redfern and Eveleigh area's local history and the railway history of the state. The identified research potential is further discussed in Section 7.5 under the NSW Heritage Branch criteria.

Methods for determining the research potential of historical archaeological resources were considered in an influential paper by Bickford and Sullivan, published in 1984.¹ In this paper, Bickford and Sullivan draw attention to the dilemma faced by archaeologists and developers alike regarding sites that are to be destroyed or modified as a result of development, and discuss effective means of assessing their potential archaeological research value. Bickford and Sullivan proposed three questions that can be used as a guide for assessing the research potential and, hence, significance of an archaeological site within a relative framework.

The three questions designed by Bickford and Sullivan are now accepted as standard questions, and the ability of the ATP site to demonstrate archaeological research potential is addressed below.

Can the site contribute knowledge that no other resource can?

The layout of former buildings including the foundry, smaller workshops and rail stock and the site history is contained in the historical record of the site, including historic plans, photographs, site records and social histories, many of which have been researched in the preparation of this document. Information on the fabric and form of the former buildings is available from historic photos, plans and site histories.

The value of archaeology at this site would be its ability to confirm construction methods and fabrics described in the historic record. Further, archaeological deposits and artefacts at the site may be able to yield new information on the types of activities undertaken at the Eveleigh Locomotive Workshops or the types of people, including the different ethnic groups that worked there.

Little information is known on the Chisholm Estate, so if archaeological deposits exist from this period, including, but not limited to the stables marked on c1875 plan, these would be significant.

If archaeological remains of the Eveleigh Housing Stock remain these deposits may yield information on the types of people living there and confirm whether these were working class neighbourhoods based on the material culture.

Can the site contribute knowledge that no other site can?

The Eveleigh Railway Workshops at their peak during the late nineteenth and early twentieth century were the largest and most important railway workshops in New South Wales, if not

Australia. Because of this, few other sites in the country could yield similar archaeological material of this size, nature and age. Within the ATP site was the area for the construction of locomotives.

The Chisholm Estate stables, if surviving, while not altogether common, would not be the only example of such stables within New South Wales from this period.

The former Alexandria Housing Stock, dating from the 1880s, and demolished to make way for the expansion of the Locomotive Workshops and Alexandria Goods Yard is not the only example of such housing in Sydney. Indeed, large parts of surrounding suburbs, including Redfern, Camperdown, Newtown and Surry Hills contain similar examples of such housing dating to the same time period. The major cities of Australia, including Sydney, experienced a housing boom in the 1880s. This expansion occurred across large parts of South Sydney, the Inner East and Inner West, where a lot of terrace housing and smaller one and two bedroom cottages were constructed to accommodate working class families.

Is this knowledge relevant to general questions about human history or other substantive questions relating to Australian history, or does it contribute to other major research questions?

The Eveleigh Railway Workshops are significant at a state level, and potentially a national level for their industrial output of locomotives and carriages and the value of place in the social and economic history of New South Wales to thousands of workers and their families over a number of generations. As such, archaeological remains, if surviving would be significant in their ability to contribute to the story of the Eveleigh Railway Workshops.

5.2.5 Summary Preliminary Research Potential

The historical archaeological resource at the ATP site has moderate research potential relating to the functioning of the Eveleigh Locomotive Workshops and Alexandria Goods Yard. This potential resource includes structures and deposits relating to the former buildings on site and rail stock across the site.

There is moderate research potential relating to the areas of former housing stock to the north of Henderson Road and west of Cornwallis Street that were resumed by the railways in the early twentieth century. This former neighbourhood, dating to the 1880s, would have housed many of the railway workers and their families. This potential resource may include occupational deposits and structures relating to the rows of housing stock, fences, gardens and yard surfaces and wells or cellars. Artefacts from this resource, if they exist, may be able to yield information on the types of people, including social class, gender and ethnicity, living in these former neighbourhoods.

There is moderate research potential relating to two former stables from the Chisholm Estate period that predated the Eveleigh Locomotive Workshops and Alexandria Goods Yard use of the site. This potential resource may include remains of timber stables and associated deposits.

The archaeological significance of the ATP site cannot be confirmed without additional investigation such as excavation, recording and analysis. The preliminary historical archaeological significance of the ATP site is shown in Figure 5.6.

5.3 Aboriginal Archaeological Desktop Survey

5.3.1 Environmental Context

Geologically, the area of the ATP site lies at the boundary of two physiographic regions: the Cumberland Lowlands which extend to the north and west and the Botany Lowlands which extend to east to the Pacific Ocean and south to Botany Bay. The Cumberland Lowlands comprise plains and generally undulating low hills with the dominant geology being the Wiannamatta Group shale. The Botany Lowlands in contrast are an area of deep sand dunes with drainage running towards Botany Bay to the south.²

The dominant soil of the Botany Lowlands is the Tuggerah Soils which comprise of gently undulating rolling coastal dunefields that run north-south in orientation.³ Rainfall run off collects in swamps, lagoons and depressions, an example of which was Shea's Creek which flowed to the south of the current subject land through present day Alexandria into Cooks River and Botany Bay. Shea's Creek has been modified as the whole area has been heavily development for industrial and residential uses over the past 200 years for European land uses.

The original vegetation has been cleared from the area but would have consisted of dry sclerophyll eucalypt and apple woodland or forest. Tree species would have included Smooth-Barked Apple (*Angophora costata*), Sydney Peppermint (*Eucalyptus piperita*) and Old Man Banksia (*Banksia aemula*) with a variety of bracken and mosses forming the understorey.⁴ This environment would have been a rich area for Aboriginal people to exploit and would have contained a variety of terrestrial resources including plant and animals for food and medicinal purposes. Coastal resources would have been available in Sydney Harbour two kilometres to the north, as well as the Pacific Coastline and Botany Bay.

5.3.2 Archaeological Context

AHIMS Sites

A search of the AHIMS Register revealed there are no previously recorded Aboriginal objects/sites or gazetted places on the ATP subject land. The search revealed there were four previously recorded Aboriginal objects/sites within a 2km x 2km search area surrounding the subject land. These objects/sites are summarised by site type and site features in Table 5.2 below.

Table 5.2 AHIMS registered sites within a 2km x 2km search area surrounding the subject land.

Site Type	Site Feature	Frequency
Midden	Artefact, Shell and Earth Mound	1
None	Artefact	1
None	Potential Archaeological Deposit (PAD)	1
None	Aboriginal Resource and Gathering	1
TOTAL		4

Table 4.1 above shows there are only four sites located in the surrounding area of the ATP. The number of sites is quite low for a 4km² area and demonstrates three things—that the area is highly developed, there are few surviving natural landforms in this part of inner Sydney and that there

have been relatively few Aboriginal heritage assessments undertaken in this area. This last point is reflection that this is an old part of Sydney and was already developed well before the introduction of the NPW Act was implemented in 1974, and the corresponding growth of heritage assessments in recent decades following the creation of this act.

A breakdown of the Aboriginal sites from the AHIMS search comprise one midden containing stone artefacts, shell and an earth mound, one artefact scatter, a PAD and an Aboriginal Resource and Gathering site.

Mapping these sites using a geographical information system (GIS) program provides information as to the distribution of these site types within the various surrounding environments. The isolated artefact, PAD and Aboriginal Resource and Gathering were located on the grounds of Sydney University, while the heavily disturbed midden site was recorded in a small park to the east of the ATP site.

Given the long history of urban development and landscape modification within the City of Sydney and surrounding inner suburbs, other site types such as stone quarries, grinding grooves, rock art, modified trees or human burials would be considered extremely unlikely for the study area.

Previous Archaeological Research

Previous archaeological research in the Sydney region has taken two forms: academic-driven research begun in the 1960s, and consultant reports which have responded to the urban development of Sydney, following the gazettal of the NPW Act. As the Eveleigh and Redfern areas are old parts of Sydney, they were already built up with many layers of European industrial, transport and residential history prior to the introduction of the NPW Act. As such, there have been few Aboriginal heritage assessments undertaken in the local area.

Aboriginal occupation of the Sydney region extends into the Pleistocene, 10,000 years before present (BP). Currently the oldest accepted date in the Sydney region is from the Shaws Creek rockshelter, located on the Nepean River at Cranebrook, dating to 17,800 years BP.⁵ Pleistocene dates have also been recorded for the lower occupation levels at Regentville near Penrith, dating to 12,100 years BP.⁶

The earliest scientific archaeological investigations in the Sydney region were undertaken by Robert Etheridge Jr in the 1880s. Etheridge and his colleague TW Edgeworth David excavated a site along Shea's Creek in Alexandria, approximately one kilometre south of the current study area. Here dugong bones and ground edge hatchet heads were excavated and cut marks and scars on the bones suggest the animals were butchered, killed and eaten for food.⁷ This shows that this area was used as a camp place and that in the past a dugong had been brought inland to be eaten.

A review of AHIMS register for previous archaeological consulting reports undertaken in the surrounding area reveals only two such assessments. This was an archaeological assessment undertaken by Jo McDonald Cultural Heritage Management at Sydney University as part of the Campus 2010 development program. No Aboriginal sites or objects were recorded during this assessment; however, it recommended a test excavation program on Geology Lawn and Maze Green. The test excavation was undertaken under a S87 Preliminary Research Permit in 2006. The programme involved the hand excavation of 11 test pits. No intact archaeological deposits were located during the test excavation. Only one flaked tuff artefact was recovered during the excavation and the area was found to be considerably disturbed.⁸

5.3.3 Site Types Considered in the Study Area

A wide range of site types can be encountered during archaeological investigations in New South Wales, and these reflect the range of activities carried out by Aboriginal people in the past. The AHIMS sets out 20 site types which are defined by the cultural activities associated with the use of a place. These site types reflect the diverse range of evidence that may be encountered relating to past Aboriginal activity. It is important to note that one site may comprise a number of different site types or attributes, indicating the diverse range of cultural activities that can be undertaken in one place.

Given the long urban and rail yard history of the study area and the lack of previously recorded Aboriginal objects and places recorded in the surrounding area, only artefact scatters/isolated artefacts and potential archaeological deposits are considered possible for the subject land. Other site types such as shell middens or human burials would not likely occur in this environment. The potential site types that may occur in the local area are described below.

Artefact Scatters and Isolated Artefacts

Stone artefacts occur across much of the New South Wales landscape in varying densities and are typically classified as artefact scatters, open camp sites or isolated occurrences of individual artefacts. These sites provide a record of past Aboriginal occupation and activity across the landscape. Artefact scatters comprise visible concentrations of artefacts (although these sites often have a significant subsurface element) and typically reflect areas of concentrated Aboriginal activity and occupation in the past, either as campsites or more transient places of activity. Artefact scatters or open camp sites are typically defined as the presence of two or more artefacts within 50 metres of each other. These contrast with isolated artefacts, which occur in much lower densities and are generally considered a 'background scatter' across the landscape in many areas of New South Wales, and may represent casual discard of lithic material. Thus, an artefact scatter or open camp site can be defined as a concentration of artefacts that occur in a greater density than the surrounding low-density 'background scatter'.

Potential Archaeological Deposits

Potential Archaeological Deposits or PADs are sites where archaeological deposits such as buried artefact scatters or shell midden accumulations are likely to occur based on sensitive landforms and locations in the landscape. Although it cannot be certain without excavation that an area contains buried Aboriginal objects, nonetheless, this site type can be registered on the AHIMS database with the DECCW.

5.3.4 Predictive Modelling on the Subject Land

Potential Impact of Former Land Uses

Land uses can have a substantial impact on Aboriginal archaeological resource that may have been once present. This section of the report aims to present a summary of the historic impact on the subject land. The large scale residential and rail yard expansion in the area in the nineteenth and into the twentieth century has severely impacted on the potential for survival of intact Aboriginal archaeological sites. The site was cut and levelled for the industrial and rail use during this period and areas were later excavated for carparks and the sports oval in the southeast of the current site thus removing top soil in these areas.

Aboriginal Archaeological Potential on the Subject Land

The European history of the site shows there has been much earth disturbance in the past, for the construction of the railway, the Eveleigh Railway Workshops and the Alexandria Goods Yard, roads for vehicle access, modern buildings including the new media complex, carpark, and landscaping. Given the impacts of these past land uses on the site and the removal of top soil where sites are frequently located, Aboriginal sites and objects that may have once existed on the site are likely to have been disturbed and/or removed off site following excavation for the various buildings, roads and carpark. Any Aboriginal objects, if they exist, are likely to be in a disturbed context and may comprise isolated artefacts. The Aboriginal archaeological potential for the subject site is considered low.

There has been much cut and fill and levelling on the site over the past 150 years and many buildings have been erected on the site and the open areas in the south of the site have been used for a goods yard. The heavy industrial use of the northern part of the ATP site including the construction of buildings and the excavation and laying of rail stock has removed the potential of intact Aboriginal archaeological sites in these areas.

In the central part of the ATP site, the analysis of the historic section reveals that this area was used for two foundry buildings and a pattern shop all constructed c1919-1922 and the laying of rail stock that ran to the west connecting up with the existing rail stock servicing the Eveleigh Railway Workshops. This period of the site would have likely removed any potential for intact Aboriginal sites that may have once existed in this area. Following the demolition of these buildings, this area today is home to a large carpark, the new media complex and the NICTA building. The excavation for the foundation of these buildings would have removed any original soil that may have remained. The levelling of the land for the carpark would have had impacted on the original soil in these areas as well.

In the southern part of the site, the area to the north of Henderson Street was used for workers housing during the 1880s pre expansion of the railway workshops. The construction of the workers houses at this time would have impacted on any Aboriginal sites that may once has existed in these areas. The more recent excavation for the sports oval in the southeast of the subject land has removed any potential for intact Aboriginal archaeological sites in this area. The area immediately north of Henderson Road was subject to cut and fill for the eastern rail line which went through c1960s and would have removed all remaining natural soil from this area. A summary of the Aboriginal archaeological potential for the subject land can be seen below in Table 5.3.

Table 5.3 Summary of the potential for Aboriginal archaeological resources in the different parts of the ATP site.

Part of ATP Site	Aboriginal Archaeological Potential
1. Northern part of the ATP Site: includes Locomotive Workshop Building, New Locomotive Shop and Work Managers Building	Intact Aboriginal archaeological sites are unlikely to exist due to heavy earth disturbance including cut and fill, construction of buildings and laying of rail stock. Low potential for lithic or shell material in a disturbed context.
2. Central part of the ATP Site: includes Channel 7 building, carpark north of Central Avenue, NICTA building.	Intact Aboriginal archaeological sites are unlikely to exist due to heavy earth disturbance including cut and fill, construction of buildings in the past including the foundries in this area and laying of rail stock. The excavation for and construction of the Channel 7 building and the NICTA building have severely disturbed the soil in these areas. Low potential for lithic or shell material in a disturbed context.

Part of ATP Site	Aboriginal Archaeological Potential
3. Southern part of the ATP site: includes Biomedical Building, RTA offices, Ambulance building sports oval, tennis and basketball courts and carparks.	Intact Aboriginal archaeological sites are unlikely to exist due to heavy earth disturbance including cut and fill, construction of buildings in the past including the foundries in this area and laying of rail stock. The excavation for and construction of the Biomedical Building, the RTA offices, the sports oval and the area north and adjacent to Henderson Road for the Eastern Railway have removed the soil in these areas. Low potential for lithic or shell material in a disturbed context.

5.3.5 Discussion of Aboriginal Archaeology at ATP

Given the considerable disturbance to the original natural environment in the historical period from the housing stock in the southern and far east part of the site and the subsequent development of the Eveleigh Railway Workshops and its associated industrial site use including the foundry and locomotive buildings and laying of rail stock, to the modern development of the site with the construction of the new media complex, NICTA Building, Biomedical Building, RTA offices, Ambulance building, sport facilities and cut and fill for the Eastern Suburbs Railway there is low to none potential for intact Aboriginal archaeological sites such as artefact scatters. Any Aboriginal objects, if they exist, are likely to be in a disturbed context and may comprise of isolated artefacts. The Aboriginal archaeological potential for the subject site is considered low.



Figure 5.1 Photograph of land at the rear of the New Locomotive Workshop that was resumed by the railways. This area was formerly housing as shown in the plan in Figure 5.5 dating to 1889 although has since been significantly landscaped. (Source: GML 2010)



Figure 5.2 Remains of the lower brick walls of the eastern wall of the former foundry. (Source: GML 2010)



Figure 5.3 Brick footings from the northern wall of the former foundry. (Source: GML 2010)



Figure 5.4 Brick footings from the southern wall of the former foundry. (Source: GML 2010)

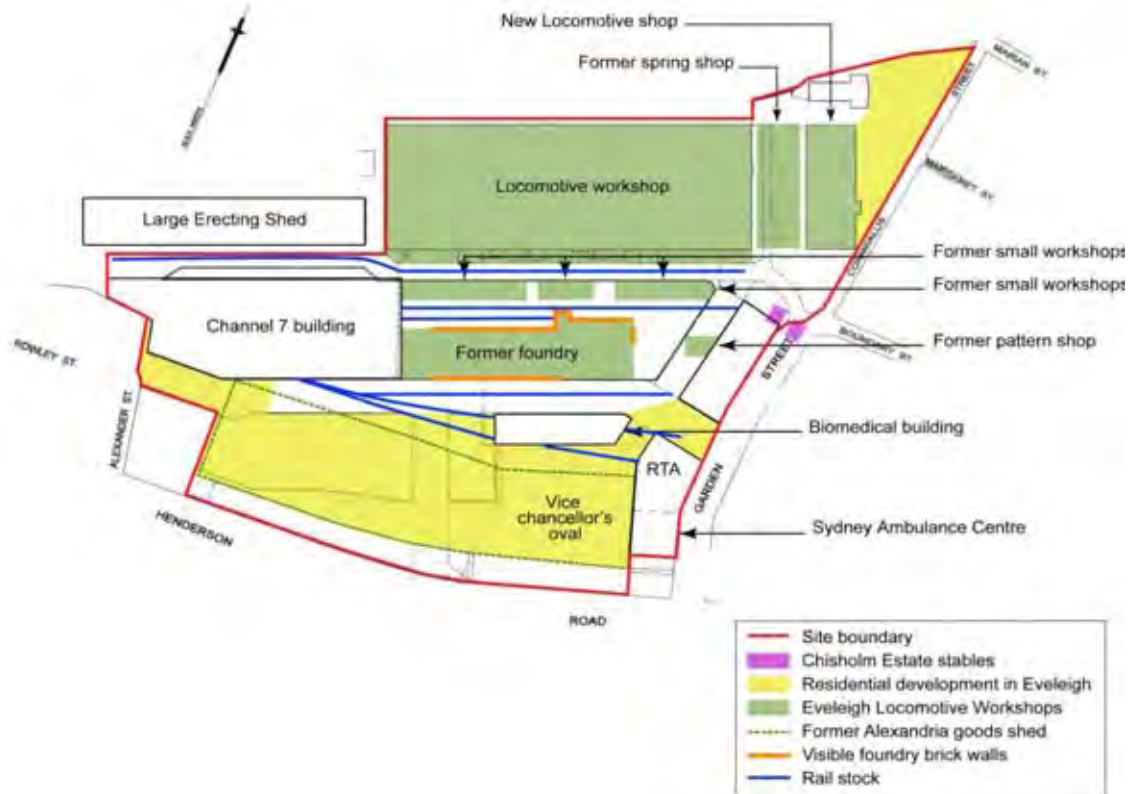


Figure 5.5 Plan showing historical archaeological potential at ATP. (Source: GML 2010)

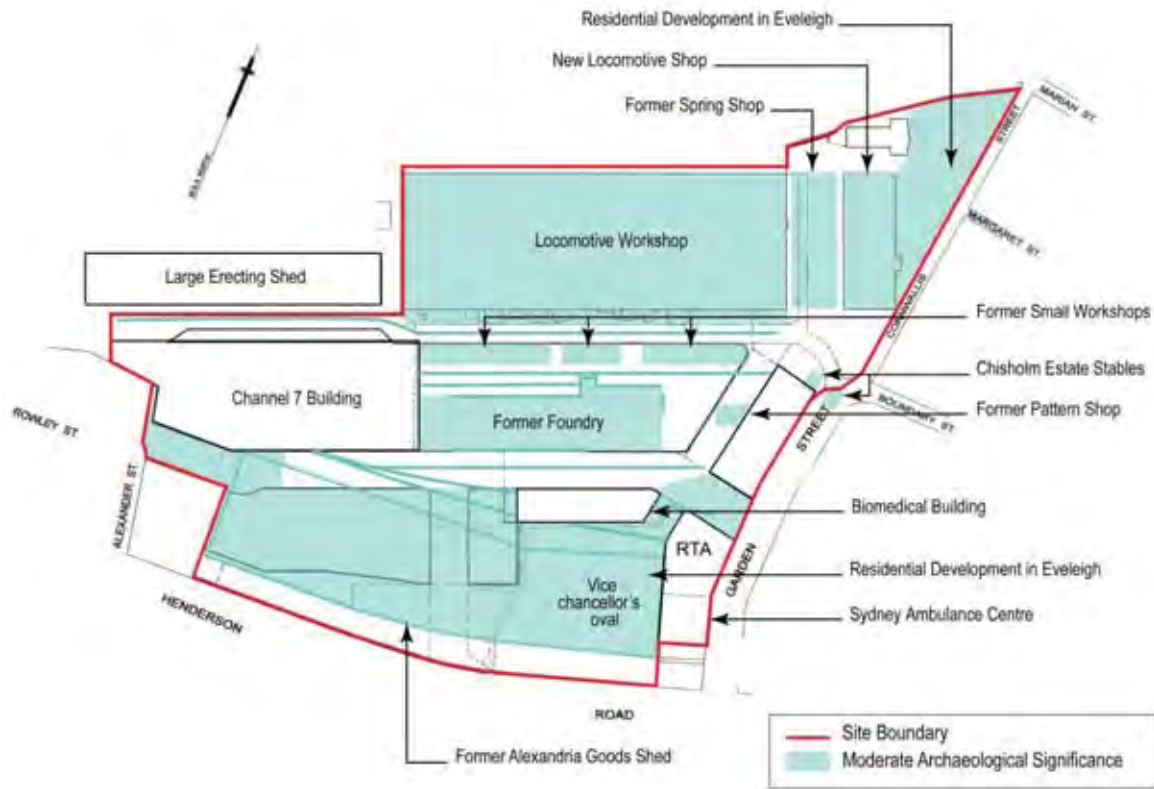


Figure 5.6 Plan showing the preliminary historical archaeological significance at ATP. (Source: GML 2011)

5.4 Endnotes

- 1 Bickford, A and Sullivan, 1984, 'Assessing and Research Significance of Historic Sites', in Sullivan S and S Bowdler (eds) *Site Survey and Significance Assessment in Australian Archaeology* (Proceedings of the 1981 Springwood Conference on Australian Prehistory), Department of Prehistory, Research School of Pacific Studies, The Australian National University, Canberra, pp 19-26.
- 2 Chapman, GA & Murphy CL, 1989, *Soil Landscapes of the Sydney 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney, pp 1-2.
- 3 Chapman, GA & Murphy CL, 1989, *Soil Landscapes of the Sydney 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney, p 94.
- 4 Chapman, GA & Murphy CL, 1989, *Soil Landscapes of the Sydney 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney, p 95.
- 5 Attenbrow, V, 2010, *Sydney's Aboriginal Past*, UNSW Press, Sydney, p 153.
- 6 McDonald, J, Mitchell, P and Rich, E 1996, *A Further Investigation of Site RS1 (45-5-892) at Regentville, Mulgoa Creek, Western Sydney*, unpublished report, Sydney, p 33.
- 7 Attenbrow, V, 2002, *Sydney's Aboriginal Past*, UNSW Press, Sydney, pp 6, 66.
- 8 Jo McDonald Cultural Heritage Management, 2006, *Archaeological Test Excavation at Sydney University: Central Site*, pp 1-4.

6.0 Community Consultation

6.1 Preamble

This section provides details of a community consultation session held at ATP in December 2009, during the preparation of the draft CMP. In the almost 4 years that have passed since the consultation took place, a number of initiatives for involving the local community have been completed by ATPSL and the RWA (now UGDC), including the creation of the Redfern-Waterloo Heritage Taskforce and a volunteer group engaged to promote the heritage significance of the ATP. The views expressed in this section represent the views of members of the local community at the time of the workshop.

6.2 Consultation Strategy

The preparation of this CMP has included consultation with Government agencies, local Aboriginal groups, community organisations and individuals that have an interest or special attachment to the site of the Eveleigh Locomotive Workshops.

During the preparation of this CMP on 7 December 2009, a community consultation session was held at ATP and facilitated by ATPSL and GML.

The aims of the community consultation were to:

- outline the objectives and scope of the CMP;
- to gather information and knowledge held by members of the community to assist in identifying and refining the understanding of the potential social heritage values of the Eveleigh Locomotive workshops as a whole;
- seek stakeholder accord from ATPSL and the local community in relation to the identified heritage values and ongoing statutory protection of the heritage values of the Eveleigh Locomotive Workshops as a whole; and
- help formulate conservation management policies that respect and help maintain community values and identify opportunities to develop them.

Discussed below are the views raised in the community consultation session in terms of the social heritage values identified as well as the elements, attributes and components that were identified as contributing to Eveleigh's significance. The Indigenous consultation strategy is also discussed in section 6.3.

6.3 Social Heritage Values

6.3.1 Introduction

The NSW Heritage Office publication *Assessing Heritage Significance* provides guidelines for assessing the social significance of a place. Social significance should be attributed to the following places or items:

- *items which are esteemed by the community for their cultural values;*
- *items which if damaged or destroyed would cause the community a sense of loss; and/or*

- *items which contribute to a community's sense of identity.*

A strong theme that came through the consultation session was that participants thought of the significance of ATP in terms of the history of the Eveleigh Railway Workshops as a whole, with a strong focus on the remaining buildings and machinery at the former Locomotive Workshops.

The following analysis of the results is set out as a summary of the views expressed during the consultation session, with specific views quoted in italics.

6.3.2 Analysis of Results—Themes of Social Heritage Value

Theme 1—The continuing significance of the Eveleigh Workshops

Although the character of the Eveleigh Locomotive Workshops has changed greatly since ATP was established, the workshop participants saw the Eveleigh Locomotive Workshops as a living thing with a significant history and strong tradition that should be conserved. The ATP site, with its remnant workshop buildings and machinery, represents the lives of thousands of workers and their families. The activities and history of the former locomotive workshop is central to the participants' perception of ATP, particularly expressed as 'Eveleigh Loco'. The blacksmith's workshop in Bay 1 and the volunteers in the Large Erecting Shed are seen by the workshop participants as integral to the ongoing conservation of the historical significance and heritage value of the site. The workshop participants expressed a strong desire to keep the stories and experiences of those who worked at Eveleigh very much in the present, primarily by retaining the railway and industrial use of the site. The current owners and managers of ATP are seen as the custodians of this history and continuing story, and have associated responsibilities—'a duty'—to conserve and communicate the history of the place.

The site represents a component of the working life and social context of many Australians. It reflects upon not only those who lived and worked at Eveleigh, but all those who worked on the railway systems throughout the country—at Bathurst, Cootamundra etc, from the 1860s through to the 1980s. It is probably a reflection on the industrial nature of the worker up to the 1980s. It will not occur again!

Theme 2—The importance of Eveleigh to the history of NSW

The former Eveleigh Railway Workshops, particularly Eveleigh Loco, were seen by workshop participants as important in the history of NSW. Eveleigh is the place from which the NSW rail system developed and to be employed in the workshops was to be a part of a place of great innovation and prestige in NSW—'Eveleigh No. 1'.

Eveleigh No. 1: the name given to the locomotive workshop and the large erecting shop. To work at Eveleigh was a prestige and an honour. Even with government interference Eveleigh won't go away, it is ingrained in the soul of every railway man and woman throughout Australia and is world renowned.

Workshop participants stressed that Eveleigh Loco had strong links to the union movement and industrial relations and was a significant state-owned industry, the likes of which are rapidly disappearing.

The workshops were supporting the entire state-owned rail industry, not only the locomotives.

Workshop participants also noted that the Eveleigh Railway Workshops were an important place where Aboriginal workers could find employment and one of the places where they struggled to gain equal pay.

Theme 3—The significance of Eveleigh as a place of work

The Eveleigh Railway Workshops were a place of life-long hard work. Workshop participants noted that the type of industrial labour performed at Eveleigh is no longer common in Australia, but was once a significant source of employment. Participants see the remnant workshops and machinery at ATP as representative of the type of work that was significant to earlier generations.

The site represents the social and cultural lives from cradle to grave of thousands of workers and families.

The site provides valuable insight into the work done by previous generations.

Dominant male workplace culture—pain, grime, injury, death, noise, workers' creative efforts.

Participants felt that this theme, which held a lot of meaning to the community, was not sufficiently acknowledged by the existing statement of significance for the Eveleigh Railway Workshops SHR listing and not currently reflected at the ATP site itself.

Theme 4—The connection between ATP and the Surrounding Area

Workshop participants identified strong links between ATP and the surrounding area. The operation of the Eveleigh Railway Workshops had significant physical and intangible effects on the surrounding suburbs. The workshops influenced the growth of the surrounding area, which resulted in a large local population of workers employed at the workshops. Many former Eveleigh workers still live in the area.

The suburbs around were not just low cost housing; the workforce was skilled and housing was built for the social spectrum and the area included businesses and shops etc.

The site has custody of remnants of livelihood and lifestyle of the neighbourhood.

The significance of the Eveleigh Railway Workshops to the community goes beyond the ATP site. The former locomotive workshops are only one part of a much larger site including North Eveleigh and the Large Erecting Shed.

Only part of a whole area of lifestyle/work/living.

With the workshops came a whole area unified by work and lifestyle. Participants found it important to remember that the significance of the former Eveleigh Railway Workshops is tied to the surrounding area and vice-versa.

Theme 5—Eveleigh as a site of technological innovation

Eveleigh Loco was the site of great technological innovation and progress. Workshop participants felt that due to changes in technology, much of the important advances in technology made at Eveleigh and the highly technical skills many of the workers possessed have now been lost. Workshop participants expressed sorrow for what had been lost since the workshops closed and expressed great pride in the significance of Eveleigh as a world-class railway workshop with associated collection of machinery.

The blacksmiths workshop contains the largest assemblages of machinery [in] the South Hemisphere according to the Smithsonian Institution.

6.3.3 Analysis of Results—Elements/Attributes/Components

Participants were asked to identify elements, attributes and components (tangible and intangible) of the ATP site they thought contributed to its significance. While mainly intangible attributes were identified in this discussion, later questions regarding issues at the site revealed the machinery collection at the Eveleigh Locomotive Workshops to be a very important element of the ATP site to the workshop participants.

View of long low shed out of which came the development of a state.

Tangible elements/attributes/components; symmetry and beautification of buildings/brickwork; scale of site and of buildings; and industrial heritage 'gateway' to train travellers approaching central.

The connection of ATP to the surrounding area was recognised in the community workshop as an important attribute of the site and entailed tangible qualities, such as particular buildings and landscapes, and intangible qualities, like viewlines, distinctive sounds and connections to the other components of the Eveleigh Railway Workshops.

Connections to stations—movement of people on and off site. Surrounding places—corner shops; pubs; key places including ancillary industry; visual corridors between places that can be lost by new buildings; map the networks; oral histories—need attachment to place; sound and smells of the place.

Participants saw the former Eveleigh Railway Workshops as a whole as a place of great potential.

6.3.4 Analysis of Results—Concerns Raised

The main issues raised in the workshop fit within four main themes: movable heritage; community involvement, education and tourism opportunities; planning and access; and communication and interpretation. A fifth area of general concerns is detailed at the end of this section.

Movable Heritage

The collection of machinery at ATP is an important attribute of the place. Concerns were raised regarding the current and future management of this significant movable heritage collection. Participants were concerned that a large proportion of the workshop machinery had been removed from the site over the past 20 years. The continuing operation of the blacksmiths workshop was seen as an important way of protecting machinery at the site and ensuring its continuing significance. Participants felt this workshop should continue even when the existing tenant leaves. The success of previous management plans for the site's movable heritage was questioned, particularly in relationship to the new CMP and the updated ATP s170 Register.

Community Involvement, Education and Tourism Opportunities

Concerns were raised by the workshop participants that the many opportunities for keeping the legacy of the Locomotive Workshops current and relevant were going unrecognised and unexploited. Workshop participants felt that the knowledge and memories of former workers was a valuable and untapped resource and that these memories and stories should be used to make the history of the site come alive—the Locomotive Workshops could be a tourist destination and a place for school excursions and tours. Workshop participants felt that the blacksmiths workshop within Bays 1 and 2 could continue to be used to develop and maintain blacksmithing skills.

Planning and Access

The former Eveleigh Locomotive Workshops as part of the Eveleigh Railway Workshops is a State-significant site. Participants raised concerns about the ongoing commitment of the RWA in protecting heritage. The physical 'severance' between North Eveleigh and ATP is seen as an impediment to conservation of the heritage value of the place.

General improvements, including more and better public space, were recommended. Participants also sought a guarantee from the RWA and ATPSL that ATP will remain a technology park and not become 'just another business park'.

Communication and Interpretation

Participants felt that they were not adequately informed about what was going on at ATP and requested more frequent and more detailed communication with the local community. Workshop participants found that the lack of clarity regarding the roles and responsibilities of stakeholders, particularly RWA, ATPSL and the Heritage Branch, made finding information about what was going on at ATP difficult.

Transparency of instruments—S170/CMP/Heritage Act etc so that people are aware and can act.

The community workshop felt strongly that the history and significance of the former Eveleigh Locomotive Workshops should be celebrated and communicated to visitors to ATP. Interpretation of the site's history received a great deal of support and one participant expressed the urgency of capturing the stories of those who had worked at the workshops. Various ways of interpreting the site's history were suggested throughout the workshop, including walking tours of ATP and Redfern and documentation of social history.

Capture stories and develop interpretive material to bring meaning to the site.

Other Issues

What is ATP becoming? Workshop participants wondered about the future direction of ATP. When ATP was formed, it was designated as a place for technological research and businesses, but the new Media City building seemed to indicate to the workshop participants that this focus is being lost. Therefore, participants asked what is intended for the ATP site in the future. (Section 8.5 includes the key policy principles that ATPSL have identified to guide the future direction of ATP.)

6.4 Indigenous Consultation Strategy

This report includes an Aboriginal archaeological desktop survey. No field survey or impact assessment was undertaken since there is no current development proposal for the ATP site. Indigenous consultation as per the Department of Environment, Climate Change and Water's *Interim Community Consultation Requirements for Applicants* was not required as no Aboriginal objects, sites or places have been proposed to be disturbed at the ATP site as part of the CMP.

The following organisations and individuals were found to have a connection to the Eveleigh Railway Workshops:

- Metropolitan Local Aboriginal Land Council;
- New South Wales Native Title Service;

- Aboriginal Housing Company, Redfern;
- Wyanga Aboriginal Aged Care Program, Redfern; and
- Aboriginal Education and Training Unit, Open Training & Education Network.

These organisations were invited to attend the consultation session and contribute to the CMP process through the session and feedback forms. None of the organisations sent representatives to the consultation session and no feedback forms have been received from these organisations.

As noted in Section 2.0, Aboriginal people did work on the railways in Sydney in the twentieth century, including the Eveleigh Railway Workshops and the Alexandria Goods Yard. There is also a general historical association between the movement of Aboriginal people to live in Redfern to take advantage of the work opportunities that this area provided, particularly on the railways.

6.5 Summary and Update

While a range of concerns were raised by the workshop participants, particularly in relation to the future of the site's significant machinery and the communication of the history of the place, the community workshop also provided a valuable insight into the importance of ATP and North Eveleigh to the local community.

Workshop participants were enthusiastic about different ways to conserve and communicate the important history of the site and the way its development affected the surrounding area. The community workshop revealed that members of the local community and others, such as those who work or volunteer in rail heritage, were very keen to see the history of the place interpreted and to be more heavily involved in its interpretation.

Since the community consultation was undertaken for this report in December 2009, ATPSL has been active in its engagement with the community over its planning and implementation of a range of heritage works (see Section 8.5.1 for details). This is in addition to providing opportunities for community participation through the Redfern Waterloo Heritage Taskforce and Eveleigh Steering Committee (now both disbanded) and through the establishment of the ATP volunteer group (who are directly engaged with the conservation and promotion of heritage at the Park).

PART C: SIGNIFICANCE ASSESSMENT



7.0 Significance Assessment

7.1 Introduction

7.1.1 Existing Heritage Listings

The Eveleigh Railway Workshops and its component elements, including the Locomotive Workshops, have been subject to numerous heritage assessments since it closed in 1986. The ATP site is included within a number of statutory heritage listings, outlined below.

- State Heritage Register (SHR):
 - Eveleigh Railway Workshops
 - Eveleigh Railway Workshops Machinery

The SHR also includes separate listings for the Chief Mechanical Engineer's Office and the Chief Mechanical Engineer's Office Movable Relics at North Eveleigh.

- ATP S170 Register:
 - Eveleigh Locomotive Workshops Precinct
 - Eveleigh Locomotive Workshops Machinery Collection
 - Locomotive Workshops Building
 - Engine Shop (former) (the New Locomotive Shop)
 - Works Manager's Office
 - Water Tower

The ATP S170 Register also includes separate listings for the Carriage Works at Eveleigh (the former carriage workshops) and the Chief Mechanical Engineer's Office at North Eveleigh.

7.1.2 Significance Assessment Methodology

The numerous heritage assessments and listings for Eveleigh Railway Workshops, Locomotive Workshops and other items were reviewed as part of assessing the significance of the ATP site.

The significance assessment is set out in the following manner:

- Review and commentary on the State Heritage Register listing for the Eveleigh Railway Workshops and Eveleigh Railway Workshops Machinery Collection.
- Assessment of the ATP site against NSW heritage criteria.
- Statement of significance for the ATP site.
- Assessment of integrity and intactness of the ATP site.
- Curtilage assessment for the ATP site.

No Aboriginal archaeological objects or sites are known to exist within the ATP site (see Section 5.0). No significance assessment of Aboriginal sites has been undertaken.

7.2 New South Wales Heritage Assessment Guidelines

7.2.1 Introduction

The NSW Heritage Manual guidelines, prepared by the NSW Heritage Office and Department of Urban Affairs and Planning (as amended July 2002), provide the framework for the following assessment and statement of significance for ATP. These guidelines incorporate the five types of cultural heritage values identified in *The Burra Charter: The Australia ICOMOS Charter for the Places of Cultural Significance 1999* into a specifically structured framework which is currently accepted as the required format by heritage authorities in New South Wales.

Under these guidelines, items (or places to use Burra Charter terminology) are assessed in accordance with a specific set of criteria, as set out below:

- 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).*
- b) *An item has strong or special association with the life or works of a person, or group of persons, of importance in the cultural or natural history of NSW (or the cultural or natural history of the local area).*
- 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).*
- 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.*
- e) *An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).*
- 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).*
- g) *An item is important in demonstrating the principal characteristics of a class of NSW's:*
 - *cultural or natural places; or*
 - *cultural or natural environments*
 - *(or a class of the local areas' cultural or natural places; or*
 - *cultural or natural environments).*

In applying the assessment criteria, both the nature and degree of significance of the place need to be identified, with items varying in the extent to which they embody or reflect key values and the relative importance of their evidence or associations.

The assessment also needs to relate the item's values to its relevant geographical and social context, usually identified as either Local or State contexts. Items may have both Local and State significance for similar or different values/criteria.

Statutory protection of heritage places (ie by local and/or state governments) is usually related to the identified level of significance. Items of State significance may be considered by the Heritage Council of NSW for inclusion on the State Heritage Register.

7.2.2 State Historical Themes

The NSW Heritage Manual identifies a specific set of 'Historical Themes relevant to New South Wales' within which the heritage values of the place can be examined. Relevant themes for the ATP site are outlined in the table below.

Table 7.1 NSW Historical Themes

Australian Historical Theme	NSW Historical Theme	Australian Technology Park
Developing local, regional and national economies	Industry—Activities associated with the manufacture, production and distribution of goods	The locomotive workshops manufactured parts for and assembled imported locomotives for the NSW railways. For two periods during the first half of the twentieth century, the workshops also manufactured Australian-designed locomotives.
Developing local, regional and national economies	Technology—Activities and process associated with the knowledge or use of mechanical arts and applied sciences	The locomotive workshops were a site of much innovation, with many machines and locomotives designed and built at Eveleigh.
Developing local, regional and national economies	Transport—Activities associated with the moving of people and goods from one place to another, and systems for the provision of such movements	The Eveleigh Railway Workshops manufactured parts for locomotives that served the entire NSW rail system. The Alexandria Goods Yard was one of the starting points for goods services to Melbourne.
Working	Labour—Activities associated with work practices and organised and unorganised labour	Eveleigh was the site of many important disputes seeking better working conditions and had significant union membership among its workers.
Governing	Government and administration—Activities associated with the governance of local areas, regions, the State and the nation, and the administration of public programs	The Eveleigh Railway Workshops were a significant State-owned industry which supported the expansion of the NSW rail system.
Governing	Defence—Activities associated with defending places from hostile takeover and occupation	The Locomotive Workshops played a significant role in manufacturing ammunition and tank parts during World War II.
Developing Australia's cultural life	Social institutions—Activities and organisational arrangements for the provision of social activities	Unions and social clubs were an important part of the working life of Eveleigh, with significant membership of the NSW Railway Institute and the Railways Ambulance Corp among Eveleigh workers.
Marking the phases of life	Persons—Activities of, and associations with, identifiable individuals, families and communal groups	The Eveleigh Railway Workshops represent a significant achievement by John Whitton, Engineer-In-Chief, and George Cowdery, Deputy Engineer for Existing Lines.

Australian Historical Theme	NSW Historical Theme	Australian Technology Park
Peopling Australia	Migration—Activities and places associated with the resettling of people from one place to another and the impacts of such movements	The Eveleigh Railway Workshops employed a significant number of post-World War II migrants and provided English language classes to assist their integration into the workplace.

7.3 State Heritage Register Listing

The ATP site comprises only a portion of the SHR listing for the Eveleigh Railway Workshops and the machinery. The statement of significance provided by the SHR listing is outlined below as a guiding statement for the assessment of significance of the ATP site. The curtilage of the SHR listing is provided as Figure 7.1.

7.3.1 Eveleigh Railway Workshops

Statement of Significance

The Eveleigh Railway Yards are some of the finest historic railway engineering workshops in the world and Eveleigh contains one of the most complete late 19th century and early 20th century forge installations, collection of cranes and power systems, in particular the hydraulic system. The place is of international significance and is one of Australia's finest industrial heritage items. The value of the place is increased by the fact that it is comprised of assemblages, collections and operational systems rather than individual items. Conversely, the significance has been reduced by its closure, relocation of some machinery and its disassociation from the operating rail network. (State Projects 1995: 109)¹

7.3.2 Eveleigh Railway Workshops Machinery

The SHR citation for the Eveleigh Railway Workshops machinery does not include a statement of significance or assessment against criteria. The citation describes the items listed as ‘Machinery associated with Locomotive Workshops’. A comprehensive assessment of the remaining machinery was prepared for the ATP S170 Register. This assessment, which is included as Appendix A, has been reviewed for this report.

7.4 ATP S170 Register Assessments

The ATP S170 Register assessments have been reviewed for this report. Copies of the inventory sheets for the Eveleigh Locomotive Workshops Precinct, the Locomotive Workshops Building, the Engine Shop (former) AKA the New Locomotive Shop, the Works Managers Office (former), the Water Tower and the Eveleigh Locomotive Workshops Machinery Collection are provided in Appendix A. The inventory for the Eveleigh Locomotive Workshops Precinct contained in the S170 Register provides the most recent and relevant assessment of significance. This listing has been reviewed in the process of preparing this CMP in the context of further consultation and examination of existing site elements and fabric.

7.5 ATP Site Assessment Against Criteria

The existing heritage listings for the site provide a basis for the assessment of significance of the ATP site as a whole. The assessment against the NSW Heritage criteria, below, culminates in a statement of significance for the ATP site as a whole in Section 7.6.

7.5.1 Criterion A (Historical Significance)

An item is important in the course, or pattern, of NSW's cultural or natural history.

- The ATP site as a whole reflects an amalgam of land gradually resumed for railway use during the nineteenth and twentieth centuries. The land was resumed for a number of expansions of the Locomotive Workshops, establishment of the Alexandria Goods Yard and construction of the Eastern Suburbs Railway connection to the Illawarra line, and involved demolition of an area of housing north of Henderson Road.
- The Locomotive Workshops were a key site in the development of the union movement in NSW and saw the beginning of significant workers' strikes and protests during the early twentieth century, including the General Strike of 1917. Many basic working conditions were gained at Eveleigh through union action, including Saturdays off.
- The locomotive repairs and manufacturing at the Eveleigh Locomotive Workshops supported the expansion of the NSW rail system in the late nineteenth and early twentieth centuries.
- The founding and operation of the railway workshops at Eveleigh greatly influenced the growth of the surrounding suburbs, with much of the local area developed to support the workshops and its workers.
- The Locomotive Workshops played a significant role in war-time manufacturing, producing ammunition and tank parts for the Australian forces during World War II.

7.5.2 Criterion B (Historical Association)

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

- The Locomotive Workshops component of the ATP site represents a significant achievement by John Whitton, Engineer-in-Chief for the Railways, and George Cowdery, Deputy Engineer for Existing Lines at the NSW Railways Department.
- The Locomotive Workshops component of the ATP site is associated with the early careers of figures prominent in the history of NSW, including former NSW Premiers James McGowen (who worked as a boilermaker at the workshops), JJ Cahill (who worked as a fitter) and former Federal Member for Sydney, Eddie Ward.

7.5.3 Criterion C (Aesthetic/Technical Significance)

An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW

- The ATP site represents one part of the technologically significant Eveleigh Railway Workshops. The separation of the two workshops (locomotive and carriage) on either side of the western railway allowed each to communicate with the main railway lines without interfering with operation of the other.
- The combination of the Locomotive Workshops and the Carriage and Wagon Workshops (North Eveleigh) provide an industrial gateway to the city when travelling by train. The

distinctive long, low, brick buildings on either side of the railway lines is a landmark along the western rail lines.

- The relationships and connections between the former workshops buildings demonstrate how the Eveleigh Locomotive Workshops operated. Rail lines to move machines and locomotives, turntables, the monorail, the pathway up to former pedestrian bridge over the Redfern Station platforms, the foundry wall and dramatic change in level where the foundry used to be, all contribute to the understanding of how the workshops functioned.
- The Machinery Collection, while still significant as a collection, has lost its original integrity as an integrated part of the operating workshops. At the time the Workshops closed, it retained the vast majority of its traditional equipment intact and in place and the Eveleigh Locomotive Workshops was a rare surviving example of an evolved nineteenth-century railway workshop. Following adaptive reuse of the Locomotive Workshops, with its associated dismantling of the interiors and relocation of much of the machinery, the original collection has been reduced to a significant degree, to a large group of related but discrete artefacts. The exception is the Blacksmiths Shop (Bays 1 and 2 North and South) component of the collection, which remains relatively complete.
- Individual items of machinery remain significant as significant items of technical achievement. These range from the Davy Press, a unique machine in Australia and rare in a world context, to the Departmental Lathe, a precision machine built locally.

7.5.4 Criterion D (Social Significance)

An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons

- The ATP site holds great significance for people in the local community, particularly those involved in the NSW railways. The locomotive workshops are emblematic of hard work of the type no longer common in NSW and are seen as a testament to the many thousands of workers and their families that made their living within its walls.
- The history and significance of the ATP site is central to many local community members' connection with the Redfern/Darlington area. As the former site of the Eveleigh Locomotive Workshops, ATP holds great significance as a social and historical landmark for the surrounding community.
- The history of the Eveleigh Locomotive Workshops and the many social and technological achievements that occurred there are a source of pride for former workers, current employees and volunteers and the local community alike. This pride is evident through the dedication of the many volunteers that continue to work in the Large Erecting Shed, the blacksmithing operation in Bay 1 and the 'Back to Eveleigh' days led by former workers, as well as the many views expressed during the community consultation process for this CMP.

7.5.5 Criterion E (Research Potential)

An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history

- The historical archaeological resource at the ATP site has moderate research potential relating to the functioning of the Eveleigh Locomotive Workshops and Alexandria Goods Yard. This potential resource includes structures and deposits relating to the former buildings on site and rail stock across the site.
- There is moderate research potential relating to the areas of former housing stock to the north of Henderson Road and west of Cornwallis Street that were resumed by the railways in the early twentieth century. This former neighbourhood, dating to the 1880s, would have housed many of the railway workers and their families. This potential resource may include occupational deposits and structures relating to the rows of housing stock, fences, gardens and yard surfaces and wells or cellars. Artefacts from this resource, if they exist, may be able to yield information on the types of people, including social class, gender and ethnicity, living in these former neighbourhoods.
- There is moderate research potential relating to two former stables from the Chisholm Estate period that predated the Eveleigh Locomotive Workshops and Alexandria Goods Yard use of the site. This potential resource may include remains of timber stables and associated deposits.
- The Machinery Collection has some value as a resource for skills development in traditional and mechanical trades, where these skills are disappearing in the community at large, and the equipment platforms for carrying out this form of work are rapidly becoming rare.

7.5.6 Criterion F (Rarity)

An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history

- The Eveleigh Railway Workshops as a whole, including its component parts within the ATP site, provide a rare expression of an ambitious late nineteenth-century public endeavour of a scale and intensity not reflected elsewhere in NSW.
- The blacksmiths workshop in the Locomotive Workshops building is one of the few remaining functional railway blacksmiths workshops in Australia, although the workshop no longer produces rail-related items.
- Many of the individual items in the Machinery Collection have no comparisons outside of large heavy engineering workshops associated with railways and shipyards, as they are specific to the manufacture of very large, complicated items. Although some similar machines may exist in traditional railway workshops in other Australian states, no detailed comparative analysis has been undertaken to determine the overall survival of such machines in Australia. Owing to the age and size of Eveleigh in comparison to railway workshops in other states, some elements of the Eveleigh Locomotive Workshops Machinery Collection are likely to be unique.
- The Davy Press is a unique machine in Australia, for its size, age and mode of operation and is a rare survivor in the world context. Other machines of rarity include items such as the

Tangye 48 inch wheel lathe (for its size and layout), the Societe Genevoise Drilling and Boring Machine, a rare surviving example of a machine that was the cutting-edge of precision machinery of its day and the 1888 Fielding & Platt two-cylinder compound steam engine direct coupled to the hydraulic pressure pump, a purpose-built machine from the 1880s.

- ATP and North Eveleigh comprise the largest group of railway workshops buildings and machinery remaining in NSW. The sites of other railway workshops in NSW, such as the Civic Railway Workshops at Newcastle and the Cardiff Railway Workshops at Glendale, were smaller workshops than Eveleigh and retain fewer buildings.

7.5.7 Criterion G (Representativeness)

An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments

- The Locomotive Workshops component of the ATP site is representative of late nineteenth-century railway workshops in New South Wales and Australia. Similar workshops of this era can be found in Newcastle (NSW), Launceston (Tasmania), Midland (Western Australia), Ipswich (Queensland), Islington (South Australia) and Newport (Victoria). The Eveleigh Locomotive Workshops were the largest in NSW.
- The Machinery Collection is broadly representative of the equipment typically associated with a large steam railway workshops complex of the late nineteenth and early twentieth century, in its range, size and technology. Individual machines and assemblages are representative of their particular application, function or technology, such as the blacksmith's assemblages or various lathes or cranes.

7.6 Australian Technology Park—Statement of Significance

ATP provides important evidence of the founding and gradual expansion of the largest railway workshops in NSW over a period of 100 years. The Eveleigh Railway Workshops was a highly significant and ambitious public endeavour of a type that rarely occurs today. Eveleigh was a government-established and government-run industrial workshop designed to provide self-sufficiency for the Sydney and NSW railways, without reliance on private operators who did not possess the funds or workforce to cope with demand during the nineteenth century. It employed and developed the best technology available at the time and continued to innovate in response to changes in the NSW railways system and management policy throughout its years of operation.

The ATP site contains an amalgam of land gradually resumed for railway use during the nineteenth and twentieth centuries. The land was resumed for a number of expansions of the Locomotive Workshops, establishment of the Alexandria Goods Yard and construction of the Eastern Suburbs Railway connection to the Illawarra line, and involved demolition of an area of housing north of Henderson Road. At its peak, the area was the most important rail precinct in NSW.

Three of four remaining buildings and a significant machinery collection from the State-significant Eveleigh Locomotive Workshops are contained within the ATP site. The Locomotive Workshops building, New Locomotive Shop and Works Manager's Office form a historically and aesthetically significant group that demonstrates the scale and importance of the Eveleigh Locomotive Workshops and are a landmark along the western railway. The distinctive, highly detailed industrial

buildings provide powerful evidence of the importance of the workshops as a major industrial undertaking in NSW during the late nineteenth century.

Individual items of the Locomotive Workshops Machinery Collection remain significant items of technical achievement. These range from the Davy Press, a unique machine in Australia and rare in a world context, to the Departmental Lathe, a precision machine built locally. While the Machinery Collection is not entirely intact, it retains a high level of significance and the collection within the blacksmiths workshop is relatively complete.

The ATP site holds great significance for members of the local community and current and former workers within the NSW railways and is central to many local community members' connection with the Redfern/Darlington area. As the site of the former Eveleigh Locomotive Workshops, ATP is emblematic of a type of work no longer common in NSW and the remaining buildings are seen as a testament to the many thousands of workers and their families that made their living within its walls. The pride in the history of the Eveleigh Locomotive Workshops is evident through the dedication of the many volunteers that continue to work in the Large Erecting Shed, the blacksmith business in Bays 1 and 2 South and the open days and tours led by former workers, as well as the many views expressed during the community consultation process.

The ATP site has strong historical connections with the surrounding area, including North Eveleigh and Redfern Station, as well as a historical connection with the expansion, pattern and type of development that occurred in adjacent suburbs. While the former Eveleigh Locomotive Workshops are significant in their own right, this significance is increased by their relationship to the Eveleigh Railway Workshops as a whole, including the former Carriage and Wagon Workshops at North Eveleigh and the former Macdonaldtown Gas Works.

7.7 Curtilage and Setting

7.7.1 Curtilage Assessment Principles

Heritage curtilage is defined in the NSW Heritage Office publication *Heritage Curtilages* as 'the area of land (including land covered by water) surrounding an item or area of heritage significance which is essential for retaining and interpreting its heritage significance.'

The Burra Charter places increased emphasis on the importance of the settings of heritage places:

Conservation requires the retention of an appropriate visual setting and other relationships that contribute to the cultural significance of the place. New construction, demolition, intrusions, or other changes that would adversely affect the setting or relationship are not appropriate. (Article 8)

This means that care must be taken in the development and management of the surroundings of a significant heritage place.

7.7.2 Curtilage Assessment

The SHR curtilage for the Eveleigh Railway Workshops includes the entirety of the ATP site as well as North Eveleigh, the former Macdonaldtown Gas Works, RailCorp's property to the west of ATP and a section of the Great Western Railway between the two sides of Eveleigh.

The SHR curtilage is considered appropriate for the ongoing conservation of the significance of the ATP site as it includes the elements that have significant historical associations with the former Eveleigh Locomotive Workshops and the Alexandria Goods Yard.

The SHR curtilage is included as Figure 7.1. The curtilage is described as follows:

The listing boundary is formed by Wilson St to the north west, Redfern Station to the north east, Cornwallis and Garden Sts to the south east and the property boundary to the new development fronting Henderson Rd to the south.²

7.7.3 The Setting of the ATP Site

While the Eveleigh Locomotive Workshops are significant in their own right, this significance is greatly increased when considered as part of the entire former Eveleigh Railway Workshops, including the former Carriage and Wagon Workshops at North Eveleigh and the former Macdonaldtown Gas Works. The workshops also have a significant relationship with the foundation and expansion of Redfern Station (originally named 'Eveleigh Station').

The current and likely future management and development of the now disparate parts of the former Eveleigh Railway Workshops will see these historical and operational relationships further obscured.

The setting of the ATP site should reflect the SHR listing boundary and include Redfern Station. The setting includes significant view lines between the various elements of the former Eveleigh Railway Workshops and ATP as well as significant view lines within the ATP site itself. The assessment of significant view lines (shown in Figure 7.2 and listed in Table 7.2) has taken into account the historical layout of the workshops and does not include views that can be obtained currently due to building demolitions but which did not exist in the past.

The setting recognises the significance of the former Eveleigh Railway Workshops as a whole and includes integral components that are currently excluded from consideration. Changes to ATP should not be considered without consideration of the heritage impact on the former railway workshops as a whole, and understanding of the sheer size of the Eveleigh Railway Workshops and the scope of functions that occurred within them should not be compromised by treating each component as a separate entity that does not relate to the whole.

7.8 Significance of Components

7.8.1 Grades of Significance

Different components of a place may make a different relative contribution to its heritage value. Loss of integrity or poor condition may also diminish significance. Specifying the relative contribution of an item or its components to overall significance provides a useful framework for decision-making about the conservation of and/or changes to the place. The following table sets out terms used to describe the grades of significance for different components of the place and is taken from the NSW Heritage Office publication *Assessing Heritage Significance* (2001).

Table 7.2 Standard Grades of Significance.

Grade	Justification
Exceptional	Rare or outstanding element directly contributing to an item's local and State significance.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.

Grade	Justification
Little	Alterations detract from significance. Difficult to interpret.
Intrusive	Damaging to the item's heritage significance.

The NSW Heritage Office publication also suggests that the standard table may need to be modified to suit particular applications and specific items. In Table 7.3, below, the standard grades of significance of Table 7.2 are applied to the particular layout, elements and fabric of the ATP site.

As part of this process Table 7.3 seeks to reflect the extent to which particular components of the place retain and/or provide meaningful evidence of the original site, as well as the relative importance of later layering and overall physical condition.

The preliminary assessment of the historical archaeological significance of the ATP site is shown on Figure 5.6.

Table 7.3 Grades of significance and application to ATP.

Grade	Application to ATP	Elements/Attributes
Exceptional	Major elements within ATP and visual connections within ATP and the former Eveleigh Railway Workshops. These may include some alterations which are of a minor nature and/or do not detract from significance.	Locomotive Workshops building including original annexes New Locomotive Shop Works Managers Office Turntables throughout site General visual connections that reflect former functional relationships and context between the elements within ATP and with the former Carriage and Wagon Workshops, Paint Shop and Chief Mechanical Engineers Office at North Eveleigh and railway lines.
High	Major elements within ATP and specific views within ATP and the former Eveleigh Railway Workshops which provide evidence of key attributes of the item's significance. These generally include alterations of a more substantial nature than Exceptional elements, but do not obscure significance.	Water tower Specific views (see Figure 7.2): <ul style="list-style-type: none"> • Along the northern and southern elevations of the Locomotive Workshops building. • Into the site from the northeastern entrance (Marian Street), the entrance near Margaret Street and the entrance near Boundary Street. • The three former Eveleigh Locomotive Workshops buildings from the railway lines. • View from the northern end of Innovation Plaza across to the Chief Mechanical Engineers Office at North Eveleigh. • View of the two sides of the Eveleigh Railway Workshops and Redfern Station from the entrance to ATP at Marian Street.
Moderate	Remnants of the Eveleigh Locomotive Workshops within the ATP site which have historic, associational and/or aesthetic values and contribute to overall significance. May also include sites of archaeological potential relating to former structures and landscape features.	Remnant brick walls from foundry Remnant rail tracks throughout the site Change in level between Locomotive Workshops building and foundry site

Grade	Application to ATP	Elements/Attributes
Little	Added or altered elements which detract from significance and/or may obscure more significant attributes.	NICTA Media Central (8 Central Avenue) Biomedical Building RTA and NSW Ambulance buildings
Intrusive	Added or altered elements which damage the item's significance.	No elements identified.

Table 7.4 Grades of significance and application to building fabric.

Grade	Application to ATP	Elements/Attributes
Exceptional	Major spaces, elements and fabric of the early/original buildings remaining from the Eveleigh Locomotive Workshops. These may include some alterations which are of a minor nature and/or do not detract from significance.	<p>Locomotive Workshops building:</p> <ul style="list-style-type: none"> External walls, including all original openings Blacksmiths workshop (Bays 1 and 2), including intact machinery collection Original annexes to Bays 3–1 Roof lanterns Original internal layout of the building, including arrangement of bays divided by double rows of cast-iron columns Rail tracks and services remaining in the slab Turntables south of Bays 3, 4a and 12 Overhead travelling cranes throughout Urinal against southern wall <p>New Locomotive Shop:</p> <ul style="list-style-type: none"> External walls, including all original openings Roof form, which demonstrates two phases of construction Rail tracks in slab Wash basins in foyer <p>Works Managers Office:</p> <ul style="list-style-type: none"> External form, including bell tower Original openings in the eastern portion of the building Railing outside southern entrance Remaining original interior fixtures and finishes, including fire places.
High (H)	Major spaces, elements and fabric of early/original buildings remaining from the Eveleigh Locomotive Workshops which provide evidence of key attributes of the item's significance. These generally include alterations of a more substantial nature than Exceptional but do not obscure significance.	<p>Locomotive Workshops building:</p> <ul style="list-style-type: none"> Machinery displayed throughout, except in Bays 1 and 2 Traverser <p>New Locomotive Shop:</p> <ul style="list-style-type: none"> Overhead travelling crane (moved from original location)
Moderate (M)	Additions/alterations to the early/original buildings remaining from the Eveleigh Locomotive Workshops which have	No fabric identified.

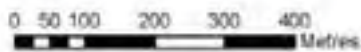
Grade	Application to ATP	Elements/Attributes
	historic, associational and/or aesthetic values which contribute to overall significance.	
Little (L)	Added or altered spaces, elements and fabric which detract from significance and/or may obscure more significant attributes.	Locomotive Workshops building: <ul style="list-style-type: none"> • Office fit-out in Bays 3–9 and 14–15 (new numbering: 3–10 and 15–16) • New annexes to Bays 14–15, 10–8, and 6–4 (new numbering Bays 15–16, 11–9 and 7–5) • Modern glass doors • Carpet throughout Bays 3–9 and 14–15 (new numbering: 15–16) New Locomotive Shop: <ul style="list-style-type: none"> • Office fit-out • Modern glass doors Works Managers Office: <ul style="list-style-type: none"> • Recent internal fit-out and finishes • Aluminium window frames
Intrusive (I)	Added or altered spaces, elements and fabric which damage the item's significance.	No fabric identified.

Heritage Council of New South Wales



State Heritage Register

Gazettal Date: 2 April 1999



Scale: 1:8,000

Produced by: Naomi Nelson

Legend

- SHR Curtilage
- LGAs
- Suburbs
- Land Parcels
- Water
- Roads
- Railways
- NSW Reserves

Figure 7.1 The SHR curtilage for the Eveleigh Railway Workshops. (Source: NSW Heritage Branch)

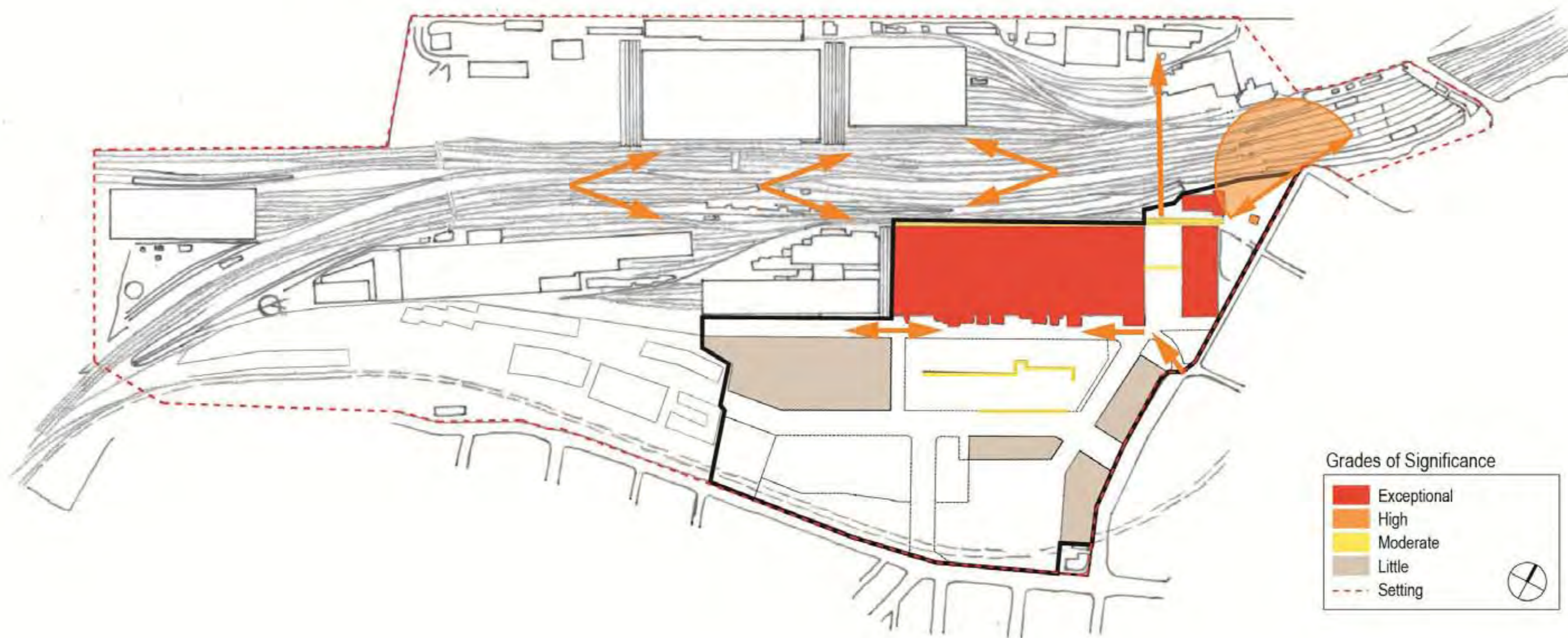


Figure 7.2 Significance plan showing grades of significance of elements within the ATP site. The plan also shows significant specific views within the site and to and from the site (High Significance). The boundary of ATP and the broader setting of the site is also indicated. (Source: GML 2011)

7.9 Endnotes

- ¹ NSW Heritage Branch, Parramatta NSW, State Heritage Inventory, 'Eveleigh Railway Workshops', viewed 21 August 2009
<http://www.heritage.nsw.gov.au/07_subnav_01_2.cfm?itemid=5045103>
- ² NSW Heritage Branch, Parramatta NSW, State Heritage Inventory, 'Eveleigh Railway Workshops', viewed 21 August 2009
<http://www.heritage.nsw.gov.au/07_subnav_01_2.cfm?itemid=5045103>

PART D: CONSTRAINTS OPPORTUNITIES AND POLICY



8.0 Constraints and Opportunities

8.1 Introduction

The role of the conservation policies in this report is to provide specific guidelines for the conservation, ongoing care, development and use of ATP and its component parts so that its cultural significance is appropriately maintained, enhanced and interpreted.

Development of conservation policies requires consideration of a range of issues which are generally divided into the following categories:

- the constraints on, and opportunities for, use and development of the site arising from the statement of significance;
- the physical condition and degree of integrity of the fabric of the place;
- requirements imposed by external factors and agencies including statutory authorities; and
- the requirements of the site users and owners, including consideration of available resources and appropriate uses.

8.2 Constraints and Opportunities Arising from Significance

8.2.1 Generally

Establishing requirements for retaining the heritage significance of the place is the essential first step in the development of conservation policies. These requirements are based on the aspects of significance identified in the statement of significance and accompanying assessment of the significance of components in Sections 7.7 and 7.8.

The future conservation, development and ongoing management of the place should take into account constraints arising from the identified heritage values of the site and its setting. Opportunities to reinstate the heritage values (where lost) and interpret the history (where not communicated) of the place should also be investigated and implemented, particularly where these can be integrated into the daily use and ongoing care of the site.

Aspects of significance of the ATP site identified in the statement of significance relevant to these concerns include:

- The need to conserve the significance of the Locomotive Workshops (within the ATP site) as an integral part of a rare surviving example of a nineteenth-century railway workshops, including its highly significant Machinery Collection and intact early buildings, which was the largest in the state and highly significant in the history of NSW.
- Opportunities to communicate this significance through appropriate uses and interpretation.
- Opportunities to conserve the significance of items of the Machinery Collection by returning them to use, taking into account relevant WHS, operational and amenity considerations.
- The need to maintain and enhance the connection between the Locomotive Workshops components within the ATP site (both buildings and machinery) and significant components of the workshops outside, particularly the Large Erecting Shed and the machinery within.

- The opportunity to enhance and engage with the social significance of the site through harnessing community interest and enthusiasm.
- The opportunity to enhance the significant relationship between the ATP site (as the former Locomotive Workshops) and North Eveleigh (as the former Carriage and Wagon Workshops) as two halves of the Eveleigh Railway Workshops.
- The opportunity to engage with and enhance relationships with other significant NSW railway sites, including the Rail Heritage Centre in Thirlmere, the former Chullora Railway Workshops and the former Civic Railway Workshops in Newcastle.
- The opportunity to recognise and enhance the importance of the ATP site as part of the larger railway industrial precinct which includes North Eveleigh, the former Macdonaldtown Gas Works, Redfern Station, the Large Erecting Shed and Macdonaldtown Stabling Yards and the boundary of the Alexandria Goods Yard and the western railway.
- The ability of the site to provide evidence of 100 years of engineering processes and equipment, including significant technological innovation, through remaining machinery and building design. The amount and type of machinery remaining on site provides many opportunities to interpret the history of the workshops.
- The powerful social significance of the site to its former workers, current volunteers and tenants, the local community and the NSW railway community, for whom the Eveleigh Railway Workshops and the Locomotive Workshops in particular represent a pinnacle of industrial achievement in NSW. This social significance provides a range of opportunities to communicate the significance of the site and to maintain significant moveable items in the Machinery Collection. The broader public is a valuable means of communicating and interpreting the significance of the site over coming generations.
- The need to communicate the social significance of the site for former workers and the local community as a testament to the lives of thousands of workers and as a site of struggle for workers' rights and improved working conditions.
- The evidence provided by the site of the workshop beginnings and expansion over 100 years, including buildings and other structures, landscape features and archaeological remains.
- The need to conserve and enhance the aesthetic and landmark qualities of the site in views from the main western railway lines, Redfern Station and the surrounding area.

The treatment of existing site components, fabric, and visual and functional relationships should be related to the assessed level of significance, as set out in Section 7.7 (Significance of Components).

8.2.2 Aboriginal Cultural Heritage

As part of the Indigenous consultation strategy, a number of organisations and individuals were found to have a connection to the Eveleigh Railway Workshops, including the Metropolitan Local Aboriginal Land Council, Aboriginal Housing Company, Redfern, New South Wales Native Title Service, Wyanga Aboriginal Aged Care Program, Redfern, and Aboriginal Education and Training Unit, Open Training & Education Network.

None of the organisations sent representatives to the consultation session and no feedback forms were received from these organisations. However, a number of sources (including oral history interviews conducted by Lucy Taksa and Joan Kent for Godden Mackay in 1996) indicate that Aboriginal people did work at the Eveleigh Railway Workshops and the Alexandria Goods Yard. The Aboriginal community in Redfern was well-established when the workshops were in operation. Opportunities exist to engage the local Aboriginal community in specific programs to identify and interpret cultural heritage in the future and to conduct detailed research that investigates the historical links to the workshops and the local area.

8.2.3 Guiding Principles

The future conservation and development of the place should be carried out in accordance with the principles of The Burra Charter:

- *The maximum amount of significant fabric, uses, associations and meanings should be preserved and conserved. (Article 3, Burra Charter)*
- *Conservation is based on a respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible. (Article 3.1, Burra Charter)*
- *Uses should, if possible, be related to the cultural significance rather than uses that do not take advantage of the interpretative potential of the place. (Article 7, Burra Charter)*
- *Conservation requires the retention of an appropriate visual setting and other relationships that contribute to the cultural significance of the place. (Article 8, Burra Charter)*
- *The contribution which related places and related objects make to the cultural significance of the place should be retained. (Article 11, Burra Charter)*
- *Conservation, interpretation and management of a place should provide for the participation of people for whom the place has special associations and meanings, or who have social, spiritual or other cultural responsibilities for the place. (Article 12, Burra Charter)*
- *Significant associations between people and a place should be respected, retained and not obscured. Opportunities for the interpretation, commemoration and celebration of these associations should be investigated and implemented. (Article 24.1, Burra Charter)*
- *Significant meanings, including spiritual values, of a place should be respected. Opportunities for the continuation or revival of these meanings should be investigated and implemented. (Article 24.2, Burra Charter)*

8.3 Constraints and Opportunities Arising from Condition and Integrity

8.3.1 Significant Buildings

Generally, the original buildings remaining on the site (the Locomotive Workshops, the New Locomotive Shop and the Works Managers Office) retain a moderate to high level of intactness and integrity, as noted in Section 3.0 of this CMP. The Locomotive Workshops and New Locomotive Shop clearly demonstrate their history as industrial buildings. Both workshop buildings are highly intact externally and relatively intact internally. The alterations to the internal spaces of both buildings could be reversible and the original open spatial character restored.

The buildings are maintained by ATPSL and are generally in good condition. Recent works to the buildings include re-pointing and repair of cracks to brickwork (completed July 2010) and conservation works to the Pump Room. Facade repairs, including repairs to cornices and coping are planned to take place in 2011.

The former Works Managers Office retains a moderate level of intactness. The flexibility of this type of small administration building has been embraced through adaptive re-use that retains much of the original character of the building, though interior finishes have been modified heavily. The building's form (including the bell tower) and location near the railway lines and station provides opportunities to enhance the connection between the Works Manager's Office and the entrance to ATP as an interpretation of the building's historical role as the administrative hub of the Locomotive Workshops.

Overall, the architectural language of the three original workshops buildings creates a tangible industrial heart of the ATP site, clearly visible from the rail lines, that provides a range of opportunities for interpretation of the site's history and distinctive branding for ATP. ATPSL has recognised this potential by using the space between the buildings (Innovation Plaza) for interpretation of some significant machinery.

8.3.2 Machinery

The survey of the condition of the major site components carried out for this CMP identified a number of key issues relating to the physical condition and degree of intactness/integrity (see Section 4.0):

- the loss of context for the industrial components of the site, particularly the Machinery Collection. Much of the remaining machinery does not have an obvious connection to its location. The relationship between the machinery and the layout of the workshops and how the two worked together has been obscured through relocation of most machinery;
- the incompleteness of the Machinery Collection overall, as result of various decisions about the collection made by various owners over the past 20 years, as outlined in Section 4.0. The notable exception is the blacksmiths workshop collection in Bays 1 and 2 North and South; and
- loss of knowledge due to the closing of the workshops and few workshops of its type remaining in operation.

Despite these three issues, a fair proportion of the significant Machinery Collection remains within the ATP site and remain relatively intact as individual items. There is great potential to interpret the Machinery Collection, engage with former workers and integrate the machinery into identity and use of the ATP site.

8.3.3 Site and Setting

Generally

Overall, a great deal of thought and effort has been put into ensuring that the connections between the remaining Eveleigh Locomotive Workshops buildings remain evident, with tracks, turntables and such being retained in situ as part of the site landscape. Portions of the foundry walls, some elements of the original layout and the change in level that runs east-west across site have also been substantially retained.

However, as is inevitable with the conversion of a densely occupied industrial site to a modern commercial precinct, much of the distinctive industrial landscape has been lost. The overall appearance of the ATP site reflects its new role as a technology-focused business park, despite the evident efforts to retain and embrace its industrial components. In some key views of the site, particularly from the western railway lines, the industrial character of the place is still clearly evident and opportunities exist to make more of this distinctive character.

The historical connection between the former Carriage and Wagon Workshops at North Eveleigh and the ATP site is clearly expressed through the architectural language of the workshops buildings on either side of the western railway. While much of the physical separation of the two areas was part of the original design of the Eveleigh Railway Workshops, as the areas functioned as two halves of the one railway workshops, this separation has been reinforced since the workshops closed. The removal of important physical links, particularly the Redfern Station pedestrian bridge, and the separation of management, with the Locomotive Workshops being given a new use quite quickly after closing while the Carriage and Wagon Workshops languished for many years before being gradually redeveloped, has resulted in the loss of links between the two areas.

Both ATP and North Eveleigh will be changing over the coming years, as the full development of the ATP site, the North Eveleigh Concept Plan and the Eveleigh Railway Workshops Interpretation Plan are realised. Opportunities to reinstate and interpret connections between the two sites should be investigated as part of these projects.

Archaeological Remains

The heritage significance of the site extends beyond the extant structures. Appropriate management measures should also be taken to ensure the archaeological resource is appropriately investigated and recorded prior to any action which may disturb or remove it. Appropriate management requires the archaeological investigation of areas of sensitivity, and the documentation of relics removed or disturbed. Excavation permits under the Heritage Act are required to disturb 'relics'.

The likelihood of the survival of the potential archaeological resource on the site is discussed in detail in Section 5.0. Future development of these areas would need to accommodate the timely management and investigation of identified archaeological resources. Specific policies for managing the site's archaeological resource are included in Section 9.0.

Aboriginal Heritage Values Assessment

Given the considerable disturbance to the original natural environment over the past 120 years from industrial and residential development, railway construction and more recently commercial development, the Aboriginal archaeological potential for the subject site is considered low. This does not preclude the existence of relics within the study area, however it is predicted that these would be highly disturbed, reworked deposits in a secondary context. Regardless of the context, all Aboriginal artefacts are afforded protection under the NPW Act.

Although the likelihood of encountering Aboriginal artefacts is considered low, should any Aboriginal relics be identified during excavation at this site, all works should cease and the area containing the relics be made secure (any artefacts must be left in situ). The OEH (formerly National Parks and Wildlife Service) Aboriginal Cultural Heritage Unit should be notified of any such find. An archaeologist should be called in at this time to assess the site and provide management

recommendations in conjunction with the Local Aboriginal Land Council, any other identified Aboriginal stakeholders and OEH.

8.4 Statutory Requirements

8.4.1 Heritage Act 1977 (NSW)

The *Heritage Act 1977* (NSW) (the Heritage Act) is a statutory tool designed to conserve the environmental heritage of New South Wales. The Heritage Act defines a heritage item as ‘a place, building, work, relic, moveable object or precinct’.

Specific for archaeology, ‘relic’ means any deposit, object or material evidence:

- (a) that relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; and
- (b) is of State or Local heritage significance.

State Heritage Register Listing and Heritage Council of NSW Approvals

As outlined in Section 7.0, the ATP site is included within the State Heritage Register (SHR) listing for the Eveleigh Railway Workshops (item number 01140, gazetted 2 April 1999). The SHR is established under Section 22 of the Heritage Act. Pursuant to Section 57(1), the approval of the Heritage Council of NSW is required for any proposed development within the site including subdivision, works to the grounds or structures or disturbance of archaeological ‘relics’.

The provisions of Section 170 and Section 170A regarding heritage management by government instrumentalities and the creation of heritage and conservation registers still apply, as do the notification provisions of Section 146 and Section 146A regarding discovery of relics.

Exemptions from Heritage Act Approval

Section 57(2) of the Heritage Act provides for a number of Exemptions to Section 57(1) approval requirements. Exempted development does not require prior Heritage Council of NSW approval. Exemptions are of two types, Standard and Specific. Standard Exemptions which apply to all items on the SHR generally include minor and non-intrusive works and are subject to some qualifications in some instances. Typical exempted works include maintenance (to buildings and gardens), minor repairs and repainting in approved colours. The NSW Heritage Council of NSW’s current Standard Exemptions are attached at Appendix B. Standard Exemptions do not apply to the disturbance, destruction, removal or exposure of archaeological ‘relics’.

Minimum Standards of Maintenance and Repair

Section 118 of the Heritage Act provides for the regulation of minimum standards for the maintenance and repair of State Heritage Register items. These standards were regulated in 1999 and apply to all State Heritage Register items. The minimum standards cover the following areas:

- weatherproofing;
- fire protection;
- security; and
- essential maintenance.

An inspection to ensure that the item is being managed in accordance with the minimum standards must be conducted at least once every year (or at least once every three years for essential maintenance and repair standards).

Failure to meet the minimum standards may result in an order from the Heritage Council to do or refrain from doing any works necessary to ensure the standards are met. Failure to comply with an order can result in the resumption of land, a prohibition on development, or fines and imprisonment.

8.4.2 State Environmental Planning Policy (Urban Renewal) 2010

The SMDA was created by the *Growth Centres (Development Corporations) Act 1974* (NSW) (Growth Centres Act) and commenced on 17 December 2010. It was renamed UGDC, which commenced operating 1 January 2013.¹ The UGDC uses existing provisions of the Growth Centres Act and has assumed the functions and continues the work of the SMDA.

The *State Environmental Planning Policy (Urban Renewal) 2010* (NSW) (Urban Renewal SEPP) came into operation in December 2010. The Urban Renewal SEPP identifies Granville, Redfern-Waterloo and Newcastle as potential urban renewal precincts and requires the preparation of Urban Renewal Studies. The UGDC is focusing on the two potential urban renewal areas of Granville (including Auto Alley) and Redfern-Waterloo.

8.4.3 State Environmental Planning Policy (Major Development) 2005

The ATP site is included within an area deemed a 'state significant site' under the *State Environmental Planning Policy (Major Development) 2005* (NSW) (SEPP Major Development). This area is listed as The Redfern-Waterloo Authority Sites (Part 5, Schedule 3). These sites are subject to State environmental planning policies only.² Other environmental planning instruments for the area, such as the *South Sydney Local Environmental Plan 1998* (SSLEP) and *Sydney Regional Environmental Plan 26—City West* (SREP 26), do not apply.

The Minister for Planning is the consent authority for state significant sites in the Redfern-Waterloo area. Where development is less than \$10 million in investment value, the City of Sydney Council is the consent authority.

Under SEPP Major Development minor works to heritage items may not require consent, provided the consent authority is notified and has advised the applicant in writing that it is satisfied that the work is of a minor nature (including maintenance) and would not adversely affect the significance of the heritage item (Clause 27(2) Part 5 Schedule 3).

Clause 27 Part 5 Schedule 3 of the SEPP Major Development provides provisions for heritage conservation, including relics, as follows:

- (1) *A person must not, in respect of a building, work, relic, tree or place that is a heritage item:*
 - (a) *demolish, dismantle, move or alter the building, work, relic, tree or place, or*
 - (b) *damage or remove the relic, or*
 - (c) *excavate land for the purpose of discovering, exposing or moving the relic, or*
 - (d) *damage or despoil the tree or place, or*
 - (e) *erect a building on, or subdivide, land on which the building, work or relic is situated or that comprises the place, or*

(f) damage any tree or land on which the building, work or relic is situated on or on the land which comprises the place, or

*(g) make structural changes to the interior of the building or work,
except with the consent of the consent authority.³*

A map of heritage items within the state significant sites in the Redfern-Waterloo area is also included in SEPP Major Development.

8.4.4 National Parks and Wildlife Act

The NPW Act provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Indigenous occupation of New South Wales) under Section 90 and for 'Aboriginal places' (areas of cultural significance to the Aboriginal community) under Section 84. Aboriginal objects and places are afforded automatic statutory protection in New South Wales whereby it is an offence (without the Minister's consent) to:

Damage, deface or destroy Aboriginal sites without the prior consent of the Director-General of the National Parks and Wildlife Service (now the Chief Executive of the Office of Environment and Heritage).

The NPW Act defines an Aboriginal object as:

any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.⁴

Under Section 84, the Act defines an 'Aboriginal place' as:

any place specified or described in the order, being a place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture.⁵

Under Section 90 of the Act, it is an offence to destroy, deface, damage or desecrate, or cause or permit the destruction, defacement, damage or desecration of an Aboriginal object or place without first obtaining consent from the Chief Executive of the OEH (sometimes called a consent to destroy). Under Section 90, consent can only be granted by applying for a Heritage Impact Permit, which must be approved by the Chief Executive.

Section 91 requires anyone who discovers an Aboriginal object to notify the Chief Executive of the OEH of the discovery. Identified objects and sites are registered on the Aboriginal Heritage Information Management System (AHIMS), which is managed and maintained by the OEH.

The protection provided to Aboriginal objects and places applies irrespective of the level of their significance or issues of land tenure. Any development on the ATP site should be undertaken with due regard to the requirements of the NPW Act in relation to Aboriginal heritage.

8.4.5 Redfern-Waterloo Authority Built Environment Plan (Stage One), August 2006

The *Redfern Waterloo Authority Built Environment Plan (Stage One)*, August 2006, (BEP 1) has been prepared to encourage the urban and social revitalisation of the Redfern-Waterloo area. Stage One focuses on the Redfern-Waterloo area's 'strategic sites', which includes the entire former Eveleigh Railway Workshops (including ATP and RailCorp land to the south) and Redfern Railway Station.⁶ BEP 1 replaces the previous ATP master plans (which were prepared as a

requirement of *Sydney Regional Environmental Plan 26—City West* (SREP 26), since revoked for the Redfern-Waterloo area) as the guiding planning document for the ATP site.

Part 3 (Strategies for Revitalising Redfern Waterloo) of BEP 1 includes a heritage strategy for the Redfern-Waterloo area. Section 3.5 recognises that the Redfern-Waterloo area's 'strategic sites' contain a number of heritage items listed on *South Sydney Local Environmental Plan 1998* and SREP 26 and proposes five more (all within North Eveleigh) for inclusion in SEPP Major Development. The heritage strategy also identifies a need to review existing CMPs and heritage inventories to guide development controls and acknowledges opportunities for adaptive re-use of heritage items.

Part 4 (Land Use and Design Concepts for Redfern-Waterloo area's Strategic Sites) of BEP 1 addresses ATP in Section 4.1.⁷ Land uses include those established (technology and research) and a proposal to allow serviced apartments and hotel/motel accommodation. The proposed design concept for ATP is based on the existing subdivision plan, with building heights from three to 11 storeys permitted on the site. Section 4.1 also notes that a Development Control Plan will be prepared to replace the ATP Master Plan 2005.⁸

Stage Two of the Built Environment Plan will address the areas of social housing in the Redfern-Waterloo area and is unlikely to directly have an impact on ATP.

8.5 Owner Requirements and Proposed Uses

8.5.1 Generally

ATPSL has provided the following statement regarding management of the heritage values of ATP:

ATPSL recognises its role and responsibility as custodian of the ATP, part of the former Eveleigh Railway Workshops which is listed on the State Heritage Register. The heritage of the site is evident through a number of show case heritage buildings, a large collection of historic industrial machinery and the social significance and influence of the site on the local community over time.

Heritage is a major theme of the site and the ATPSL Board of Directors, management and staff are committed to ensuring the valuable heritage significance of the ATP is appropriately preserved, maintained and promoted. The ATPSL Board has overseen the development of a range of plans and capital works relating to this issue, including:

- *Preparation of this new CMP for the site;*
- *The Section 170 Register that was approved by the Heritage Council in November 2008 and is available on the ATPPML website;*
- *The development, implementation and ongoing review of the Heritage Asset Management Strategy (HAMS);*
- *The ongoing implementation of the capital works and maintenance expenditure programs for heritage at the ATP, now totalling more than \$4.4m over the past 5 years, this work includes:*
 - *Pump Room refurbishment,*
 - *Innovation Plaza upgrade, Pivot crane restoration and steam crane display*
 - *Locomotive Workshop building façade works and structural repairs;*

- *Heritage interpretation infrastructure in Bays 1 and 2 North;*
- *Active participation in the former Redfern Waterloo Heritage Taskforce and Eveleigh Steering Committee;*
- *Establishment of the ATP volunteer group who are directly engaged with the conservation and promotion of heritage at the Park;*
- *Conduct of an ATP Open Day on 25 February 2012, with a strong heritage focus.*

8.5.2 CMP Policy Objectives

ATPSL and UGDC have identified the following objectives that are sought through the implementation of the CMP conservation policies:

- 1) *To achieve compliance with relevant heritage legislation and policy;*
- 2) *To achieve conservation, maintenance and interpretation of the heritage significance of the former Eveleigh Railway Workshops it relates to the Australian Technology Park (ATP) and associated moveable collection, in a commercial setting;*
- 3) *To facilitate and enable high quality development, adaptive reuse and heritage interpretation that responds to the heritage significance of the site and contributes to the creation of a vibrant and diverse place with a distinct identity;*
- 4) *Achieve enhanced public understanding and engagement in the role of the former workshops at ATP and their significance;*
- 5) *To help strengthen and create linkages with the heritage significance of the broader Redfern Waterloo area as well as the wider railway network;*
- 6) *To enhance ATPSL through the adaptive reuse of heritage on the site;*
- 7) *To improve ATPSL's business opportunities through its heritage assets;*
- 8) *To contribute to ATPSL's Corporate Social Responsibility program;*
- 9) *To enhance ATPSL's public reputation as a responsible business entity who has custodial responsibilities of important heritage assets;*
- 10) *To enhance, where possible in the constraints of the operational requirements of ATPSL, public access to the heritage assets at ATP;*
- 11) *To contribute to the public's awareness of the heritage value of ATP and the former Eveleigh Workshops more broadly.*

8.5.3 ATP Constitution and Entry Criteria

A Memorandum of Association (now constitution) for ATPSL was set out in 1993. The constitution states that the first object of the establishment of ATPSL is to:

- a) *establish, maintain and operate a facility of an international standard for the promotion, development and application of sciences and technologies;*

Entry criteria for ATP have been formulated by ATPSL based on the constitution. The entry criteria specifically note the need for companies who wish to occupy ATP to be involved in the research, development and commercialisation of new technology.

The constitution and entry criteria place restrictions of the type and range of uses ATP can support in the future, but also provide the basis for the continued development of a technology-focused business park.

8.5.4 Redfern Waterloo Heritage Taskforce and Eveleigh Steering Committee

The Redfern Waterloo Heritage Taskforce was established in 2009 to ensure that the significant heritage places within the Redfern-Waterloo area were 'conserved and promoted as the area undergoes significant revitalisation'.⁹ Membership of the taskforce comprised six State and Local Government representatives and four representatives from the local community, with specialists invited to attend and contribute to the taskforce's quarterly meetings. The taskforce was administered by SMDA (now UGDC).

The purpose of the taskforce was to

*identify opportunities for the active conservation, interpretation and, where appropriate, the adaptive reuse of the cultural, natural and archaeological heritage of the Redfern Waterloo area in tandem with the revitalisation and renewal of the area.*¹⁰

The taskforce was involved in identifying interpretation, tourism, education and recreation opportunities that would communicate the history of the area and its heritage items to the community.

A steering committee was established within the taskforce to focus solely on the Eveleigh Railway Workshops. The Eveleigh Steering Committee met in May 2010 and identified the following key issues and considerations for the former railway workshops:

- the interpretation of Eveleigh generally, including links to other rail heritage places such as the Chullora Railway Workshops and the NSW Rail Transport Museum at Thirlmere;
- collections management;
- a workers' wall;
- interpretation of the intact collection in Bays 1 and 2 north;
- workers and social and cultural history of the site; and
- railway arts.

8.5.5 Eveleigh Railway Workshops Interpretation Plan

An Interpretation Plan and Implementation Strategy was prepared for the former Eveleigh Railway Workshops by 3-D Projects with Artscape and Only Human in February 2012. The Interpretation Plan sets out strategies to communicate the significance and history of the site for future visitors and residents, in particular social history.

The Interpretation Plan proposes the division of the site into five interpretive zones and the replacement of existing signage with new signage and seating clusters to be located within the five

interpretive zones, including one cluster on a proposed link between North Eveleigh and the Locomotive Workshops that would also provide for a visual appreciation of the relationship between the two parts of Eveleigh. A number of strategies to enhance interpretation have been suggested in the interpretation plan, including a large-scale installation in Bay 2. The artwork would be an artefact and audio-visual installation which conveys the stories of the site and former workers. The Interpretation Plan also proposes the installation of portraits of former workers reflecting diversity of the working environment.

Creation of a publicly accessible interpretation path within Bays 1 & 2 North has been approved and recently completed. ATPSL has also installed the Stevenson Locomotive Crane and the Wheel Shop Pivot Crane within Innovation Plaza.

8.6 Opportunities Arising from Analysis of Constraints

This section has brought to light a range of key issues and opportunities for the future conservation and use of the ATP site and its significant components. While these issues place some constraints on the future use and development of the place, the condition, location and significance of individual buildings and the site as a whole also provide great opportunities to make the most of the heritage significance of ATP. These opportunities will allow ATP to better demonstrate and communicate its industrial past, and respond to key related places in the area also undergoing considerable change.

- **Making Eveleigh whole:** The former Locomotive Workshops buildings within the site demonstrate a place of heritage significance that goes beyond the boundaries of the ATP site. Interpretation and use of the former workshops buildings have the ability to connect to the former Carriage and Wagon Workshops at North Eveleigh and to related places such as Redfern Station to interpret the historical scale and importance of the Eveleigh Railway Workshops.
- **The Machinery Collection:** The context of the significant amount of remaining machinery is now limited with little human or operational connection. However, much of the Machinery Collection remains on site and is intact within Bays 1 and 2. The Machinery Collection provides a great deal of potential for creating engaging interpretation and providing new use for the place.
- **Future development sites:** The development of the ATP site is currently guided by the subdivision plan and BEP 1 and has followed the path set down following the creation of ATP in 1993. The development and chosen direction for the site has had and will continue to shape the setting and use of significant buildings and machinery within the ATP site.
- **Retaining the Site Character:** The ATP site has a unique character resulting from the juxtaposition of new and old (eg computer technology and blacksmithing, and contemporary architecture and nineteenth-century workshops). There is an opportunity to emphasise this juxtaposition and enhance the site's unique character through the implementation of the interpretation plan.
- **Opportunities:** This CMP has identified some areas of real opportunity. The community consultation process revealed a range of opportunities to harness community passion to conserve and communicate the heritage significance of the place. The site is also an ideal place to interpret broader NSW and Eveleigh Railway Workshops stories, through the remaining significant buildings and machinery and through the evident community interest.

There is also great potential to retain some of the industrial character of the place in future uses and to retain those industrial uses already in place.

8.7 Endnotes

- ¹ UrbanGrowth NSW, 'About us: Overview', UrbanGrowth NSW, Parramatta NSW, viewed 17 September 2013, <<http://www.urbangrowthnsw.com.au/about-us/overview.aspx>>
- ² *State Environmental Planning Policy (Major Developments) 2005*, Clause 3 Part 5 Schedule 3.
- ³ *State Environmental Planning Policy (Major Developments) 2005*, Clause 27 Part 5 Schedule 3.
- ⁴ NSW legislation website <<http://www.legislation.nsw.gov.au/viewtop/inforce/act+80+1974+first+0+N>> Accessed on 22/10/2009.
- ⁵ NSW legislation website <<http://www.legislation.nsw.gov.au/viewtop/inforce/act+80+1974+first+0+N>> Accessed on 22/10/2009.
- ⁶ Redfern-Waterloo Authority, *Redfern-Waterloo Built Environment Plan (Stage One)*, August 2006, p 4.
- ⁷ Redfern-Waterloo Authority, *Redfern-Waterloo Built Environment Plan (Stage One)*, August 2006, p 46.
- ⁸ Redfern-Waterloo Authority, *Redfern-Waterloo Built Environment Plan (Stage One)*, August 2006, p 47.
- ⁹ Redfern Waterloo Heritage Taskforce, Terms of Reference, June 2010.
- ¹⁰ Redfern Waterloo Heritage Taskforce, Terms of Reference, June 2010.

9.0 Conservation Policy

9.1 Introduction

This conservation policy section has two key parts. The first part is an ATP Conservation Vision Statement that provides an overarching direction and vision for the conservation and management of the ATP site. The second part is a series of policy objectives and individual policies to match these objectives. Where a policy generates a specific action, this is listed directly underneath that policy.

The policy recommendations are all based on the assumption that they should be implemented at the first available opportunity but recognising that in practice this is dependent on a range of regulatory, financial and logistical factors relevant at the time and in relation to other organisational responsibilities.

9.2 ATP Conservation Vision Statement

ATP is a workplace which has always been characterised by technical achievement and contemporary best practice. Today ATP is a site of State heritage significance which combines the rich and evocative history of more than a century of rail industry with inspiring adaptation of historic buildings, innovative new development and cutting-edge technology. While retaining links with the past and social value to former workers, ATP also has strong connections with the current community of workers, residents and visitors.

ATP will be managed to:

- deliver high quality **custodianship** of a major public asset;
- facilitate ongoing **evolution** of the place itself and ever-changing technology through new uses and appropriate development while retaining the heritage values of the ATP site and the Eveleigh Railway Workshops site as a whole;
- **engage** with workers both past and present, local people and the wider community; and
- **present** the old and new Eveleigh / ATP stories in an engaging way - both on and off site.

Custodianship

ATP will be managed, conserved and developed in a way which retains and adds value – both the heritage value of the site and the economic and social value of the asset.

All heritage management actions and decisions will comply with ATPSL's constitution, relevant legislation, the Burra Charter, the policies of the ATP CMP and the NSW Government policy, as appropriate.

Evolution

ATP will continue to develop in a manner which respects and conserves the existing heritage values of the place, but which encourages exciting new development that is of sympathetic design.

Innovative commercial uses which use new technologies and deliver good heritage outcomes—in relation to both physical conservation and interpretation—will be encouraged.

Engagement

Interested people, including current or former workers, residents, special interest groups and the wider public, will be encouraged to connect with ATP both on and off site.

Engagement will continue to occur through on-site interpretation, publications, access to common areas, events and direct delivery of information.

Presentation

The history and heritage of ATP will be presented on and off site to inform and inspire workers and visitors.

Interpretation will embrace the concepts contained in the ERW Interpretation Plan and will use the historic fabric of the place itself, landscape elements, artwork and signs, as well as electronic media. Tenants will be encouraged to communicate and celebrate the special nature of this extraordinary place.

9.3 Conservation Policy

Conservation policy is organised according to the following areas:

- 1 Conservation planning—these policies provide a framework for the adoption and implementation of the CMP and include essential policies for the conservation of ATP.
- 2 Conserving heritage significance—these policies outline the approach to the conservation of the heritage significance of the site, including conservation of individual elements.
- 3 Conserving the heritage curtilage and setting—these policies guide the conservation of the heritage curtilage and broader setting of ATP.
- 4 Physical conservation and maintenance of buildings—these policies outline the approach to the conservation of fabric and maintenance of the significant buildings within ATP.
- 5 Physical conservation and maintenance of the machinery collection—these policies guide the conservation of the machinery collection.
- 6 Managing the archaeological resource—these policies provide a framework for the management of the archaeological potential within ATP.
- 7 Future use—these policies establish principles for future uses of the site and its components, as well as public use and access.
- 8 Future development—these policies establish principles for new development of the site and its components, including adaptation of existing structures.
- 9 Community involvement and consultation—these policies guide engagement with the local community and interested groups in matters that affect the heritage significance of ATP.
- 10 Interpretation—these policies acknowledge the need for a detailed interpretation plan to be prepared and implemented to communicate the significance of ATP and related places.

Policy Objective 1—Conservation Planning

The aim of these policies is to ensure that conservation planning continues to be an integral part of the management of ATP. There are a range of conservation processes with which current and future owners will need to comply. Conservation of heritage significance should be central to future decisions about the place. This section sets out policies for establishing and maintaining suitable conservation planning processes for ATP.

1.1 This CMP should be the principal guiding document for the conservation and management of the heritage significance of ATP.

Action: This CMP should be adopted by ATPSL and UGDC.

Action: This CMP should be submitted to the NSW Heritage Council for final endorsement.

Action: The SHR listings for the Eveleigh Railway Workshops and the Eveleigh Railway Workshops Machinery Collection should be updated by the Heritage Branch to reflect the findings of this CMP.

1.2 The analysis and recommendations of this CMP should be co-ordinated with other planning documents for the place, including:

- ATP S170 Heritage and Conservation Register 2008;
- Eveleigh Workshops Management Plan for Moveable Items and Social History 1996 (or as revised);
- Eveleigh Railway Yards Locomotive Workshops Conservation Management Plan 1995;
- Eveleigh Railway Workshops Interpretation Plan and Implementation Strategy 2012;
- Draft Eveleigh Locomotive Workshops Conservation Management Plan 2002; and
- RWA Built Environment Plan Stage One 2006.

In the event of any inconsistencies, the CMP should prevail.

Heritage and planning aspects of future documents should be prepared to be consistent with this CMP.

1.3 The S170 Heritage and Conservation Register and the Management Plan for Movable Items should be updated to reflect changes to the Machinery Collection and to guide its future conservation.

Action: The S170 Register and Management Plan for Movable Items review should include a review of existing conservation and disposal policies, with a view to reducing the number of elements held at ATP which are not relevant to the site. Conservation actions should be prioritised to ensure resources are targeted to higher conservation priorities first.

1.4 If parts of ATP are sold or leased on long-term basis, adequate provisions should be included within the sale/lease contracts to ensure conservation and maintenance of heritage assets on the site in accordance with the endorsed CMP and the Management Plan for Movable Items (as revised). A copy of the endorsed CMP and the Management Plan for Movable Items (as revised) should be included as part of the sale/lease contract.

1.5 This CMP should be a widely accessible document.

Action: A copy of this CMP should be provided to RailCorp, City of Sydney Council and other relevant agencies with an interest in the property.

Action: This CMP should be made available electronically to the public, preferably through the ATP and UGDC websites.

Action: If ownership of the property is transferred, a copy of the CMP should be included as part of any sale documents and provided to the new owner.

Action: Copies of the ATP Conservation Vision Statement should be provided to lessees of the site. The full CMP should be made available as a web resource.

1.6 The effectiveness of the CMP should be monitored on an ongoing basis.

Action: The owner of the site should review and update this CMP every five years.

Action: Specific policies within the CMP should be reviewed and updated in light of new circumstances, including changes to the management or ownership of ATP.

1.7 The strong community attachment to the heritage significance of the ATP site should be acknowledged through regular consultation on changes to the site and its management. (Specific policies for community involvement and consultation are contained in Policy Objective 9.)

1.8 All proposed activities should be in accordance with this CMP and relevant approvals identified in the Heritage Act.

1.9 The following process should be followed prior to approving any changes or works to the place:

- Assess the proposed works against the policies in this CMP.
 - Prepare a Heritage Impact Statement for works with the potential to have an impact on the heritage significance of ATP, including works not permitted under the Standard Exemptions. The HIS should assess impacts and propose appropriate mitigation measures.
 - Prepare an Archival Recording (for changes to site elements of Moderate or above significance (as per Section 7.8 of this CMP), in accordance with NSW Heritage Branch guidelines. (See *Guidelines for Photographic Recording of Heritage Sites, Buildings, Structures and Moveable Items* (1998), prepared by the Heritage Office.)
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1.10 Maintenance works and minor repairs should be undertaken in compliance with the Standard Exemptions under Section 57(2) of the Heritage Act. The standard exemptions are included as Appendix B. ATP is not subject to any site-specific exemptions.

1.11 All personnel engaged in works with the potential to have an impact on the site's heritage significance should have proven experience and qualifications in the relevant field of heritage conservation. This includes both professionals and tradespeople.

1.12 The management of unforeseen discoveries or new information should comply with the policies in this CMP.

Action: The heritage value of newly discovered physical evidence, such as unforeseen survival of early building fabric, should be assessed prior to making decisions about its future management.

1.13 Systematic recording should be maintained as part of the management of the site's heritage significance.

1.14 Decisions about the place should be documented and records kept for future reference.

1.15 Records relating to works undertaken at the site should be safely stored for future reference, both at the site and elsewhere.

1.16 Planning for all projects that have a heritage component should be in accordance with the ATPSL Heritage Project Management Policy, July 2011, or as amended.

1.17 Copies of historical information and reports should be made publically available in a public repository, such as the City of Sydney Archives or the Mitchell Library.

Policy Objective 2—Conserving Heritage Significance

Conservation of the heritage significance of ATP and its significant buildings, structures and machinery should be an integral part of the management of the place. The identity of the place as the former Eveleigh Locomotive Workshops and Alexandria Goods Yard should be reinforced through appropriate conservation and interpretation.

2.1 ATP is a place of State heritage significance as one half of the former Eveleigh Railway Workshops and should be conserved.

2.2 The Machinery Collection is of State significance and should be conserved.

2.3 Conservation of ATP and the Machinery Collection should be in accordance with the definitions and principles of *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance 1999*.

2.4 Management of heritage significance must also take into account the broader SHR curtilage for the Eveleigh Railway Workshops, which includes the entirety of ATP.

2.5 Conservation of heritage significance of the former Eveleigh Locomotive Workshops, the Machinery Collection and Eveleigh Railway Workshops as a whole should be central to future decisions about the place including its interpretation.

2.6 Management of the Large Erecting Shed (on RailCorp land) and the Locomotive Workshops buildings within ATP and the machinery within each should be co-ordinated between ATPSL and RailCorp (or future owners) if ownership remains separate. Changes to either should be considered and assessed in light of the heritage significance of the other.

2.7 All current and future owners and managers responsible for the care and management of ATP, its significant machinery collection and its setting should be advised of and be jointly responsible for the conservation of the heritage significance of the place.

2.8 The authenticity of the former Locomotive Workshops as an industrial place should be respected and embraced. This includes tangible (structures, machinery, etc.) and intangible (social significance, etc.) aspects. (See also Policy Objective 4—Physical Conservation of Buildings, Policy Objective 5—Physical Conservation of the Machinery Collection, Policy Objective 9—Community Consultation and Policy Objective 10—Interpretation.)

2.9 Key aspects of the site that demonstrate the former use of the Locomotive Workshops should be retained and interpreted, including movable heritage, building components, power sources and use of Bays 1 and 2 for blacksmithing.

2.10 The relative significance of individual elements will determine the appropriate conservation process:

- **Exceptional**—should be preserved, restored or reconstructed.
- **High**—should be preserved, restored, reconstructed or adapted.
- **Moderate**—retention and adaptation is desirable but not essential; removal may be acceptable (following archival recording).
- **Little**—may be retained, adapted or removed as necessary.
- **Intrusive**—should be removed or adapted to reduce adverse heritage impact.

The specific views of High significance (shown in Figure 7.2) should be preserved, subject to the conditions contained in Policy 3.6. Reinstatement of highly significant views is desirable if an opportunity arises.

An assessment of significance of components is contained in Section 7.8 of this CMP. Refer to the ATP S170 Register for significance of individual items of the machinery collection.

The Burra Charter definitions (Appendix D) explain the conservation processes noted here. Often conservation involves a combination of these processes. Reconstruction is generally only used in limited circumstances to replace a missing part of an element and where good documentation exists—often reconstruction is used to allow for recovery of a historic use, but is limited to avoid an impact on authenticity.

2.11 Adverse impacts on components, fabric or other aspects of significance (including use) should only be permitted where:

- it makes possible the recovery of aspects of greater significance;
- it helps ensure the security and viability of the place;
- there is no feasible alternative (eg to meet safety and/or legal requirements);
- the area, element, fabric or other aspect of significance is adequately recorded; and
- full assessment of alternative options has been undertaken to minimise adverse impacts.

Action: When assessing proposed actions that may have an impact on the site, the significance assessment (Section 7.0 of the CMP) should be used to identify the contribution that individual elements make to the significance of the site. Individual elements should not be assessed in isolation.

2.12 The social significance of the place to the local community, former workers and the NSW railways community should be acknowledged. The considerable resource provided by community interest in the place should be used to interpret the significance of the place. (See Policy Objective 9—Community Consultation and Policy Objective 10—Interpretation for detailed policies.)

2.13 The highly significant Machinery Collection at ATP should be conserved as an integral part of the site's identity.

2.14 The obligations of and opportunities for owners in relation to heritage conservation should be defined. These obligations and opportunities could include:

- retention of the operating blacksmiths workshop or similar heritage operation;
- publicly accessible interpretation areas;
- annual financial contributions towards conservation (repair and maintenance); and
- an interpretation strategy and implementation.

Policy Objective 3—Conserving the Heritage Curtilage and Setting

The entire ATP site has significance and is included within the SHR curtilage for the Eveleigh Railway Workshops. A broad setting was also identified in Section 7.7 that includes significant view lines between the significant elements of the SHR curtilage and within the ATP site. This section sets out policies for conserving the heritage curtilage and broader setting of ATP. Policies for the physical conservation of buildings and machinery are contained in Policy Objectives 4 and 5.

3.1 The SHR curtilage is the minimum area required to conserve the heritage significance of former Locomotive Workshops (see Figure 7.1).

3.2 The industrial character of ATP should be conserved where evident, and interpreted where lost. This character is demonstrated by the remaining workshops buildings, structures and machinery and their industrial patina (which reveals wear, long-term intensive use and age). (See also Policy Objective 4—Physical Conservation of Buildings, Policy Objective 5—Physical Conservation of the Machinery Collection and Policy Objective 10—Interpretation)

3.3 The visual and other relationships, such as physical connection or a use connection, between significant elements within the heritage curtilage should be conserved, where possible, including remaining physical connections such as rail tracks.

3.4 An appropriate broad setting that describes the historical context of ATP must be retained to conserve the heritage significance of the place. The key elements of the setting of ATP are:

- the former Carriage and Wagon Workshops at North Eveleigh;
- Redfern Station;
- the former Macdonaldtown Gas Works;
- remaining RailCorp property to the west next to the western railway, including that now occupied by the Macdonaldtown stabling yards;
- the area of public housing to the west (as formerly part of the historic ERW site); and
- significant view lines within the ATP site and between it and other elements of the SHR curtilage.

The majority of this setting (excluding the area of public housing) is contained within the SHR listing boundary. (A copy of the SHR boundary is shown as Figure 7.1 in Section 7.0.)

Action: ATPSL should follow up on opportunities to comment on development or other proposals in the broader setting of ATP that may have an impact on the heritage values of ATP or its setting (being the former Eveleigh Railway Workshops).

3.5 Changes within ATP should take into account the impact on the heritage significance of the former Eveleigh Locomotive Workshops buildings.

3.6 Significant visual connections and specific views within the site, to and from ATP and to related places, should not be obscured (see Figure 7.2 for the specific views of High significance). Significant views include views into the site from the Great Western Railway.

Where removal or obstruction of significant specific views is required for essential operation or development reasons, or if they are subject to existing approvals which would result in their loss or obstruction, other locations that provide the same type of view line could be identified as a replacement. (For example, if the proposed development at North Eveleigh will obscure the significant specific view between Innovation Plaza and the Chief Mechanical Engineer's Office, a similar view might be obtained from the proposed pedestrian and cycle bridges over the Great Western Railway.)

Retention of existing significant specific views or their replacement by alternative views is preferred. However, if significant specific views must be removed or obstructed, other mitigative measures should be undertaken, including retention of modified/slot views or implementing interpretive measures (such as representation of former views in building design, installation of public art which reflects former views and relationships, interpretive signs or other interpretive media).

3.7 The connection between ATP and North Eveleigh should be enhanced and reinforced as an opportunity for future growth and interpretation. (See Policy Objective 10—Interpretation for further details.)

3.8 Subject to future funding and in association with other owners and the development of adjacent sites a physical connection between ATP and North Eveleigh should ideally be reinstated, preferably through a bridge that connects to Redfern Station, as per the original pedestrian bridge. This bridge could provide opportunities to interpret the workshops as a whole and link the two developing areas on either side of the railway. (See Policy Objective 10—Interpretation for further details.)

3.9 The role of the Marian Street entrance to ATP and its relationship to Redfern Station should be strengthened, both to reflect the historical importance of this entrance and to respond to the current and future needs of those entering the site from Redfern Station. This could be achieved through in the short term through signage or landscaping and in the longer-term through the potential redevelopment of Redfern Station and the proposed pedestrian and cycle bridges over the rail lines.

3.10 Plantings within ATP should be hard-edged and sparse to suit the industrial character of the site and should not obscure key view lines.

3.11 Both sides of the Eveleigh Railway Workshops provide an industrial heritage 'gateway' to the city. This should be conserved and enhanced.

Policy Objective 4—Physical Conservation and Maintenance of Buildings

Conserving the former Eveleigh Locomotive Workshops buildings is integral to conserving the heritage significance of the place. Conservation of buildings includes repair works, regular maintenance and inspection of building fabric and appropriate adaptations that respond to the significance of the place.

4.1 Significant buildings and fabric within ATP should be conserved. (Refer to Section 7.8 of this CMP for a table of significant buildings and fabric.)

4.2 The authentic industrial character of the former Locomotive Workshops buildings should be conserved. Worn features, cracked paint, etc. should be conserved unless it poses a threat to the physical condition of the buildings or in the case of an OH&S issue.

4.3 Conservation of fabric should be appropriate to the grades of significance identified in Tables 7.2–7.3 and Figure 7.2, as per Policy 2.5 (above).

4.4 Conservation works identified in draft Eveleigh Locomotive Workshops CMP 2002 not yet carried out should be completed to arrest any material conservation issues.

Action: A building conservation specialist should be engaged to identify any further conservation works needed.

4.5 Regular maintenance should take place to conserve the significant fabric of the place, as per the *Minimum Standards of Maintenance and Repair* (NSW Heritage Branch Guidelines 2006).

Action: A Cyclic Maintenance Plan should be prepared to guide regular maintenance of significant structures within ATP in accordance with NSW Heritage Branch guidelines.

Action: The Cyclic Maintenance Plan should be updated following works to the site and/or buildings, ie. following reconstruction or adaptation works.

4.6 Maintenance work should be prioritised according to the heritage significance and vulnerability to deterioration of individual elements.

4.7 The condition of elements and fabric should be monitored on an ongoing basis through regular inspections.

Action: A regular inspection program should be established to identify maintenance and rectification works. Areas of particular importance include roofs, brick and stonework, water ingress, gutters and downpipes, site drainage and general security.

4.8 Where possible replacement or repair of significant fabric should be carried out on a like-for-like basis. For example, a damaged timber window frame should be replaced with one of matching details and similar timber.

Action: Where significant fabric is proposed to be removed, a representative sample of the fabric should be recorded, catalogued and stored on site, and interpreted where appropriate.

4.9 Hazardous materials and materials causing physical damage (such as rusting reinforcing bars) should be replaced with modern materials of similar finish, including fabric of high or exceptional significance.

4.10 The distinctive industrial character of the former Eveleigh Locomotive Workshops buildings should be conserved through use of appropriate materials and finishes.

4.11 As much original fabric as possible should be retained in situ. Removal of original fabric should only take place where it has deteriorated to a condition beyond feasible retention.

Policy Objective 5—Physical Conservation and Maintenance of the Machinery Collection

Conservation of the Machinery Collection is an integral part of conserving the heritage significance of the place. The policies in this section guide physical conservation and maintenance works for the Machinery Collections. Recommendations for future use and display are contained in Policy Objectives 7 and 10.

5.1 The remaining Machinery Collection should be managed in accordance with the general recommendations of this CMP and the item specific recommendations contained in the s170 and HAMS reports (current or as revised) and the Management Plan for Movable Items (as revised). (Refer to the ATP S170 Register for an assessment of significance for each item of the Machinery Collection.)

5.2 In managing the Machinery Collection within its available resources ATPSL will continue to look for opportunities to obtain advice and assistance from a range of appropriate sources.

Action: ATPSL should continue to engage relevant experts on a case-by-case basis to advise on conservation actions including, where appropriate, use and interpretation, and consult with appropriate stakeholders prior to the implementation of these conservation actions in accordance with the ATPSL Heritage Project Management Policy.

5.3 Liaison with RailCorp, 3801 Ltd, the Powerhouse Museum and the heritage operator in Bays 1 and 2 (currently Wrought Artworks) regarding ongoing management of the Machinery Collection by ATPSL should continue.

5.4 Conservation of the machinery collection should aim to retain authenticity in appearance and use. The approach for conserving the machinery fabric should be one of minimal intervention.

5.5 Although the use of machinery in the movable collection may not generally be feasible given the constraints relating to safety concerns, loss of power supplies and difficulty in finding uses for the machinery, the opportunity to restore items of the Machinery Collection to operational use should be considered. This is not intended to place an obligation on ATPSL to find uses for the Machinery Collection.

Action: A flexible conservation approach should be taken to machinery where a viable operational use is proposed. Minor alterations may be required to allow for new uses.

Action: The impact of new uses on the significance of the Machinery Collection should be assessed on a case-by-case basis. Some items in the Machinery Collection should not be altered owing to rarity and level of significance.

5.6 Machinery may be made to look as though it has been recently overhauled, but should not be made to look 'new'. All external surfaces should be treated to prevent rust, but oiling and waxing is preferred to repainting.

5.7 Regular maintenance should take place to conserve the significant items in use and on display.

Action: Maintenance should be carried out in accordance with the general and item-specific conservation recommendations made in the ATP S170 Register and any specific maintenance plans, such as those for individual items in Bays 1 and 2 prepared by Heritech Consulting.

Action: Maintenance should be carried out by personnel with proven qualifications and experience in the conservation of machinery. (Refer to Policy 1.10)

Action: WorkCover health and safety requirements must be taken into account for machinery in use and on display.

5.8 If a viable operational use can be identified, including for use or interpretation by a lessee, for the machinery on site (eg in fabricating or in a craft workshop use), consideration should be given to allowing the machinery continue its working life, subject to adequate maintenance levels being met.

Action: The blacksmithing use currently in operation in Bays 1 and 2 (or a similar operation) is consistent with this policy and should be retained.

5.9 Remaining evidence of former machinery, including remains of pits and machine footings, should be retained where possible.

Policy Objective 6—Managing the Archaeological Resource

6.1 Any redevelopment of ATP should be preceded by an Archaeological Impact Assessment, specific to the particular area being redeveloped, to mitigate any proposed development on the known and potential archaeological resource. Depending on the potential significance of deposits in an area proposed for redevelopment, detailed on-site archaeological investigations may be required such as excavation, monitoring and recording of site features, and the collection, analysis and interpretation of remains and artefacts.

6.2 The discovery of any relic, and its location should be reported to the Heritage Council of NSW, regardless of whether an excavation permit has been issued, as per Section 146 of the Heritage Act.

6.3 If evidence of underground infrastructure or evidence of former machinery is uncovered during construction excavations, the advice of an industrial archaeologist should be sought.

6.4 The archaeological resource of ATP, including in situ rail lines and evidence of former machinery inside and outside the workshops buildings has great potential for interpretation of the historical use of the site. Refer to Policy Objective 10 for specific interpretation policies.

6.5 This assessment has determined that intact Aboriginal sites are unlikely to exist within ATP owing to heavy earth disturbance including cut and fill, construction of buildings and laying of rail stock. There remains low potential for lithic or shell material in a disturbed context. Should Aboriginal objects be identified during redevelopment of ATP, works must stop and a suitably qualified archaeologist should be called in to document and assess the finds. The Chief Executive of the OEH must be notified of the discovery of Aboriginal objects under Section 91 of the NPW Act.

6.6 In the unlikely event of human remains being discovered during any redevelopment works within ATP, the finding should immediately be reported to the New South Wales Coroner's office and/or the New South Wales Police. If the remains are suspected to be Aboriginal, the OEH should also be contacted and a specialist should be consulted to determine the nature of the remains.

Policy Objective 7—Future Use

The current use of ATP as a technology park, which is guided by the ATP Memorandum of Association, has facilitated adaptive re-use of the former workshops buildings and provided for the gradual redevelopment of the site. This section sets out policies for the future use for the significant buildings and machinery within ATP.

7.1 Use of ATP should continue to embrace the industrial past of the place through the adaptive reuse of the site and its constituent elements and heritage fabric.

7.2 Future uses of ATP should provide for the ongoing conservation of the historical associations, meaning and fabric of its significant components, including the Machinery Collection.

Action: While ATPSL has overall responsibility in regard to its statutory obligations, explore opportunities through the leasing process to make ongoing maintenance and conservation works to significant components a requirement of new lessees.

7.3 Proposals for new uses should not be approved without consideration of the conservation of the heritage significance of the place as a whole.

7.4 Proposals for active uses that take advantage of the form and spatial volumes of the remaining Eveleigh Locomotive Workshops buildings should be considered. Use of the Locomotive Workshops building that provides for increased public access also should be considered.

7.5 New uses should communicate the heritage significance of ATP and its components workers, visitors and the broader community.

7.6 Accommodation of new uses should be accompanied by a willingness to adapt and evolve as the Locomotive Workshops once did and be based on consideration of the potential impact of the new use on the heritage significance of the place. For example, if a new use of the New Locomotive Shop requires a different floor covering, this could be accommodated following consideration of the heritage impact on the building overall.

7.7 The potential to reinforce significant historical relationships between ATP and North Eveleigh through related uses should be considered investigated.

7.8 New uses should continue to encourage public access to the site. Further access should be encouraged, particularly into remaining workshops buildings.

7.9 Use of the Bays 1 and 2 as a blacksmiths workshop should be retained as an active interpretation of the history of the place and its significant machinery collection.

Policy Objective 8—New Development Opportunities

New development possible within ATP is set out in the approved subdivision plan and BEP 1. The development opportunities identified in this section and the new development lots allowed in the subdivision plan are shown in Figure 9.1.

8.1 Proposals for new development should take into account the potential heritage impact on ATP and its significant components. New development should be sympathetic in terms of scale, siting, materials and details to the significant former Locomotive Workshops building at ATP. New development should be sited and designed so that significant view lines within the site and into the site are conserved (see Figure 7.2).

8.2 Proposals for new development should be in accordance with the heritage provisions contained in BEP 1.

8.3 The form and materials of new development should respond to the industrial character of ATP wherever possible. The palette for future design works should be complementary to the existing heritage structures. New buildings should have a character sympathetic to the heritage structures and buildings on the site.

8.4 New development should respond to (but not mimic) the architectural character of the former Locomotive Workshops buildings, as per the recommendations of the BEP1.

8.5 New adaptive reuse projects should be encouraged to incorporate components of or make use of the Machinery Collection, primarily to assist site interpretation the character of the site.

8.6 New development on the site of the former foundry should creatively interpret the historical use of this part of the ATP site and may include conservation and presentation of archaeological features.

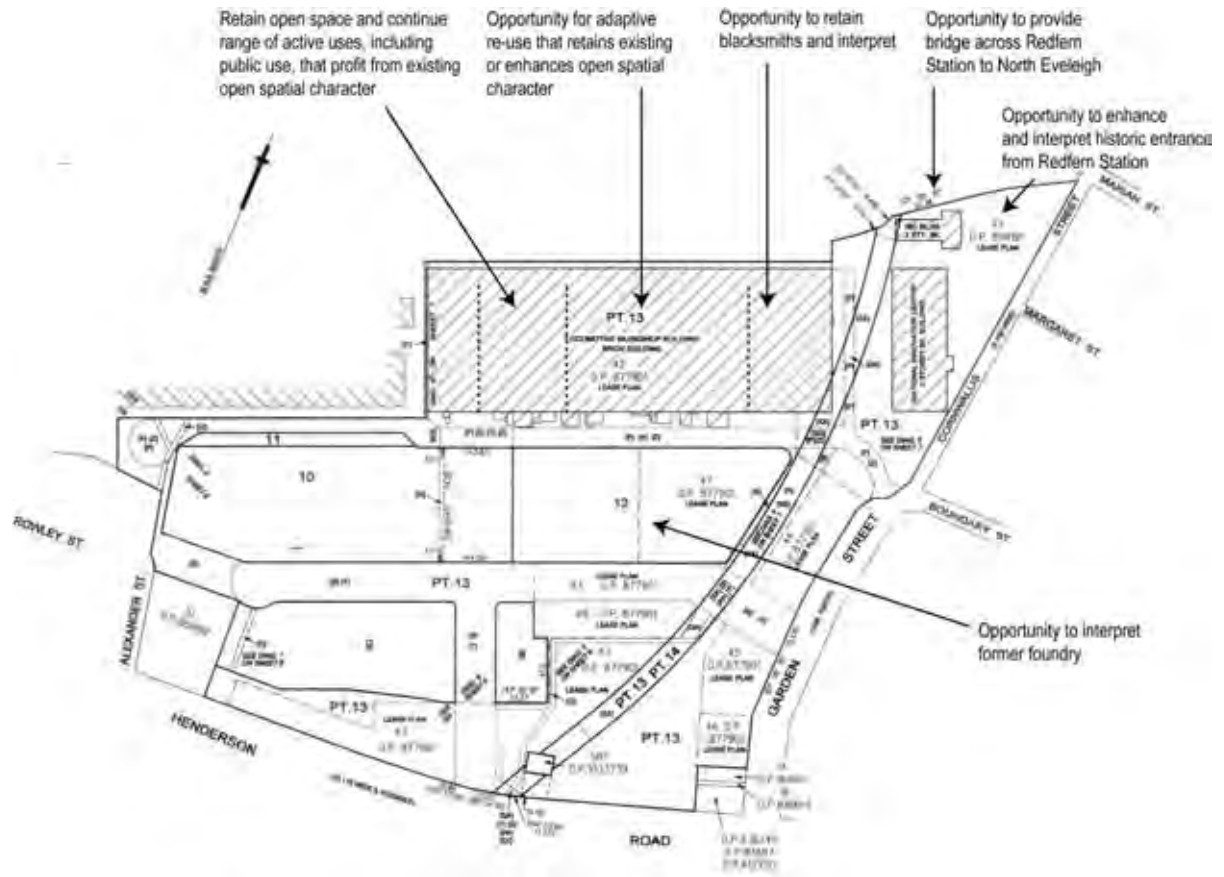


Figure 9.1 Plan showing key development opportunities at the ATP site and development parcels defined in the approved ATP subdivision plan. (Source: ATPSL, with GML additions 2010)

Policy Objective 9—Community Involvement and Consultation

The consultation strategy of ATPSL, which supported the consultation process for this CMP and the interest in the Redfern-Waterloo Heritage Taskforce, has reinforced substantial community interest in the ATP site and the former Eveleigh Railway Workshops as a whole. This community interest should be harnessed to help in the future conservation and interpretation of the place. The Eveleigh Railway Workshops Interpretation Plan and Implementation Strategy, February 2012, supports this policy objective.

- 9.1 The strong community attachment to the heritage significance of the ATP site should be retained recognised.
- 9.2 Regular consultation with the local community and interested groups regarding changes, new works and/or new plans should become part of the future planning for the place.
- 9.3 Community interest should be engaged as a resource for the conservation and interpretation of the ATP site and its significant components. Continuation of activities already underway such as open days and the work carried out by volunteers should be encouraged.

The establishment of a volunteer program proposed by ATPSL is a positive step in fostering community involvement in conserving the place.

9.4 Community involvement and consultation should consider co-ordination with other rail heritage places and organisations, including the NSW Rail Transport Museum at Thirlmere, the former Chullora Railway Workshops and RailCorp.

9.5 Former workers should be encouraged to contribute to the ongoing conservation and interpretation of the place, where it is possible for them to do so.

Policy Objective 10—Interpretation

The important history of the ATP site as the location of the Locomotive Workshops and the Alexandria Goods Yard should be celebrated and interpreted. It is vital that the whole story of the place is told. This is a place where locomotives were made, where thousands of people (mainly men) worked in a dirty, noisy and dangerous environment, where great innovations took place and from where the NSW railway system was developed. The story of the Eveleigh Locomotive Workshops (and the Eveleigh Railway Workshops as a whole) is a great Australian story.

10.1 Interpretation should be adopted as a method of communicating the historical significance of the entire ATP site, including areas where the historical use is no longer visible (eg. former Alexandria Goods Yard land).

10.2 Interpretation of ATP should be co-ordinated with interpretation of the entire former Eveleigh Railway Workshops site. Consistency across the area will help communicate the historical links between the different places that comprised the railway workshops.

Action: The Eveleigh Railway Workshops Interpretation Plan and Implementation Strategy prepared in February 2012 is consistent with this policy and should be adopted as a whole and implemented where feasible and where funding permits. The Interpretation Plan provides an interpretation strategy for ATP as part of a comprehensive interpretation strategy for the entire former Eveleigh Railway Workshops.

10.3 Interpretation should seek to re-engage ATP with the historical purpose of the workshops (to repair, assemble and manufacture locomotives) and the goods yard.

10.4 The full story of the place, its former workers and its component parts should be told and should engage with the remaining significant elements within ATP. The full story of the place includes any significance it may have to the local Aboriginal community and the history of the place prior to the establishment of the workshops.

Action: Interpretation should make use of the array of remaining elements of the workshops, including machinery, buildings and remnant rail tracks.

Action: Interpretation should communicate the social aspect of site's history.

Action: Oral histories of former workers and managers should be recorded to inform interpretation of the history of the place, with a focus on understanding the use of items within the Machinery Collection, and the operations of the Eveleigh Locomotive Workshops in general.

10.5 Interpretation should encourage better understanding of the use of the different types of machinery, including what they produced, and relationships between items in the collection.

Action: While broad scale reconstruction of power sources such as steam is not feasible, reconstructing examples of assemblages and systems of machinery should be considered where and when appropriate, including for interpretation. For example, an assemblage would include an overhead travelling crane, a group of related machines for demonstration purposes and the associated power system, and a collection of hand tools and moulds used in operating the machinery, and an example of what particular machines produced.

10.6 The functional relationships between the Machinery Collection and the workshops buildings should be interpreted. This could be communicated through recreation of an assemblage, as per Policy 10.5. Consider recreation of an assemblage, with power system, cranes, tools and moulds. The interpretation should also demonstrate what was actually manufactured in the workshops (wheel sets, springs, etc.) and by which machines.

10.7 The archaeological resource of the ATP site, which includes former residential areas, has potential for interpretation. Display of archaeological finds should be part of the interpretation strategy for the place.

10.8 The local community and broader NSW railways community should be involved in future interpretation, eg through heritage walks, open days, a workers' wall, recording oral histories.

10.9 Innovation should be encouraged in developing interpretation methods. Interpretation should go beyond signage to re-capture the dynamic, noisy, busy industrial place that the workshops once were. The industrial history of the site would lend itself to the following interpretation methods:

- video installations;
 - sound scapes;
 - podcasts;
 - re-creations of machinery assemblages and uses; and
 - an actual locomotive.
-

10.10 Eveleigh Locomotive Workshops imagery should be adopted as part of ATP branding and signs.

10.11 Names and titles historically associated with the Eveleigh Locomotive Workshops and the Alexandria Goods Yard should be considered in naming new buildings, roads and parks within ATP.

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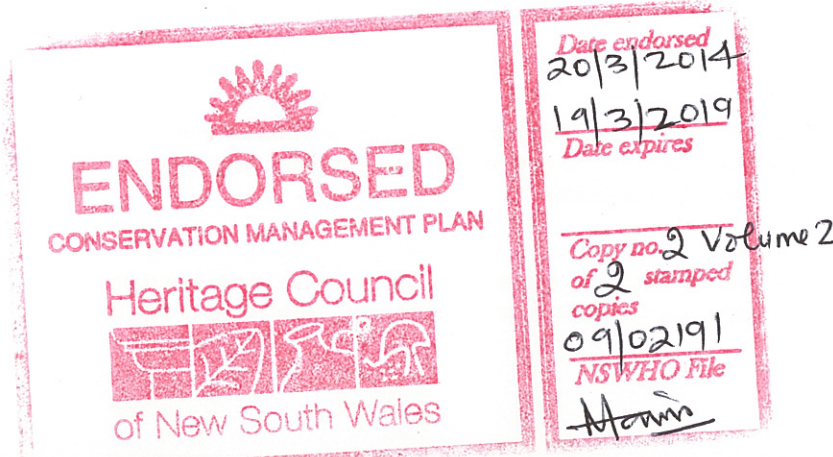


Australian Technology Park

Conservation Management Plan

Volume 2: Appendices

Report prepared for Australian Technology Park Sydney Ltd
December 2013



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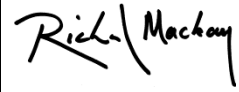
The following report register documents the development and issue of the report entitled Australian Technology Park—Conservation Management Plan, undertaken by GML Heritage in accordance with its quality management system.

Job No.	Issue No.	Notes/Description	Issue Date
09-0250	1	Draft Report	June 2010
09-0250	2	Revised Draft Report	July 2011
09-0250	3	Revised Draft Report	November 2011
09-0250	4	Revised Draft Report	March 2012
13-0056	5	Final Report	October 2013
13-0056	6	Final Report (incorporating Heritage Division comments)	December 2013

Quality Assurance

GML Heritage operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

The report has been reviewed and approved for issue in accordance with the GML quality assurance policy and procedures.

Project Manager:	Julia Dowling	Project Director & Reviewer:	Richard Mackay
Issue No.	6	Issue No.	6
Signature		Signature	
Position:	Senior Consultant	Position:	Partner
Date:	20 December 2013	Date:	20 December 2013

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11.0 Appendices

Appendix A

Statutory Heritage Listings

Appendix B

Heritage Information Series—Standard exemptions for works requiring heritage council approval, NSW Heritage Branch 2006

Appendix C

Heritage Information Series—Minimum standards for maintenance and repair, NSW Heritage Office 1999

Appendix D

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 1999

Appendix E

Don Godden & Associates, Eveleigh Railway Workshops Heritage Study (Part 1), 1986

Appendix F

Godden Mackay, Eveleigh Workshops Management Plan for Moveable Items and Social History Volume II—Social and Oral History, July 1996

Appendix A

Statutory Heritage Listings:

Eveleigh Railway Workshops—State Heritage Register citation

Eveleigh Railway Workshops machinery— State Heritage Register citation

Eveleigh Locomotive Workshops Precinct—ATP Heritage and Conservation Register citation

Eveleigh Locomotive Workshops Machinery Collection—ATP Heritage and Conservation Register citation

Locomotive Workshops building—ATP Heritage and Conservation Register citation

Engine Shop (former)—ATP Heritage and Conservation Register citation

Works Managers' Office (former)—ATP Heritage and Conservation Register citation

Water Tower—ATP Heritage and Conservation Register citation

Large Erecting Shop—RailCorp Heritage and Conservation Register citation



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Eveleigh Railway Workshops

Item

Name of Item: Eveleigh Railway Workshops
Other Name/s: Eveleigh Railway Yards, Eveleigh Precinct, Sydney Technology Park
Type of Item: Complex / Group
Group/Collection: Transport - Rail
Category: Railway Workshop
Location: Lat:151.19566602 Long:-33.89452745
Primary Address: Great Southern and Western Railway, Redfern, NSW 2016
Local Govt. Area: Sydney

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
LOT	50	-	DP	1001467
LOT	52	-	DP	1001467
LOT	50	-	DP	859192
LOT	4	-	DP	862514

Boundary: The listing boundary is formed by Wilson St the the north west, Redfern Station to the north east, Cornwallis and Garden Sts to the south east and the property boundary to the new development fronting Henderson Rd to the south.

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Eveleigh Workshops	Eveleigh	Sydney			Other
Great Southern and Western Railway	Redfern	Sydney			Primary
Cornwallis Street	Redfern	Sydney			Alternate
Burren Street	Redfern	Sydney			Alternate
Eveleigh Street	Redfern	Sydney			Alternate

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
RailCorp	State Government	20 Jan 99

Statement of Significance

The Eveleigh Railway Yards are some of the finest historic railway engineering workshops in the world and Eveleigh contains one of the most complete late 19th century and early 20th century forge installations, collection of cranes and power systems, in particular the hydraulic system. The place is of international significance and is one of Australia's finest industrial heritage items. The value of the place is increased by the fact

that it is comprised of assemblages, collections and operational systems rather than individual items. Conversely, the significance has been reduced by its closure, relocation of some machinery and its disassociation from the operating rail network. (State Projects 1995: 109)

Date Significance Updated: 12 Feb 99

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Designer/Maker: George Cowdery

Builder/Maker: George Fishburn

Construction Years: 1882 - 1897

Physical Description: The Eveleigh Precinct is located approximately four kilometres south of the Sydney GPO and is bounded by the inner city suburbs of Darlington, Redfern, Alexandria Park, Erskinville and Newtown. The total area of the precinct, which runs from Redfern Station in the northeast to Erskinville and MacDonalddtown Stations in the southwest, is approximately 51 hectares. It is located across the main railway corridor to Sydney Central Station.

Most of the southern portion of the overall site has been declared surplus to railway needs and much of this area has been cleared and was used as a parking area for Paddy's Markets while they were occupying the Locomotive Workshop. Other portions of the southern precinct have been redeveloped for public housing. Several former railway buildings stand vacant. (Schwager Brooks 1994:1)

THE LOCOMOTIVE WORKSHOP

- The external walls are of sandstock brickwork laid in English bond with arched window and door openings picked out in white bricks. The pediments have circular vents filled with louvres. The brickwork is modulated into bays forming piers which strengthen the walls.

Externally, brick walls feature sandstone cornices, parapets, sills and base courses. The stone generally extends the full depth of the wall. The top face of the parapets (and cornices) are splayed to fall to the outside to discharge water and they are joined on the top face by cast iron toggles, about one inch thick. On the pedimented areas roof flashings are recessed in a trench in the stone.

The walls and internal columns are supported on massed brick footings. In bays 1-4 there are brick arches between piers and each pier is supported on a timber platform and timber piles, 12 in each corner and 6 at each column.

Inside the building is a grid of round, hollow cast iron columns moulded in a classical style supported on footings. The columns support the crane girders and the roof.

The corrugated iron clad roof is supported by fine wrought iron trusses with diagonal wind bracing which fixes through the walls at each end. The purlins are wrought iron 'Z's'. Timber purlins have been added in some places for ease of fixing replacement roofing. Monitor roofs run the length of the bays with a curved roof supported on curved wrought iron rafters.

Along the south side of the building are a series of annexes of varying dates of construction.

Along the south of the building are two sets of tracks and several associated turntables. To the east in the space between the Loco Shop and the new Loco Shed a track lays parallel to the building, sections of which are now exposed. (State Projects 1995: 60-65)

CARRIAGE WORKSHOPS

- The construction of these workshops are essentially the same as the Locomotive Workshops.

PAINT SHOP - A large single storey building containing 8 roads in the brick section and 5 roads in the adjacent metal clad section. Each road is separated by a single row of cast iron columns which support the saw tooth south light roof.

TURNTABLE & TRACKWORK - This is located west of the Large Erecting Shop.

AIR RAID SHELTERS - These are scattered along the existing rail corridor, generally located along embankments or cuttings.

There are numerous collections of machinery within the buildings on the site, including equipment adjacent to the Locomotive Workshops and machinery inside the buildings. (Schwager Brooks 1994: 20-21)

**Physical Condition
and/or
Archaeological
Potential:**

Archaeological Potential - Medium-High Physical Condition - Fair **Date
Condition Updated:** 19 Aug 97

**Modifications and
Dates:**

1899 - Large Erecting Shop added to the site. 1901 - By this year the new foundry and laundry had been constructed. 1902 - Most overhead cranes in workshops converted to electric drives. - A new copper and tinsmiths shop erected. 1907 - The New Locomotive Shop designed and constructed. - A new compressor house constructed. 1914 - Electrification of machinery in the workshops. - New Locomotive Shop extended to the south. 1917 - Resumption of adjacent houses to the south for the Alexandria Goods Yard. - Several new buildings completed, leading to a rearrangement of the workshops. 1925 - Northmost bay of Running Shed demolished. 1965 - Southern and middle bay of Running Shed demolished. 1970s - Workshops rearranged internally to update the works and the Spring Shop was removed. (State Projects 1995:28 - 34) 2008 - AIA Architecture Award for the adaptive reuse of CarriageWorks at Eveleigh: Tonkin Zulaikha Greer ... an exciting addition to the cultural life of Sydney and its artists. It provides an environment of unique creativity and innovation; a new home for physical theatre, spoken word, music, dance, visual and hybrid arts. The site is close to the city but difficult to access and being below road level not easy to identify. This has been resolved by the simple gesture of creating a small plaza at street level and celebrating it with a new public marker made of recycled trusses from the building. The project is essentially an exercise in adaptive reuse: the design reveals and celebrates the industrial heritage of the site. The strength of the design comes from the directness of its response to the old buildings, respecting their structural grid as an ordering device and inserting simple strong new forms as a counterpoint to the intricacies of the old. The foyer delivers a remarkable new public space, animated and activated by the revealed heritage items. Located in the Redfern-Waterloo precinct, CarriageWorks sets a precedent for the remaining development of the site, for heritage values to be respected and to inform the design of new interventions. (AIA, www.architecture.com.au/i-cms?page=11388) AIA (Heritage) Greenway Award given to CarriageWorks at Eveleigh: Tonkin Zulaikha Greer The Eveleigh Carriage Workshops are of national cultural significance as part of the largest intact, high quality workshop site from the steam era in Australia. It has now been opened to the public in a creative new way. This landmark site has been given new life without forsaking the old - its 1888 industrial heritage clearly evident through the retention of nearly all the significant fabric and equipment extant at the time of adaptation. The carriages have gone, but not the cranes, the rails and the ability to read its form and former function. Existing elements retain their patina of age. This project, realised on a strict budget and even stricter timetable, provides flexible theatre spaces, administration offices, workshop spaces and amenities in discrete

concrete boxes clearly articulated from the heritage fabric. The success of the project stems from its simplicity and the quality of design and detailing in the new work. The spaces created by the new theatre boxes has enriched the interior rather than detracted from it. The complexity of the frame, the structure and the industrial artefacts are powerful. This is a confident design approach that does not diminish that significance. While sections of the building have been altered, these are minor in terms of the scale of the overall conservation exercise and accessibility this project brings. The desire to successfully adapt buildings is often not matched by the design. Here at Eveleigh the evidence is concrete. (AIA, www.architecture.com.au/i-cms?page=11388)

Current Use:

Public housing, Australian Technology Park and temporary uses.

Former Use:

Railway workshops and yards

History

Historical Notes:

When John Whitton first conceived the idea of the Eveleigh Railway Workshops, they were to undertake the construction of the infrastructure of the railways including the safe working systems and some of the perway systems. However, their main tasks were the maintenance and repair of locomotives and railway stock and the manufacture of rolling stock such as wagons and passenger carriages. At the time there were no other facilities in NSW for the construction of locomotives.

The workshops were set up on both the north and the south sides of the main western and southern railway lines, which led to a duplication of some workshop functions, but the really heavy work such as forging and casting of ferrous and non-ferrous metal, was to be carried out on the locomotive side. When the workshops were established most of the rolling stock had a wooden chassis, so the separation of services was not a major impediment to production.

The site for the Eveleigh railway yards was chosen in 1875, resumed in 1878 and the compensation price settled in 1880. Approximately 100 000 pounds was paid for 64.5 acres of land. Clearance began two years later. Much work went into the design and construction of the buildings because of the sandy nature of the soil. In the meantime, Eveleigh Station had been opened in 1878. In 1906 it was renamed Redfern Station. The former Redfern Station was renamed Sydney Terminal (Central).

The Engine Running Shed, now demolished, was the first building completed. Cowdery was criticised for the extravagance of this building. It comprised three segmental arched bays, each covering seven 'roads' without intervening columns.

George Fishburn was awarded the contract for bays 1-4 of the Locomotive Workshops in 1884 and work was commenced soon after. They were officially opened in 1887. Workshops 5-15 were opened later in the year. This initial building phase also included the construction of bays 16-25 of the Carriage Sheds, the Paint Shop, a General Store and various smaller buildings and the associated turntables, traversers and rail lines. Development continued into the 1890s. The workshops were open every day of the week until 1892 when union negotiations led to the workshops being closed on Saturdays.

The residential development of the area proceeded in the 1870s and 1880s around the railway workshop and was stimulated by the need for housing generated by the workshops. The names of many early settlers are continued in the street names in the area, including Eveleigh, and many of the property boundaries and former watercourses are reflected in street patterns. At the time of the development of the railway workshops, Darlington School was also built, as were other municipal buildings since demolished for the university.

For some time Eveleigh had its own gas works which were located near MacDonalddtown Station. However, in 1901 with the establishment of Ultimo Power Station which belonged to the Rail and Tramway Department, electric power was made available to the workshops. Shortly after work commenced on the conversion of the rope-driven cranes to electric motor drives. Work also commenced on the replacement of the steam engines at the south end of the workshops by powerful electric motors. This, however, was not completed until 1914.

In 1907 the Commissioners for Railways decided to begin the manufacture of new locomotives at Eveleigh and the New Locomotive Shop was designed and constructed for this purpose.

A Public Works Annual Report in 1915 concluded that the Eveleigh Works were too congested and recommended the establishment of a new locomotive and repairing works. Adding to this situation, strained conditions led to eight strikes at Eveleigh between July 1915 and July 1917. In 1916 James Fraser, Acting Chief Commissioner, addressed workers at Eveleigh on the introduction of the Taylor card system. The introduction of this system on 2 August 1917 led to an 82 day general strike. It began when 1100 men struck at Randwick Tramway Depot and 3000 at Eveleigh. Volunteers kept trains running including boys from Newington and S.C.E.G.S. (Shaw) private schools at Eveleigh.

This all took place during the First World War which brought worse conditions and declining wages.

The rail yards continued to develop. Additional land was resumed to the south-west and 230 houses were demolished to allow for the construction of the Alexandria Goods Yard sometime around 1917.

During 1925 the manufacture of new locomotives ceased.

As a result of World War 2 (1939-45), bays 5-6 were cleared of machinery in 1940 and plans drawn up for the installation of equipment supplied by the Department of Defence for the manufacture of 25lb field gun-shells. A mezzanine floor was added to Bay 5 in 1941 and the machinery for shell manufacture installed by February. Bay 8 was altered for an ammunitions annex. By 1943 Bay 8 had been abandoned by the Department of Defence as it had organised its own factories. Production of the shells ceased in 1945 and the construction of new locomotives was reintroduced. This post-war locomotive manufacturing lasted until 1952 when Eveleigh once again became a repair and maintenance facility. The decision to abandon steam locomotives in 1963 meant that Eveleigh, which was dedicated to steam locomotive maintenance and repair, entered its final phase.

The yards continued to grow and expand, and functions were continually changing. In later years workshops at Chullora in 1937 and later Clyde took over aspects of work formerly performed at Eveleigh and functions were rearranged accordingly.

Re-organisation and attempts at modernisation in the 1970s came too late. Too much of the machinery was suited only to the steam locomotive era. Buildings containing old equipment, machinery which had become progressively inappropriate to a modern transport era, and a changing work culture, has seen the yards decline gradually in the late 20th century until its closure in 1988. After closure, bays 5-15 were used by Paddy's Markets while other buildings on the site were demolished over an extended period. These included the Pattern Shed, Foundry, Smith's Shops and the Wheelpress Shop. In 1991 the NSW Government announced the creation of a technology park at Eveleigh in association with the University of NSW, the University of Sydney and the University of Technology. Decontamination works were carried out to cleared areas of the site progressively.

In 1994 Paddy's Markets returned to Haymarket. City West Development Corporation took ownership of the Locomotive Workshops, bays 1-15, in addition to the New Locomotive Shed and the Manager's Office.

Today the functions formerly carried out at Eveleigh are no longer carried out by government enterprises or no longer carried out in Australia. (State Projects 1995:19-22, 27-33, 43-51)

Historic Themes

Australian Theme (abbrev)	New South Wales Theme	Local Theme
3. Economy - Developing local, regional and national economies	Technology - Activities and processes associated with the knowledge or use of mechanical arts and applied sciences	(none) -
3. Economy - Developing local, regional and national economies	Transport - Activities associated with the moving of people and goods from one place to another, and systems for the provision of such movements	(none) -
5. Working - Working	Labour - Activities associated with work practises and organised and unorganised labour	(none) -
7. Governing - Governing	Defence - Activities associated with defending places from hostile takeover and occupation	Involvement with the Second World War -

Assessment of Significance

SHR Criteria a)

[Historical Significance]

*The workshops were an important part of the NSW rail network which was instrumental in the development of the state during the 19th and 20th century.

*The construction of the workshops influenced the development of the local area (which was developed for worker's housing) both by providing employment and by its bulk and presence, starting bells and sirens.

*The yards were associated with developments in working conditions now crucial to the Australian cultural identity, eg) the weekend. The yards had an important association with the labour movement. The place was seen initially as a positive instrument of state socialism and in later periods as the site of important labour actions and of restrictive work practises.

*They were conceived by Whitton, the 'father' of the NSW railways, and were an integral part of his NSW rail system, and were executed in detail by Cowdery

(State Projects 1995:109)

SHR Criteria c)

[Aesthetic Significance]

*The entire complex has a strong industrial character generated by the rail network itself, by the large horizontal scale of the buildings, the consistent use of brick and corrugated iron, the repetitive shapes of roof elements and of details such as doors and windows and because of the uniform grey colours.

*The simple, strong functional forms of the buildings have landmark quality, not only as important townscape elements in the Redfern/Eveleigh area, but as part of the visual train journey of thousands of commuters, marking arrival in the city centre.

*The major buildings from the original 19th century development of the site are well designed, detailed and built exhibiting a high degree of unity of design, detailing and materials.

(State Projects 1995:109)

SHR Criteria d)

[Social Significance]

*The Workshops were one of the largest employers in Sydney at the turn of the century, declining only in the latter half of the 20th century. It was and is an important source of pride and in demonstrating the capacity of Australian industry and workers and a high level of craft skills.

*The place is significant to railway workers, former railway workers and railway unions and is associated with the stories of many, including workers and locals, which are important to cultural identity.

*Although no longer operating as a workshop, the place maintains symbolic value for the community as a former workplace and a place that provided economic input into the local area.

*It has strong symbolic ties with existing trade unions. (State Projects 1995: 106-111)

SHR Criteria e)
[Research Potential]

*The Eveleigh railway workshops have considerable research potential for understanding the operation of railway workshops. This potential is enhanced by the extent of archival material available and because the relatively recent closure means that there are many former workshop workers who are still alive and who know how the place operated.

*They have unique educational value enhanced by the highly valuable location and the relationship with the ATP and the three universities. They contain the potential to achieve an understanding of the work practices of today through an understanding of the cultural continuity between 19th century technology and 21st century technology.


*There is potential for further research to yield information about the labour movement, labour relations and the nature of work practices in the 19th and 20th centuries.

*Archaeological remains have the potential to reveal further information about the operation of the Yards. (State projects 1995: 109)

SHR Criteria f)
[Rarity]

The size and quality of the site is rare. (State Projects 1995: 107)

Integrity/Intactness: *The Eveleigh Locomotive Workshops are the largest surviving, intact railway workshops dating from the steam era in Australia, and possibly the world. (State Projects 1995: 110)

Assessment Criteria Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Recommended Management Conservation management should be pursued as an active, day-to-day responsibility. (State Projects 1995: 133)

Procedures /Exemptions

Section of Act	Description	Title	Comments	Action Date
21(1)(b)	Conservation Plan submitted for endorsement	Eveleigh Carriageworks CMP	CMP conditionally endorsed by Heritage Council 27 June 2003.	Jun 27 2003
57(2)	Exemption to allow work	Standard Exemptions	<p>SCHEDULE OF STANDARD EXEMPTIONS HERITAGE ACT 1977</p> <p>Notice of Order Under Section 57 (2) of the Heritage Act 1977</p> <p>I, the Minister for Planning, pursuant to subsection 57(2) of the Heritage Act 1977, on the recommendation of the Heritage Council of New South Wales, do by this Order:</p> <p>1. revoke the Schedule of Exemptions to subsection 57(1) of the Heritage Act made under subsection 57(2) and published in the Government Gazette on 22 February 2008; and</p> <p>2. grant standard exemptions from subsection 57(1) of the Heritage Act 1977, described in the Schedule attached.</p> <p>FRANK SARTOR</p>	Sep 5 2008

		Minister for Planning Sydney, 11 July 2008	
		To view the schedule click on the Standard Exemptions for Works Requiring Heritage Council Approval link below.	

 [Standard Exemptions](#) for Works Requiring Heritage Council Approval

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - State Heritage Register</i>		01140	02 Apr 99	27	1546
<i>Heritage Act - s.170 NSW State agency heritage register</i>					
<i>Regional Environmental Plan</i>			17 Nov 95		
<i>National Trust of Australia register</i>					
<i>Register of the National Estate</i>			26 Apr 88	115	0002

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Claire O'Rourke	2003	Rail workshop to become platform for inner city hub (SMH 26/7/03)	
Written	Geraldine O'Brien	2003	Sparks still fly over rail's long-silent workshops (SMH 2/12/03)	
Management Plan	Heritage Group, State Projects.	1995	Eveleigh Rail Yards Locomotive Workshops Conservation Management Plan	
Written	Schwager Brooks and Partners	1994	Eveleigh Precinct Sydney Conservation Policy	

Note: Internet links may be to web pages, documents or images.



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Eveleigh Railway Workshops machinery

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Item

Name of Item: Eveleigh Railway Workshops machinery
Other Name/s: Eveleigh Locomotive Workshops machinery
Type of Item: Movable / Collection
Group/Collection: Transport - Rail
Category: Other - Transport - Rail
Location: Lat:151.19603612 Long:-33.89440686
Primary Address: Great Southern and Western Railway, Redfern, NSW 2016
Local Govt. Area: Sydney

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
-----------------	-------------------	----------------	-----------------	-------------------

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Eveleigh Workshops	Eveleigh	Sydney			Other
Great Southern and Western Railway	Redfern	Sydney			Primary
Cornwallis Street	Redfern	Sydney			Alternate

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
RailCorp	State Government	20 Jan 99


Description

Physical Description: Machinery associated with Locomotive Workshops
Former Use: Railway workshops

Historic Themes

Australian Theme (abbrev)	New South Wales Theme	Local Theme
3. Economy - Developing local, regional and national economies	Technology - Activities and processes associated with the knowledge or use of mechanical arts and applied sciences	(none) -

3. Economy - Developing local, regional and national economies	Transport - Activities associated with the moving of people and goods from one place to another, and systems for the provision of such movements	(none) -
5. Working - Working	Labour - Activities associated with work practises and organised and unorganised labour	(none) -

Assessment Criteria Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Procedures / Exemptions

Section of Act	Description	Title	Comments	Action Date
57(2)	Exemption to allow work	Standard Exemptions	<p>SCHEDULE OF STANDARD EXEMPTIONS HERITAGE ACT 1977 Notice of Order Under Section 57 (2) of the Heritage Act 1977</p> <p>I, the Minister for Planning, pursuant to subsection 57 (2) of the Heritage Act 1977, on the recommendation of the Heritage Council of New South Wales, do by this Order:</p> <ol style="list-style-type: none"> 1. revoke the Schedule of Exemptions to subsection 57(1) of the Heritage Act made under subsection 57 (2) and published in the Government Gazette on 22 February 2008; and 2. grant standard exemptions from subsection 57(1) of the Heritage Act 1977, described in the Schedule attached. <p>FRANK SARTOR Minister for Planning Sydney, 11 July 2008</p> <p>To view the schedule click on the Standard Exemptions for Works Requiring Heritage Council Approval link below.</p>	Sep 5 2008

 **Standard Exemptions** for Works Requiring Heritage Council Approval

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - State Heritage Register</i>		01141	02 Apr 99	27	1546
<i>Heritage Act - s.170 NSW State agency heritage register</i>					
<i>Regional Environmental Plan</i>			16 Jul 93		
<i>National Trust of Australia register</i>					

References, Internet links & Images

None

Note: Internet links may be to web pages, documents or images.

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Eveleigh Locomotive Workshops Precinct

Item

Name of Item: Eveleigh Locomotive Workshops Precinct

Other Name/s: Australian Technology Park

Type of Item: Complex / Group

Group/Collection: Transport - Rail

Category: Railway Workshop

Primary Address: Locomotive Street, Eveleigh, NSW 2015

Local Govt. Area: Sydney

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
-----------------	-------------------	----------------	-----------------	-------------------

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Locomotive Street	Eveleigh	Sydney			Primary

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
Australian Technology Park (ATP)	State Government	

Statement of Significance

The Eveleigh Locomotive Workshops were a key component of the Eveleigh Railway Workshops and were the site of much of the construction and maintenance of steam locomotives in NSW from the late 19th to mid 20th centuries. The Locomotive Workshops were built on a vast scale and allowed the complete manufacture of locomotive engines from basic components. The workshops were a massive enterprise that included thousands of workers working in all of the trades required to build and maintain steam locomotives. While the construction of locomotives was eventually moved off site to the Chullora Workshops, the Eveleigh site continued in operation until the 1980s as a maintenance facility for steam and later diesel locomotives. The site also served as a manufacturing site for military hardware, with an initial trial early in the 20th century and a full-scale production of artillery shells during WWII. Socially, the Workshops were influential on the development of the adjacent suburbs, which developed into areas of low-cost terrace housing to service the large working population on the site. The site was also a significant site in the history of the NSW labour movement, with early unions winning many significant concessions for workers, including Saturdays off and the provision of indoor washing and toilet facilities. Several significant figures in the labour movement worked at Eveleigh, including James McGowan, the first Labour Premier of

NSW. In the mid 20th century, the workshops were well known for the activities of the Communist Party of Australia on the site. The site also contains a significant collection of remnant machinery relating to locomotive manufacture in the 19th and 20th centuries.

Date Significance Updated: 23 Apr 08

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Designer/Maker:

George Cowdery

Builder/Maker:

George Fishburn

Construction Years:

1882 - 1897

Physical Description:

The Eveleigh Locomotive Workshops Precinct consists of a large site to the south of the main railway lines leading into Redfern Station. The Locomotive Workshops Precinct is one half of the overall Eveleigh Railway Workshops, which included both the Locomotive Works and the Carriage Workshops, to the north of the railway line. The Locomotive Workshop Precinct is now the Australian Technology Park and consist of three main historic buildings, a wrought iron water tower and a number of new commercial buildings and land earmarked for commercial redevelopment. The three historic buildings within the Precinct are the Locomotive Workshop, the former Works Managers' Office (now the International Business Centre) and the Engine Shop (now the National Innovation Centre). The modern office buildings further south on the site are not included within the heritage precinct, although this land was originally part of the Workshops site.

Historically, the Precinct encompassed a large area and included the above three buildings as well as a Spring Shop (in the location now known as Innovation Plaza), a Pattern Shop, a Foundry, a Goods Shed, a large Running Shed and the Large Erecting Shop. Of these, only the Large Erecting Shop remains and is outside of the area of this listing. Rails and turntables ran alongside the north end of the buildings to allow locomotives under construction or repair to be moved from bay to bay and building to building using a traverser. Two turntables remain, now used as traffic circles but most of the rail lines have been removed. One traverser has been restored and is interpreted in Bay 10 of the Locomotive Workshop building.

The Locomotive Workshops had the ability to produce entire locomotives from components manufactured on site. Wooden pattern moulds were built for individual parts and were cast on site in the foundries. Blacksmiths and machinists were able to fabricate other parts out of steel billets and the wheel shops were able to press and turn the wheels for the bogies. Assembly of the locomotives took place on site as well. At its peak, the Locomotive Workshops employed over 2000 people. The Locomotive Workshop has been converted to commercial office space and a large exhibition hall, with machinery retained in situ in Bays 1 and 2 and other machinery interpreted elsewhere around the building.

The site was managed from the Works Managers' Office (now the International Business Centre), which was the administrative office for the site and contained the Timekeeper's Office as well as the pay office. A large bell on top of the building rang the start and end of shift. The Works Managers' Office has been reconfigured internally and is used as commercial office space. Internally it retains no historic features other than some minor detailing.

The Engine Shop was constructed in 1907 to provide additional space for the assembly of locomotive engines. It consisted of two large bays with overhead cranes. The building has now been converted to commercial office space but retains one of the overhead cranes as a static display item.

See individual building listing card for details.

**Physical Condition and/or
Archaeological Potential:
Modifications and Dates:**

See individual building listing card for details. **Date Condition Updated:** 06 Jun 08

The Workshops were progressively converted into a commercial office precinct from the mid-1990s. See individual building listing card for details.

Further Information:

The curtilage of the Eveleigh Locomotive Workshop Precinct is bounded by the railway line to the north, the top of the hill to the east, the boundary with the Large Erecting Shop to the west and the upper car park to the south. The curtilage specifically excludes the former Workshops land south of the upper car park, and excludes all modern office buildings built on this southern land. The curtilage includes the former Works Managers' Office, the former Engine Shop and the former Locomotive Workshop buildings. Other historic features included within the precinct are all machinery outside the southern and eastern sides of the Locomotive Workshop, the turntables in the southern roadway and the water tower at the east end of the site. The former railway carriage used as offices by 3801 Ltd, located within Innovation Plaza, was brought onto the site in 1995 and has no historical association with the place. It is not included within the curtilage.

Current Use:

Commercial offices

Former Use:

Railway Workshops

History

Historical Notes:

The Locomotive Workshops are located on the southern half of land that was initially part of a grant to Chisholm in the early 19th century. Chisholm constructed a residence known as Calder on part of the land in the 1820s and the rest of the land was largely undeveloped. Chisholm's grant was split by the construction of the railway line from Redfern in 1855. Chisholm's grant was selected as the location for the Railway Yards in 1875 and was resumed in 1878. A compensation price was finally settled in 1880 and the clearing of the site commenced in 1882. The construction of the Railway Yards had the flow-on effect of stimulating the construction of a considerable amount of housing in the local area, to provide accommodation for the workforce.

The construction of the Yards started with the building of Bays 1 to 4 of the Locomotive Workshop, in 1884. The construction of Bays 5 to 15 (now Bays 6 to 16) of the Workshops commenced in 1885. Both sections of the building were completed in 1887. Bays 1 to 4 were built separately to house the dirty trades of blacksmithing, boiler-making and foundry work. In 1896, the Large Erecting Shop was built to the west of the Locomotive Workshop, allowing many tasks to be relocated to the new building. The Carriage Workshops, to the north of the railway line, were built at the same time, being completed by 1897, and were known as Bays 16-25. The Locomotive Workshops also contained the Engine Running Shed, to the west of the Large Erecting Shop, which was demolished in 1960, as well as the Works Manager's Office (on the Locomotive Workshops side of the tracks), the Chief Mechanical Engineer's Office (on the Carriage Workshops side) and numerous other buildings of brick and corrugated metal which served as the Paint Shop, Spring Shop and many other functions. All of these ancillary buildings have been

demolished.

In 1900, compressed air plant was installed in an annex to Bays 3 and 4 of the Locomotive Workshops. Modernisation of the site continued in pace with technology, and in 1902 the overhead cranes were converted from rope drive to electric drive, due to the availability of power from the Ultimo Power Station. The progressive electrification of the rest of the site continued over the next 10-15 years. Between 1903 and 1905, the space between Bays 4 and 5 was enclosed to match the rest of the building, and was known as Bay 4A (now Bay 5). In 1907 the New Locomotive Shop was constructed to allow the manufacture of new locomotives on the site. In 1908, four M class steam boilers were installed outside of Bays 2 and 3, to provide steam power for the site. Changes to the workshops continued as functions were shifted or machinery was modernised, but a major report into the operation of the workshops prepared over the course of 1911-1914 recommended the establishment of a new facility elsewhere for some of the functions, as the site was too congested.

In 1923, much of the boiler repair work was shifted to the new railway workshops at Chullora. Manufacture of new locomotives on the site ceased altogether in 1925 and by 1937 much of the repair work had been relocated to Chullora as well. During World War II parts of the site were repurposed for the manufacture of military equipment, including 25lb field artillery shells. This work continued until the end of the war. The construction of new locomotives on the site had a brief resurgence between 1945 and 1952, and the NSW Railways ceased to use steam equipment altogether, in favour of diesel, by 1965.

From that point, the Locomotive Workshops were progressively reorganised to serve a range of different repair functions, including the manufacture and repair of wheels and axles. By the 1980s, the decision had been made to cease operations at the site, which finally occurred in 1988. The site served as the temporary home of Paddy's Markets from 1989 to 1994 and from 1995 was progressively converted to its present use as the Australian Technology Park.

The site was an important place in the development of unionised labour in NSW, with the unions successfully lobbying for the workshops to be closed on Saturdays in 1892. Indoor toilets were installed as a result of labour negotiations in 1910. The first Australian Railways Union Shop Committee was established on the site in 1925. Union meetings were held at an area known as Red Square, a red-painted area of pavement outside of Bay 14. During the 1940s and 1950s, the site was also the home to major activity by the Australian Communist Party.

Assessment of Significance

SHR Criteria a)

[Historical Significance]

The Eveleigh Locomotive Workshops were a key component of the Eveleigh Railway Workshops and were the site of much of the construction and maintenance of steam locomotives in NSW from the late 19th to mid 20th centuries. The Locomotive Workshops were built on a vast scale and allowed the complete manufacture of locomotive engines from basic components.

SHR Criteria c)

[Aesthetic Significance]

The workshops were a massive enterprise that included thousands of workers working in all of the trades required to build and maintain steam locomotives. While the construction of locomotives was eventually moved off site to the Chullora Workshops, the Eveleigh site continued in operation until the 1980s as a maintenance facility for steam and later diesel locomotives. The site also served as a

manufacturing site for military hardware, with an initial trial early in the 20th century and a full-scale production of artillery shells during WWII. The remaining buildings and machinery on the site allow this process to be understood and interpreted.

SHR Criteria d)
[Social Significance]

socially, the Workshops were influential on the development of the adjacent suburbs, which developed into areas of low-cost terrace housing to service the large working population on the site. The site was also a significant site in the history of the NSW labour movement, with early unions winning many significant concessions for workers, including Saturdays off and the provision of indoor washing and toilet facilities. Several significant figures in the labour movement worked at Eveleigh, including James McGowan, the first Labour Premier of NSW. In the mid 20th century, the workshops were well known for the activities of the Communist Party of Australian on the site.

SHR Criteria e)
[Research Potential]

The machinery collection at the site contains the potential to further research and interpret the manufacture of steam locomotives.


SHR Criteria f)
[Rarity]

The site was the largest railway workshop in Australia and is the only remaining site which contains such a large degree of original machinery and related equipment.

Integrity/Intactness:

Heavily modified but key components retained

Assessment Criteria

Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Recommended Management

See individual listing cards for conservation recommendations for individual items.

Recommendations

Management Category	Description	Date Updated
Recommended Management	Review a Conservation Management Plan (CMP)	06 Jun 08

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - s.170 NSW State agency heritage register</i>	Redfern-Waterloo Authority S170 Register	4745500	30 Jun 08		

Study Details

Title	Year	Number	Author	Inspected by	Guidelines Used
Heritage Study of Eveleigh Railway Workshops	1986		Don Godden and Associates		No
Eveleigh Workshops Management Plan for Moveable Items and Social History	1996		Godden Mackay		No
Eveleigh Railway Locomotive Workshops Conservation Management Plan	2002		Otto Cserhalmi and Partners		Yes
Eveleigh Railway Workshops Conservation Management Plan	1995		State Projects - Department of Public Works		No

Eveleigh Railway Locomotive Workshops - Fabric Inventory	2002		Otto Cserhalmi & Partners		No
Heritage Assessment - Archaeological Resources - ATP Masterplan Site	1994		Wendy Thorp		No
ATP S170 Heritage Register Overview Report	2008		Futurepast Heritage Consulting P/L	M North & P Crook	Yes

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Butcher, R K	2004	The Great Eveleigh Railway Workshops	

Note: Internet links may be to web pages, documents or images.



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Eveleigh Locomotive Workshops Machinery Collection

Item

Name of Item: Eveleigh Locomotive Workshops Machinery Collection

Type of Item: Movable / Collection

Group/Collection: Transport - Rail

Category: Railway Machinery & Objects

Primary Address: Locomotive Street, Eveleigh, NSW 2015

Local Govt. Area: Sydney

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number

Boundary: Located in various buildings within the Eveleigh Locomotive Workshops Precinct

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Locomotive Street	Eveleigh	Sydney			Primary

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
Australian Technology Park (ATP)	State Government	

Statement of Significance

The Eveleigh Locomotive Workshops Machinery Collection consists of over 400 individual items and represents a significant component of the Eveleigh Railway Workshops and is a substantial remnant of the equipment that was on site during the operational period of the Workshops. The equipment includes a nearly complete assemblage from the Blacksmith's Shop, significant portions of the Spring Shop and Wheel Shop and remnants of the hydraulic power train which drove the equipment. These are the most complete in situ collections of this type in Australia. The machinery demonstrates the evolution in technology and the innovation developed on the site in the construction and maintenance of railway locomotives. Many of the machines demonstrate shop-built modifications and in some cases whole machines are shop-built, which are a testament to the skill and ingenuity of the people who worked on the site. The remaining in situ components of the power systems are rare surviving examples in Australia. As an interpretive resource, the machinery is highly significant to the presentation and understanding of the place and provides a good insight into the changing nature of work and labour in Australia over the course of the 19th and 20th centuries. Elements of the machinery remain functional within the Blacksmith's Shop, which is rare for machinery of this type in Australia.

Date Significance Updated: 10 Jun 08

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Designer/Maker: Various

Builder/Maker: various

Construction Years: 1887 - 1986

Physical Description: The vast majority of the equipment is from the Blacksmith's Shop, in Bays 1 and 2 of the Locomotive Workshop and includes steam hammers, forges and the hydraulic power equipment used to operate the equipment. Much of this equipment is in situ, often in association with racks of hand tools used in conjunction with the machinery. The collection also includes a significant number of the machines from the Spring Shop, which was in a now-demolished building, previously located between the Locomotive Workshop and the Engine Shop. A few machines also remain from the Wheel Shop, which was originally in Bays 10 to 12 of the Locomotive Workshop.

Machinery is located throughout the Locomotive Workshop, although the vast majority is located in Bays 1 and 2. Machinery has been relocated and interpreted to other areas of the building, and most bays retain at least one item of machinery, which includes large overhead travelling cranes and small hoists and jib cranes.

See individual machine listing card for details.

Physical Condition and/or Archaeological Potential:

Most machinery is under cover but otherwise unmaintained. Dust, grime and surface rust is common on many machines. The machinery that has been interpreted and is on display in Bays 3 to 16 tends to be in better condition and largely free from problems. A small number of machines are badly affected by rust; these are largely those located outside or are partially exposed to the elements. Some machinery in Bays 1 and 2 South is in operational condition. See individual machine listing card for details.

Date Condition Updated: 10 Jun 08

Modifications and Dates:

See individual machine listing card for details. Varies. Most machines show some sign of modification, which may include the installation of safety guards, task lighting or electrification. Some machines are substantially modified or are scratch-built from parts of other machines.

Current Use:

Display

Former Use:

Workshop machinery

History


Historical Notes:

The Eveleigh Locomotive Workshops Machinery Collection represents a range of machinery in use at the Workshops between the 1880s and the 1980s. The collection comprises over two hundred items of machinery, hand tools and fixed equipment which were used in the construction of locomotives on the site. The Workshops were equipped with a large array of machinery and a substantial staff of skilled tradespeople, who could produce a locomotive from the basic components, using parts and tools manufactured on site. The collection includes a small number of machines from pre-1900, which were originally driven by line shafting along the walls of the bays, powered by four large boilers outside the southern side of Bays 1 and 2. The bulk of the machinery remaining on site dates from the first half of the 20th century and includes equipment that was originally driven by line shafting but was later converted to electricity. Some of the machinery was considered cutting edge technology for its day and the vast majority of it was imported from overseas. The steam power system was converted to gas fired boilers from coal fired boilers in xxx.

Towards the end of the operational life of the workshops, some of the machinery had been converted to computer control for extra precision. The Workshops were progressively shut down throughout the 1980s and much of the equipment on site was sold at auction, though many significant components were saved. Many of the retained machines bear a plaque stating "Do Not Scrap - Property of the National Trust", which were installed by stealth by individuals seeking to preserve the collection, however the machinery was never in fact the property of the National Trust. This gentle deception was however instrumental in preventing many of the items from being sold for scrap or dispersed to other workshops. Since the early 1990s, some of the machinery in Bays 1 and 2 South has been in use by a blacksmith. In the 1990s, the site was progressively developed as the Australian Technology Park and Bays 1 and 2 of the Locomotive Workshop were retained to house and interpret machinery from the site. In the early 2000s, while the site was under the control of the Sydney Harbour Foreshore Authority, many of the machines which had been removed from their original contexts were reinstalled near their original functional positions and interpreted.

See the individual listing cards for specific items of machinery for additional historical information, where known.

Assessment of Significance

- SHR Criteria a)**
[Historical Significance] The Eveleigh Locomotive Workshops Machinery Collection is historically significant as an assemblage of equipment which demonstrates the manufacturing processes used in locomotive manufacture on the site between the 1880s and the 1980s. The Collection provides an understanding of both the complexity of the manufacturing undertaken in the workshops as well as the transformation in technology over time, from hand-made and hand-worked processes, to computer controlled techniques.
- SHR Criteria b)**
[Associative Significance] The Collection has a strong association with the Eveleigh Locomotive Workshops Site and is a critical component in the understanding and interpretation of the site's history.
- SHR Criteria c)**
[Aesthetic Significance] The Collection contains everything from hand tools to large industrial machinery which illustrates the progression in technology over time. The range of items in the collection assists in the understanding of manufacturing and work practices and the challenges associated with manufacturing complex machines such as locomotives from raw components.
- SHR Criteria d)**
[Social Significance] The collection would have had a strong personal association for the people who worked and trained at the Workshops, however this connection has been broken since the closure of the workshops in the 1980s.
- SHR Criteria e)**
[Research Potential] The Collection has the potential to allow better understanding and interpretation of 19th and 20th century manufacturing and work practices in the construction of locomotives, particularly the blacksmithing trades.
- SHR Criteria f)**
[Rarity] Many of the machines are typical of those which would have been used in other workshops in the 19th and 20th century, however the collection is unique in Australia in its scale and continued association with its original place of use.
- SHR Criteria g)**
[Representativeness] Much of the machinery is representative of that which was used in locomotive workshops and blacksmith's shops throughout the world.
- Integrity/Intactness:** Bays 1 and 2 relatively intact. Other individual machines are out of their original position.
- Assessment Criteria** Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Recommended Management

All individual items of machinery to be tagged in accordance with the S170 Register inventory.

Items identified as significant which are presently stored out of doors are to be relocated under cover, either into Bay 2 North or into appropriate off-site storage.

The collection is not to be further dispersed, except for loans to appropriate institutions under a loan agreement.

Any items which are to be included in an operational lease are to be specifically listed in the lease and maintained in accordance with the recommendations of the S170 Register or further specialist advice, as appropriate.

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - s.170 NSW State agency heritage register</i>	Redfern-Waterloo Authority S170 Register	4745505			

Study Details

Title	Year	Number	Author	Inspected by	Guidelines Used
Heritage Study of Eveleigh Railway Workshops	1986		Don Godden and Associates		No
Eveleigh Workshops Management Plan for Moveable Items and Social History	1996		Godden Mackay		No
ATP S170 Heritage Register Overview Report	2008		Futurepast Heritage Consulting P/L	M North & P Crook	Yes

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Butcher, R K	2004	The Great Eveleigh Railway Workshops	

Note: Internet links may be to web pages, documents or images.



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Locomotive Workshops Building

Item

Name of Item: Locomotive Workshops Building
Other Name/s: Loco Workshops
Type of Item: Built
Group/Collection: Transport - Rail
Category: Railway Workshop
Primary Address: Locomotive Street, Eveleigh, NSW 2015
Local Govt. Area: Sydney

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
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Boundary: Within the Eveleigh Locomotive Workshops Precinct

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Locomotive Street	Eveleigh	Sydney			Primary

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
Australian Technology Park (ATP)	State Government	

Statement of Significance

The Locomotive Workshop was the heart of the enterprise at the Eveleigh Railway Workshops site. Established in 1887, it was one of the foremost railway workshops in the world and the largest in Australia. The Workshop contained all trades necessary to fully construct or repair a steam locomotive and was the primary centre of railway construction in NSW until the opening of Chullora Workshops in 1923. The building was also the site of many significant events in the early history of the Australian labour movement, with the railway unions winning many concessions for workers that are now taken for granted. The site was also a major centre of the Australian Communist Party in the mid-20th century. The sheer scale of the workshops and the diversity of activities undertaken within them is a testament to both the importance of the railways in the development of 19th and 20th century NSW and to the skill of the large workshop which operated at the site for 100 years.

Date Significance Updated: 10 Jun 08

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Construction Years: 1887 -

Physical Description: The Locomotive Workshop consists of a very large brick building divided into 16 bays running north-south. Each bay was originally used for one or more trades required to repair or manufacture locomotives and their components. The building is of masonry construction with a metal roof and presents as a two storey

structure. A series of small annexes have been built along the southern side of the building. Internally, the building is supported on a steel frame and metal roof trusses, which have been incorporated within the redevelopment of the building. Only Bays 1 & 2 at the east end of the building are substantially original, with the remaining bays having been converted to commercial office space, function and exhibition areas in a variety of styles. Items of machinery have been placed on display and interpreted throughout Bays 3 to 16 of the building.

Bay 1 - Blacksmith shop / interpretation area
 Bay 2 - Blacksmith shop / interpretation area
 Bay 3 - 3 levels of infill offices, commercial kitchen
 Bay 4 - atrium, reception/function area, 3 levels of office space at north end
 Bay 5 - theatre, 3 levels of infill offices
 Bay 6 - 2 levels of infill offices, air conditioning plant on 3rd level
 Bay 7 - 2 levels of infill offices
 Bay 8 - atrium, cafe, 2 levels of infill offices at north end
 Bay 9 - 2 levels of infill offices, board room
 Bay 10 - exhibition hall & machinery interpretation
 Bays 11 to 14 - exhibition hall
 Bay 15 - 3 levels of infill offices
 Bay 16 - cafe, 2 levels of infill offices

Originally there were 21 annexes along the south wall of the building built in brick, timber and corrugated metal, however only 12 remain. Several of these have been rebuilt in modern materials to house new functions while others are in original condition.

Annex 1 - historic structure, machinery / workshop space
 Annex 2 - historic structure, blacksmith shop
 Annex 3 - historic structure, blacksmith shop access & fuel tanks
 Annex 4 - historic structure, boilers
 Annex 5 - modern structure, commercial kitchen access
 Annex 6 - historic structure, pump room
 Annex 8a - historic structure with modifications, security office
 Annex 9a -
 Annex 10a - historic structure with modifications, offices space
 Annex 12 - modern structure, plant room
 Annex 13 - modern structure, plant room
 Annex 20a - modern structure, plant room

**Physical Condition
and/or
Archaeological
Potential:**

Externally, the condition of the building ranges from good to poor, with significant structural defects noted in the southern walls of Bays 1 to 4. The building as a whole exhibits a patina of heavy wear and use, mixed with modern materials. Internally the building is generally in good condition. Several leaks have been noted in the roof of Bays 1 & 2. Structural issues to the south walls of Bays 1 & 2 are under investigation (July/August 2008) **Date Condition Updated:** 10 Jun 08

Current Use:

Commercial office & exhibition space

Former Use:

Railway workshops

History


Historical Notes:

The Locomotive Workshops commenced construction in 1887 and was originally built in two parts. Bays 1 to 4, at the east end, contained the 'dirty' trades such as blacksmithing and boilermaking, while Bays 5 to 15 contained the machining, tooling and assembly areas, with the two buildings separated by an open area. This area was infilled in 1905 to become Bay 4A and the boilermaking function extended into it. The Loco Workshops were the hub of locomotive manufacture from the 1880s to the 1930s, when many functions were progressively relocated to the newly-constructed Chullora Workshops. Surrounding the Loco Workshops were separate buildings (now gone) containing auxiliary trades such as springmaking, pattern making, welding, coppersmithing and foundry work. The Loco Workshops employed vast numbers of employees in these trades and many lived nearby in working class suburbs such as Redfern and Erskineville. By the 1960s, the Workshops had begun to wind down as the NSW Railways changed technology to diesel from steam. The Workshops finally shut in 1988 and were converted to the Australian Technology Park in the mid-1990s.

Assessment of Significance

- SHR Criteria a)**
[Historical Significance] The Locomotive Workshops were the centre of railway manufacturing in NSW between the late-19th and mid-20th centuries.
- SHR Criteria c)**
[Aesthetic Significance] The Locomotive Workshops are exceptionally large and well-detailed examples of late 19th century industrial buildings, incorporating items such as decorative brick and stonework.
- SHR Criteria d)**
[Social Significance] The Locomotive Workshops were socially important as the site where many generations of railway workers were trained. These individuals lived in the surrounding suburbs which reflect the working-class nature of the workforce. The Locomotive Workshops were also important in the development of the Australian union movement, the fight for workers' rights and occupational health and safety. The Workshops were also well known for the strong presence of the Australian Communist Party in the early to mid 20th century.
- SHR Criteria f)**
[Rarity] The Locomotive Workshops are the largest railway workshop in NSW and the only one containing a substantial collection of original machinery.
- SHR Criteria g)**
[Representativeness] The Locomotive Workshops are typical of a large Victorian era railway workshop and are able to demonstrate the scale of railway operations and the variety of processes required in their manufacture.

Integrity/Intactness: Modified for office space but the building is relatively intact. Bays 1 & 2 are largely unchanged from their mid-20th century configuration.

Assessment Criteria Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Recommended Management Update the Conservation Management Plan for the building. Investigate structural issues in Bay 1 & 2 South Wall. Investigate roof leakage issues in Bays 1 & 2. Undertake routine maintenance in accordance with normal practice.

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - s.170 NSW State agency heritage register</i>	Redfern-Waterloo Authority S170 Register	4745501			

Study Details

Title	Year	Number	Author	Inspected by	Guidelines Used
Eveleigh Workshops Management Plan for Moveable Items and Social History	1996		Godden Mackay		No
Eveleigh Railway Locomotive Workshops Conservation Management Plan	2002		Otto Cserhalmi and Partners		Yes
Eveleigh Railway Locomotive Workshops - Fabric Inventory	2002		Otto Cserhalmi & Partners		No
ATP S170 Heritage Register Overview Report	2008	481	Futurepast Heritage Consulting P/L	M North & P Crook	Yes

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Butcher, R K	2004	The Great Eveleigh Railway Workshops	

Note: Internet links may be to web pages, documents or images.



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Engine Shop (former)

Item

Name of Item: Engine Shop (former)
Other Name/s: National Innovation Centre; New Locomotive Shop
Type of Item: Built
Group/Collection: Transport - Rail
Category: Railway Workshop
Primary Address: Locomotive Street, Eveleigh, NSW 2015
Local Govt. Area: Sydney

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
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Boundary: Within the overall Eveleigh Locomotive Workshops Precinct

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Locomotive Street	Eveleigh	Sydney			Primary

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
Australian Technology Park (ATP)	State Government	

Statement of Significance

The Engine Shop is one of the few remaining original components of the Eveleigh Railway Workshops. The Engine Shop was added to the site to facilitate the construction of locomotive engines on site, allowing other functions in the Locomotive Workshops to be reorganised. The building served as the workshop where many of the workshops used by the NSW Railways were constructed and maintained in the 20th century.

While modified, the building retains enough key features to demonstrate its original function within the site.

Date Significance Updated: 10 Jun 08

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Construction Years: 1907 -

Physical Description: The former Engine Shop consists of a large masonry building with a corrugated metal roof. The building presents as two storeys externally but has been reconfigured internally to provide three levels. The Engine Shop was built in two sections - the northern section was built in 1907 and consisted of two long bays running north-south with large doors in either end, capable of allowing locomotives in and out of the building. Along the side, the building was divided into 8 bays highlighted with decorative brick pilasters. In 1914, the building was extended to the south. This new section has seven bays along the and a five segment sawtooth

roof, facing south. The bays on the sides of the buildings each contain a pair of openable steel arched windows with sandstone sills at the lower level, with another pair of smaller, non-opening steel framed windows with brick sills at the top level. The ends of the buildings repeat this fenestration pattern, with the top arches of the windows picked out in polychrome brick. The external configuration of the building is little changed, save for the loss of the original arched timber doors at either end of the building. A pair of arched timber doors stands permanently open in the centre of the west wall, with the entrance closed off by a new glass foyer inserted within the door opening.

Internally, the building would have originally been one large space which was subdivided as required. An overhead travelling crane ran the length of the building above the west bay. This crane is still present, now fixed in position above the lobby of the building. The interior is supported on a frame of steel columns with a steel roof truss structure. With the conversion of the building into office space in the 1990s, the interior was fitted out with three levels of office accommodation built within the existing building envelope. The lobby area in the middle of the building is the only remaining full height space within the structure. A few historic features have been retained, including the overhead travelling crane, a jib hoist and a row of washbasins.

Externally, a new freestanding, two storey plant room has been built on the east side of the building which contains the air conditioning and other major physical plant for the building.

Physical Condition and/or Archaeological Potential:

The building is fully tenanted as commercial office space and is generally in good condition. The following minor maintenance issues were noted: Several sandstone sills show evidence of damage and spalling. These should be inspected by a stone specialist and repaired with a sacrificial render, indented and repaired or replaced, as recommended. Growth of vegetation in some masonry joints. Vegetation should be poisoned, removed and joints repointed as required. Steel windows show signs of spot rust. Windows should be treated with a rust inhibitor and repainted. Windows with structural rust damaged should be repaired to match the original window profile. **Date Condition Updated:** 10 Jun 08

Modifications and Dates:

1914 - building extended to the south 1952 - construction of new locomotives ceased Mid-1990s - converted into the National Innovation Centre

Current Use:

Offices

Former Use:

Locomotive engine workshop

History

Historical Notes:

The Engine Shop (originally known as the New Locomotive Shop) was constructed in 1907 to allow the construction of new locomotive engines at Eveleigh. The building was extended to the south in 1914. The building served as the main location for construction of locomotive engines on the site, until such construction ceased altogether in 1952. The building became disused in 1988 when the Workshops were finally shut down and was converted to its present use as commercial office space in the mid-1990s.

Assessment of Significance

SHR Criteria a)

[Historical Significance]

The Engine Shop was historically important to the Eveleigh Locomotive Workshop Precinct as it provided a significant new facility for the construction of new locomotive engines, allowing other functions within the Locomotive Workshops Building to be reconfigured.

SHR Criteria c)

[Aesthetic Significance]

The building is a well-detailed early 20th century industrial building.

SHR Criteria d)

[Social Significance]

The Engine Shop contains remnants of the struggle for workers' rights on site, in the form of washbasins installed as a result of industrial action.

SHR Criteria f)

[Rarity]


The Engine Shop is rare in the Sydney area and unusual for remaining in association with other key components of the Locomotive Workshops Precinct.

SHR Criteria g)

[Representativeness]

The Engine Shop is a typical early 20th century railway industrial building and is able to demonstrate its function through its scale and layout.

Integrity/Intactness: Relatively intact externally. The interior has largely been reconfigured for commercial office space.

Assessment Criteria Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Recommended Management

Prepare a Conservation Management Strategy for the building. Undertake routine maintenance in accordance with normal practice.

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - s.170 NSW State agency heritage register</i>	Redfern-Waterloo Authority S170 Register	4745503			

Study Details

Title	Year Number		Author	Inspected by	Guidelines Used
ATP S170 Heritage Register Overview Report	2008	483	Futurepast Heritage Consulting P/L	M North & P Crook	Yes

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Butcher, R K	2004	The Great Eveleigh Railway Workshops	

Note: Internet links may be to web pages, documents or images.



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Works Managers' Office (former)

Item

Name of Item: Works Managers' Office (former)
Other Name/s: International Business Centre
Type of Item: Built
Group/Collection: Transport - Rail
Category: Railway Office
Primary Address: Locomotive Street, Eveleigh, NSW 2015
Local Govt. Area: Sydney

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
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Boundary: Within the Eveleigh Locomotive Workshops Precinct

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Locomotive Street	Eveleigh	Sydney			Primary

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
Australian Technology Park (ATP)	State Government	

Statement of Significance

The Works Manager's Office is one of the few remaining original components of the Eveleigh Railway Workshops. The building was part of the original construction of the Workshops in the 1880s and served as the location of the Works Manager and the pay office for the site. The building also contained the Timekeeper's Office and a bell on the top of the building rang the start and end of shift and controlled the actions of workers at the site. The building was substantially expanded in 1922 as a part of the larger changes to the Locomotive Works during that period. The building demonstrates the separation of management from the main workforce and the manner in which control was exercised over the workforce. While modified, the building retains enough key features to demonstrate its original function within the site.

Date Significance Updated: 10 Jun 08

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Construction Years: 1887 - 1947

Physical Description: The former Works Managers' Office retains most of the features from its 1940s incarnation. Internally however the building has been completely reconfigured. The building is a two storey rendered masonry structure with a T-shaped floor plan, with the short leg of the T formed by the 1940s extension on the east end. The building is painted off-white with maroon trim and detailing. A green corrugated metal gabled roof runs the length of the main building, with a double gabled roof

on the 1940s extension at 90 degrees. A bull-nosed verandah supported on decorative cast iron columns with iron lace capitals wraps around the west end of the building. Entry to the building is via a door in the east end, which had had a new light and access secure plate glass doors installed in place of the original doors. All external windows have been replaced with non-opening double glazed windows. Metal sun awnings have been installed along some of the first floor windows along the north side of the building. A large freestanding air conditioning plant has been installed on the hardstand area to the north of the building.

Internally, the building has been completely reconfigured. The floor layout consists of small offices and meeting rooms either side of a long central corridor which runs east-west through the building. A lobby area and new staircase have been installed in the ground floor of the 1940s extension at the east end of the building. The first floor of this section is one large office space. New staircases have also been installed in the middle of the building and at the west end.

The only remnant internal features are some sections of ashlar render and render baseboard along the central corridors on both floors. In the first floor corridor is a series of iron rungs built into the wall which provide access to the bell tower.

Externally, the building has a brick retaining wall and staircase along the east end and part of the north wall, where the embankment has been cut back for the building. An interpretive sign has been installed near the south-eastern corner of the building.

**Physical Condition
and/or
Archaeological
Potential:**

Generally good with only superficial wear to paint. A small fire was started by vandals outside the building in early 2008 which caused only minimal damage to the building exterior. **Date Condition Updated:** 10 Jun 08

**Modifications and
Dates:**

1887-Built; 1922 - Extended to the west; 1944 - Extended to the east; 1994/5 - Converted to the International Business Centre. Bell tower was removed and reinstated at unknown dates in the mid 20th century.

Current Use:

Offices

Former Use:

Offices

History

Historical Notes:

The Works Managers' Office was built in 1887 as a part of the original construction of the Railway Workshops, which incorporated both the Locomotive Workshops on the south side of the rail line and the Carriage Workshops on the north side of the line. The building was the seat of administrative control within the site, containing both the pay office and the Timekeepers' Office. A large brass bell contained within a decorative cast iron bell tower rang the start and end of shift on the site. The building is located in the north-east corner of the Locomotive Workshops site.

A major expansion was undertaken at the Locomotive Workshops between 1918 and 1928 and the Works Managers' Office was extended at the western end in 1922. The twin gabled two-storey building was extended by 36 feet on both stories along the western side. This change moved the bell tower into the centre of the building, whereas previously it had been located on the west end. The bull-nosed verandah was also extended around the building at this time. Historic photographs from the early to mid 20th century show that the bell had been removed from the building for a period, but it has been reinstated. The bell is no longer functional.

Between 1944 and 1947 a twin gabled extension was added to the east end of the building to provide additional administrative office space. The extension is turned 90 degrees from the main building, giving the structure a T shaped plan. The extension was undertaken in sympathy to the main building in terms of proportion and materials. The building ceased to operate as the Works Managers' Office in the 1980s when the overall Workshops site was shut down.

In 1994/5 the building was the first of the buildings on site to be renovated for the establishment of the Australian Technology Park and is now known as the International Business Centre. The building was reconfigured internally at that time and contains essentially no original features. Externally the building is somewhat modified but not essentially changed from its 1940s configuration.

Assessment of Significance

SHR Criteria a)
[Historical Significance]

The Works Managers Office is historically important for its role in the administration of the Eveleigh Locomotive Workshops.

SHR Criteria c)
[Aesthetic Significance]

The Works Managers' Office is a well-detailed late 19th century administrative building incorporating the unusual feature of a bronze bell at its parapet as part of the site's timekeeping mechanism.


SHR Criteria d)
[Social Significance]

The Works Managers Office was socially important to the site as both the source of administrative power on the site as well as the practical necessity of serving as the pay office.

SHR Criteria f)
[Rarity]

The Works Managers' Office is uncommon in the Sydney area and unusual in that it survives within the context of the industrial buildings it was originally associated with.

Integrity/Intactness: Externally intact but completely modified internally for commercial office space.

Assessment Criteria Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Recommended Management

Prepare a Conservation Management strategy for the building. Undertake routine maintenance in accordance with normal practice.

For interpretive purposes, consider installing a system to ring the bell on top of the building for special occasions. An electronic, remote operated ringing mechanism would be acceptable provided it is not visible from the ground.

Consider removing the fluorescent light fitting above the main entrance and replacing it with an appropriate period light fitting.

Should a major refit be considered to the IBC, investigate the reinstatement of the original floor plan and staircase arrangement.

Consider replacing metal double glazed windows with traditional double hung timber windows once the present windows reach the end of their life.

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - s.170 NSW State agency heritage register</i>	Redfern-Waterloo Authority S170 Register	4745502			

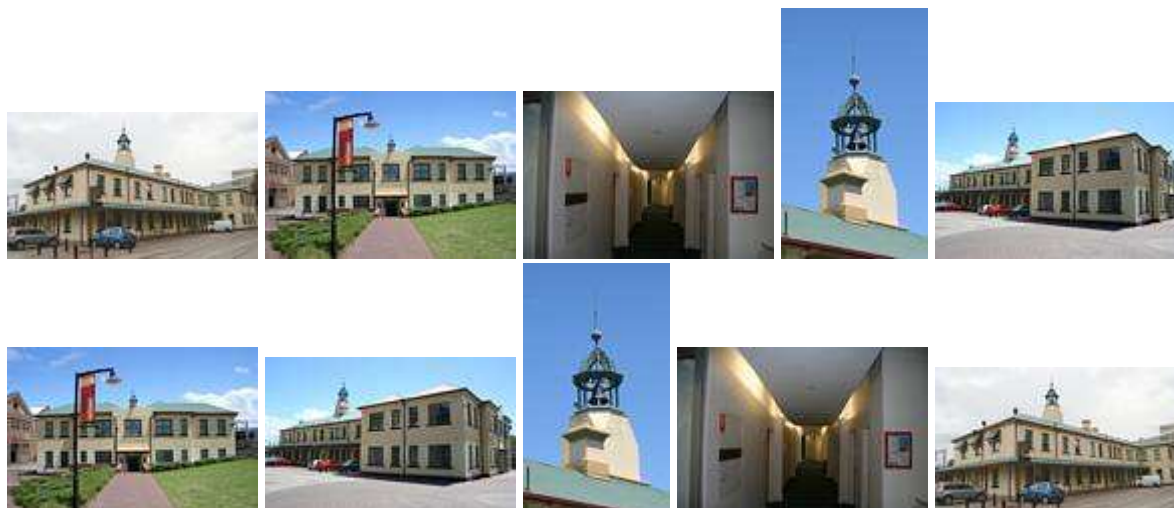
Study Details

Title	Year Number		Author	Inspected by	Guidelines Used
ATP S170 Heritage Register Overview Report	2008	482	Futurepast Heritage Consulting P/L	M North & P Crook	Yes

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Butcher, R K		The Great Eveleigh Railway Workshops	

Note: Internet links may be to web pages, documents or images.



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Water Tower

Item

Name of Item: Water Tower
Other Name/s: Water Tank
Type of Item: Built
Group/Collection: Transport - Rail
Category: Railway Water Tower/ Tank
Primary Address: Locomotive Street, Eveleigh, NSW 2015
Local Govt. Area: Sydney

Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
-----------------	-------------------	----------------	-----------------	-------------------

Boundary: Within the Eveleigh Locomotive Workshops Precinct

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Locomotive Street	Eveleigh	Sydney			Primary

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
Australian Technology Park (ATP)	State Government	

Statement of Significance

The Water Tower is typical of late 19th century railway water towers, consisting of an open-topped riveted wrought iron tank on a metal stand. This tank, while typical of those used throughout the NSW railway network, is an important contributory element to the Eveleigh Locomotive Workshops Precinct and contributes to the understanding of the place as a site of railway manufacturing enterprise. It is also unusual in an urban context.

Date Significance Updated: 03 Aug 08

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Builder/Maker: Per Way Shop Newcastle
Construction Years: 1925 -
Physical Description: A square, open-topped tank constructed of riveted wrought iron, atop 16 steel I-beam legs. Water was conveyed into and out of the tank via a pair of pipes on the underside. A metal maker's plate is mounted on the north side. The legs are secured via cross-bracing.
Physical Condition and/or Archaeological Potential: Fair. The tank shows some rust and requires repainting. Rust on the steel legs requires investigation. **Date Condition Updated:** 03 Aug 08
Current Use: Display

Former Use: Water tower

History

Historical Notes: The specific history of the Water Tower is not known. It was installed on the site in 1925 and is typical of water towers used throughout the railway system in NSW. Water would have been pumped into the tank to serve as a header tank to provide water pressure elsewhere on the site.

Assessment of Significance

SHR Criteria a)
[Historical Significance] The Water Tower is associated with the historical operation of the Locomotive Workshops Precinct.


SHR Criteria c)
[Aesthetic Significance] The Water Tower serves as a local landmark.

SHR Criteria e)
[Research Potential] The water tower is able to demonstrate the riveted wrought iron method of construction in use by the railways up until the mid-20th century and one no longer practiced.

SHR Criteria f)
[Rarity] The water tower is typical of similar towers constructed by the railways throughout NSW however it is rare for its continued association with the Locomotive Workshops and is unusual in an urban setting.

SHR Criteria g)
[Representativeness] Typical of railway water towers.

Integrity/Intactness: Intact but non-functional.

Assessment Criteria Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Recommended Management Remove rust and repaint in micaceous grey oxide. Investigate legs and repair any structural rust.

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - s.170 NSW State agency heritage register</i>	Redfern-Waterloo Authority S170 Register	4745504			

Study Details

Title	Year Number		Author	Inspected by	Guidelines Used
ATP S170 Heritage Register Overview Report	2008	484	Futurepast Heritage Consulting P/L	M North & P Crook	Yes

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Butcher, R K	2004	The Great Eveleigh Railway Workshops	

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Eveleigh - Large Erecting Shop

Item

Name of Item: Eveleigh - Large Erecting Shop
Type of Item: Built
Group/Collection: Transport - Rail
Category: Locomotive Shed (straight)
Primary Address: Locomotive Street, Eveleigh, NSW 2015
Local Govt. Area: Sydney
Property Description:

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
-----------------	-------------------	----------------	-----------------	-------------------

Boundary: North: 20m from north building face South: Property boundary along fenced area, and extending to the west down the north edge of the access road East: Property boundary to ATP West: Extending down the rail line to the turntable (1m from each side of outside of line), to include sand tower and turntable and approximately 1m around the outside edge of each structure.

All Addresses

Street Address	Suburb/Town	LGA	Parish	County	Type
Locomotive Street	Eveleigh	Sydney			Primary
Off Henderson Street	Eveleigh	Sydney			Alternate

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
RailCorp	State Government	
RailCorp	State Government	

Statement of Significance

(Simpson Dawbin Associates, March 2003)

The Large Erecting Shop was one of the largest and most imposing single structures on the Eveleigh site, and its role within the workshops complex was pivotal in the process of locomotive overhaul and the construction of new locomotives. It was of equal importance as any other facility within the Eveleigh Workshops complex but is unique in retaining its railway context.

The Large Erecting Shop is significant for the size of the building and volume of the interior space. The huge interior space has proved to be the building's most enduring asset, and assured its viability during 104 years of continuous use as a railway workshop. The building has adapted to the changing needs of several generations of steam locomotives, conversion to diesel maintenance and use as a centre for heritage locomotives and rolling stock.

The changing technology and work practices associated with the functions of the facility remain visible in the fabric and are an intact resource for interpretation of the process of locomotive erection and overhaul from 1899 to the present day. The sand tower is a rare remnant feature of steam operations with research value. It is the only example in Australia of the longitudinal pit erecting shop design, closely modeled on contemporary British practice as demonstrated at Crewe and Derby Railway Workshops.

The configuration and structure of the building as described above have remained substantially unchanged after more than 100 years. This continuity of use and the intact railway context is unique among all of the surviving 19th century Eveleigh buildings and greatly enhances the importance and heritage significance of this structure.

Date Significance Updated: 17 Dec 09

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Physical Description: ELEMENTS
Large Erecting Shop
Sand Tower
Turn Table

This information is from Eveleigh - Large Erecting Shop, Conservation Management Plan, Simpson Dawbin Associates, March 2003.

Context

The Large Erecting Shop is located at the south western end of the former Eveleigh Railway Workshops (now the Australian Technology Park). The building is separated from bay 15, the western extremity of the workshops by an open area formerly occupied by a traverser used for transporting locomotives between the workshops and the Large Erecting Shop. The car park for the ATP is located to the south of the former workshops complex.

A siding (known as the Annexe Road or Road 7) extends almost the full length of the Erecting Shop and is currently used for the storage of rolling stock. A housing estate on the site of the Alexandria Goods Yard is located to the south of this open area. The size and scale of the building can be appreciated when viewed from the relatively unobscured south side.

The building is accessed from the west end and six tracks enter the building via large double doors. A tall open ended building spans Road 3 near the western side of the Erecting Shop, known as the Elephant House. Built in the 1980's this is used as an inspection facility for rail cars by State Rail. The only direct vehicle access from Henderson Road to the site is from the west via the operational diesel workshops precinct and which crosses two running tracks.

Workshops and stores buildings abut the north wall of the Erecting Shop for part of its length. An administration building for the rail car workshops is adjacent the north side of the building towards the west end.

Floor Plan

The overall dimensions of the building are 184 metres long by 35 metres wide divided into two galleries by a central line of cast iron columns. Walls are entirely load bearing brickwork of English bond pattern. The structure comprises 30 column bays of 6.1 metres, with each pier expressed externally by recessed bays with pails of arched cast iron framed windows and square upper level gallery windows.

The first 20 bays from the eastern end date from original construction in 1899, the remaining 10 bays from 1906. The junction between the two stages and the original brick west wall are not visible. The only visible difference in the fabric is the slightly darker and deeper red brickwork used in the extension.

Building extensions

An array of extensions, alterations and attachments interrupt the repetitive rhythm of the exterior. Most prominent are the two ablutions wings to the north and south elevations.

The elevated structure to the north wall was built in 1930 with corrugated iron sheet to walls and roof, and is supported on steel cantilever brackets. Drawings indicate primitive wc and wash room facilities of minimal dimensions and an attendant's counter for time keeping.

To the south, an upgraded ablutions wing was constructed in 1950 and used until 1997. Also elevated with skillion roof to "L" floor plan, it was constructed in concrete blocks on concrete slab supported on steel columns and beams. 14 wc cubicles and 12 shower stalls serviced the needs of tradesmen based in the Erecting Shop. This facility was in use until 1996. Both elevated structures are of minimal architectural merit and have resulted in damage to original fabric such as windows and brickwork.

Other toilet facilities have been demolished in recent years and include a lean-to structure built in the 1920's at the south east corner for which evidence of roof flashings and painted wall and services remain. Four slate urinal stalls were placed at strategic intervals around the building of which one partially intact example exists against the south wall.

Roof and roof structure

The entire building was re-roofed in 1997, and gutters and down pipes were replaced. This was the third known replacement of the roof, the first being in 1946 following a disastrous hail storm which destroyed all glass skylights and the second in the early 1970's. The roof structure however is original and details of trusses and roof members are unusual and unique for the Eveleigh Workshops. Rail sections are used for roof beams and top chords of each truss. The paired cast iron columns to the centre of the building also serve for roof water drainage, characteristic of the Locomotive Workshops.

Doors and windows

Six locomotive entry doors are located at each of the north and south ends of the building and originally comprised arched timber double doors of heavy braced and ledged construction. The door to each central access road incorporated a small personnel door.

The imposing east and west elevations feature the six pairs of locomotive doors with upper gallery windows, emphasised by a pair of finely detailed pedimented brick gables including stone copings and sills with circular oriel vent opening to the centre of each.

Three pairs of timber side doors also arched are located within the south wall at intervals of 7-7-10 bays from the east end. Corresponding doors were located to the north wall but two were later filled in for the Diesel workshops. A series of single escape and access doors were inserted as required.

Windows are cast iron of standard Department of Railways detail of the time, with opening pivot sash to the centre section of each frame originally opened by rotating screw device. Many windows have been removed or extensively altered to allow for later door penetrations. Several window openings have been infilled where structures were attached externally. All window frames feature dressed sandstone sills and heads picked out in arched red brickwork.

Sub Foremen's Cabins

Small timber office cabins are located at various locations around the shop floor of the building. All date from the pre 1968 steam era and have been moved around in different locations to suit operational needs of the time.

Overhead Cranes

Over the buildings life a number of cranes have been installed. Three of the cranes date from original construction, dated 1899 built by Craven Manchester. L25 and 1.28 are located in the eastern bay and are intact and L20 has been stripped for parts at the western end. Other cranes were built in 1904 and 1923 by Craven and Babcock and Wilcox and two were rebuilt in 1953. All cranes have been extensively altered and updated to incorporate new. Most overhead cranes in the workshops were converted to electric drives by 1905. In the Large Erecting Shop four rope-driven cranes were installed in 1899 and two electric cranes in 1904. Two of the rope-driven cranes were converted to electric drive during 1910. Two of the rope-driven cranes reportedly survived until 1954, before upgrading to independent electric drive.

Floors, trolley tracks and inspection pits

The configuration of full length pits to the four pit roads and short pits to the clear

centre road at the western end, remains as originally constructed. The floor surface of concrete paving is not original, the timber slab or "billet" paving having been replaced many years ago. The concrete substructure is original, and remnants of the 610mm (2') gauge trolley system remain both parallel to the main tracks and transverse to the building.

Services

Several distinctive cast iron encased switch boxes remain in various locations the earliest dating from the 1940 to 50's period. Unusual metal brackets support electrical insulators on the bottom chord of several trusses. Attachments to the exterior are evidence of old technology which served the processes within the Erecting Shop.

Sand Tower and Turntable

Further distant to the west are located the only remaining turntable on the site, and a rare surviving overhead sand bin facility.

Physical Condition and/or Archaeological Potential:

Moderate. The building is in a reasonable condition however some components are deteriorating. **Date Condition Updated:** 17 Dec 09

Further Information:

Further information is in the Eveleigh - Large Erecting Shop Conservation Management Plan, Simpson Dawbin Associates, March 2003.

History

Historical Notes:

When the NSW Railways opened in 1855, small workshop buildings were erected close to the first Sydney terminal station fronting Devonshire Street. However, as the station was progressively enlarged to handle more traffic, the workshop sites became cramped and inadequate (Simpson Dawbin, 2003, p9)

In 1879 the NSW Government purchased 62-acres of land on both sides of the main railway lines west of present-day Redfern Station. Three buildings were constructed: a steam locomotive 'running' shed used for routine servicing, minor repairs and refuelling (since demolished); a major manufacturing and repair workshop for steam locomotives on the southern side of the main lines; and a workshop for repair and maintenance of wagons and carriages on the northern side of the tracks (Simpson Dawbin, 2003, p9).

The original Eveleigh locomotive workshops built in 1887 were contained entirely within one main building closer to Redfern station and included an erecting shop in Bays 5 to 8, accomodating 24 engines and 12 tenders at any one time (Simpson Dawbin, 2003, p9-10).

Growth in the NSW Railway system from 1888 was particularly rapid, with larger numbers of rolling stock required to accommodate the increasing number of passengers. To cater for this expansion, two major workshop buildings were commenced at Eveleigh during the 1890's at the western end of the original 1887 main building; a foundary constructed in 1898; and a new and larger Erecting Shop in 1899 to replace the cramped working areas in the original building (Simpson Dawbin, 2003, p10-11).

With the first stage of the building opening in June, 1899, the Erecting Shop measured 122m in length by 36m wide, and was constructed at a cost of 19, 207 pounds. When another similar building was built adjacent to the Works Manager's office in 1907 for engine construction, the word 'Large' appears to have been added to its name to differentiate it from the new shop. For its life since then, the building has been known as the 'Large Erecting Shop' (Simpson Dawbin, 2003, p11).

A major extension to the Erecting Shop was completed on August 7th, 1906. Ten new bays were added to the original twenty, and two new overhead travelling cranes installed, adding to the original four. The Erecting Shop provided a facility for locomotive maintenance that was unique in NSW until the later construction of Chullora and Cardiff, used for almost 70 years for the overhaul of steam engines and the erection of new locomotives (Simpson Dawbin, 2003, p12).

From about 1968 the Large Erecting Shop (LES) was converted for the overhaul of

diesel engines, with steam locomotive overhauls ceasing in 1970. By 1984 the decision was made to consolidate work at Chullora and lease the southern gallery of the building to 3801 Ltd from 1985. On the northern side, work on diesel engines and bogies continued (Simpson Dawbin, 2003, p15).

Workshop activities at Eveleigh ceased completely in 1988 and all machinery was sold at auction, transferred to other sites, or retained on site due to their heritage value. In the same year, the SRA made space available to the Powerhouse Museum for the storage of locomotives within the area allocated to 3801 Ltd, and reallocated part of the LES for preparation of 'Tangara' electric trains for service. In 1991, the Australian Technology Park took over the main workshop building. From 1992 to 1996, the northern gallery was used to prepare new units of 'Explorer' and 'Endeavour' railcars for traffic and warranty repairs. In 1996 all maintenance of Countrylink stock was relocated to adjacent workshops, enabling 3801 Ltd and the Powerhouse Museum to occupy the entire interior of the Large Erecting Shop (Simpson Dawbin, 2003, p16-20).

Assessment of Significance


- SHR Criteria a)**
[Historical Significance] The Large Erecting Shop is historically important as a significant feature of the Eveleigh Railway Workshops, which were instrumental in the development of the state during the 19th and 20th Century. It provides physical evidence of a past era of steam traction and the important process of locomotive construction and overhaul is embodied in the fabric and design of the building. (Simpson Dawbin Associates, March 2003)
- SHR Criteria b)**
[Associative Significance] The Large Erecting Shop is significant for its association with George Crowley who designed a number of the prominent buildings on the Eveleigh site including the Large Erecting Shop.
- SHR Criteria c)**
[Aesthetic Significance] The Large Erecting Shop is a prominent visual element on the Eveleigh Workshops site. Architecturally the building represents the highest standards of building design and detailing typical of the most important industrial facilities of the late Victorian period. Elements of the façade treatment repeat the design of the workshops complex constructed 13 years earlier, contributing to the cohesion and integrity of the overall site and the building was one of the last in the Eveleigh complex of masonry construction aspiring to quality architectural design and finish. The building represents an accomplished Australian interpretation of the design and layout of several of the great locomotive workshops in Britain at the time, including Crewe, Derby and Bow. (Simpson Dawbin Associates, March 2003)
- SHR Criteria d)**
[Social Significance] At its peak of operation in 1917, Eveleigh workshops employed a total of over 3,300 staff. The social and industrial significance was immense as one of the largest single work places in Australia. Up to 1,100 employees worked in the Erecting Shop alone, and as a single workspace, this building highlighted the work practices and environment of railway workshops and reflects gradual improvements in working conditions. (Simpson Dawbin Associates, March 2003)
- SHR Criteria e)**
[Research Potential] The building contains a number of intact features of technological and research significance that enable interpretation of industrial processes which took place during the working life of the building. The overhead cranes are highly significant representing the technology of traveling cranes dating from various period of installation and adaptation. Remnants of the 2' gauge trolley tracks are relics of the extensive transportation system for heavy components and tools within the building providing the essential link between the Erecting Shop and the foundry and workshops. Evidence remains in the structure of the central transmission drive shaft, supplying power to all equipment within the work areas. Traces of switch boxes, compressed air outlets, brackets for steam pipes and electrical insulators all express the layering of technological change throughout the life of the building. It remains an intact example of the longitudinal pit erecting shop, the layout and structure of the building fundamentally unchanged since original construction. (Simpson Dawbin Associates, March 2003)
- The turntable and overhead sand bin facility are of research significance in their ability to demonstrate and interpret this element of steam train operations.
- SHR Criteria f)**
[Rarity] The Large Erecting Shop is unique in Australia as a rare example in the world of an erecting shop of this scale to remain in public ownership continuing to fulfill a railway function. (Simpson Dawbin Associates, March 2003)

The overhead sand bin facility is rare in NSW.

SHR Criteria g)
[Representativeness]

The building is representative of large scale railway workshops buildings of this era.

Integrity/Intactness: The structure of the Large Erecting Shop remains substantially as finally completed in 1905, consequently its original fabric and interior configuration are largely intact. The Large Erecting Shop remains the most prominent single purpose structure surviving on the Eveleigh Workshops site with the largest single interior space. It is the most intact in terms of original fabric and functional layout, in spite of detracting extensions and redundant services attached to the building and the impacts on its context through site redevelopment. (Simpson Dawbin Associates, March 2003)

Assessment Criteria Items are assessed against the  **State Heritage Register (SHR) Criteria** to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
<i>Heritage Act - s.170 NSW State agency heritage register</i>	Eveleigh - Large Erecting Shop				

Study Details

Title	Year	Number	Author	Inspected by	Guidelines Used
S170 Heritage & Conservation Register Update	2009		ORH		Yes

References, Internet links & Images

Type	Author	Year	Title	Internet Links
Written	Simpson Dawbin Associates, Ian Brady	2003	Eveleigh- Large Erecting Shop Conservation Management Plan	

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Appendix B

Heritage Information Series—Standard exemptions for works requiring heritage council approval,
NSW Heritage Branch 2006

HERITAGE INFORMATION SERIES

STANDARD EXEMPTIONS FOR WORKS REQUIRING HERITAGE COUNCIL APPROVAL

Heritage Council



of New South Wales

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INTRODUCTION

In NSW important items of our environmental heritage are listed on the State Heritage Register. Any changes to those items should respect and retain those qualities and characteristics that make the heritage place special.

Any major works proposed for **State Heritage Register items** therefore need to be assessed and approved by the Heritage Council to ensure that the heritage significance of the item will not be adversely affected.

However, the assessment process can waste the time and resources of both the owner and the Heritage Council if the works are only minor in nature and will have minimal impact on the heritage significance of the place. The Heritage Act allows the Minister for Planning, on the recommendation of the Heritage Council, **to grant exemptions for certain activities** which would otherwise require approval under the NSW Heritage Act.

There are two types of exemptions which can apply to a heritage item listed on the State Heritage Register:

1. **standard exemptions** for all items on the State Heritage Register. Typical activities that are exempted include building maintenance, minor repairs, alterations to certain interiors or areas and change of use.
2. **site specific exemptions** for a particular heritage item can be approved by the Minister on the recommendation of the Heritage Council.

These guidelines have been prepared to inform owners and managers of heritage items listed on the State Heritage Register about the standard exemptions. They also explain how to develop site specific exemptions for a heritage item.

The State Heritage Register

Heritage places and items of particular importance to the people of New South Wales are listed on the State Heritage Register. The Register was created in April 1999 by amendments to the *Heritage Act 1977*.

The key to listing on the State Heritage Register is the level of significance. Only those heritage items which are of **state significance in NSW** are listed on the State Heritage Register.

To check whether an item is listed on the register, check the online heritage database on the homepage of the Heritage Branch, Department of Planning:

www.heritage.nsw.gov.au

This online database lists all statutorily protected items in NSW. It may be accessed from the homepage, via the Listings tab, then Heritage databases.

WHY HAVE STANDARD EXEMPTIONS?

The standard exemptions apply to all items listed on the State Heritage Register. These exemptions came into force on 5 September, 2008. They replace all previous standard exemptions.

The current exemptions replace those gazetted on 4 April 2006 and as amended 28 April 2006. They relate to a broad range of minor development and will result in a more streamlined approval process.

The purpose of the standard exemptions is to clarify for owners, the Heritage Branch and local councils what kind of maintenance and minor works can be undertaken without needing Heritage Council approval. This ensures that owners are not required to make unnecessary applications for minor maintenance and repair.

The Heritage Council has prepared guidelines to help owners and managers to interpret and apply the standard exemptions. Those guidelines were first published in 2004 and have been incorporated into this document.

HOW WILL EXEMPTIONS ALREADY IN PLACE BE AFFECTED BY THE NEW STANDARD EXEMPTIONS?

1. **Standard Exemptions:** The new standard exemptions replace all existing standard exemptions.
2. **Site Specific Exemptions:** Some heritage items have site specific exemptions for works other than those in the standard list. Site specific exemptions will continue to remain in force.

WHAT OTHER APPROVALS ARE NECESSARY TO DO WORK ON A HERITAGE ITEM?

The exemptions only reduce the need to obtain approval from the Heritage Council, under section 60 of the Heritage Act, to carry out works to a heritage item listed on the State Heritage Register. You should check with your local council for information on additional development and building approvals, and with the Heritage Branch for other approvals which may be required under the Heritage Act, such as an Excavation Permit.

HOW TO RELATE THE STANDARD EXEMPTION CLAUSES TO YOUR HERITAGE ITEM

The standard exemption clauses can be grouped under two headings:

- maintenance and repairs;
- alterations.

Clauses have been kept as concise as possible to avoid ambiguities. The terminology used is consistent with the Australia ICOMOS *Burra Charter*. Australia ICOMOS is the Australian Chapter of International Council on Monuments and Sites, a UNESCO-affiliated international organisation of conservation specialists. The *Burra Charter* is a nationally accepted standard for assessing and managing change to heritage items.

Before you develop firm proposals for changes to the heritage item, take the following actions:

- [1.] Check the boundaries of the item to which the State Heritage Register listing applies;
- [2.] Check the exemptions which apply to your heritage item;
- [3.] Read these explanatory notes to ensure that the work you propose is exempted, and check if prior Heritage Council notification and endorsement is required before the works are commenced;
- [4.] If the work is not exempted, apply to the Heritage Council for approval under section 60 of the Heritage Act;
- [5.] Check with the local council concerning other approvals that may be required;
- [6.] Check with the Heritage Branch if the work you propose involves the disturbance of relics more than 50 years old.

SCHEDULE OF STANDARD EXEMPTIONS

HERITAGE ACT, 1977

NOTICE OF ORDER UNDER SECTION 57(2) OF THE HERITAGE ACT, 1977

I, the Minister for Planning, pursuant to subsection 57(2) of the Heritage Act 1977, on the recommendation of the Heritage Council of New South Wales, do by this Order:

- 1. revoke the Schedule of Exemptions to subsection 57(1) of the Heritage Act made under subsection 57(2) and published in the Government Gazette on 22 February 2008; and**
- 2. grant standard exemptions from subsection 57(1) of the Heritage Act 1977, described in the Schedule attached.**

**FRANK SARTOR
Minister for Planning
Sydney, 11 July 2008**

SCHEDULE OF EXEMPTIONS TO SUBSECTION 57(1) OF THE

HERITAGE ACT 1977

MADE UNDER SUBSECTION 57(2)

GENERAL CONDITIONS

1. These general conditions apply to all of the following Exemptions.
2. Anything done pursuant to the following Exemptions must be carried out in accordance with relevant Guidelines issued by the Heritage Branch including *“The Maintenance of Heritage Assets: A Practical Guide” 1998, “Movable Heritage Principles” 2000 and “The Heritage Council Policy on Managing Change to Heritage Items”*.
3. The following Standard Exemptions do not apply to anything affecting objects, places, items or sites of heritage significance to Aboriginal people or which affect traditional access by Aboriginal people.
4. The Director, and Managers employed by the Heritage Branch,- Department of Planning; the Executive Director, Tenant and Asset Management Services, employed by the Sydney Harbour Foreshore Authority; the Executive Director Culture & Heritage employed by the Department of Environment and Climate Change and the General Manager, Sustainability employed by the Sydney Water Corporation may perform any of the functions of the Director-General of the Department of Planning (Director-General) under these exemptions.

The authorisation to the Executive Director, Tenant and Asset Management Services of the Sydney Harbour Foreshore Authority is restricted to land for which it is the delegated approval body under section 169 of the Heritage Act, and the preparation and submission of information required to demonstrate that compliance with the criteria contained in these exemptions is satisfied, must not be carried out by the Executive Director, Tenant and Asset Management Services.

The authorisation to the Executive Director Culture & Heritage of the Department of Environment and Climate Change is restricted to land for which it is the delegated approval body under section 169 of the Heritage Act, and the preparation and submission of information required to demonstrate that compliance with the criteria contained in these exemptions is satisfied, must not be carried out by the Executive Director Culture & Heritage.

The authorisation to the General Manager, Sustainability employed by the Sydney Water Corporation is restricted to land for which it is the delegated approval body under section 169 of the Heritage Act, and the preparation and submission of information required to demonstrate that compliance with the criteria contained in these exemptions is

satisfied, must not be carried out by the General Manager, Sustainability.

5. In these Exemptions, words shall be given the same meaning as in the *Heritage Act 1977* (“the Act”) unless the contrary intention appears from the context of the exemption.
6. Anything done pursuant to the following Exemptions must be specified, supervised and carried out by people with knowledge, skills and experience appropriate to the work.

Guidelines

In addition to the above guidelines listed in paragraph two, the Heritage Council adopted further guidelines on 7 April 2004 (revised 2009) for use in interpreting and applying the standard exemptions.

If it is unclear whether proposed development satisfies the requirements of these exemptions, an application will be required under section 60 of the Heritage Act.

STANDARD EXEMPTION 1: MAINTENANCE AND CLEANING

1. The following maintenance and cleaning does not require approval under subsection 57(1) of the Act:

- (a) the maintenance of an item to retain its condition or operation without the removal of or damage to the existing fabric or the introduction of new materials;
- (b) cleaning including the removal of surface deposits, organic growths or graffiti by the use of low pressure water (less than 100 psi at the surface being cleaned) and neutral detergents and mild brushing and scrubbing.

NOTE 1: Traditional finishes such as oils and waxes must continue to be used for timber surfaces rather than modern alternative protective coatings such as polyurethane or acrylic which may seal the surface and can cause damage.

NOTE 2: Surface patina which has developed on the fabric may be an important part of the item's significance and if so needs to be preserved during maintenance and cleaning.

Guidelines

Maintenance is distinguished from repairs, restoration and reconstruction as it does not involve the removal of or damage to existing fabric or the introduction of new materials. It is a continuing process of protective care. Typical maintenance activity includes:

- *the removal of vegetation and litter from gutters and drainage systems;*
- *resecuring and tightening fixings of loose elements of building fabric;*
- *lubricating equipment and services which have moving parts;*
- *the application of protective coatings such as limewash, polish, oils and waxes to surfaces which have previously had such coatings applied; and*
- *cleaning by the removal of surface deposits using methods other than aggressive mechanical or chemical techniques such as high pressure, high temperature or strong solvents which may affect the substrate.*

This standard exemption applies to the maintenance of all types of heritage items including buildings, works, landscapes, cemeteries and movable heritage. Reference should be made to other relevant standard exemptions (#12, 14 and 17) for particular types of items.

STANDARD EXEMPTION 2: REPAIRS

1. 1. Repair to an item which is of the type described in (a) or (b) below does not require approval under subsection 57(1) of the Act:

- (a) the replacement of services such as cabling, plumbing, wiring and fire services that uses existing service routes, cavities or voids or replaces existing surface mounted services and does not involve damage to or the removal of significant fabric;
- (b) the repair (such as refixing and patching) or the replacement of missing, damaged or deteriorated fabric that is beyond further maintenance, which matches the existing fabric in appearance, material and method of affixing and does not involve damage to or the removal of significant fabric.

NOTE 1: Repairs must be based on the principle of doing as little as possible and only as much as is necessary to retain and protect the element. Therefore replacement must only occur as a last resort where the major part of an element has decayed beyond further maintenance.

NOTE 2: Any new materials used for repair must not exacerbate the decay of existing fabric due to chemical incompatibility, obscure existing fabric or limit access to existing fabric for future maintenance.

NOTE 3: Repair must maximise protection and retention of fabric and include the conservation of existing detailing, such as vents, capping, chimneys, carving, decoration or glazing.

Guidelines

This standard exemption is not intended to allow the cumulative replacement of large amounts or a high proportion of the fabric of an item. If replacement of large amounts of fabric is necessary, an application will be required to be submitted under s. 60 of the Heritage Act. If there is uncertainty about whether the proposed extent of repair is exempt from approval, advice should be sought from the Heritage Branch, Department of Planning.

Repairs should have detailed specifications and carried out by licensed tradespeople with experience in the conservation of heritage buildings. It is essential that the composition of elements of the fabric such renders, mortars, timber species and metal types remain the same to assist with matching appearance and avoiding chemical incompatibility.

Repair may involve reconstruction which means returning an item to a known earlier state. This may involve the use of new or recycled materials.

Reconstruction must satisfy a four-part test to qualify for exemption from approval:

- 1. The nature of the earlier state being reconstructed must be known. Where there is conjecture about the earlier state of the fabric or where it is proposed to change the appearance, material or method of fixing of the fabric an application under s.60 of the Heritage Act will be required.*
- 2. The replacement fabric must be matching in appearance and method of fixing. The use of salvaged or recycled fabric can be a valuable resource in matching appearance in preference to the use of new fabric which may appear obtrusive. However the damage to other heritage buildings by the salvaging of fabric for reuse is unacceptable. Salvaged materials must be judiciously sourced so as not to encourage secondary damage to other heritage resources. The use of artificial ageing techniques to assist the matching of new with original fabric is only advocated where there is an obtrusive mismatch of materials which negatively impacts on the heritage significance of the item. Ideally, new and original fabric should be subtly discernable on close examination to assist interpretation of the history of change to the building.*
- 3. The fabric being replaced must be beyond further maintenance. The replacement of fabric may only occur where fabric is missing or it is so damaged or deteriorated that it is beyond further maintenance. In many cases the judgement about the level of deterioration and the effectiveness of further maintenance will require the advice of a person who is suitably experienced in similar heritage conservation projects. If it is unclear that the fabric is beyond further maintenance, its replacement will require the submission of an application under s. 60 of the Heritage Act.*
- 4. Significant fabric must not be damaged or removed. In all cases of repair, the damage or removal of significant fabric is not permitted without approval. Significant fabric is that which contributes to the heritage significance of the item. The identification of the level of significance of fabric will usually require the advice of a person who is suitably experienced in similar heritage conservation projects. The damage or removal of significant fabric will require the submission of an application under s. 60 of the Heritage Act.*

New material used in repairs should where possible be date stamped in a location which is not conspicuous but is legible on close examination. Archival recording of removed and replacement fabric is advocated and should be used in interpretive displays where practicable.

STANDARD EXEMPTION 3: PAINTING

1. **Painting does not require approval under subsection 57(1) of the Act if the painting:**
 - (a) **does not involve the disturbance or removal of earlier paint layers other than that which has failed by chalking, flaking, peeling or blistering;**
 - (b) **involves over-coating with an appropriate surface as an isolating layer to provide a means of protection for significant earlier layers or to provide a stable basis for repainting; and**
 - (c) **employs the same colour scheme and paint type as an earlier scheme if they are appropriate to the substrate and do not endanger the survival of earlier paint layers.**
2. **Painting which employs a different colour scheme and paint type from an earlier scheme does not require approval under subsection 57(1) of the Act, provided that:**
 - (a) **the Director-General is satisfied that the proposed colour scheme, paint type, details of surface preparation and paint removal will not adversely affect the heritage significance of the item; and**
 - (b) **the person proposing to undertake the painting has received a notice advising that the Director-General is satisfied.**
3. **A person proposing to undertake repainting of the kind described in paragraph 2 must write to the Director-General and describe the proposed colour scheme, paint type, details of surface preparation and paint removal involved in the repainting. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 2(a) the Director-General shall notify the applicant.**

NOTE: Preference should be given to the re-establishment of historically significant paint schemes of the item that are appropriate to the significance of the building.

Guidelines

Painting of surfaces which have not previously been painted such as face brickwork, stone, concrete or galvanised iron is likely to adversely affect the heritage significance of the item and is not exempt from approval under this standard exemption. Likewise, the stripping of paint coatings which were intended to be protective may expose the substrate to damage and cause the loss of the historical record and significance of the building. In cases where surface preparation has revealed significant historic paint layers, repainting should facilitate the interpretation of the evolution of the building by displaying appropriately located sample patches of historic paint schemes. This

information should also be examined if it is proposed to recreate earlier finishes or paint schemes.

Paint removal of failed layers to achieve a stable base for repainting is exempt from approval but intervention should be minimised to avoid the loss of the significant historical record. Where old paint layers are sound they should be left undisturbed. The removal of paint with a high content of lead or other hazardous materials requires considerable care and use of experienced tradespeople as its disturbance can create health hazards. If the removal of such paint layers will adversely affect the heritage significance of the item, an application will be required under section 60 of the Heritage Act.

Reference should be made to The Maintenance Series, NSW Heritage Branch, particularly Information Sheets 6.2 Removing Paint from Old Buildings, 7.2 Paint Finishes and 7.3 Basic Limewash which are available online at www.heritage.nsw.gov.au.

STANDARD EXEMPTION 4: EXCAVATION

- 1. Excavation or disturbance of land of the kind specified below does not require approval under subsection 57(1) of the Act, provided that the Director-General is satisfied that the criteria in (a), (b) or (c) have been met and the person proposing to undertake the excavation or disturbance of land has received a notice advising that the Director-General is satisfied that:**
 - (a) an archaeological assessment, zoning plan or management plan has been prepared in accordance with Guidelines published by the Heritage Council of NSW which indicates that any relics in the land are unlikely to have State or local heritage significance; or**
 - (b) the excavation or disturbance of land will have a minor impact on archaeological relics including the testing of land to verify the existence of relics without destroying or removing them; or**
 - (c) a statement describing the proposed excavation demonstrates that evidence relating to the history or nature of the site, such as its level of disturbance, indicates that the site has little or no archaeological research potential.**

- 2. Excavation or disturbance of land of the kind specified below does not require approval under subsection 57(1) of the Act:**
 - (a) the excavation or disturbance of land is for the purpose of exposing underground utility services infrastructure which occurs within an existing service trench and will not affect any other relics;**
 - (b) the excavation or disturbance of land is to carry out inspections or emergency maintenance or repair on underground utility services and due care is taken to avoid effects on any other relics;**
 - (c) the excavation or disturbance of land is to maintain, repair, or replace underground utility services to buildings which will not affect any other relics;**
 - (d) the excavation or disturbance of land is to maintain or repair the foundations of an existing building which will not affect any associated relics;**
 - (e) the excavation or disturbance of land is to expose survey marks for use in conducting a land survey**

- 3. A person proposing to excavate or disturb land in the manner described in paragraph 1 must write to the Director-General and describe the proposed excavation or disturbance of land and set out why it satisfies the criteria set out in paragraph 1. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 1 (a), (b) or (c) the Director-General shall notify the applicant.**

NOTE 1: Any excavation with the potential to affect Aboriginal objects must be referred to the Director-General of the Department of Environment and Climate Change.

NOTE 2: If any Aboriginal objects are discovered on the site, excavation or disturbance is to cease and the Department of Environment and Climate Change is to be informed in accordance with section 91 of the National Parks and Wildlife Act, 1974.

NOTE 3: This exemption does not allow the removal of State significant relics.

NOTE 4: Where substantial intact archaeological relics of State or local significance, not identified in the archaeological assessment, zoning plan, management plan or statement required by this exemption, are unexpectedly discovered during excavation, work must cease in the affected area and the Heritage Council must be notified in writing in accordance with section 146 of the Act. Depending on the nature of the discovery, additional assessment and possibly an excavation permit may be required prior to the recommencement of excavation in the affected area.

NOTE 5: Archaeological research potential of a site is the extent to which further study of relics which are likely to be found is expected to contribute to improved knowledge about NSW history which is not demonstrated by other sites or archaeological resources.

STANDARD EXEMPTION 5: RESTORATION

- 1. Restoration of an item by returning significant fabric to a known earlier location without the introduction of new material does not require approval under subsection 57(1) of the Act.**
- 2. The following restoration does not require approval under subsection 57(1) of the Act, provided that the Director-General is satisfied that the criteria in (a) have been met and the person proposing to undertake the restoration has received a notice advising that the Director-General is satisfied:**
 - (a) the restoration of an item without the introduction of new material (except for fixings) to reveal a known earlier configuration by removing accretions or reassembling existing components which does not adversely affect the heritage significance of the item.**
- 3. A person proposing to undertake restoration of the kind described in paragraph 2 must write to the Director-General and set out why there is a need for restoration to be undertaken and the proposed material and method of restoration. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 2(a), the Director-General shall notify the applicant.**

Guidelines

Restoration in accordance with clause 1 of this standard exemption does not involve the removal of fabric and only relates to the return of fabric which has been removed to storage or has been dislodged from its original location.

STANDARD EXEMPTION 6: DEVELOPMENT ENDORSED BY THE HERITAGE COUNCIL OR DIRECTOR-GENERAL

- 1. Minor development specifically identified as exempt development which does not materially impact on heritage significance, by a conservation policy or strategy within a conservation management plan which has been endorsed by the Heritage Council of NSW or by a conservation management strategy endorsed by the Director-General does not require approval under subsection 57(1) of the Act.**
- 2. A person proposing to do anything of the kind described in paragraph 1 must write to the Director-General and describe the proposed development. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 1, the Director-General shall notify the applicant.**

Guidelines

This standard exemption does not exempt development that is consistent with a conservation policy or strategy contained in an endorsed conservation management plan or interim conservation management strategy other than development that is specifically identified as exempt development in that conservation plan or strategy.

STANDARD EXEMPTION 7: MINOR ACTIVITIES WITH LITTLE OR NO ADVERSE IMPACT ON HERITAGE SIGNIFICANCE

- 1. Anything which in the opinion of the Director-General is of a minor nature and will have little or no adverse impact on the heritage significance of the item does not require approval under subsection 57(1) of the Act.**
- 2. A person proposing to do anything of the kind described in paragraph 1 must write to the Director-General and describe the proposed activity. If the Director-General is satisfied that the proposed activity meets the criteria set out in paragraph 1, the Director-General shall notify the applicant.**

Guidelines

This standard exemption has the potential to relate to a wide range of minor development. In determining whether a proposed development is minor the Director may have regard to the context of the particular heritage item such as its size and setting. For instance a development may be considered to be minor in the context of Prospect Reservoir's 1200ha curtilage whereas a similar proposal affecting an item on a smaller site may not be considered to be minor.

In order to assess whether a proposal has an adverse affect on heritage significance it is necessary to submit a clear and concise statement of the item's heritage significance and an assessment of whether a proposal impacts on that significance.

STANDARD EXEMPTION 8: NON-SIGNIFICANT FABRIC

1. The following development does not require approval under subsection 57(1) of the Act, provided that the Director-General is satisfied that the criteria in (a) have been met and the person proposing to undertake the development has received a notice advising that the Director-General is satisfied:
 - (a) the alteration of a building involving the construction or installation of new fabric or services or the removal of building fabric which will not adversely affect the heritage significance of the item.
2. A person proposing to do anything of the kind described in paragraph 1 must write to the Director-General and describe the proposed development. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 1(a), the Director-General shall notify the applicant.

Guidelines

In order to assess the level of significance of fabric it is necessary to submit a clear and concise statement of the item's heritage significance and to grade the fabric of the place in accordance with its association with or impact on that significance. It may not always be concluded that more recent fabric is of less or no heritage significance.

STANDARD EXEMPTION 9: CHANGE OF USE

1. The change of use of an item or its curtilage or the commencement of an additional or temporary use does not require approval under subsection 57(1) of the Act, provided that the Director-General is satisfied that the criteria in (a) and (b) have been met and the person proposing to undertake the change of use has received a notice advising that the Director-General is satisfied:
 - (a) the use does not involve the alteration of the fabric, layout or setting of the item or the carrying out of development other than that permitted by other standard or site specific exemptions; and
 - (b) the use does not involve the cessation of the primary use for which the building was erected, a later significant use or the loss of significant associations with the item by current users;
2. A person proposing to change the use of an item or its curtilage or to commence an additional or temporary use of an item or its curtilage in the manner described in paragraph 1 must write to the Director-General and describe the changes proposed. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 1(a) and (b), the Director-General shall notify the applicant.

Guidelines

For the purposes of this standard exemption any change of use which is inconsistent with specific conditions of any previous approval or consent such as hours of operation or nature of conduct of an activity requires approval under section 57(1) or the modification of an approval under section 65A of the Heritage Act.

STANDARD EXEMPTION 10: NEW BUILDINGS

1. Subdivision under the *Strata Scheme (Freehold Development) Act* or *Strata Scheme (Leasehold Development) Act* of the interior of a building that has been constructed since the listing of the item on the State Heritage Register or the publication of an interim heritage order in the Gazette which applies to the land does not require approval under subsection 57(1) of the Act.
2. Alteration to the interior of a building which has been constructed since the listing of the item on the State Heritage Register or the publication of an interim heritage order in the Gazette which applies to the land does not require approval under subsection 57(1) of the Act.

Guidelines

Subdivision to which clause 1 of this standard exemption applies must not subdivide the curtilage of the exterior of a building other than approved car spaces. A strata plan which otherwise proposes the subdivision of the curtilage of a heritage item requires approval under section 57(1) of the Heritage Act.

For the purposes of clause 2 of this standard exemption, alterations to the interior of a building:

- *do not include internal alterations to additions to buildings which existed prior to the listing of the site on the State Heritage Register or publication of the interim heritage order;*
- *must not affect the external appearance of the building such as by balcony enclosure or window screening; and*
- *must not be inconsistent with any specific conditions of a previous approval.*

Such alterations require approval under section 57(1) of the Heritage Act.

STANDARD EXEMPTION 11: TEMPORARY STRUCTURES

- 1. The erection of temporary structures does not require approval under subsection 57(1) of the Act, provided that the Director-General is satisfied that the criteria in (a) and (b) have been met and the person proposing to erect the structure has received a notice advising that the Director-General is satisfied:**
 - (a) the structure will be erected within and used for a maximum period of 4 weeks after which it will be removed within a period of 2 days and not erected again within a period of 6 months; and**
 - (b) the structure is not to be located where it could damage or endanger significant fabric including landscape or archaeological features of its curtilage or obstruct significant views of and from heritage items.**
- 2. A person proposing to erect a structure of the kind described in paragraph 1 must write to the Director-General and set out the nature of the structure, the use for the structure and how long it will remain in place and the next occasion on which it is anticipated that the structure will be erected. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraphs 1(a) and 1(b) the Director-General shall notify the applicant.**

Guidelines

The cumulative impact of the multiple use of this standard exemption will be considered by the Director in the assessment of the simultaneous construction of a number of temporary structures or a succession of temporary structures which may have a prolonged adverse impact on heritage significance of the item.

STANDARD EXEMPTION 12: LANDSCAPE MAINTENANCE

1. **Landscape maintenance which is of the type described below does not require approval under subsection 57(1) of the Act:**
 - (a) **weeding, watering, mowing, top-dressing, pest control and fertilizing necessary for the continued health of plants, without damage or major alterations to layout, contours, plant species or other significant landscape features;**
 - (b) **pruning (to control size, improve shape, flowering or fruiting and the removal of diseased, dead or dangerous material), not exceeding 10% of the canopy of a tree within a period of 2 years;**
 - (c) **pruning (to control size, improve shape, flowering or fruiting and the removal of diseased, dead or dangerous material) between 10% and 30% of the canopy of a tree within a period of 2 years;**
 - (d) **removal of dead or dying trees which are to be replaced by trees of the same species in the same location; or**
 - (e) **tree surgery by a qualified arborist, horticulturist or tree surgeon necessary for the health of those plants.**

2. **A person proposing to undertake landscape maintenance in the manner described in paragraph 1(b) 1(c) or 1(d) must write to the Director-General and describe the maintenance proposed and provide certification by a qualified or experienced arborist, horticulturist or tree surgeon that the maintenance is necessary for the tree's health or for public safety. If the Director-General is satisfied that the proposed maintenance meets these criteria, the Director-General shall notify the applicant.**

NOTE 1: In relation to cemeteries, landscape features include monuments, grave markers, grave surrounds, fencing, path edging and the like.

NOTE 2: Other standard exemptions may apply to landscape maintenance such as #4 Excavation and #6 Development endorsed by the Heritage Council; and #7 Minor works with no adverse heritage impact.

Guidelines

Landscape features and gardens can be of heritage significance in their own right. They are often vital to the curtilage of a heritage item and fundamental to the setting of other (eg; built or archaeological) heritage items and important to the appreciation of their heritage significance. Landscape setting is by its nature evolving and often requires more regular maintenance than other elements of heritage fabric. Horticultural advice may be required to ensure a regime of maintenance appropriate to the retention of the heritage significance of a place.

General advice about landscape maintenance is provided by The Maintenance of Heritage Assets: A Practical Guide Information Sheet 9.1 Heritage Gardens and Grounds, printed versions available from the Heritage Branch, Department of Planning.

General advice about heritage gardens is also available on the Heritage Branch website at: http://www.heritage.nsw.gov.au/06_subnav_10.htm and at: www.gardenhistorysociety.org.au.

STANDARD EXEMPTION 13: SIGNAGE

1. The erection of signage which is of the types described in (a) or (b) below does not require approval under subsection 57(1) of the Act:
 - (a) temporary signage which is located behind or on the glass surface of a shop window which is not internally illuminated or flashing and is to be removed within eight weeks; or
 - (b) a real estate sign indicating that the place is for auction, sale or letting and related particulars and which is removed within 10 days of the sale or letting of the place;
2. The erection of signage which is of the types described in (a) or (b) below does not require approval under subsection 57(1) of the Act, provided that the Director-General is satisfied that the criteria in (a) and (b) respectively have been met and the person proposing to erect it has received a notice advising that the Director-General is satisfied:
 - (a) the erection of non-illuminated signage for the sole purpose of providing information to assist in the interpretation of the heritage significance of the item and which will not adversely affect significant fabric including landscape or archaeological features of its curtilage or obstruct significant views of and from heritage items; or
 - (b) signage which is in the form of a flag or banner associated with a building used for a purpose which requires such form of promotion such as a theatre or gallery, which is displayed for a maximum period of eight weeks and which will not adversely affect significant fabric including landscape or archaeological features of its curtilage;
3. A person proposing to erect signage of the kind described in paragraph 2 must write to the Director-General and describe the nature and purpose of the advertising or signage. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 2(a) or 2(b), the Director-General shall notify the applicant.
4. Signage of the kind described in paragraphs 1 and 2 must:
 - (a) not conceal or involve the removal of signage which has an integral relationship with the significance of the item;
 - (b) be located and be of a suitable size so as not to obscure or damage significant fabric of the item;
 - (c) be able to be later removed without causing damage to the significant fabric of the item; and
 - (d) reuse existing fixing points or insert fixings within existing joints without damage to adjacent masonry.

Guidelines

In addition to the requirements of clause 4 of the standard exemptions, signage may be controlled by development control plans or signage policies prepared by the relevant local council. The operation of the standard exemptions do not affect the requirements for consent by local councils or the need to satisfy any signage policies which may have been adopted by them.

Additional forms of signage not addressed by this standard exemption may not require approval under section 57(1) of the Heritage Act if they satisfy the requirements of other standard exemptions such as Standard Exemption 7 (Minor Activities with no Adverse Impact on Heritage Significance) or Standard Exemption 8 (Non-significant Fabric).

Signage in accordance with clause 2(a) of the standard exemption for the purpose of assisting the interpretation of heritage significance:

- requires approval under section 57(1) of the Heritage Act if additional information is provided which is unrelated to heritage interpretation such as commercial promotion or sponsorship; and*
- must be in accordance with Interpreting Heritage Places and Items published by the Heritage Council and available online.*

STANDARD EXEMPTION 14: BURIAL SITES AND CEMETERIES

1. Development on land within a burial site or cemetery which is of the type described in (a), (b) or (c) below does not require approval under subsection 57(1) of the Act:

- (a) the creation of a new grave;
- (b) the erection of monuments or grave markers in a place of consistent character, including materials, size and form, which will not be in conflict with the character of the place; or
- (c) an excavation or disturbance of land for the purpose of carrying out conservation or repair of monuments or grave markers;

provided that there will be no disturbance to human remains, to relics in the form of grave goods, associated landscape features or to a place of Aboriginal heritage significance.

2. A person proposing to carry out development in the manner described in paragraph 1(b) or (c) must write to the Director-General and describe the development proposed. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 1, the Director-General shall notify the applicant.

3. This exemption does not apply to the erection of above-ground chambers, columbaria or vaults, or the designation of additional areas to be used as a burial place.

NOTE 1: Other standard exemptions apply to the maintenance, cleaning and repair of burial sites and cemeteries.

Guidelines

In addition to burial remains and artefacts, above ground cemetery elements may include headstones, footstones and other burial markers or monuments and associated elements such as grave kerbing, iron grave railings, grave furniture, enclosures and plantings. It is important that cemeteries listed on the State Heritage Register have a conservation policy or conservation management plan endorsed by the Heritage Council and that it records the history and significant fabric of the place with policies for conservation, relocation and the erection of new monuments and grave markers.

Additional advice about the management of heritage cemeteries is provided in:

- *Cemeteries: Guidelines for their Care and Conservation, Heritage Council of NSW and Department of Planning, 1992;*
- *Skeletal Remains, NSW Heritage Council, 1998;*
- *Guidelines for Cemetery Conservation, National Trust of Australia (NSW), 2002.*

STANDARD EXEMPTION 15: COMPLIANCE WITH MINIMUM STANDARDS AND ORDERS

1. Development which is required for the purpose of compliance with the minimum standards set out in Part 3 of the *Heritage Regulation 1999* or an order issued under either:
 - (a) section 120 of the *Heritage Act 1977* regarding minimum standards of maintenance and repair; or
 - (b) section 121S of the *Environmental Planning and Assessment Act 1979* regarding an order which is consistent with a submission by the Heritage Council under subsection 121S(6) of that Act;does not require approval under subsection 57(1) of the Act.

Guidelines

This standard exemption is intended to facilitate and expedite compliance with orders and minimum standards of maintenance and repair.

The Minimum Standards of Maintenance and Repair replaced the “wilful neglect” provisions of the Heritage Act in 1999. The minimum standards are contained in Part 3 of the Heritage Regulation 2005 and are reproduced in the Heritage Information Series published by the Heritage Branch, Department of Planning. The minimum standards only apply to items listed on the State Heritage Register and relate to:

- *weather protection;*
- *fire prevention and protection;*
- *security; and*
- *essential maintenance and repair to prevent serious or irreparable damage.*

Maintenance and repair which exceed the minimum standards in the Regulation may be exempt from approval under other standard exemptions (refer to #1 and #2).

Orders under s.121S(6) of the EP&A Act are those given by a council or other consent authority in relation to an item listed on the State Heritage Register, land to which an interim heritage order applies or a heritage item listed under an environmental planning instrument. Orders must not be given in relation to items listed on the State Heritage Register or land to which an interim heritage order relates unless the consent authority has given notice of it to the Heritage Council and considered any submission made by it.

STANDARD EXEMPTION 16: SAFETY AND SECURITY

1. The following development does not require approval under subsection 57(1) of the Act, provided that the Director-General is satisfied that the criteria in (a) or (b) have been met and the person proposing to undertake the development has received a notice advising that the Director-General is satisfied:
 - (a) the erection of temporary security fencing, scaffolding, hoardings or surveillance systems to prevent unauthorised access or secure public safety which will not adversely affect significant fabric of the item including landscape or archaeological features of its curtilage; or
 - (b) development, including emergency stabilisation, necessary to secure safety where a building or work or part of a building or work has been irreparably damaged or destabilised and poses a safety risk to its users or the public.
2. A person proposing to undertake development of the kind described in paragraph 1 must write to the Director-General and describe the development and, if it is of the kind set out in 1(b), provide certification from a structural engineer having experience with heritage items confirming the necessity for the development with regard to the criteria set out in 1(b) and any adverse impact on significant fabric. If the Director-General is satisfied that the proposed development meets the criteria set out in paragraph 1(a) or (b), the Director-General shall notify the applicant.

Guidelines

Development exempt under this standard exemption must be for the temporary or emergency securing of safety for users or the public. Permanent upgrading of site or building security may be exempt under other standard exemptions such as #7 (Minor Activities with little or no Adverse Impact on Heritage Significance) or #8 (Non-significant Fabric). Development described in 1(b) of this exemption is intended to apply in circumstances where there has been damage caused by a sudden change in circumstances of the building such as a catastrophic event, rather than safety risks which may arise from ongoing neglect of maintenance.

Emergency maintenance and repairs such as required following a storm event may be exempt under other standard exemptions such as #1 (Maintenance and Cleaning) and #2 (Repairs). More intrusive means of upgrading security which may damage significant fabric will require the submission of an application under section 60 of the Heritage Act.

Development in accordance with this exemption must be undertaken with minimal intervention to significant fabric.

STANDARD EXEMPTION 17: MOVABLE HERITAGE ITEMS

1. The temporary relocation of movable heritage items, including contents, fixtures and objects, to ensure their security, maintenance and preservation, for conservation or exhibition, to ensure health or safety, the need for a controlled environment for those heritage items, or to protect the place, and which are to be returned to their present location within six months, does not require approval under subsection 57(1) of the Act.
2. A person proposing to relocate a movable heritage item as set out in paragraph 1 must advise the Director-General in writing of the proposed location and the reasons for its relocation. If the Director-General is satisfied that the temporary relocation meets the criteria set out in paragraph 1 the Director-General shall notify the applicant.

Guidelines

Movable heritage items or objects which are listed on the State Heritage Register must be specifically referred to in the gazetted listing. Unless specifically listed, the movable content of buildings such as furniture, paintings and other decoration is not movable heritage for the purposes of the Heritage Act which triggers approval requirements to “move, damage or destroy it”.

The permanent relocation of an item of movable heritage such as listed ships or railway rolling stock will require the submission of an application under section 60 of the Heritage Act.

Additional advice regarding movable heritage is provided by:

- *Objects in Their Place: An Introduction to Movable Heritage, NSW Heritage Council, 1999; and*
- *Movable Heritage Principles, NSW Heritage Council and Ministry for the Arts, 1999.*

END

Appendix C

Heritage Information Series—Minimum standards for maintenance and repair, NSW Heritage Office
1999

HERITAGE INFORMATION SERIES

MINIMUM STANDARDS OF MAINTENANCE AND REPAIR



DISCLAIMER

Any representation, statement, opinion or advice, expressed or implied in this publication is made in good faith but on the basis that the State of New South Wales, its agents and employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement or advice referred to above.

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Front cover graphics:

Aboriginal hand stencils, South Coast. *Photograph courtesy of National Parks and Wildlife Service*
Interior of Belltrees shearing shed, built near Scone in NSW in 1879 by architect J. Horbury Hunt.
Artefacts from the site of first Government House Archaeology Collection. *Photograph courtesy of Museum of Sydney on the site of first Government House*
Grose Valley, Blue Mountains, NSW. *Photograph courtesy of NSW National Parks and Wildlife Service*

Back cover graphics:

Australia Square, Sydney
Entrance to the central temple, Sze Yup Temple, Glebe. *Photograph by Karl Zhao*
Lands Department Building, Sydney
The bow of iron steamer, *Merimbula*, wrecked near Currarong in 1928. *Photograph by David Nutley*
Snowy Mountains Scheme. *Photograph courtesy of the Snowy Mountains Hydro-electric Authority*
St Mark's Anglican Church, Darling Point, Sydney. *Photograph by Stuart Humphreys*
Belltrees Shearing Shed, near Scone, NSW.
Detail from the crypt floor of St Mary's Cathedral, Sydney. *Photograph courtesy of St Mary's Cathedral*

MINIMUM STANDARDS FOR MAINTENANCE AND REPAIR

Major amendments to the Heritage Act 1977 passed both houses of State Parliament and came into effect on 2 April 1999. The changes are the result of substantial review of the NSW heritage system.

One of the changes in policy reflected in the new legislation is the establishment of Minimum Standards. Since the original Heritage Act was passed in 1977 the “wilful neglect” provisions had been ineffective in preventing the deterioration of heritage items. In the twenty years of its operation there were no successful prosecutions under this section of the Act.

The section has therefore been deleted and replaced. Owners of items listed on the **State Heritage Register** are now required to ensure that heritage significance is maintained. Owners are required to achieve minimum standards of maintenance and repair.

The standards are set out in the Regulation, and relate to:

- weatherproofing;
- fire protection;
- security; and
- essential maintenance.

These are minimum standards to ensure that heritage significance is maintained. They do not require owners to undertake restoration works, but where works are needed owners may be eligible to apply for financial assistance through the Heritage Incentives Program.

Where these standards are not met and the heritage significance of the item is in jeopardy the Heritage Council will now have the power to order repairs after consultation with the owner.

As a last resort, if negotiations have failed and the owner does not comply with the order, the Heritage Council can arrange for the works to be carried out and charge the expenses to the owner. The Minister may consent to the Heritage Council's prosecution of the owner for failure to comply with an order under this section of the Act.

A copy of the *Heritage Amendment Regulation 1999*, extracted from the New South Wales Government Gazette No.27, 1999, pages 1 – 9, is included for your information.

What is the State Heritage Register?

Heritage places and items of particular importance to the people of New South Wales are listed on the State Heritage Register. The Register was created in April 1999 by amendments to the *Heritage Act 1977*.

The key to listing on the State Heritage Register is the level of significance. Only those heritage items which are of **state significance in NSW** are listed on the State Heritage Register.

The Register replaces the old system of permanent conservation orders as a means of listing items of state significance

The Register forms part of the State Heritage Inventory, an electronic database of all protected heritage items in New South Wales. To check whether an item is listed on the Register, consult the **State Heritage Inventory** on the internet through the Heritage Office home page: www.heritage.nsw.gov.au

Heritage Amendment Regulation 1999

under the

Heritage Act 1977

His Excellency the Governor, with the advice of the Executive Council, has made **the following Regulation under the *Heritage Act 1977***.

CRAIG KNOWLES, M.P.,
Minister for Urban Affairs and Planning

Explanatory note

The object of this Regulation is to impose minimum standards with respect to the maintenance and repair of buildings, works and relics that are listed on the State Heritage Register or within a precinct that is listed on that Register.

This Regulation is made under the *Heritage Act 1977*, including sections 118 (as substituted by the *Heritage Amendment Act 1998*) and 165 (the general regulation-making power).

Clause 1 Heritage Amendment Regulation 1999

Heritage Amendment Regulation 1999

1 Name of Regulation

This Regulation is the *Heritage Amendment Regulation 1999*.

2 Commencement

This Regulation commences on 2 April 1999.

3 Amendment of Heritage Regulation 1993

The *Heritage Regulation 1993* is amended as set out in Schedule 1.

4 Notes

The explanatory note does not form part of this Regulation.

Heritage Amendment Regulation 1999

Amendments

Schedule 1

Schedule 1 Amendments

(Clause 3)

[1] Part 1, heading

Insert before clause 1:

Part 1 Preliminary**[2] Clause 3 Interpretation**

Insert at the end of clause 3:

(3) Notes in the text of this Regulation do not form part of this Regulation.

[31] Part 2, heading

Insert before clause 4:

Part 2 Fees and forms**[4] Part 3**

Insert after clause 9:

Part 3 Minimum standards of maintenance and repair**9A Minimum standards imposed**

Pursuant to section 118 of the Act, the standards set out in this Part are imposed as minimum standards with respect to the maintenance and repair of a building, work or relic that is listed or within a precinct that is listed on the State Heritage Register.

Note. Section 119 of the Act requires the owner of the building, work or relic to ensure that it is maintained and repaired to standards that are not less than the minimum standards imposed by this Part. Nothing in this Part affects any requirement for the approval under Part 4 of the Act of any aspect of maintenance or repair.

Heritage Amendment Regulation 1999**Schedule 1 Amendments****9B Inspection**

- (1) The building, work or relic, and its curtilage or site, must be inspected to identify maintenance and repairs that are needed to ensure compliance with section 119 of the Act in respect of the standards set out in clauses 9C-9H.
- (2) The inspection must be carried out at least once every 12 months in the case of the standards set out in clauses 9C-9G and at least once every 3 years in the case of the standards set out in clause 9H.

Note. The maintenance and repair requirements of section 119 of the Act are ongoing and are not limited to matters identified by an inspection carded out for the purposes of this clause.

- (3) The inspection is to be carried out by a person with expertise and experience appropriate to the nature of the item concerned.
- (4) In the case of a relic kept in a repository or as part of a collection, the inspection is to extend to the conditions under which the relic is kept.
- (5) In the case of a relic that is attached to or forms part of land, the inspection is to include an assessment of the stability of the site of the relic.

9C Weather protection

- (1) The following systems or components, if present, must be maintained and repaired (including by being cleaned and secured) when and to the standard necessary to ensure a reasonable level of protection for the building, work or relic, and its curtilage or site, against damage or deterioration due to weather:
 - (a) surface and sub-surface drainage systems,
 - (b) roof drainage systems, including gutters, rainwater heads, downpipes and stormwater drainage systems,
 - (c) water storages, dams, ponds, retention basins, watercourses, batters, levee banks, sea-walls and other flood and erosion mitigation measures,

Heritage Amendment Regulation 1999

Amendments Schedule 1

- (d) roofs, walls, doors and windows (including the glass components of doors and windows) and other components intended to exclude sun, rain, wind, hail, snow or other weather elements, including their security against the effects of high winds;
 - (e) systems or components which might be at risk of damage or dislodgment by high winds, including damage by falling trees and branches, tidal inundation or wave action;
 - (f) systems and components such as damp proof courses, flashings, ventilation systems and other measures intended to prevent the ingress of water or dampness or to reduce its effects;
 - (g) lightning conductors;
 - (h) any other system or component designed to protect the building, work or relic or its curtilage or site against damage or deterioration due to weather.
- (2) Doors and windows of a building may, as an alternative to being repaired, be boarded up, but only:
- (a) if the building is unoccupied, or
 - (b) as a short term measure pending repair.
- (3) If an opening to a building is designed or intended to have a door, window or other closure in place and does not have the door, window or other closure in place, the opening must be boarded up.

9D Fire protection

- (1) Vegetation, rubbish and any other material that could create a fire hazard for the building, work or relic is to be removed and not permitted to accumulate.

Note. Vegetation and other items can be of heritage significance, and their removal may require the approval of the Heritage Council or the local council.

Heritage Amendment Regulation 1999

Schedule 1 Amendments

- (2) The following systems or components, if present, must be maintained and repaired when and to the standard necessary to ensure a reasonable level of protection for the building, work or relic against damage or destruction by fire:
- (a) lightning conductors,
 - (b) fire detection and control systems, including smoke and heat detectors and fire sprinkler systems and including associated alarm and communication systems,
 - (c) stores of inflammable materials or rubbish,
 - (d) building services such as electricity, gas and heating systems,
 - (e) any other system or component designed to protect the building, work or relic from damage or destruction by fire.

9E Additional fire protection for unoccupied buildings

- (1) The following additional fire protection measures must be taken for the protection of a building that is to be unoccupied for a continuous period of 60 days or more:
- (a) heating or gas services must be shut down, gas or oil supply to those services must be turned off at the mains or other point of connection to supply, and portable gas or oil storages must be removed,
 - (b) permanent or temporary smoke detection systems must be installed with associated communication systems connected to the Fire Brigade and, if the building will be unoccupied for a period of 6 months or more, provided with a permanent power supply.
- (2) This clause does not apply to any outbuilding within the curtilage or site of a building unless the outbuilding has been constructed or adapted for use as a dwelling.
- (3) The use of a building for storage of goods or materials does not constitute occupation of the building for the purposes of this clause if the building ordinarily has another use or is a building of a kind not ordinarily used for storage.

Heritage Amendment Regulation 1999

Amendments Schedule 1

9F Security

- (1) Fencing or surveillance systems appropriate to the nature and location of the building, work or relic must be installed to secure it and its site and prevent vandalism.
- (2) The following systems or components, if present, must be maintained and repaired when and to the standard necessary to ensure a reasonable level of security for the building, work or relic:
 - (a) boundary and internal fences and gates, **including associated locking mechanisms**,
 - (b) in the case of a building, the walls, roof and other building elements, doors, windows and other closures, including glazing and associated locking and latching mechanisms,
 - (c) any electronic surveillance or alarm system installed on the site,
 - (d) any other system or component designed to ensure the security of the building, work or relic.
- (3) Doors and windows of a building may, as an alternative to being repaired, be boarded up, but only:
 - (a) if the building is unoccupied, or
 - (b) as a short term measure pending repair.
- (4) If an opening to a building is designed or intended to have a door, window or other closure in place and does not have the door, window or other closure in place, the opening must be boarded up.

9G Additional security measures for unoccupied buildings

- (1) The following additional security measures must be taken for the protection of a building that is to be unoccupied for a continuous period of 60 days or more:
 - (a) if an electronic surveillance or alarm-system is installed, the system must be connected to a Police Station or a commercial security provider,

Heritage Amendment Regulation 1999

Schedule 1 Amendments

- (b) if no electronic surveillance or alarm system is installed, arrangements must be in place for regular surveillance of the building, work or relic, as appropriate to its nature and location.
- (2) This clause does not apply to any outbuilding within the curtilage or site of a building unless the outbuilding has been constructed or adapted for use as a dwelling.
- (3) The use of a building for storage of goods or materials does not constitute occupation of the building for the purposes of this clause if the building ordinarily has **another use or is a building of a kind** not ordinarily used for storage.

9H Essential maintenance and repair

- (1) Essential maintenance and repair of a building, work or relic (being maintenance and repair necessary to prevent serious or irreparable damage or deterioration) must be carried out whenever necessary.
- (2) Essential maintenance and repair includes:
 - (a) the taking of measures (Including inspection) to control pests such as termites, rodents, birds and other vermin, and
 - (b) the taking of measures to maintain a stable environment for in-situ archaeological relics.
- (3) The requirement for essential maintenance and repair extends to (but is not limited to) the following:
 - (a) foundations, footings and supporting structure of any building, work or relic,
 - (b) structural elements such as walls, columns, beams, floors, roofs and roof structures, and verandah or balcony structures,
 - (c) exterior and interior finishes and details,
 - (d) systems and components (such as ventilators or ventilation systems) intended to reduce or prevent damage due to dampness,

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Amendments Schedule 1

- (e) fixtures, fittings and moveable objects attached to the building, work or relic, or to its curtilage or site,
- (f) landscape elements on the site of and associated with the building, work or relic, including vegetation, garden walls, paths, fences, statuary, ornaments and the like.

9I Conservation management plans

- (1) A **conservation management plan** is a plan prepared by the owner of a building, work or relic for the conservation of the building, work or relic.
- (2) A conservation management plan endorsed by the Heritage Council for a building, work or relic may:
 - (a) provide that a standard set out in this Part does not apply to the building, work or relic (in which case the standard does not apply to it), or
 - (b) impose additional standards of maintenance and repair for the building, work or relic (in which case those standards are imposed as minimum standards with respect to the maintenance and repair of the building, work or relic, in addition to those set out in this Part).

[5] Part 4, heading

Insert before clause 10:

Part 4 Miscellaneous

Appendix D

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 1999

The Burra Charter

(The Australia ICOMOS Charter for Places of Cultural Significance)

Preamble

Considering the International Charter for the Conservation and Restoration of Monuments and Sites (Venice 1964), and the Resolutions of the 5th General Assembly of the International Council on Monuments and Sites (ICOMOS) (Moscow 1978), the Burra Charter was adopted by Australia ICOMOS (the Australian National Committee of ICOMOS) on 19 August 1979 at Burra, South Australia. Revisions were adopted on 23 February 1981, 23 April 1988 and 26 November 1999.

The Burra Charter provides guidance for the conservation and management of places of cultural significance (cultural heritage places), and is based on the knowledge and experience of Australia ICOMOS members.

Conservation is an integral part of the management of places of cultural significance and is an ongoing responsibility.

Who is the Charter for?

The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians.

Using the Charter

The Charter should be read as a whole. Many articles are interdependent. Articles in the Conservation Principles section are often further developed in the Conservation Processes and Conservation Practice sections. Headings have been included for ease of reading but do not form part of the Charter.

The Charter is self-contained, but aspects of its use and application are further explained in the following Australia ICOMOS documents:

- Guidelines to the Burra Charter: Cultural Significance;
- Guidelines to the Burra Charter: Conservation Policy;
- Guidelines to the Burra Charter: Procedures for Undertaking Studies and Reports;
- Code on the Ethics of Coexistence in Conserving Significant Places.

What places does the Charter apply to?

The Charter can be applied to all types of places of cultural significance including natural, indigenous and historic places with cultural values.

The standards of other organisations may also be relevant. These include the Australian Natural Heritage Charter and the Draft Guidelines for the Protection, Management and Use of Aboriginal and Torres Strait Islander Cultural Heritage Places.

Why conserve?

Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences. They are historical records, that are important as tangible expressions of Australian identity and experience. Places of cultural significance reflect the diversity of our communities, telling us about who we are and the past that has formed us and the Australian landscape. They are irreplaceable and precious.

These places of cultural significance must be conserved for present and future generations.

The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained.

Articles

Article 1. Definitions

For the purposes of this Charter:

1.1 *Place* means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

Explanatory Notes

The concept of place should be broadly interpreted. The elements described in Article 1.1 may include memorials, trees, gardens, parks, places of historical events, urban areas, towns, industrial places, archaeological sites and spiritual and religious places.

1.2 *Cultural significance* means 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.

1.3 *Fabric* means all the physical material of the *place* including components, fixtures, contents, and objects.

1.4 *Conservation* means all the processes of looking after a *place* so as to retain its *cultural significance*.

1.5 *Maintenance* means the continuous protective care of the *fabric* and *setting* of a *place*, and is to be distinguished from repair. Repair involves *restoration* or *reconstruction*.

1.6 *Preservation* means maintaining the *fabric* of a *place* in its existing state and retarding deterioration.

1.7 *Restoration* means returning the existing *fabric* of a *place* to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.

1.8 *Reconstruction* means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material into the *fabric*.

1.9 *Adaptation* means modifying a *place* to suit the existing *use* or a proposed use.

1.10 *Use* means the functions of a place, as well as the activities and practices that may occur at the place.

1.11 *Compatible use* means a *use* which respects the *cultural significance* of a *place*. Such a use involves no, or minimal, impact on cultural significance.

1.12 *Setting* means the area around a *place*, which may include the visual catchment.

1.13 *Related place* means a *place* that contributes to the *cultural significance* of another place.

1.14 *Related object* means an object that contributes to the *cultural significance* of a *place* but is not at the place.

1.15 *Associations* mean the special connections that exist between people and a *place*.

1.16 *Meanings* denote what a *place* signifies, indicates, evokes or expresses.

1.17 *Interpretation* means all the ways of presenting the *cultural significance* of a *place*.

The term cultural significance is synonymous with heritage significance and cultural heritage value.

Cultural significance may change as a result of the continuing history of the place.

Understanding of cultural significance may change as a result of new information.

Fabric includes building interiors and sub-surface remains, as well as excavated material.

Fabric may define spaces and these may be important elements of the significance of the place.

The distinctions referred to, for example in relation to roof gutters, are:

- maintenance — regular inspection and cleaning of gutters;
- repair involving restoration — returning of dislodged gutters;
- repair involving reconstruction — replacing decayed gutters.

It is recognised that all places and their components change over time at varying rates.

New material may include recycled material salvaged from other places. This should not be to the detriment of any place of cultural significance.

Associations may include social or spiritual values and cultural responsibilities for a place.

Meanings generally relate to intangible aspects such as symbolic qualities and memories.

Interpretation may be a combination of the treatment of the fabric (e.g. maintenance, restoration, reconstruction); the use of and activities at the place; and the use of introduced explanatory material.

Conservation Principles

Article 2. Conservation and management

- 2.1** *Places of cultural significance* should be conserved.
- 2.2** The aim of *conservation* is to retain the *cultural significance* of a *place*.
- 2.3** *Conservation* is an integral part of good management of *places of cultural significance*.
- 2.4** *Places of cultural significance* should be safeguarded and not put at risk or left in a vulnerable state.

Article 3. Cautious approach

3.1 *Conservation* is based on a respect for the existing *fabric, use, associations* and *meanings*. It requires a cautious approach of changing as much as necessary but as little as possible.

3.2 Changes to a *place* should not distort the physical or other evidence it provides, nor be based on conjecture.

Article 4. Knowledge, skills and techniques

4.1 *Conservation* should make use of all the knowledge, skills and disciplines which can contribute to the study and care of the *place*.

4.2 Traditional techniques and materials are preferred for the *conservation* of significant *fabric*. In some circumstances modern techniques and materials which offer substantial conservation benefits may be appropriate.

Article 5. Values

5.1 *Conservation* of a *place* should identify and take into consideration all aspects of cultural and natural significance without unwarranted emphasis on any one value at the expense of others.

5.2 Relative degrees of *cultural significance* may lead to different *conservation* actions at a *place*.

Article 6. Burra Charter Process

6.1 The *cultural significance* of a *place* and other issues affecting its future are best understood by a sequence of collecting and analysing information before making decisions. Understanding cultural significance comes first, then development of policy and finally management of the *place* in accordance with the policy.

6.2 The policy for managing a *place* must be based on an understanding of its *cultural significance*.

6.3 Policy development should also include consideration of other factors affecting the future of a *place* such as the owner's needs, resources, external constraints and its physical condition.

Article 7. Use

7.1 Where the *use* of a *place* is of *cultural significance* it should be retained.

The traces of additions, alterations and earlier treatments to the fabric of a place are evidence of its history and uses which may be part of its significance. Conservation action should assist and not impede their understanding.

The use of modern materials and techniques must be supported by firm scientific evidence or by a body of experience.

Conservation of places with natural significance is explained in the Australian Natural Heritage Charter. This Charter defines natural significance to mean the importance of ecosystems, biological diversity and geodiversity for their existence value, or for present or future generations in terms of their scientific, social, aesthetic and life-support value.

A cautious approach is needed, as understanding of cultural significance may change. This article should not be used to justify actions which do not retain cultural significance.

The Burra Charter process, or sequence of investigations, decisions and actions, is illustrated in the accompanying flowchart.

7.2 A place should have a compatible use.

The policy should identify a use or combination of uses or constraints on uses that retain the cultural significance of the place. New use of a place should involve minimal change, to significant fabric and use; should respect associations and meanings; and where appropriate should provide for continuation of practices which contribute to the cultural significance of the place.

Article 8. Setting

Conservation requires the retention of an appropriate visual *setting* and other relationships that contribute to the *cultural significance* of the *place*.

New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.

Aspects of the visual setting may include use, siting, bulk, form, scale, character, colour, texture and materials.

Other relationships, such as historical connections, may contribute to interpretation, appreciation, enjoyment or experience of the place.

Article 9. Location

9.1 The physical location of a *place* is part of its *cultural significance*. A building, work or other component of a place should remain in its historical location. Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival.

9.2 Some buildings, works or other components of *places* were designed to be readily removable or already have a history of relocation. Provided such buildings, works or other components do not have significant links with their present location, removal may be appropriate.

9.3 If any building, work or other component is moved, it should be moved to an appropriate location and given an appropriate *use*. Such action should not be to the detriment of any *place* of *cultural significance*.

Article 10. Contents

Contents, fixtures and objects which contribute to the *cultural significance* of a *place* should be retained at that place. Their removal is unacceptable unless it is: the sole means of ensuring their security and *preservation*; on a temporary basis for treatment or exhibition; for cultural reasons; for health and safety; or to protect the place. Such contents, fixtures and objects should be returned where circumstances permit and it is culturally appropriate.

Article 11. Related places and objects

The contribution which *related places* and *related objects* make to the *cultural significance* of the *place* should be retained.

Article 12. Participation

Conservation, *interpretation* and management of a *place* should provide for the participation of people for whom the place has special *associations* and *meanings*, or who have social, spiritual or other cultural responsibilities for the place.

Article 13. Co-existence of cultural values

Co-existence of cultural values should be recognised, respected and encouraged, especially in cases where they conflict.

For some places, conflicting cultural values may affect policy development and management decisions. In this article, the term cultural values refers to those beliefs which are important to a cultural group, including but not limited to political, religious, spiritual and moral beliefs. This is broader than values associated with cultural significance.

Conservation Processes

Article 14. Conservation processes

Conservation may, according to circumstance, include the processes of: retention or reintroduction of a *use*; retention of *associations* and *meanings*; *maintenance*, *preservation*, *restoration*, *reconstruction*, *adaptation* and *interpretation*; and will commonly include a combination of more than one of these.

There may be circumstances where no action is required to achieve conservation.

Article 15. Change

15.1 Change may be necessary to retain *cultural significance*, but is undesirable where it reduces cultural significance. The amount of change to a *place* should be guided by the *cultural significance* of the place and its appropriate *interpretation*.

When change is being considered, a range of options should be explored to seek the option which minimises the reduction of cultural significance.

15.2 Changes which reduce *cultural significance* should be reversible, and be reversed when circumstances permit.

Reversible changes should be considered temporary. Non-reversible change should only be used as a last resort and should not prevent future conservation action.

15.3 Demolition of significant *fabric* of a *place* is generally not acceptable. However, in some cases minor demolition may be appropriate as part of *conservation*. Removed significant fabric should be reinstated when circumstances permit.

15.4 The contributions of all aspects of *cultural significance* of a *place* should be respected. If a place includes *fabric*, *uses*, *associations* or *meanings* of different periods, or different aspects of cultural significance, emphasising or interpreting one period or aspect at the expense of another can only be justified when what is left out, removed or diminished is of slight cultural significance and that which is emphasised or interpreted is of much greater cultural significance.

Article 16. Maintenance

Maintenance is fundamental to *conservation* and should be undertaken where *fabric* is of *cultural significance* and its *maintenance* is necessary to retain that *cultural significance*.

Article 17. Preservation

Preservation is appropriate where the existing *fabric* or its condition constitutes evidence of *cultural significance*, or where insufficient evidence is available to allow other *conservation* processes to be carried out.

Preservation protects fabric without obscuring the evidence of its construction and use. The process should always be applied:

- where the evidence of the fabric is of such significance that it should not be altered;
- where insufficient investigation has been carried out to permit policy decisions to be taken in accord with Articles 26 to 28.

New work (e.g. stabilisation) may be carried out in association with preservation when its purpose is the physical protection of the fabric and when it is consistent with Article 22.

Article 18. Restoration and reconstruction

Restoration and *reconstruction* should reveal culturally significant aspects of the *place*.

Article 19. Restoration

Restoration is appropriate only if there is sufficient evidence of an earlier state of the *fabric*.

Article 20. Reconstruction

20.1 *Reconstruction* is appropriate only where a *place* is incomplete through damage or alteration, and only where there is sufficient evidence to reproduce an earlier state of the *fabric*. In rare cases, reconstruction may also be appropriate as part of a *use* or practice that retains the *cultural significance* of the place.

20.2 *Reconstruction* should be identifiable on close inspection or through additional *interpretation*.

Article 21. Adaptation

21.1 *Adaptation* is acceptable only where the adaptation has minimal impact on the *cultural significance* of the *place*.

21.2 *Adaptation* should involve minimal change to significant fabric, achieved only after considering alternatives.

Article 22. New work

22.1 New work such as additions to the *place* may be acceptable where it does not distort or obscure the *cultural significance* of the place, or detract from its *interpretation* and appreciation.

22.2 New work should be readily identifiable as such.

Article 23. Conserving use

Continuing, modifying or reinstating a significant *use* may be appropriate and preferred forms of *conservation*.

Article 24. Retaining associations and meanings

24.1 Significant *associations* between people and a *place* should be respected, retained and not obscured. Opportunities for the *interpretation*, commemoration and celebration of these associations should be investigated and implemented.

24.2 Significant *meanings*, including spiritual values, of a *place* should be respected. Opportunities for the continuation or revival of these meanings should be investigated and implemented.

Article 25. Interpretation

The *cultural significance* of many *places* is not readily apparent, and should be explained by *interpretation*. Interpretation should enhance understanding and enjoyment, and be culturally appropriate.

Conservation Practice

Article 26. Applying the Burra Charter process

26.1 Work on a *place* should be preceded by studies to understand the place which should include analysis of physical, documentary, oral and other evidence, drawing on appropriate knowledge, skills and disciplines.

26.2 Written statements of *cultural significance* and policy for the *place* should be prepared, justified and accompanied by supporting evidence. The statements of significance and policy should be incorporated into a management plan for the place.

26.3 Groups and individuals with *associations* with a *place* as well as those involved in its management should be provided with opportunities to contribute to and participate in understanding the *cultural significance* of the place. Where appropriate they should also have opportunities to participate in its *conservation* and management.

Adaptation may involve the introduction of new services, or a new use, or changes to safeguard the place.

New work may be sympathetic if its siting, bulk, form, scale, character, colour, texture and material are similar to the existing fabric, but imitation should be avoided.

These may require changes to significant *fabric* but they should be minimised. In some cases, continuing a significant use or practice may involve substantial new work.

For many places associations will be linked to use.

The results of studies should be up to date, regularly reviewed and revised as necessary.

Statements of significance and policy should be kept up to date by regular review and revision as necessary. The management plan may deal with other matters related to the management of the place.

Article 27. Managing change

27.1 The impact of proposed changes on the *cultural significance* of a *place* should be analysed with reference to the statement of significance and the policy for managing the place. It may be necessary to modify proposed changes following analysis to better retain cultural significance.

27.2 Existing *fabric, use, associations* and *meanings* should be adequately recorded before any changes are made to the *place*.

Article 28. Disturbance of fabric

28.1 Disturbance of significant *fabric* for study, or to obtain evidence, should be minimised. Study of a *place* by any disturbance of the fabric, including archaeological excavation, should only be undertaken to provide data essential for decisions on the *conservation* of the place, or to obtain important evidence about to be lost or made inaccessible.

28.2 Investigation of a *place* which requires disturbance of the *fabric*, apart from that necessary to make decisions, may be appropriate provided that it is consistent with the policy for the place. Such investigation should be based on important research questions which have potential to substantially add to knowledge, which cannot be answered in other ways and which minimises disturbance of significant fabric.

Article 29. Responsibility for decisions

The organisations and individuals responsible for management decisions should be named and specific responsibility taken for each such decision.

Article 30. Direction, supervision and implementation

Competent direction and supervision should be maintained at all stages, and any changes should be implemented by people with appropriate knowledge and skills.

Article 31. Documenting evidence and decisions

A log of new evidence and additional decisions should be kept.

Article 32. Records

32.1 The records associated with the *conservation* of a *place* should be placed in a permanent archive and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.

32.2 Records about the history of a *place* should be protected and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.

Article 33. Removed fabric

Significant *fabric* which has been removed from a *place* including contents, fixtures and objects, should be catalogued, and protected in accordance with its *cultural significance*.

Where possible and culturally appropriate, removed significant fabric including contents, fixtures and objects, should be kept at the place.

Article 34. Resources

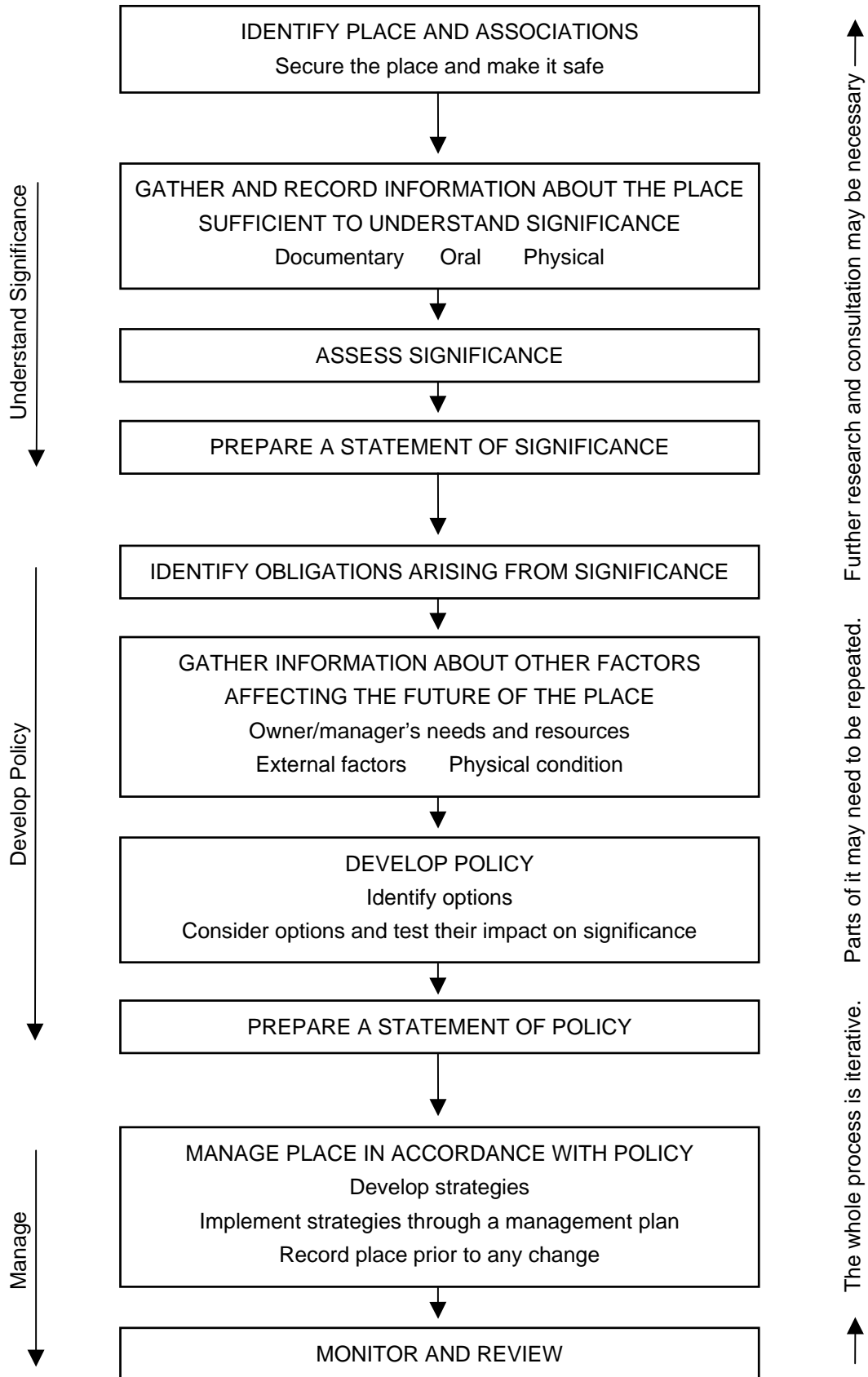
Adequate resources should be provided for *conservation*.

The best conservation often involves the least work and can be inexpensive.

Words in italics are defined in Article 1.

The Burra Charter Process

Sequence of investigations, decisions and actions



Appendix E

Don Godden & Associates, Eveleigh Railway Workshops Heritage Study (Part 1), 1986

EVELEIGH RAILWAY WORKSHOPS

HERITAGE STUDY

PART 1

BACKGROUND

EVELEIGH RAILWAY WORKSHOPS
HISTORY AND DEVELOPMENT
1870-1887 - THE ESTABLISHMENT OF THE WORKSHOPS

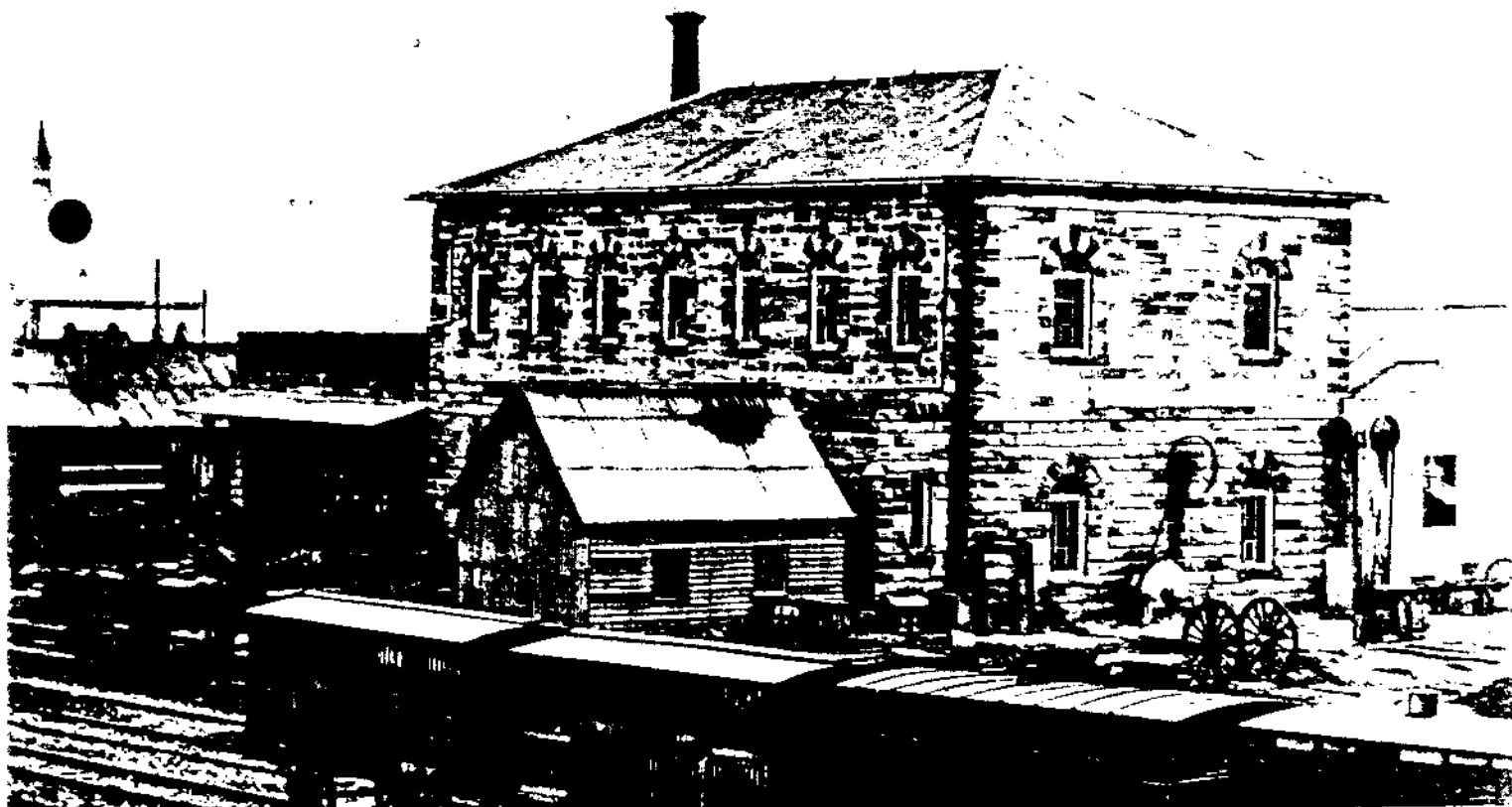
Planning for the provision of a large modern railway workshops complex at Redfern began with the proposed expansion of the existing Repair Shops in 1871. The original workshops, which were known as the Locomotive and Carriage and Wagon Repair Shops, were located towards the Redfern end of the Sydney Railway Yard in an area known as "Cleveland Paddock". They comprised a collection of corrugated-iron sheds around a two-storey stone Turning and Pattern Shop. Power for much of the works was provided by a 20hp steam engine fed by two boilers housed in an annexe to this building. Equipment in the Shops included two large and five small lathes, two steam hammers (one of 45 cwt and the other of 15 cwt) and thirteen other machines of various kinds. In 1871, it was proposed to expand and upgrade this facility in accordance with the needs of the developing rail network.

Some improvements and additions were made to the old repair workshops at this time, however, it was apparent that a new location would soon be required to allow sufficient room for expansion.

Gilder, (1905, quoted in Inst. of Eng., Syd. Div., 1922, p.2).

Fig. 1. Railway Workshops, Sydney, March 1971.

The original railway workshops were housed in a collection of sheds around a two-storey stone Turning and Pattern Shop. This building, long demolished, obviously contained machinery on the ground floor powered from a central overhead lineshaft which projects through the northern wall to drive the external grindstone. The Boiler House is on the southern side with an open arched facade and water tank on the roof. The Mortuary Station and Sydney University are apparent in the background. (B21)



By 1875, the site at Eveleigh was selected and plans and estimates prepared for a workshops complex adequate for the foreseeable future. Negotiations for the acquisition of the land commenced early in 1878 and settlement was reached in 1880 with 64.5 acres resumed from the estate of the late John Chisholm on the 1st of July at a cost of around 100,000 pounds. The resumption included the Chisholm residence known as "Calder House" on the northern side of the site, built in 1820 and used since 1855 as a boy's school.

N.S.W.R. Annual Report, 1881.

Fewtoll, F., Works Manager, 14/5/55.

Clearing of the land commenced early in 1882 and construction of the Running Shed was begun while foundations for the workshops were being prepared. Late in 1882, the Department of Mines sunk a bore to 1,000 ft in search of a permanent water supply for the railways but this was unsuccessful and further exploration was not attempted.

N.S.W. Dept. of Mines Annual Report, 1882.

NEW RUNNING SHED AT EVELEIGH

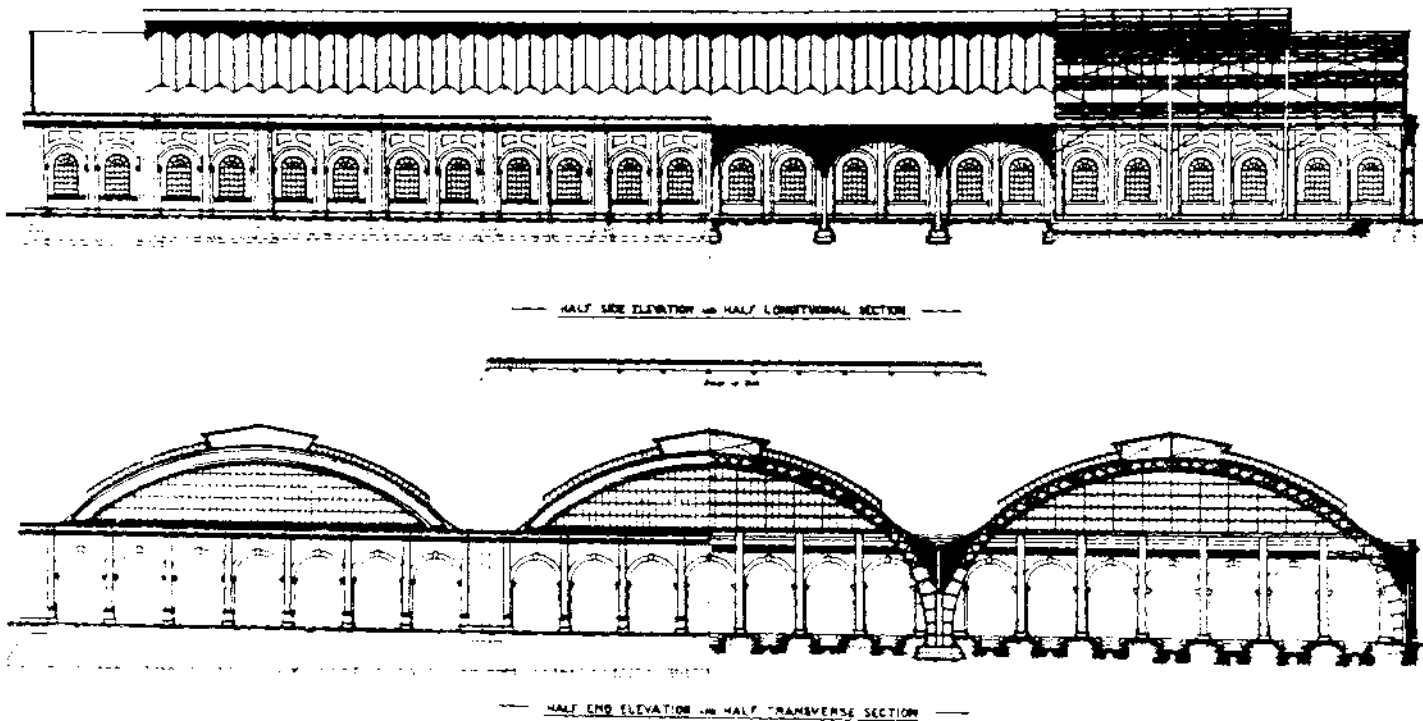


Fig. 2. New Running Shed at Eveleigh, 1884.

Most details of the structure of this building are shown in this diagram, including foundations, steel arch truss arrangement and roof design. The building was completed in 1885. (D14)

Owing to the sandy nature of the soil in the vicinity and the need for absolute stability of the workshop walls (for the overhead crane supports) a great deal of work went into the design and construction of the foundations for the workshops. Long heavy piles were sunk deep into the ground in groups of three under each load-bearing pillar. Brick piers to ground level tied each group of piles together and each brick pier was braced to its adjacent piers by low brick arches. Load-bearing pillars were placed above

each pier, with the walls constructed above and along the brick arches between piers.

The construction of the workshops was scheduled in stages, with Bays 1-4 proceeding ahead of the rest of the workshops. The contract for the construction of Bays 1-4 was let to George Fishburn late in 1884 for a cost of 40,725 pounds and work commenced shortly afterwards.

N.S.W.R. Annual Report, 1885.

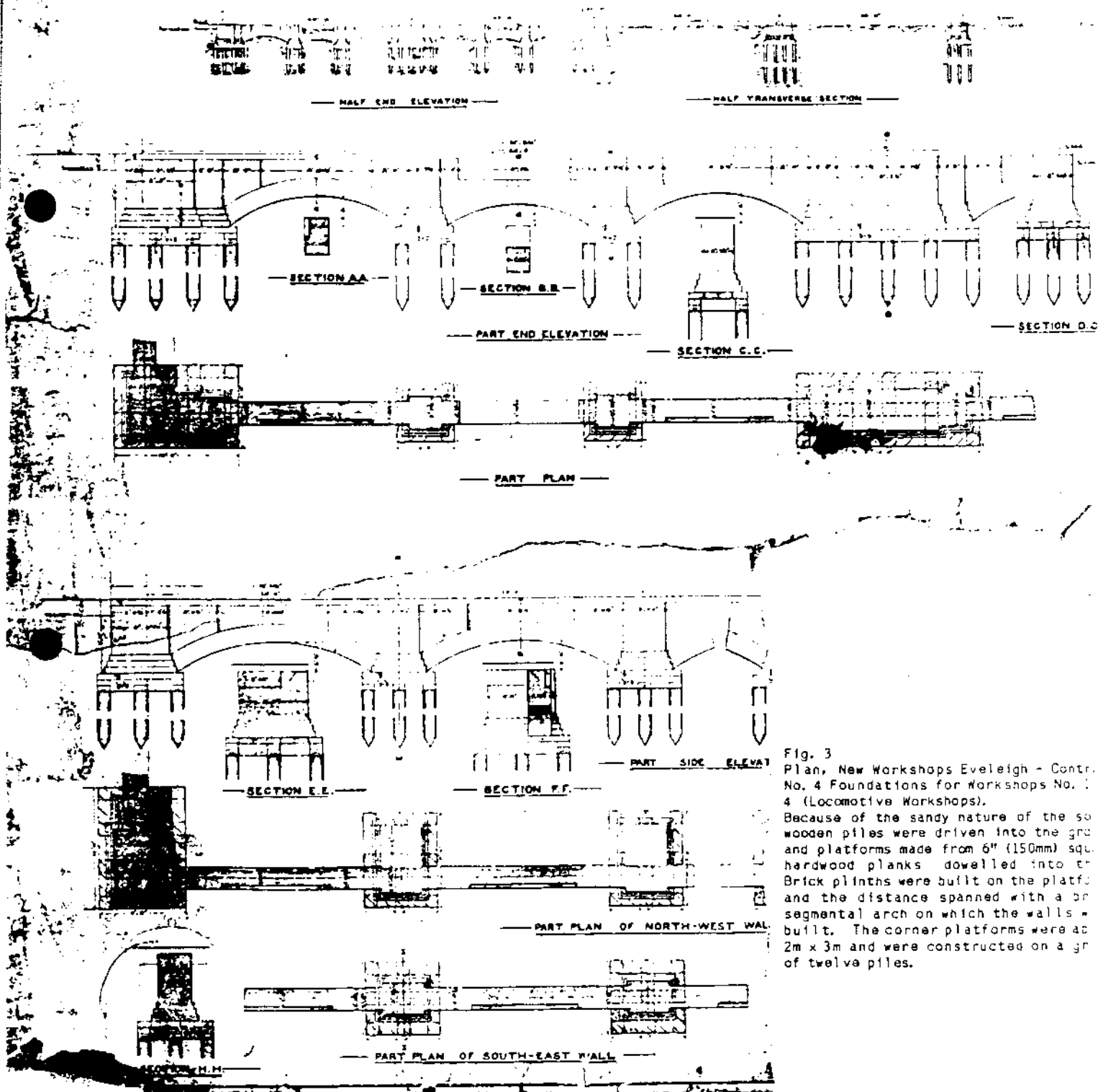


Fig. 3
 Plan, New Workshops Eveleigh - Contr.
 No. 4 Foundations for Workshops No. 1
 4 (Locomotive Workshops).
 Because of the sandy nature of the soil
 wooden piles were driven into the ground
 and platforms made from 6" (150mm) square
 hardwood planks dowelled into the
 brick plinths were built on the platform
 and the distance spanned with a brick
 segmental arch on which the walls were
 built. The corner platforms were 2m x 3m
 and were constructed on a group
 of twelve piles.

CONTRACT N° 9



N. S. W. R.

NEW WORKSHOPS EVELEIGH

DETAILS OF FOUNDATIONS AND PITS SHOPS 16 TO 25

DRAWING N° 2

29
26

See also the Plan of Carriage Workshops 16 to 25, Appendix to the Report on the Construction of Workshops at Eveleigh, Sydney, N.S.W., June 1883.

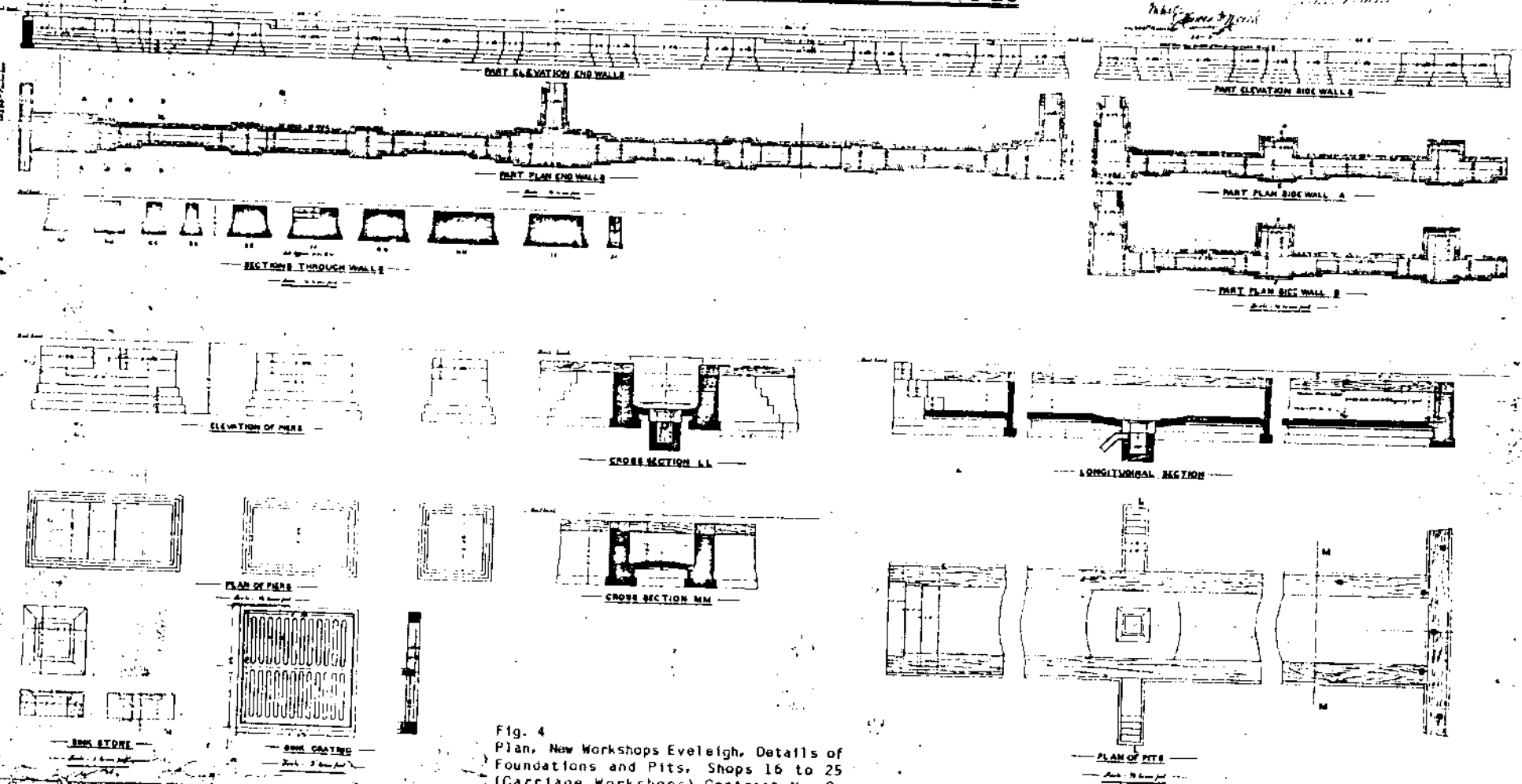


Fig. 4. Plan, New Workshops Eveleigh, Details of Foundations and Pits, Shops 16 to 25 (Carriage Workshops) Contract No. 9, 1883.

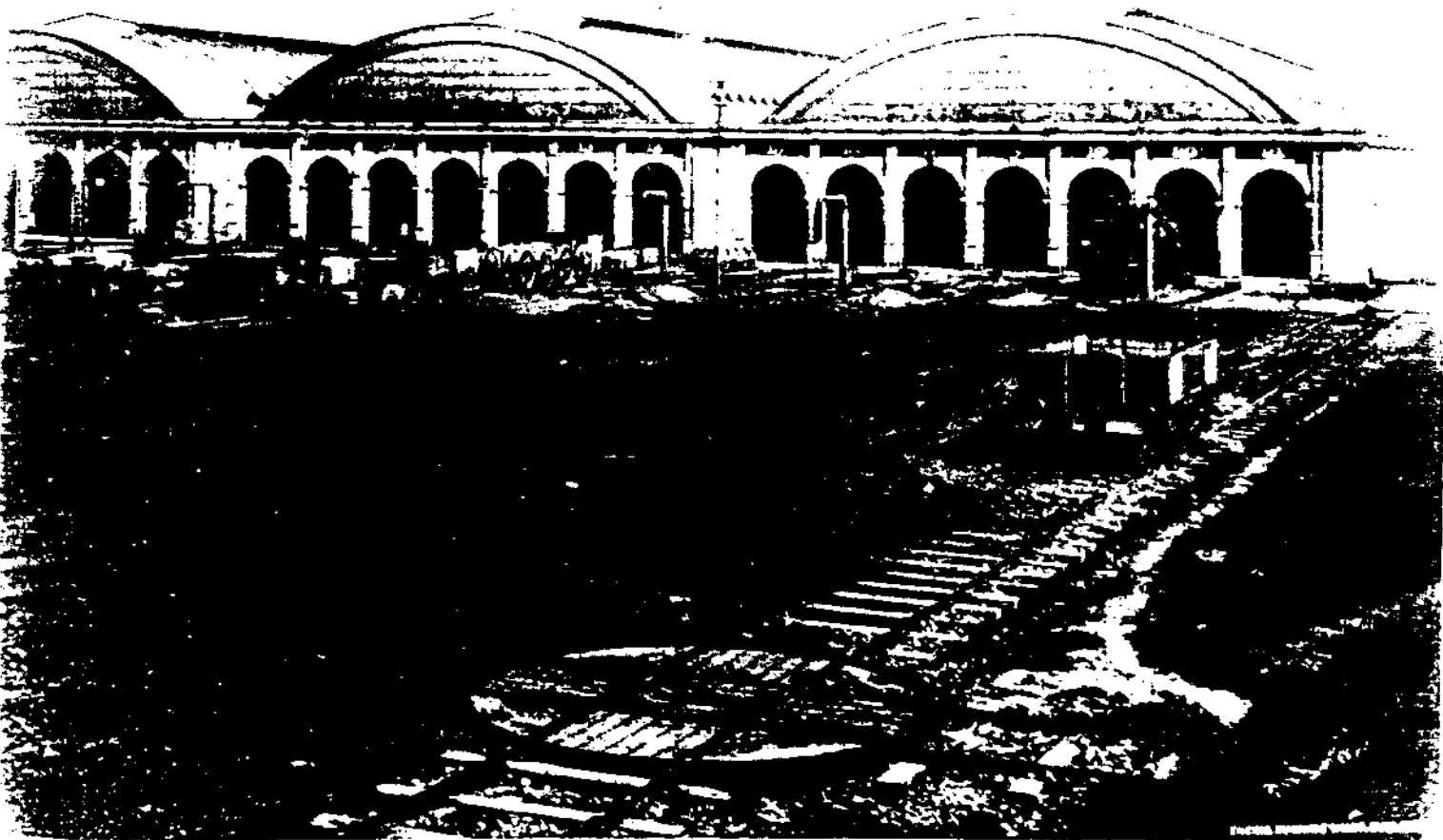
Because the soil on the Carriage Workshops side of the site was better for building, the spectacular pile, platform and plinth method of constructing the footings was abandoned in favour of the more conventional type of footing.

By 1885, the construction of the workshops was in progress and the purchase of machinery had commenced. During this year, an office building for the Locomotive Operations Manager was constructed near the southern coal stage adjacent to the Running Shed with entrance gates and a watchman's office built nearby. A small brick building was erected on the southern side of the Running Shed and a self-contained steam-driven electric light plant installed. The foundations for the Bays 5-15 were also completed, enabling the contract for the construction of these bays to be let to John Ahern at a price of 80,837 pounds.

N.S.W.R. Annual Report, 1885.

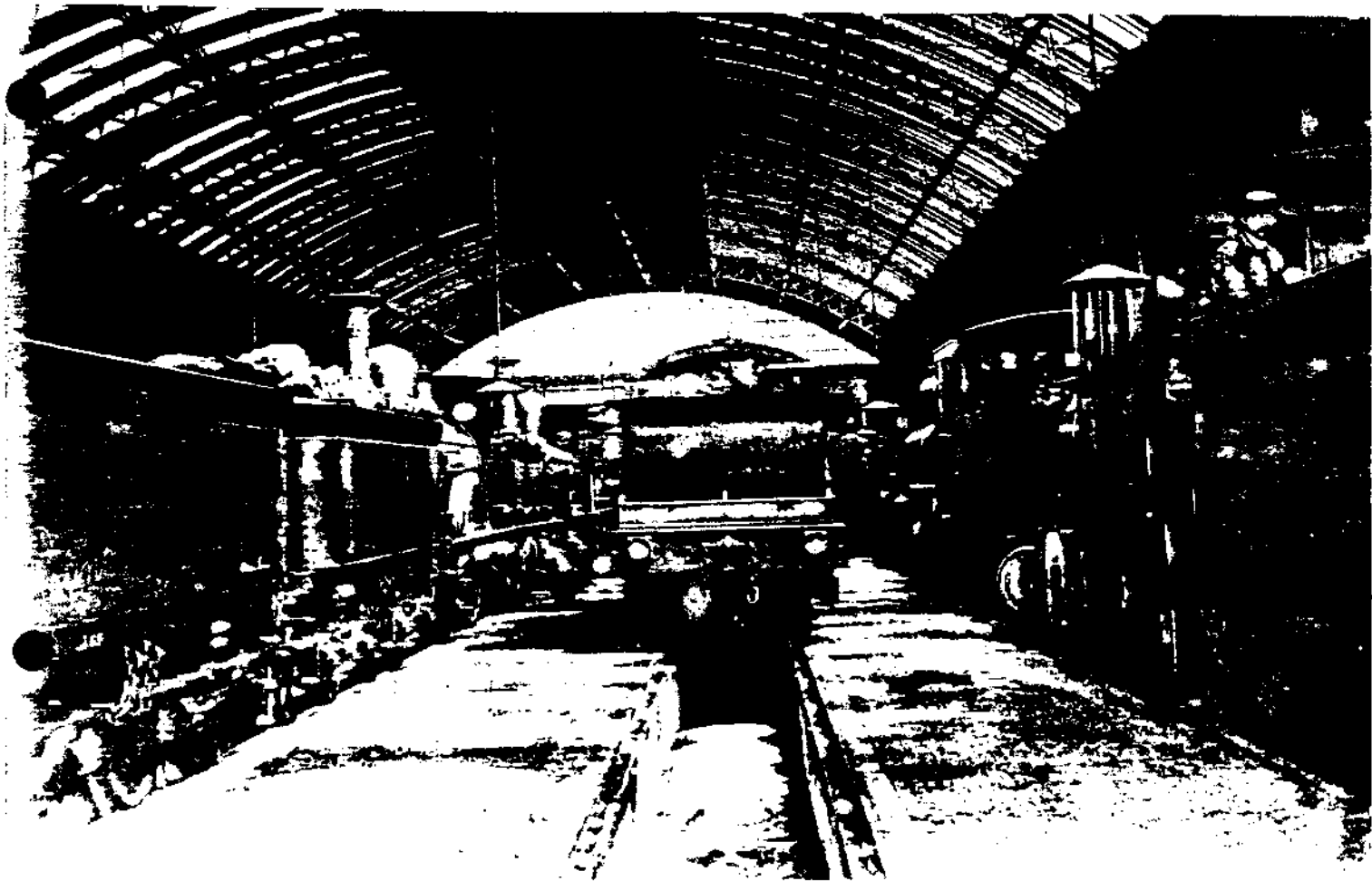
By the end of 1885, the Running Shed was completed and put into operation, the final cost being 68,728 pounds. Located at the Macdonaldtown end of the site, it was a large brick and stone building, 300 ft long by 220 ft wide, containing three longitudinal bays each containing seven roads of track. Each bay was covered by a segmental-arched roof of corrugated iron capped with a central gabled monitor and containing rows of skylight panels on either side of the monitor.

Fig. 5. Engine Running Shed, Eveleigh. The elegant yet functional design of this building, the first of the Eveleigh complex to be completed, set a high standard which was reflected in other later constructions. Engines were garaged, cleaned and serviced in this building. (B25)



The segmental-arch gable-ends of each bay were also glazed. Roof support was provided by rivetted steel lattice beams curved to follow the arch line, braced longitudinally by lattice beams running the length of the bay at approximately ten degree intervals around the arch. This arrangement obviated the need for internal columns and allowed the maximum unobstructed headroom below the roof. Across the facade of each bay, seven arched openings accessed the seven roads, each arch having a projecting keystone and imposts. The floor was of concrete with brick paving between each road. Inspection pits were placed below each road and these ran the length of the building. Ash pits were installed below each road outside the eastern end of the shed.

Fig. 6. Inside the Engine Running Shed, Eveslign. Engines and tenders were parked in continuous lines on the twenty-one roads in the shed. Extensive areas of glazed panels in the roof and on the arched and walls gave good natural lighting in addition to the electric lights installed throughout. (B28)



The construction of the workshops continued throughout 1886. The Carriage and Wagon Shops were also being built at this time (the contract was let to Harold Norris in January 1885). With the tracks laid and sidings constructed the general layout of the site took shape. An unfortunate incident occurred late in this year when all of the existing timber patterns for iron-casting were destroyed as the building in which they were temporarily housed caught fire and burned down.

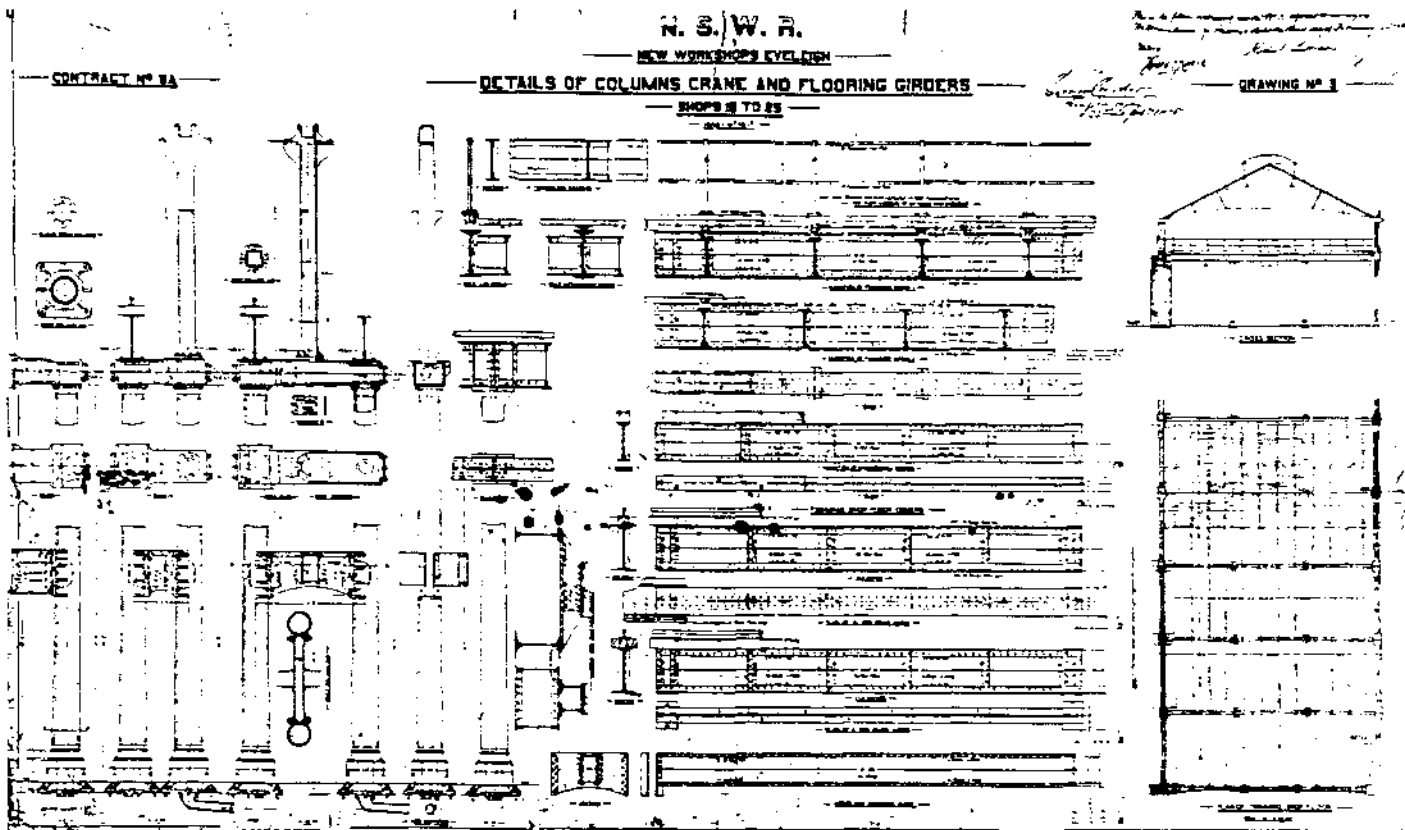
Early in 1887, workshops 1-4 were officially opened. The four shops were each 300 ft long and 60 ft wide, built as adjoining bays with no internal walls. Each bay was covered by a gabled roof clad in corrugated-iron with a central monitor and a row of skylight panels on either side of the monitor. Walls were of load-bearing brick laid in English bond with semi-circular window arches in white brick with sandstone sills and string courses. Ridge capping on the gable-ends was also of sandstone.

N.S.W.R. Papers 87/57.

Internally, the bays were separated by a double row of cast-iron columns (cast in the Globe Foundry of Glebe) running the length of the bays below the junction of each gable. The columns were hollow and acted as downpipes taking water from the roof to the sub-floor drains.

The roof was supported by light steel trusses carried on the walls or columns and the overhead cranes ran on plate girder beams carried on the intruding wall pilasters or the rows of columns.

Fig. 7
Plan, New Workshops Eveleigh, Details of Columns, Crane and Flooring Girders, Shops 16 to 25 Contract No. 8A, 1885. The columns which held the roof trusses were cut in two lengths which were later bolted together. These columns carried rainwater from the roof box gutters to the sub-floor drains. The columns were generally in pairs. In one pattern, one column held the crane girder while the other supported the roof truss. In a second pattern both columns held crane girders while a higher separate centre section held the roof truss.

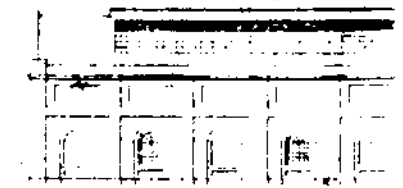


Contract 48.

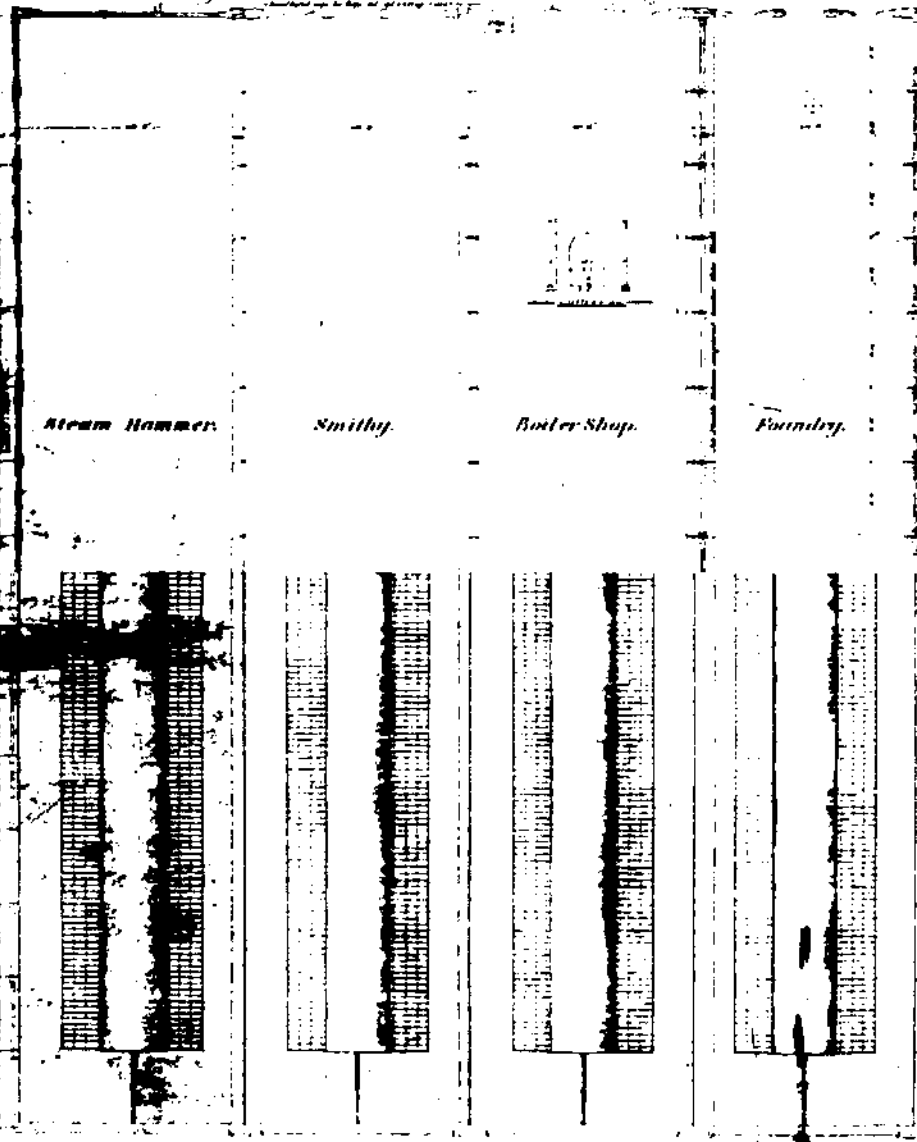
NEW WORKSHOPS
DETAILS OF SUPERSTRUCTURE
Bays 1 to 4
Details



FRONT ELEVATION



SIDE ELEVATION



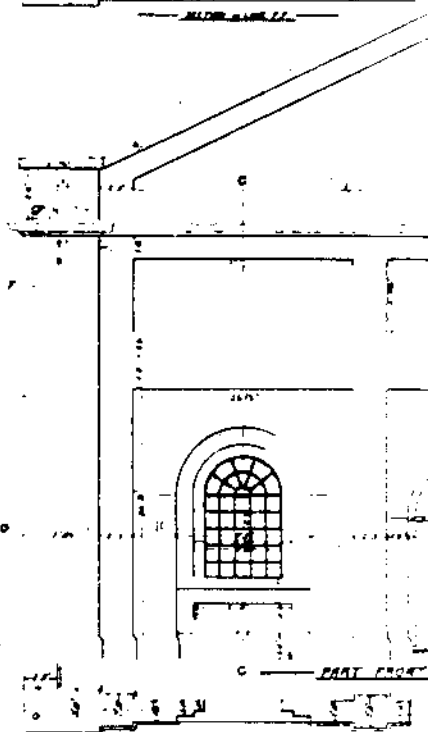
Steam Hammer.

Smithy.

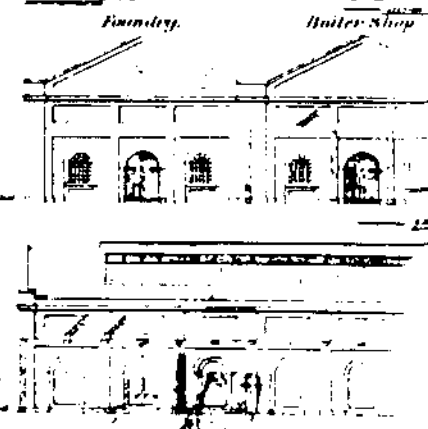
Boiler Shop.

Foundry.

GENERAL PLAN



PART FRONT



Foundry.

Boiler Shop

Fig. 8
Plan, NSW, New Workshops, Eveleigh.
Details of Superstructure, Shops 1 to 4.
Contract 48, Sheet No. 1, 1884.
Bays 1 to 4 contained the 'dirty' trade
of foundrywork, boilermaking and
blacksmithing. They were originally
separated from bays 5 to 15 by a space
equivalent in width to one of the bays.

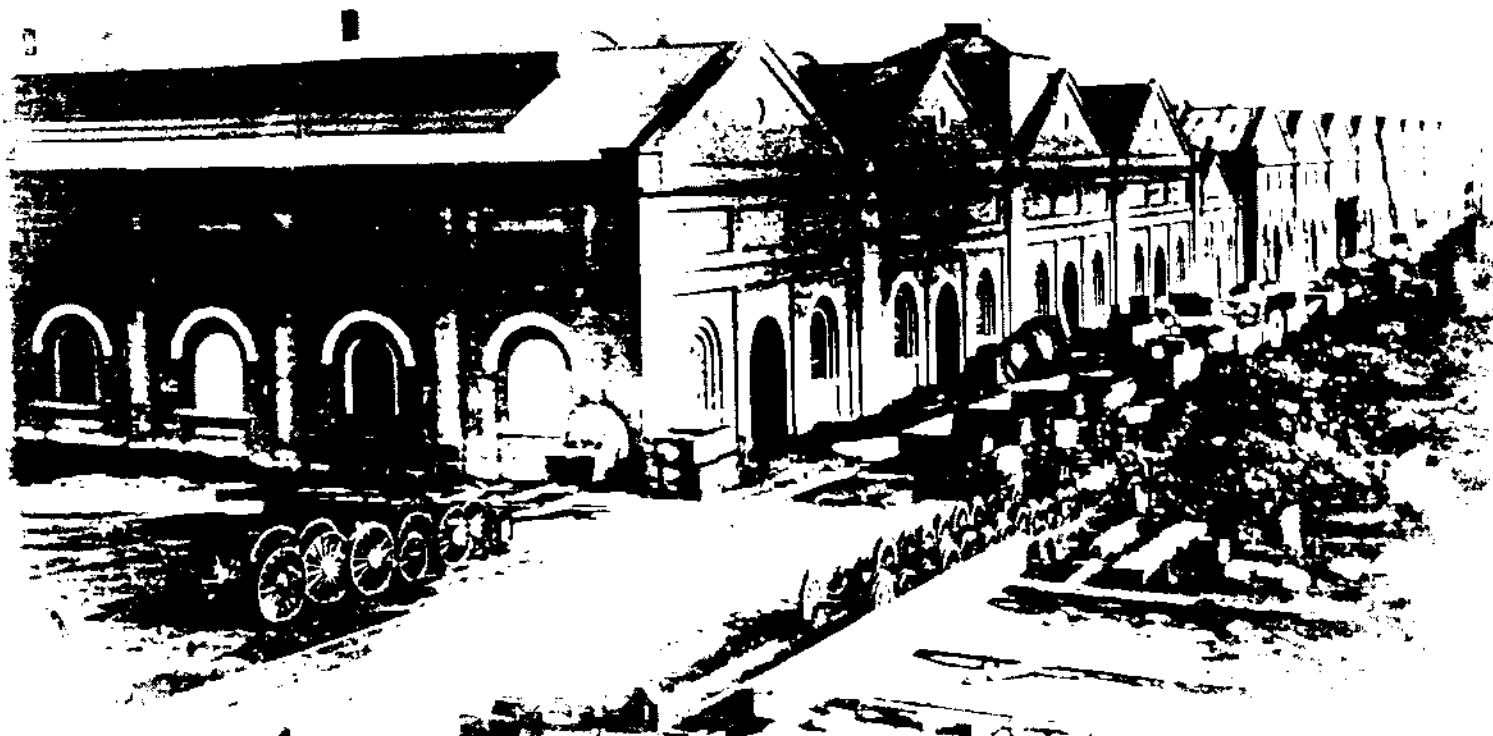
Workshops were numbered from the eastern end of the building, Bay 1 being the Steam Hammer Shop, Bay 2 the Blacksmith's Shop, Bay 3 the Boiler Shop and Bay 4 the Foundry. Annexes were built on the southern and western sides. At the rear (south) of Bay 1 was the case-hardening annexe. The boiler house annexe which contained four 'D' class boilers with space for two more straddled the rear of Bays 2 and 3 while the hydraulic engine house adjoined the rear of Bay 3. In the laneway, which then existed between Workshops 1-4 and 5-15, were located, on the northern side, the Tinsmiths and Coppersmiths Shop and on the southern side the sand store and core stoves for the Foundry. These annexes though small were built of the same materials and with similar detailing to the main building.

Illus. Syd. News, 18/7/91 p.11-13.

Later in 1887 the workshops 5-15 were also completed and opened. The building was structurally very similar to the first four workshops with each bay housed under a single gable and separated from the adjacent bays by a double row of iron columns, generally supporting overhead cranes traversing the length of the bay. The width of each bay was 50 ft, slightly narrower than in the original section but wall, window and roof details were almost identical. Bays 7 and 13 each contained a Craven 45 ton ground traverser for carrying engines in and out of the building and the northern and southern facades of these bays were enclosed below the gable by a pair of swinging iron doors with a heavy iron lintel above. Symmetrically placed as the third bay from either end, the variance in the facades of these bays was planned and executed as a feature of the final appearance of the complex.

N.S.W. Papers, 87/57.

Fig. 9. Railway Workshops in the early 1890's. The fifteen bays of the Locomotive Workshops were built in two groups, one of four bays and one of eleven bays. The Coppersmiths and Tinsmiths Shops were housed in a small annexe with matching architectural detailing in the laneway between the two groups. (C24)



The intended function of each workshop bay was part of the design of the building, with the relevant features necessary for the function included in the arrangements of the building. Bay 5 was the Tender Repair Shop and had a 25 ton overhead crane installed. Bays 6,7 and 8 contained the Engine Repair or Erecting Shop, with the Traverser in Bay 7 distributing locomotives to the bays on either side, each of these having a 25 ton overhead crane. Bay 9 contained the Wheel Shop and the Machine and Fitting Shop occupied Bays 10 and 11. Each of these bays had a 5 ton overhead crane installed. Bays 12 and 13 contained the Paint Shop with the Traverser in Bay 13 to move locomotives in and out. Brick walls inserted instead of columns at the junctions with either adjacent bay isolated the Paint Shop from the rest of the Workshops and, in the absence of any overhead crane, only a single row of columns divided the two bays. Bay 14 contained the Pattern and Joiners Shop and a brick wall also separated this from Bay 15 containing the Locomotive Store which supplied all manner of parts and tools used in the workshops. Two annexes were built at the rear of Bays 9 and 10, one being the Cleaning Shop and the other a second Boiler House.

Motive power in the shops was provided by wall-mounted steam engines driving lineshafts running along and secured to the tops of the iron columns.

Fig. 10. Railway Running Sheds, Eveleigh 1890's.

The building housing the electric light plant with its twin boiler chimneys was erected on the south side of the Running Shed to provide light for overnight servicing of locomotives. The small brick building in the right foreground housed the sand-drying furnace - dry sand is still used on locomotives to assist traction in slippery or icy conditions. (B26)



CONTRACT N°5B

NSWR
NEW WORKSHOPS EVELIGH
SUPERSTRUCTURE SHOPS 5 TO 15

DRAWING N° 1

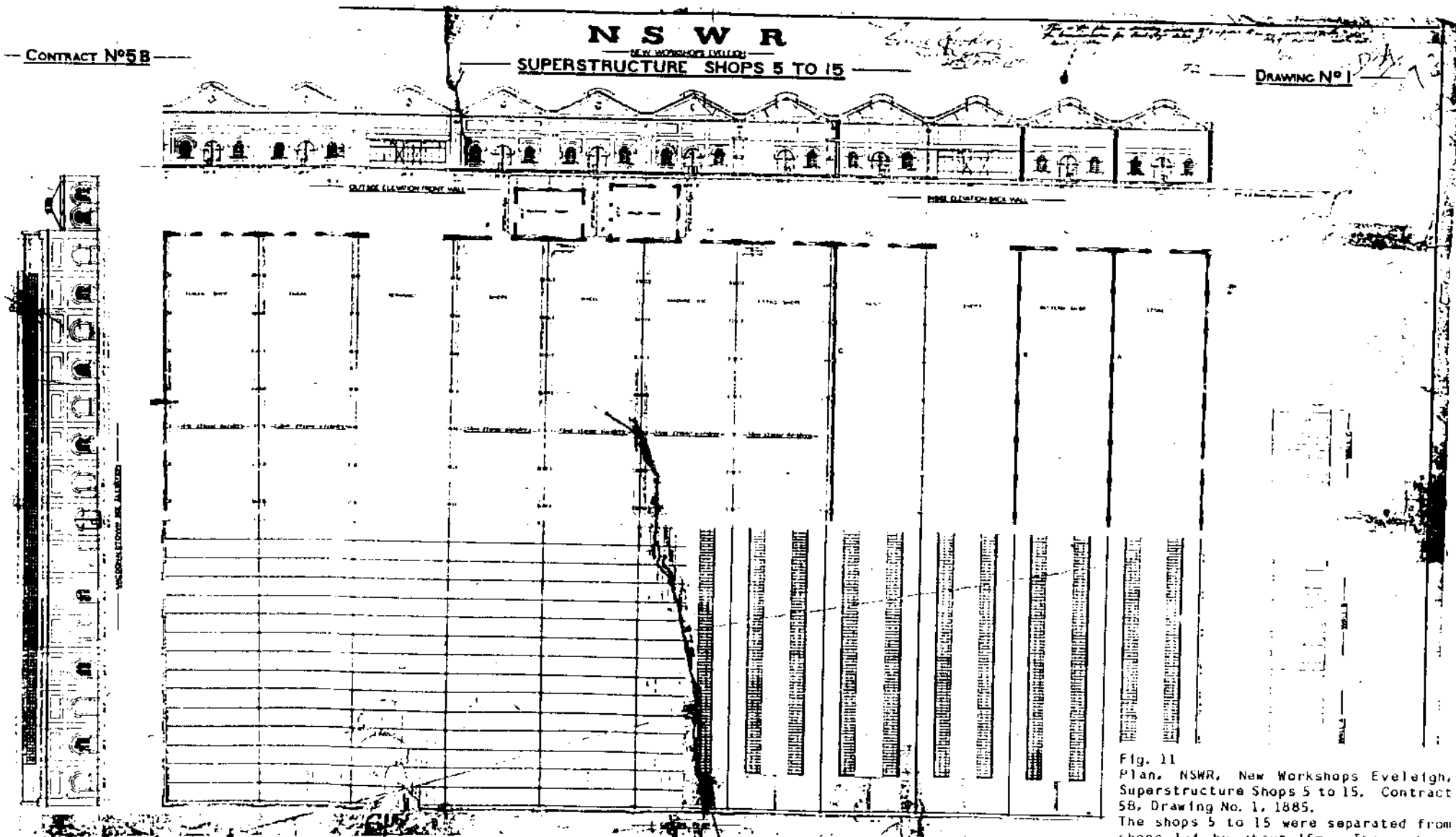


Fig. 11
Plan, NSW Rail, New Workshops Eveleigh,
Superstructure Shops 5 to 15. Contract
5B, Drawing No. 1, 1885.
The shops 5 to 15 were separated from
shops 1-4 by about 15m. These shops
contained the 'clean' trades such as
machining, patternmaking and painting.
The facades of the shops on the northern
elevation were identical, having two
windows and a door surmounted by semi-
circular arches.

Pairs of these engines were located against the rear (south) wall in the Boiler Shop (Bay 3), the Erecting Shop (Bays 5, 6 and 8) and the Machine Shop (Bays 9, 10 and 11). The workshops were well lit by electric lights powered from the independent electric light plant near the Running Shed.

N.S.W.R. Budget, 21/7/00, p.239, 240.



Fig. 12. Eveleigh Loco Works - approx. 1910.

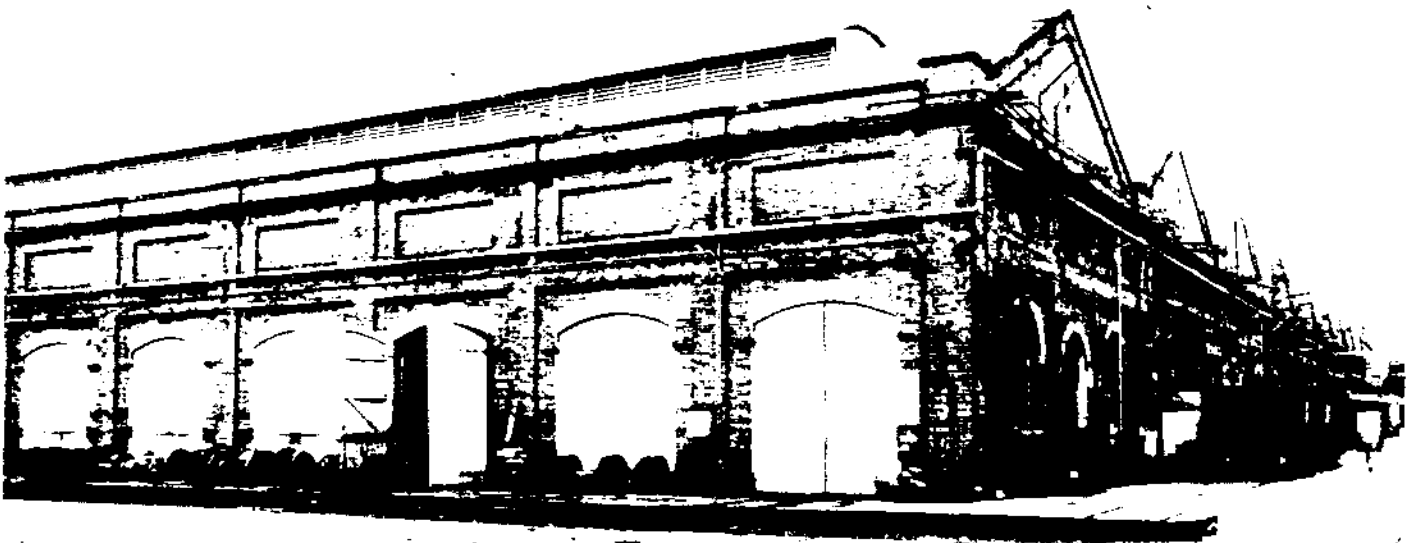
The original configuration of the Locomotive Works Managers and Timekeepers office building, with the bell-tower on the westernmost side, was altered in 1922 with additional offices constructed on this side. (A1)

North-east of the workshops, a small building was erected to house the Timekeeper's and Works Manager's offices. Of cement-rendered brick, two storeys, with a hipped double-gabled roof of corrugated iron, it had a verandah encircling the ground floor and a square bell-tower on the western side. The bell tower was topped by an elaborate cast-iron bell cage. Verandah posts were cast-iron with iron lace decorations at the capitals.

Across the railway yard on the northern half of the site, the Carriage and Wagon Workshops also opened late in 1887. Built of the same materials

Fig. 13. Carriage and Wagon Workshops, Bays 16-25.

Built with similar detailing to the Locomotive Workshops, the Carriage and Wagon Workshops occupied ten bays. The eastern end of these workshops was allocated to Wagon construction and repair while the western end was allocated to Carriage construction and repair. (R26)



N. S. W. F.

NEW WORKSHOPS EVELIGH

ROOFS COLUMNS AND CRANE GIRDERS SHOPS 16 TO 25

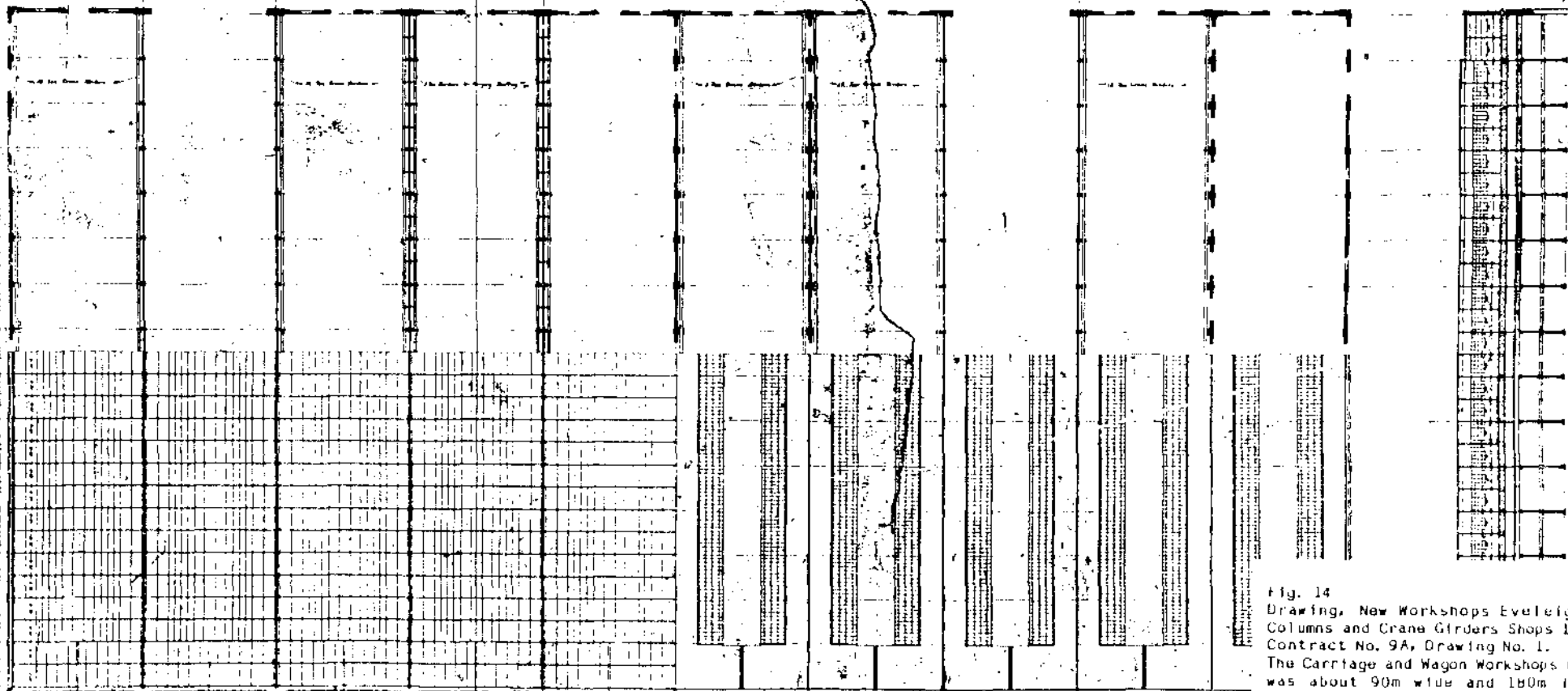
*George Cookley
1882-1883-1884*

DRAWING N° 1

*This is plan a drawing made in 1882 after the
approval of the Government for the completion of
the 1st of January 1884. Robert Laidlaw*



SECTION ON LINE A-A



GENERAL PLAN

Fig. 14
Drawing, New Workshops Eveleigh, Roof
Columns and Crane Girders Shops 16 to 25.
Contract No. 9A, Drawing No. 1.
The Carriage and Wagon Workshops building
was about 90m wide and 180m long and
divided into 10 bays. Each bay had a
door and two windows surmounted by semi-
circular arches in its gabled end except
for bays 17 and 23 which housed
crane girders.

and to an almost identical design as the Locomotive Workshops, the building comprised ten bays, 300 ft long and 60 ft wide, numbered 16-25. These shops performed much the same general function as the Locomotive Workshops but acted exclusively on Carriages and Wagons and from the outset, new carriages and wagons were constructed at these workshops.

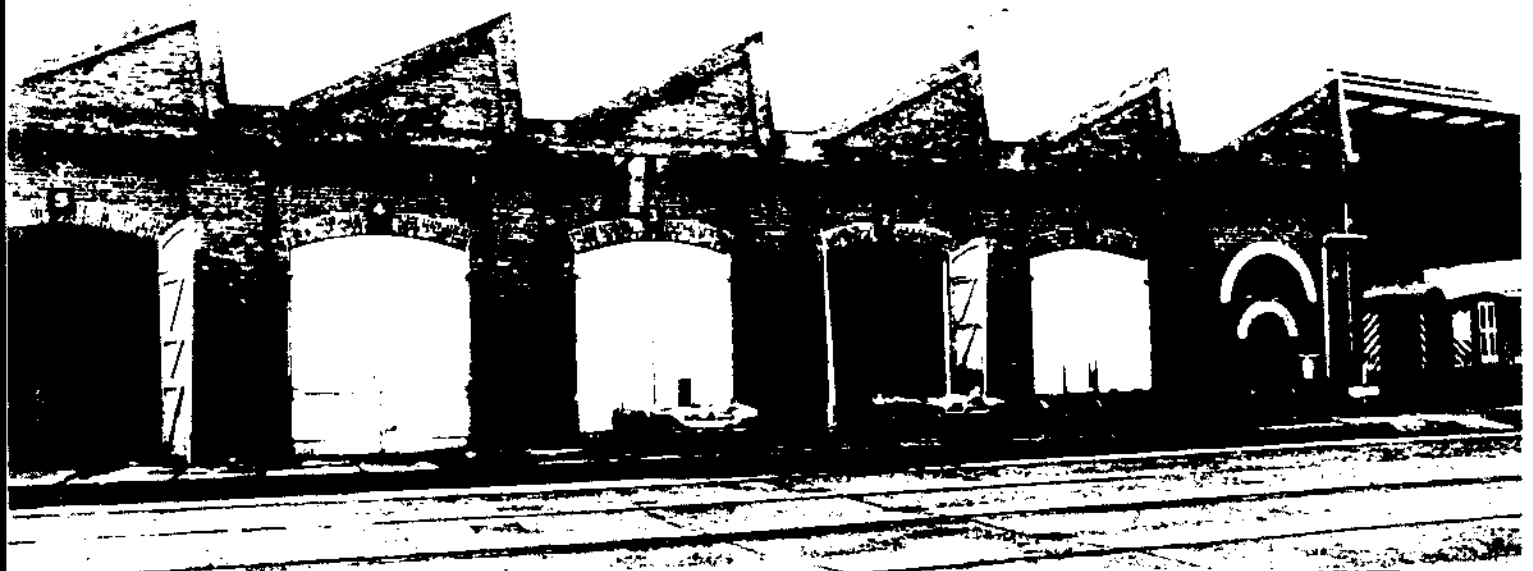
As in the Locomotive Workshops, bays and groups of bays were allocated to specific functions. Bays 16, 17 and 18 were the Wagon Repairing Shops with a Craven Ground-Traverser in Bay 17 and 12 ton overhead cranes installed in Bays 16 and 18. Bays 19 and 20 contained the Woodworking Machine Shop with a 5 ton crane in Bay 19. Bay 21 was isolated by brick walls on either side - the Fitting and Turning Shop occupied the southern three-quarters of the bay, with a small Blacksmith's Shop in the northern quarter. Bays 22, 23 and 24 were the Carriage Repairing Shop, with another Craven Ground-Traverser installed in Bay 23 and 12 ton cranes installed in Bays 22 and 24. Bay 25 contained a two-storey store section in its northern quarter while the rest contained the Trimming Shop.

On the eastern side of the Carriage Workshops was built a large Paint Shop for the painting of carriages. Built in brick with a saw-tooth roof, it measured 400 ft by 160 ft and contained 6 roads of track. A system of steam pipes constructed below the floor provided heating to assist in the paint drying.

N.S.W.R. Budget, 21/6/00, p.255. 256.

Fig. 15. Paint Shop

Built at the same time as the rest of the workshops, the Paint Shop featured a saw-tooth roof unlike all other buildings. This was to give maximum natural light to the interior. A system of steam pipes throughout the building provided temperature control to assist in paint drying. (R27)



CONTRACT NO 98

N. S. W. R.
NEW WORKSHOPS EVELEIGH
DETAILS OF DOORS WINDOWS & SHOPS 16 TO 25

DRAWING NO 4

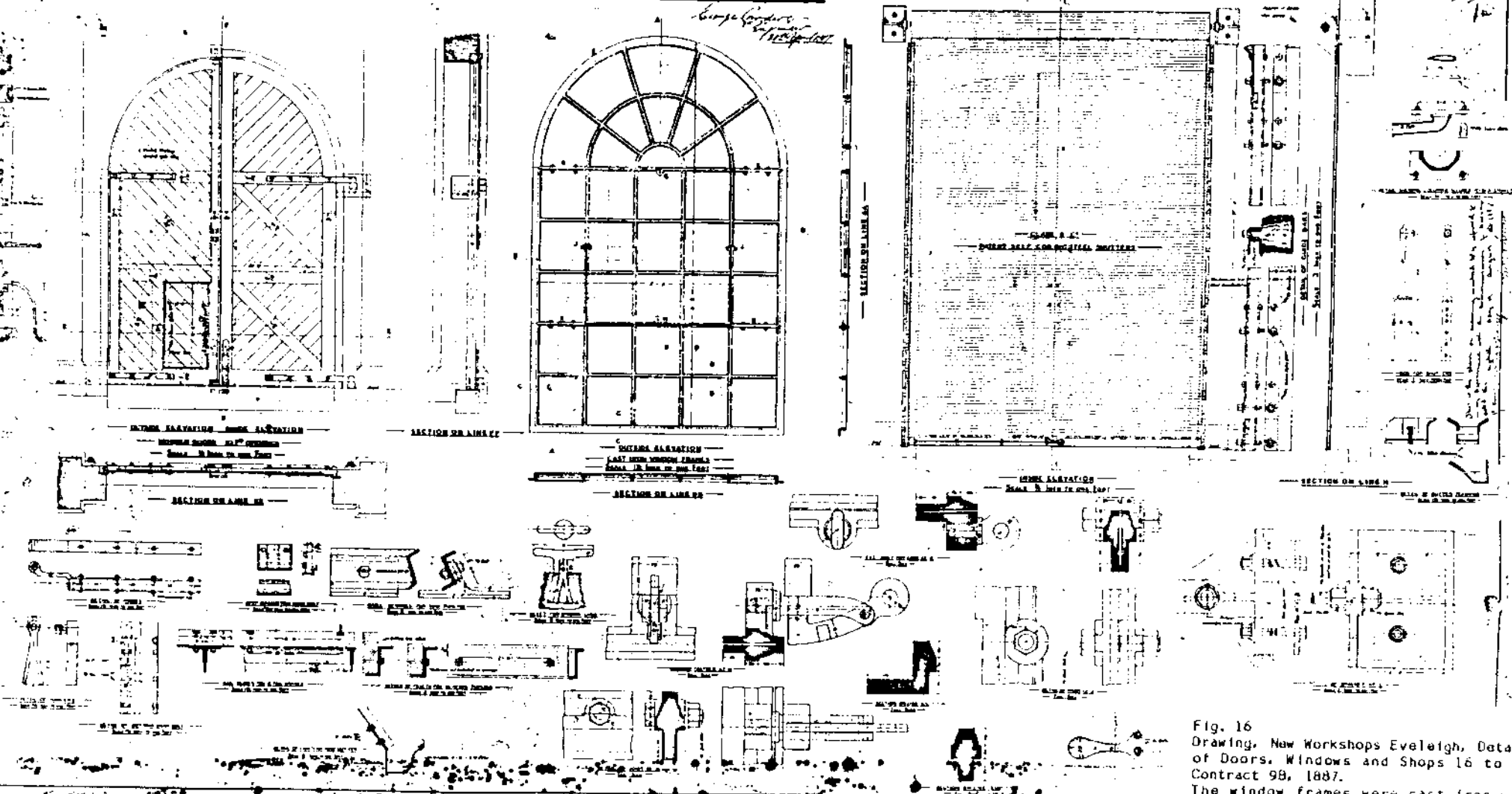


Fig. 16
 Drawing, New Workshops Eveleigh, Details
 of Doors, Windows and Shops 16 to 25,
 Contract 98, 1887.
 The window frames were cast iron with
 several pieces being bolted together.
 The side doors, like the windows, had
 semi-circular tops and quite exquisitely
 crafted wrought iron handles, clasps,
 barrel bolts and hinges. The end doors
 were of the patent self coiling shutter
 type by Clarke and Co. and must have been
 amongst the earliest of their kind used

On the ridge above the workshops adjacent to Wilson Street, a large two storey brick building was erected to house the offices of the Chief Mechanical Engineer, under whose supervision the whole workshops operated. Surrounded by a bull-nosed verandah on three sides supported by cast-iron columns with iron lace friezes for the capital brackets and iron lace balustrades it had a hipped single gable corrugated iron roof, sandstone window sills and an entrance portico to Wilson Street surmounted by a triangular pediment inscribed with the date '1887'. The 'Calder House' nearby was used as a residence.

All the workshops began operations almost as soon as they were completed, such was the backlog of work created by the inadequacy of the old workshops and the demand created by the constantly expanding rail system. Approximately 1500 men were employed in the Workshops, under the Chief Mechanical Engineer, Mr. W. Thow. Works Manager of the Locomotive side was Mr. H.B. Howe and of the Carriage Side was Mr. Elston.

Illus. Syd. New, 18/7/91 p.11.

Fig. 17. Chief Mechanical Engineer's Office.

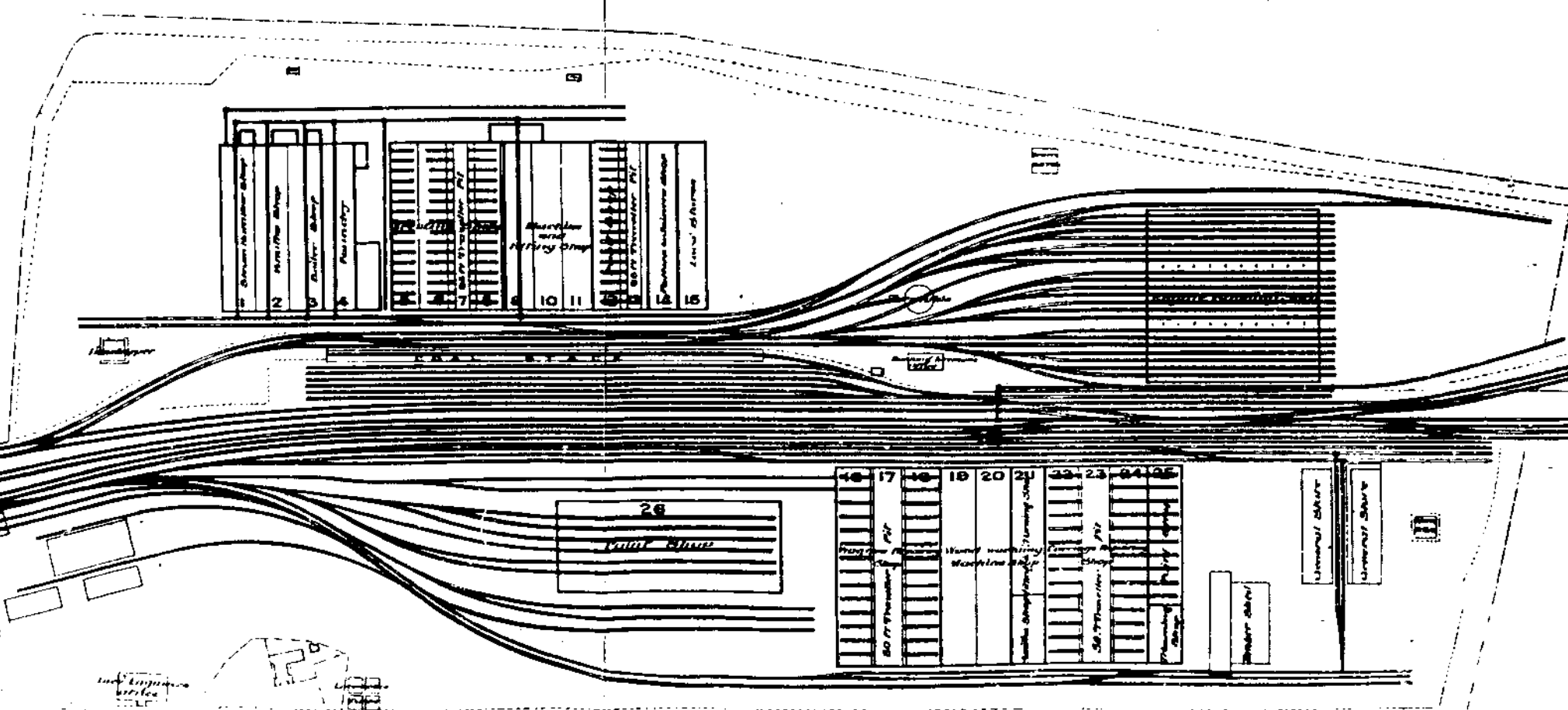
This building, erected in 1887 as the control centre for both the Locomotive and the Carriage Workshops, features verandahs on both floors with iron lace decoration, an entrance portico on the Wilson Street side with a triangular pediment above each level and its location gave commanding views over the whole workshop area. (B237)



N. S. W. R.
DIAGRAM OF WORKSHOPS
EVELEIGH

Fig. 18
 Plan, NSW Diagram of Workshops Eveleigh,
 1887.

The workshops are basically complete. Calder House is shown next to the building marked Locomotive Engineer's Office and the Timekeepers Office (which later became the Locomotive Works Manager's Office) is shown before any additions were made to it.



EVELEIGH RAILWAY WORKSHOPS
HISTORY AND DEVELOPMENT
1888-1910 - CONSOLIDATION AND GROWTH

Following the opening of the Workshops in 1887, the N.S.W. rail system underwent a period of sustained growth both in the construction of new lines and the amount of traffic handled. Although other workshops were established in other locations, Eveleigh was the central repair facility for the N.S.W. system throughout this period.



Fig. 19. Loco Workshops - Wheel Shop, Bay 9 - circa 1896. This array of belt-driven lathes and drills powered from the overhead lineshafts was used for machining and balancing all the wheels and axles used on locomotives. (A11)

A few major additions appear to have been made to the workshops following its opening. In 1890, a carriage shed was constructed in the south-western corner of the site, adjacent to the Macdonaldtown Station. Constructed of timber clad in corrugated-iron and measuring 167 ft by 482 ft, the shed contained twelve roads of track for the stabling of carriages used in the suburban and interurban passenger services. In September of 1890 the erection of a timber drying shed was commenced on the Carriage Side of the Workshops for the storage and seasoning of timber used in Carriage construction and repair, as well as more general purposes. This was completed in March the next year by M. Scouter for 3,000 pounds. In

N.S.W.R. Shop Order 19/5790.

N.S.W.R. Shop Order 1581/252.

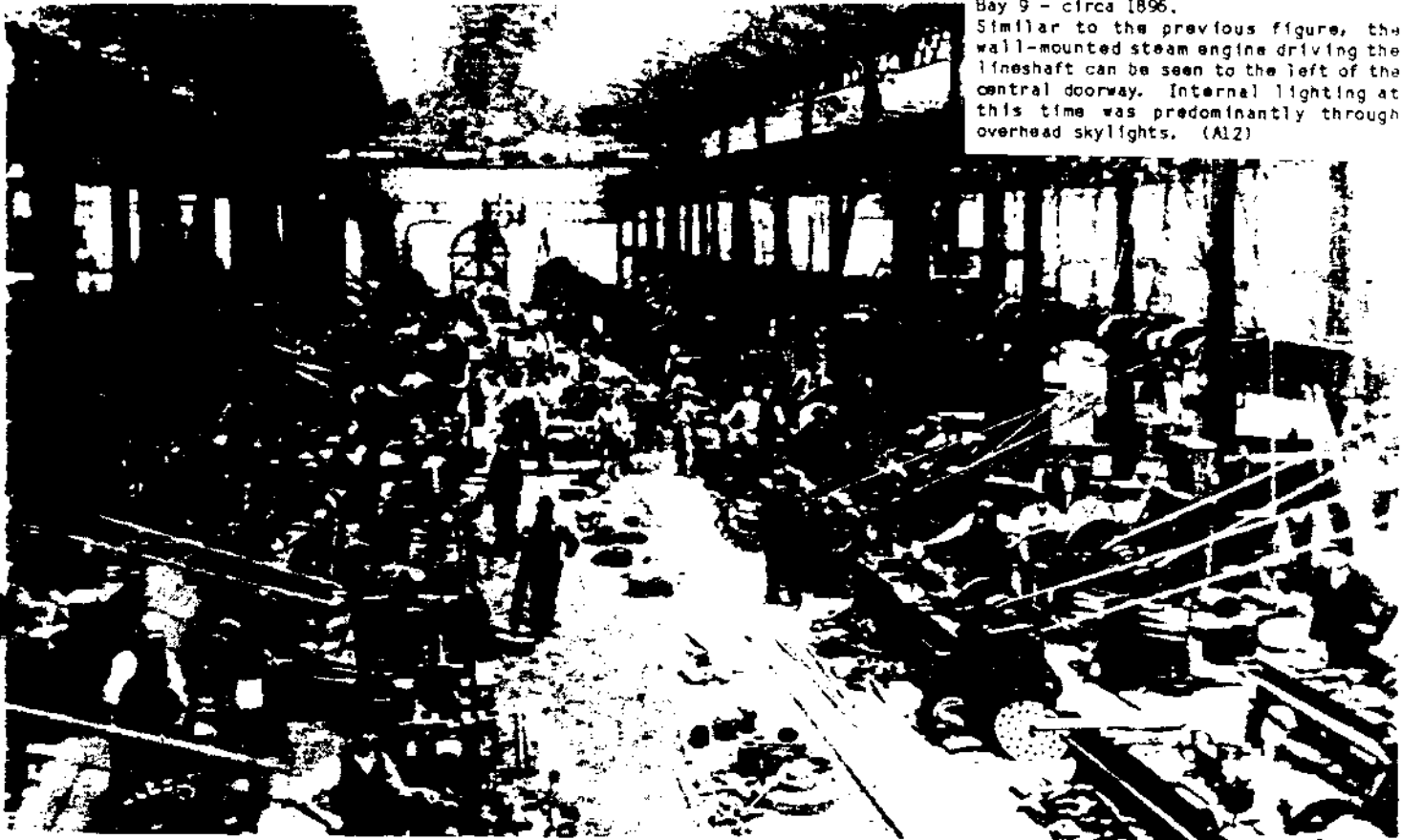


Fig. 20. Loco Workshops - Wheel Shop, Bay 9 - circa 1896. Similar to the previous figure, the wall-mounted steam engine driving the lineshaft can be seen to the left of the central doorway. Internal lighting at this time was predominantly through overhead skylights. (A12)

1891, a new coal stage was constructed using materials salvaged from the demolition of other earlier coal stages on the site. A special workshop was established in that year for the manufacture, maintenance and repair of Signals and Telegraphs in the northern part of the site. In the western corner of the site, construction of a gas-producing plant was commenced in November by J. Cook and Co. (for a cost of 13,215 pounds) to replace a small plant established during the construction of the Workshops.

N.S.W.R. Shop Order 1590/252.

N.S.W.R. Shop Order 2265/252.

N.S.W.R. Shop Order 2720/253.

Construction also commenced on a steam-powered laundry to be housed in a corrugated-iron shed on the southern side of the workshops. Equipped with revolving washing machines, hydro-extractors, boiling tanks and drying ovens powered from its own boilers and engines, the laundry washed the waste and sponge cloths used for cleaning all over the N.S.W. rail system.

N.S.W.R. Shop Order 2357/252.

N.S.W.R. Budget, 21/7/00, p.239-240.

A contemporary description from 18th July, 1891 edition of the Illustrated Sydney News describes the works in detail and claims that in size, scope and in the technology employed, Eveleigh Workshops at this time had no equal either in Australia or the southern hemisphere. It also notes that much of the iron supplied to the foundry and the Smiths Shop originated from the Eskbank Ironworks at

Existing Water Supply Shown Thus ✓ Section 2500
 Proposed do do do do
 S. V. Bendoo Shop Yards
 F. P. do Fire Plug
 H. P. do Hydrant
 Scale 66 feet = 1 inch

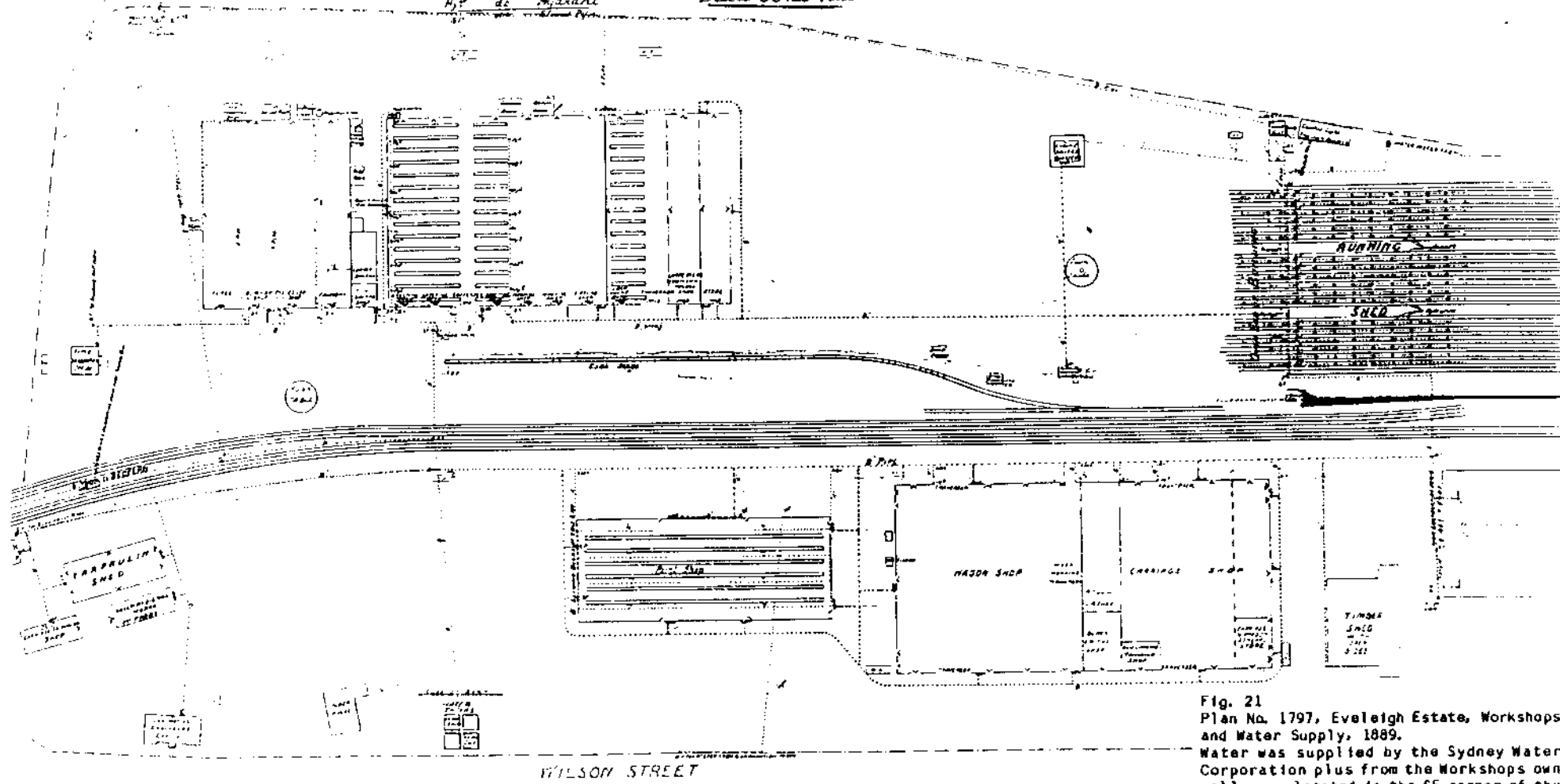


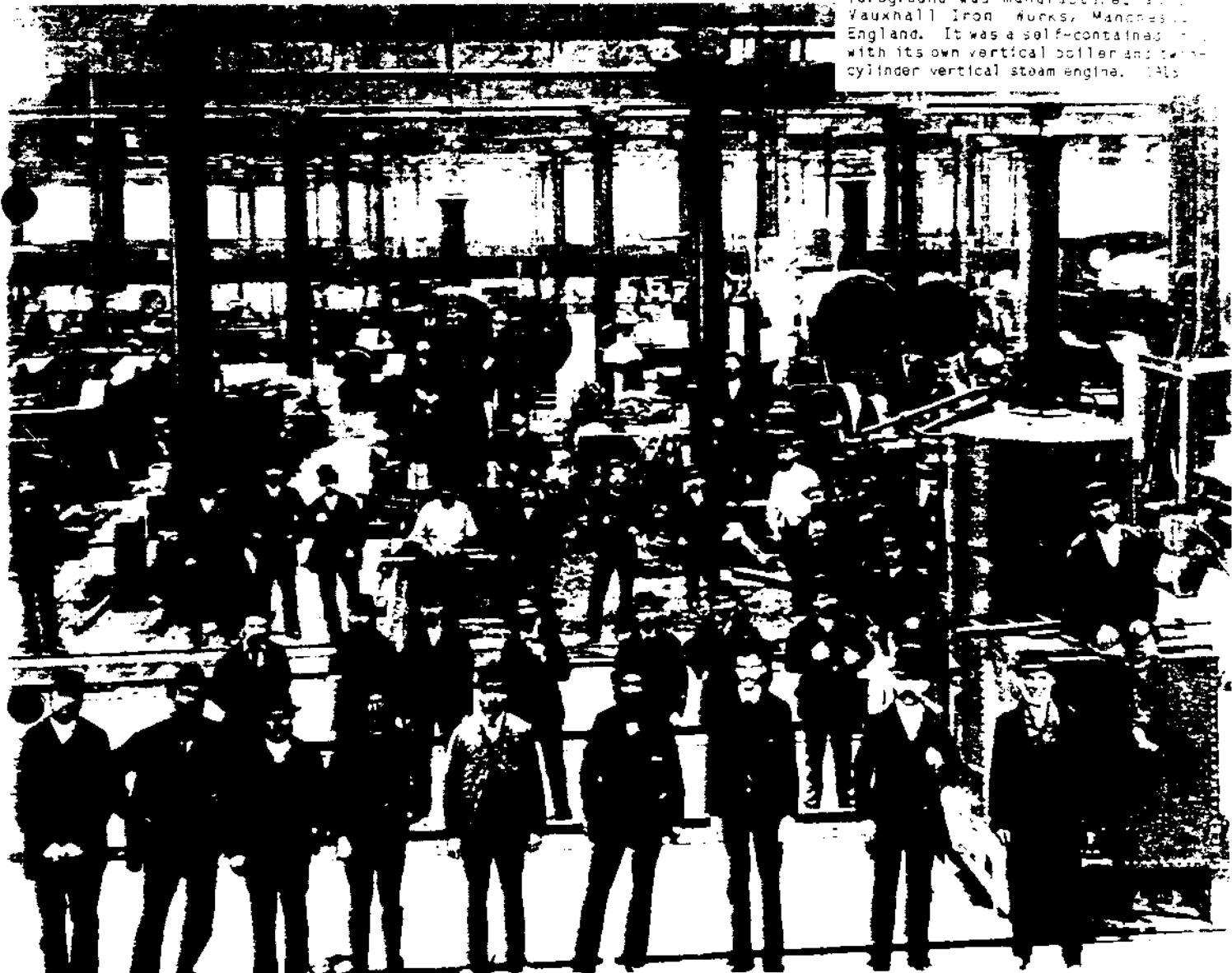
Fig. 21
 Plan No. 1797, Eveleigh Estate, Workshops
 and Water Supply, 1889.
 Water was supplied by the Sydney Water
 Corporation plus from the Workshops own
 well located in the SE corner of the
 works. Calder House can be seen close to
 the NE corner adjacent the locomotive
 engineer's office which later became the
 General Manager's office. The electric
 light plant is in the SW corner close to
 the running sheds. Even by 1889 the
 works had become a very large industrial

Lithgow - at this time an infant industry that was later to give rise to the present Port Kembla steelworks. This article is included as an appendix.

In 1892, union negotiations led to the workshops being closed on Saturdays - this was part of the social change underway at this time that eventually created the two-day weekend that remains a feature of Australian working conditions.

McLachlan, N.S.W.R. Sec. Office 19/3/42.

Fig. 22. Loco Workshops, Erecting Shop, Bay 7. The Craven Bros. Steam Traverser in foreground was manufactured at Vauxhall Iron Works, Manchester, England. It was a self-contained unit with its own vertical boiler and two-cylinder vertical steam engine. 1915.



In 1894 the electric light plant was completely upgraded. A Westinghouse boiler provided steam for a Tangye engine and a No. 1 Westinghouse engine. Electricity was generated by a Westinghouse No. 5 generator.

N.S.W.R. Annual Report, 1894.



Fig. 23. Loco Workshops, Erecting Shop Bay 6 or Bay 8. The Craven Bros. overhead traversing crane was also manufactured in England. Of twenty-five tons capacity, it was powered by a continuous rope running the length of the crane track, driven by the wall-mounted steam engine. (A10)

In 1896, lightning rods were fitted to the 120 ft high chimney for the Boiler House behind Bay 2/3 and the old gas plant was removed, the new plant having been completed and put in operation.

N.S.W.R. Budget, 1896, p.99.

N.S.W.R. Shop Order 24/12/96.

In 1898, the first major expansion of workshop facilities occurred with the construction of the new Erecting Shop, which soon became known as the Large Erecting Shop to differentiate it from the Erecting Shop occupying Bays 6-8 in the main workshop building. Built to increase the accommodation for the repair of locomotives, it

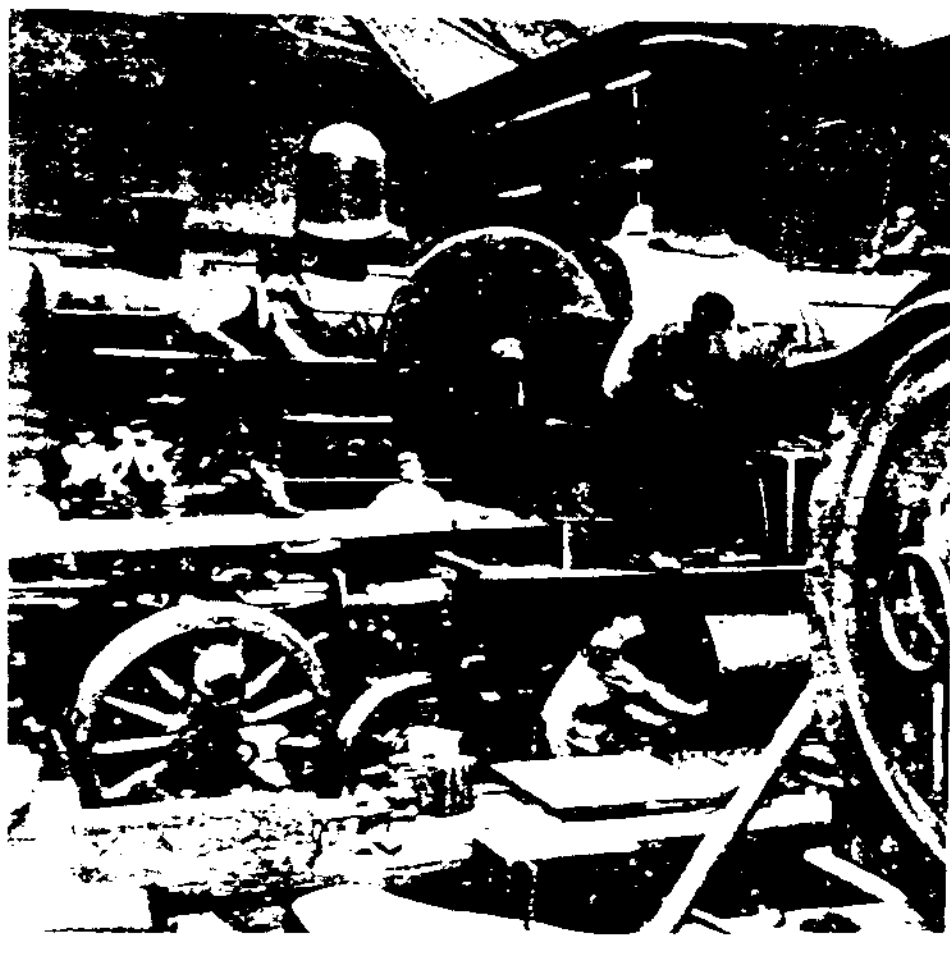


Fig. 24. Loco Workshops, Erecting Shop. All forms of locomotive repair and refurbishing was carried on in the workshops at Eveleigh. Engines were dismantled in the Erecting Shop, the various parts sent to other shops for repair or replacement, after which they returned to the Erecting Shop for the engine to be rebuilt. (9A)

was situated on the western side of Bay 15 and was a substantial building of two bays, each 400 ft long and 55.5 ft wide. Each bay contained three roads of track, the centre one being the clear road and those on each side used for engines undergoing repair. The roads had pits below running the length of the building for access beneath the engines and each bay had two 35 ton overhead cranes. Machines such as lathes, shaping, drilling, milling and grinding tools were installed and powered from a lineshaft running the length of the building between the two bays, driven by electric motors. The building was completed in June, 1899.

N.S.W. Railway and Tramway Magazine, 12/17, p.37.

N.S.W.R. Budget, 21/7/00 p.239-240.

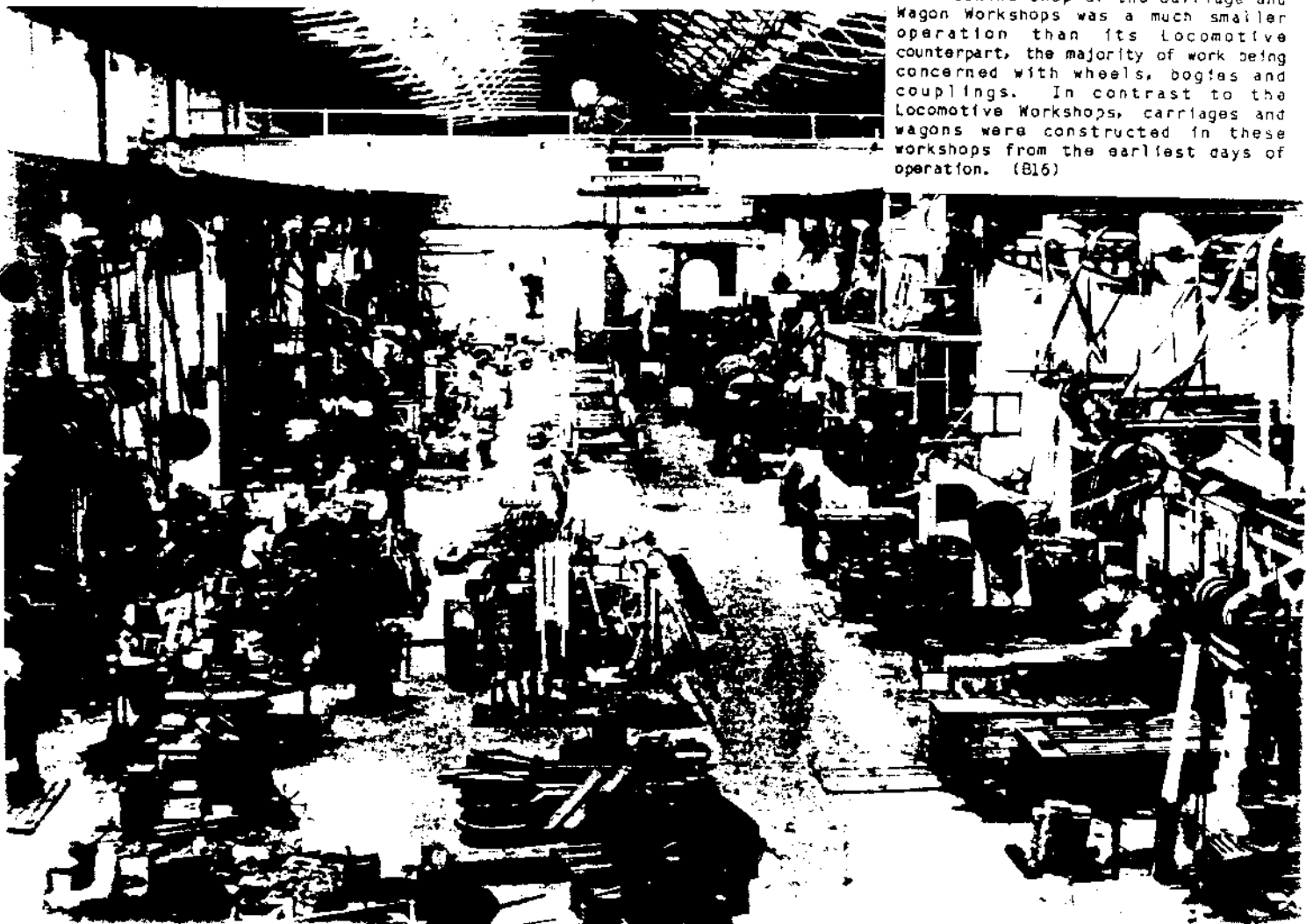
N.S.W.R. Shop Order 28/6/99.

Concurrently, a new Foundry building was being erected adjacent to the Large Erecting Shop site. Established largely to allow the Boiler Shop to expand in Bay 4 of the main workshops, this building, 300 ft long and 60 ft wide, contained 3 iron-smelting cupolas and 12 brass cupolas, 2 core ovens, a steam moulding machine, a sand mixer, a Chilean Mill, rumpers and emery wheels. Lifting appliances included a 16 ton overhead travelling crane, two hydraulic jib cranes, one of 5 tons and one of 2 tons capacity. Several hydraulic lifts were installed outside the building for lifting scrap iron. This building was completed in March, 1899.

N.S.W.R. Shop Order 2/3/99.

N.S.W.R. Budget 21/7/00, p.239-240.

Fig. 25. Carriage Workshops, Machine Shop, Bay 21.
The Machine Shop of the Carriage and Wagon Workshops was a much smaller operation than its Locomotive counterpart, the majority of work being concerned with wheels, bogies and couplings. In contrast to the Locomotive Workshops, carriages and wagons were constructed in these workshops from the earliest days of operation. (B16)



Following the establishment of the Large Erecting Shop enabling many of the engine repair functions to be removed from the main building, the Paint Shop became immediately redundant and work commenced on converting Bays 12 and 13 for an Interlocking Shop. This work began in November 1899 with the removal of the brick wall between Bays 11 and 12 and the installation of iron columns and crane girders.

N.S.W.R. Budget 21/7/00, p.239-240.

N.S.W.R. Shop Order 23/11/99.

In 1900, owing to the large amount of locomotive repair work in hand and the expected growth in this area, an extension to the Large Erecting Shop was commenced. This extension was of 200 ft on the western end, bringing the total length of the building to 600 ft. Two additional cranes were installed, one in each bay and a lineshaft was erected in the extension powered by a 20 hp electric motor. It appears that this extension proceeded gradually as the work was not completed till 1906.

N.S.W. Railway and Tramway Magazine, 12/1 p.37.

Fig. 26. Loco Workshops, Large Erecting Shop. Constructed in 1899 and extended progressively until 1906, the Large Erecting Shop was the centre of the locomotive repair operations at Eveleigh. With each bay measuring 600 feet in length, it was the largest of the workshops entirely concerned with a single function. (X6)



In a separate development, a compressed-air plant was installed in an annexe to the Boiler Shop (Bays 3 and 4) and air-mains were installed around the workshops. The compressor was an Ingersoll-Sergeant with a capacity of 950 cubic feet per minute of free air compressed to 100 pounds per square inch. Various pneumatic tools were introduced and air-hoists were installed in the Machine Shop (Bays 9-11).

Fawcett, F., Works Manager, 14/5/55.

N.S.W.R. Budget, 21/7/00, p.239/240.

The year 1900 also provided an excellent and comprehensive description of both the Locomotive Workshops and the Carriage and Wagon Workshops in the monthly journal known as the N.S.W. Railway Budget. The Locomotive Workshops were detailed in the July 21 issue and the Carriage and Wagon Shops in the following issue of August 21. Both of these articles are included as an appendix.

By the end of 1901, work on the conversion of Bays 12 and 13 was near completion. The Ground-Traverser from No. 13 Bay was dismantled, removed and re-erected outside No. 15 Bay between it and the Large Erecting Shop. The rails in No. 13 Bay were removed, the pits filled-in and a crane installed in No. 12 Bay. Work also began on the conversion of the rope-driven cranes to electric motor drives, as the recent installation of AC current generators at Ultimo Power Station had made the supply of electricity to the Railways easily and cheaply available. This work was completed for the main workshops in September, 1902.

N.S.W.R. Shop Order 17/1/01.

N.S.W.R. Shop Order 14/2/01.

N.S.W.R. Shop Order 5/9/01.

Two new structures were commenced at the end of 1902. A new Copper and Tinsmiths Shop was erected in a shed on the southern side of Bays 5-9, the former shop in the laneway between Bays 4 and 5 being demolished shortly afterward. A large building of corrugated-iron was erected on the eastern end of the workshops (outside Bay 1) which contained in its northern half a Spring Shop and in its southern half a Steam Hammer Shop.

N.S.W.R. Shop Order 1/12/02.

N.S.W.R. Shop Order 1/12/02.

Fig. 27. Loco Workshops, Bays 3-15. In 1903, the annexes located in the laneway between bays 4 and 5 were demolished and the laneway was roofed over and end-walls erected to match the surrounding building. The reason for the construction of the twin square towers, apart from ventilation, doesn't seem to have been recorded. (C12)

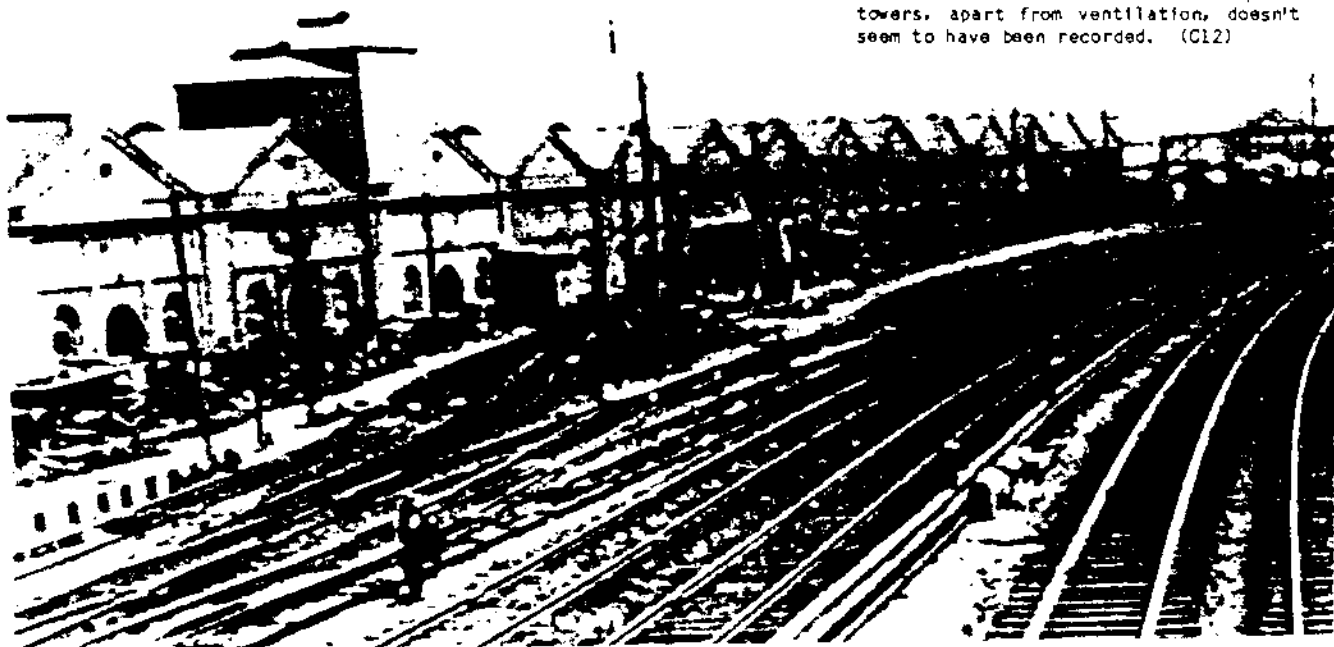
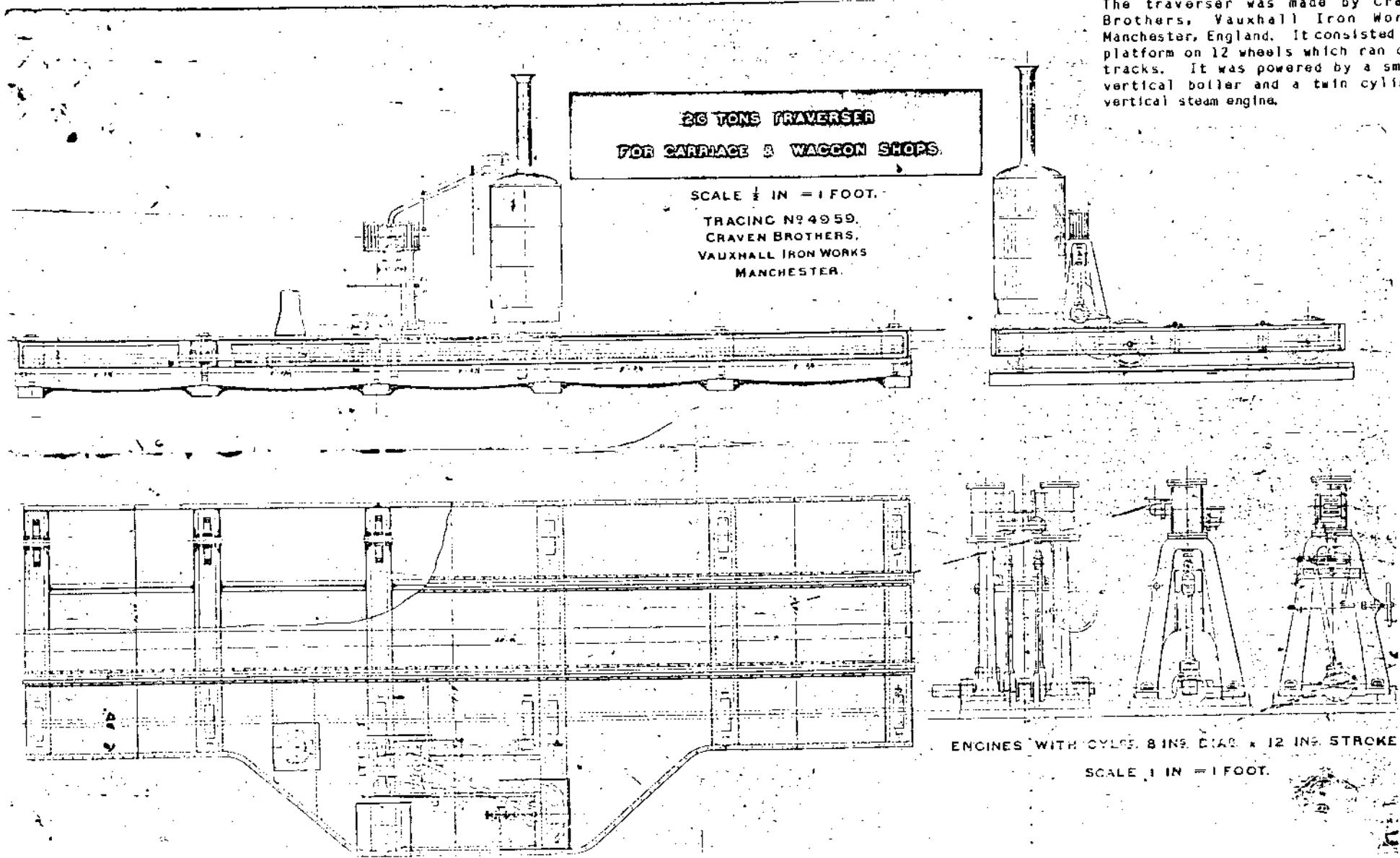


Fig. 28
 Drawing, 26 tons traverser for Carriage and Waggon Shops. Undated.
 The traverser was made by Craven Brothers, Vauxhall Iron Works, Manchester, England. It consisted of platform on 12 wheels which ran on tracks. It was powered by a small vertical boiler and a twin cylinder vertical steam engine.



**26 TONS TRAVERSER
 FOR CARRIAGE & WAGGON SHOPS.**

SCALE $\frac{1}{2}$ IN = 1 FOOT.

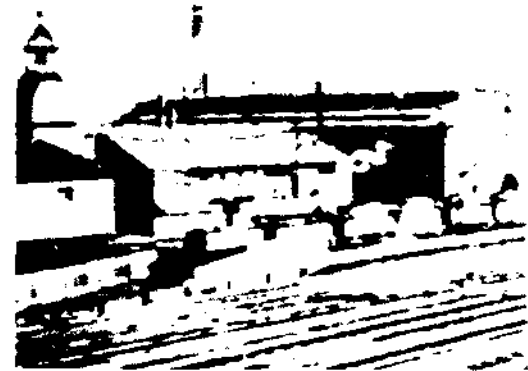
TRACING N^o 4959.
 CRAVEN BROTHERS,
 VAUXHALL IRON WORKS
 MANCHESTER.

ENGINES WITH CYLINDERS 8 IN. DIA. x 12 IN. STROKE
 SCALE 1 IN = 1 FOOT.

The reason for these two construction was the need to expand the operations of both the Blacksmiths Shop (Bay 2) and the Boiler Shop (Bays 3 and 4). During 1903, the laneway between Bays 4 and 5 was cleared of standing structures, infilled and roofed to match the adjoining workshops and the wall adjoining Bay 4 was removed and replaced by iron columns. The Boiler Shop then expanded into this bay. The Blacksmith Shop expanded into Bay 1 following the removal of the Steam Hammers and the Spring Section to their new location. These works were largely completed by 1905.

The Spring Shop was responsible for the manufacture of all sorts of springs including spiral, volute, lock and laminated springs that were used on the railways. The Steam Hammer Shop was initially an open-sided shed containing several steam hammers with associated furnaces, boilers and cranes for the manufacture of items once worked up on a blacksmith's anvil.

Fig. 29. Loco Workshops, Spring Shop. The Spring Shop was established in 1902 in a corrugated-iron shed on the eastern side of the Workshops. All types of springs used on the railway system were manufactured in this shop. (C11)



Fewell, F., Works Manager, 14/5/55.

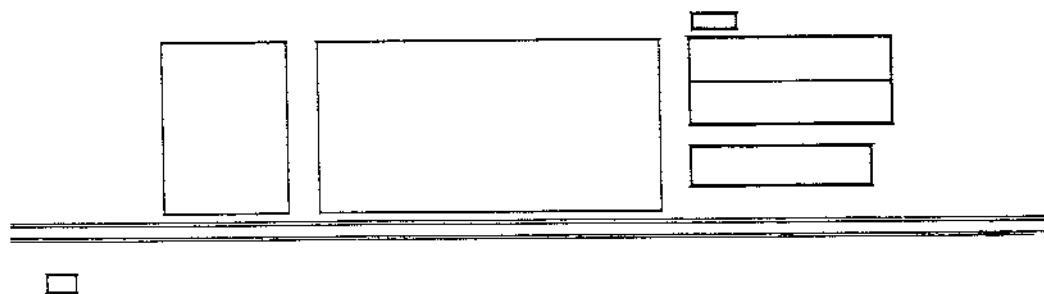


Fig. 30
Loco Workshops : Site Plan - 1900
The Large Erecting Shop, new Foundry and the Laundry have been constructed.

Although the exact date is unclear, it appears that the Wheel Press Shop was also established at this time adjacent to the new Tinsmiths Shop. Housed in a corrugated-iron, timber framed shed to the south of Bays 10-12, this shop contained hydraulic presses for removing axle centres, a tyre-heating plant, hydraulic cranes and a chain-testing machine.

Inst. of Eng. Syd. Div. 11/10/22.

Early in 1905, the arched roof over the three bays of the Running Shed was rebuilt. The lantern was lengthened and fitted with louvres, replacing the original ridge and furrow design.

Wylfe, 1963, in A.R.H.S. Bulletin 291-314, p.945.

In August 1905, an engine weighbridge was installed in the yard a little to the north of the Large Erecting Shop.

N.S.W.R. Shop Order, 21/9/05.

During 1906, the Ground Traverser between No. 15 Bay and the Large Erecting Shop was converted from steam to electric power. This traverser was extended in 1907 on its southern side. Other developments included the installation of extra turntables in the Large Erecting Shop and the purchase of a 20 hp electric motor for the Spring Shop.

Fewell, F., Works Manager, 14/5/55.

N.S.W.R. Shop Order 6149/255.

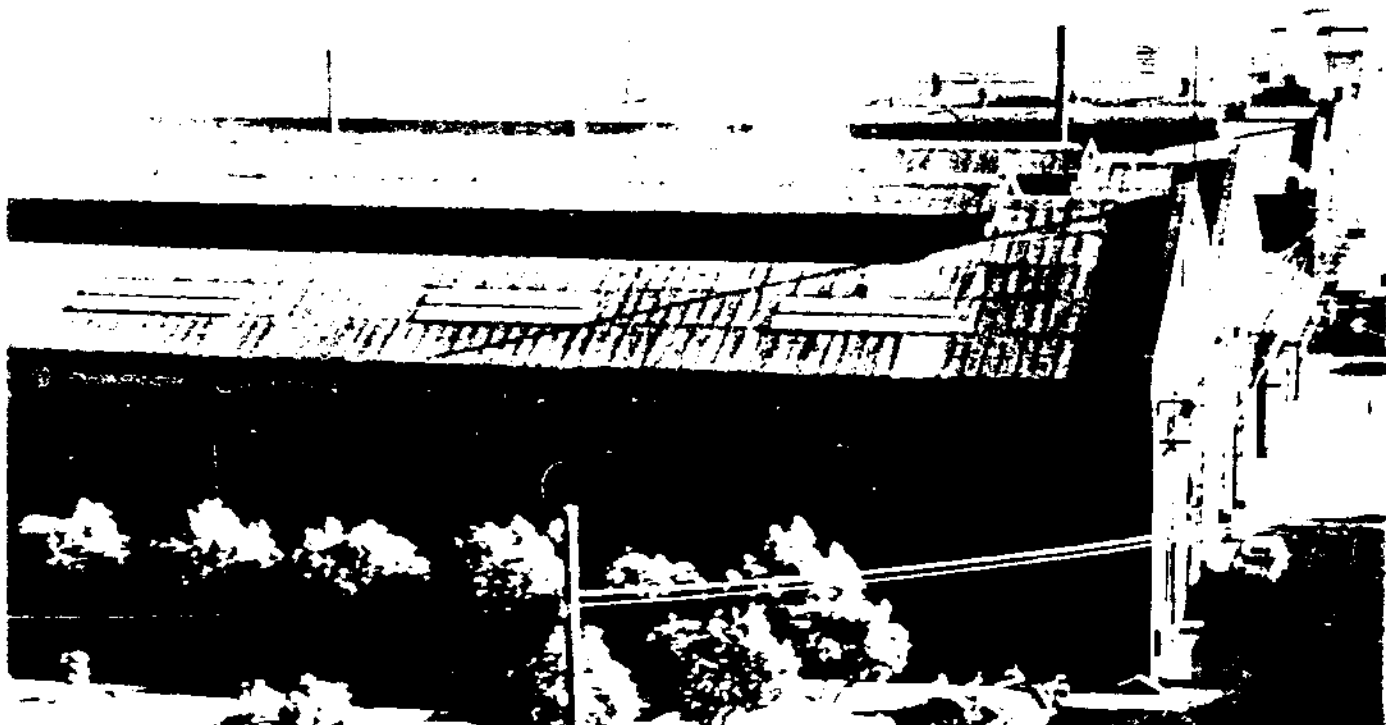
N.S.W.R. Shop Order 7/8/06.

N.S.W.R. Shop Order 17/5/06.

The year 1907 was distinguished by the decision of the Commissioners for Railways to begin the manufacture of new locomotives at Eveleigh and a new building was designed for this purpose. Clearing of ground on the eastern end of the workshops complex commenced in September and construction began shortly afterwards. Known as the New Loco Shop, it comprised two bays, each 200 ft long and 53 ft wide, running parallel to the main workshop bays. Walls were of polychrome load-bearing brick laid in English Bond with double semi-circular arched windows at ground level and segmented arched windows above. Window and door arches were in contrasting dark bricks and a white mortar was used throughout. Windows were steel-framed and multi-paned with sandstone sills. Internally, light steel trusses supported the corrugated-iron double-gabled roof and Globe Foundry iron columns carried these and the overhead crane tracks.

Fewell, F., Works Manager, 14/5/55.

Fig. 31. Loco Workshops, New Loco Shop. The New Loco Shop was constructed in 1907 specifically to house the construction of new locomotives. In all, between 1908 and 1924 when construction ceased at Eveleigh, 152 locomotives of six different classes were built in this Shop. (C14)



Also during 1907 a new compressor house was established on the south side of the New Loco Shop site. A small building, 65 ft by 48 ft, it contained space for two compressors and two boilers. Construction commenced in September and by the end of the year, two Babcock and Wilcox boilers had been purchased and installed and the Ingersol-Sergeant compressor had been moved from its location in the Boiler Shop Annexe to the new Compressor House. A second compressor, referred to only as a Franklin, brought the total output of the Compressor House up to 2800 cfm at 100 psi.

N.S.W.R. Shop Order 17/9/07.

Fewtall, F., Works Manager, 14/5/55.

The following two years saw the refurbishment or replacement of many of the operating boilers around the workshops. During 1908, four 'M' class locomotive boilers were installed as stationary boilers in the Boiler House behind Bays 2 and 3, presumably replacing the four installed in 1887. Another 'M' class boiler replaced a condemned boiler in the Boiler House behind Bay 9. Early in 1909, four old E17 class locomotive boilers were installed to replace the four 'A' class boilers in use in the Smiths Shop.

N.S.W.R. Shop Order 28/5/08.

N.S.W.R. Shop Order 14/5/08.

N.S.W.R. Shop Order 4/2/09.

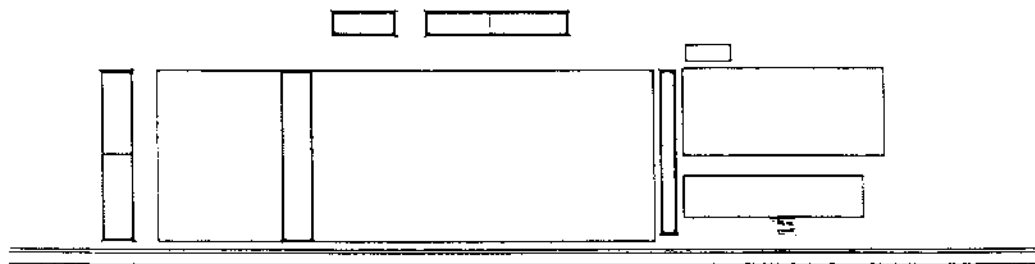
Most overhead cranes in the workshops were all converted to electric drives by 1902. In the Large Erecting Shop there remained four rope-driven cranes installed in 1899 and two electric cranes installed in 1904. Two of the rope-driven cranes were converted to electric drive during 1910. An additional 5 ton Craven electric crane was installed in the No. 9 Bay (Wheel Section). Another significant development in 1910 was the construction of indoor toilet facilities throughout the workshops - the result of labour negotiations for improved conditions.

Fewtall, F., Works Manager, 14/5/55.

N.S.W.R. Shop Order 20/11/09.

In contrast to the almost constant development in the Locomotive Workshops during the two decades

Fig. 32
Loco Workshops : Site Plan - 1905
The No. 4A Bay has been enclosed, the New Tinsmiths and Coppersmiths Shops constructed and the Steam Hammer and Spring Shop established on the eastern side of Bay 1.



□

1890-1910, operations in the Carriage and Wagon Workshops appear to have proceeded with few major changes or alterations to either the buildings or equipment. During 1901 and 1902 the two steam-driven Ground Traversers were removed from Bay 17 and 23 and new electric external Traversers were installed at either end of the Carriage Workshop building. In 1907, a new building was erected on the northern side of the workshops to house the Carriage and Wagon Blacksmiths Shop. This allowed more room within Bay 21 for expansion of the Woodworking Machine Shop. The gas-plant was upgraded in 1909 by the addition of a 'Mond' 550 hp gas producer, a 450 hp Premier gas engine and a 100 hp Premier gas engine. A hydraulic plant was also installed late in 1909. In 1910, a sawdust exhaust system was installed in the Woodworking Machine Shop, the boiler was removed from the Woodworking Machine Shop, being replaced by steam generated by an 'M' class boiler located in the Blacksmiths Shop, (which had nine of its bays closed in during May and June) and a drive shaft was connected to the Blacksmiths Shop, cross-shafted underground from the Machine Shop opposite.

N.S.W.R. Shop Order 31/1/01 and Shop Order 7/11/01.

N.S.W.R. Shop Order 29/10/07.

N.S.W.R. Shop Order 25/11/09.

N.S.W.R. Shop Order 20/10/09.

N.S.W.R. Shop Order 2/6/10.

N.S.W.R. Shop Order 29/9/10.

N.S.W.R. Shop Order 074/256.

N.S.W.R. Shop Order 11/5/10.

Apart from these minor changes, work on the maintenance and repair of the Railways rolling stock was carried on uninterrupted and new carriages were being constructed at the rate of about ten per week.



Fig. 33. Carriage Workshops Outside Bay 16. Cleaning a carriage bogey using what appears to be a portable high pressure water unit, the hydraulic power unit for the Carriage Workshops is in the background. The accumulator with its heavy iron weights is halfway up its travel, indicating the system is in operation.

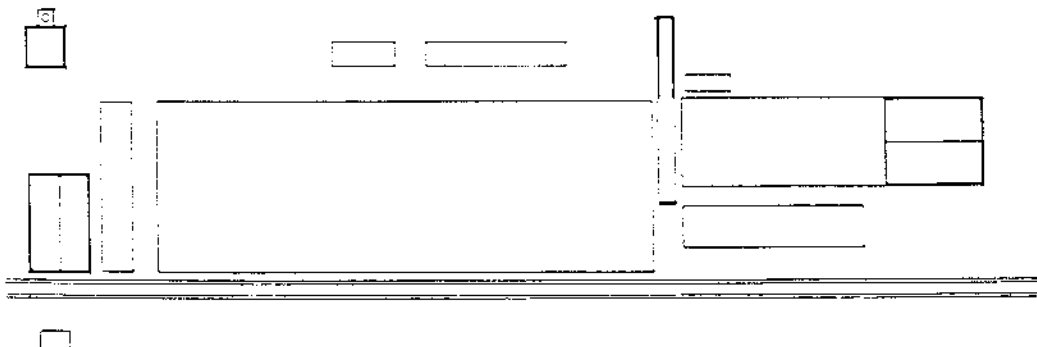


Fig. 34 Loco Workshops : Site Plan - 1910 The New Loco Shop and Compressor House have been constructed and the Large Erecting Shop and its Traverser extended.

**EVELEIGH RAILWAY WORKSHOPS
HISTORY AND DEVELOPMENT
1910 - 1935 WAR, PEACE AND RECESSION**

The years 1911 to 1913 were quiet years for the Workshops. A Grinding and File Making Shop was established in the old Cleaning Annexe behind Bay 9 during 1911. Equipped with three large Pymont sandstone grindstones of about 6 foot diameter and a file testing and cutting machine, it provided a central facility in the Workshops for tool maintenance and repair, as well as more general grinding work. In 1912 a Signal and Telegraph Branch Workshop was constructed in the north-eastern corner of the workshops site, adjacent to the Redfern Station No. 1 Platform. A one-storey brick building consisting of two bays, each 95ft by 24ft, it had a sawtooth roof of corrugated-iron, extruding pilasters and timber-framed windows with brick lintols and sills.

Fewell, F., Works Manager, 14/5/55.

N.S.W.R. Shop Order 357/256.

The Carriage and Wagon Paint Shop was extended around this time and the area on the western side of the Carriage Repair Shed, known as the Carriage Shop Paddock, was roofed over for additional car repair space. The Paint Shop extension was built on the northern side of the existing shed. It was similar in dimensions and materials though the sawtooth roof of the extension was at a right angle to the direction of the sawtooth roof of the original. The enclosing of the Carriage Shop Paddock was done entirely in corrugated-iron, except that a brick face wall was erected on the southern side facing the Suburban Railway lines. In detail and materials this wall maintained the appearance of the Carriage and Wagon Shop facade adjacent, although it was given a sawtooth rather than the existing gabled profile. In 1913 a footbridge was built across the southern end of the yard for the workmen to cross the tracks more safely.

N.S.W.R. Shop Order 228/256.

N.S.W.R. Shop Order 24/8/12 and Shop Order 19/9/13.

N.S.W.R. Shop Order 256/187.



Fig. 35. Carriage Workshops, Signal and Telegraph Shop.
Built in 1912, this building housed the workshops that dealt with all aspects of signalling and telegraphs used to communicate between railway stations. In later years, the telegraph system was converted to a telephone system. (02)

The beginning of 1914 and presumably the outbreak of war in Europe gave impetus to a significant upgrading of facilities and rearrangement of workshops. The New Loco Shop, constructed in 1907, was extended on its southern side by 100 ft to a total of 300 ft, making it equivalent in length to the Main Workshops. The brickwork and internal details of the original building were reproduced in the extension but the roof profile was of the saw-tooth design with copings and parapets finished in sandstone.

N.S.W.R. Shop Order 11/5/14.

Electrification of machinery in the workshops was another major undertaking, with No. 14 Bay (Pattern Shop) completed by the 8th of January, No. 8 Bay (Erecting Shop) and No. 9 Bay (Machine Shop) completed by the beginning of August.

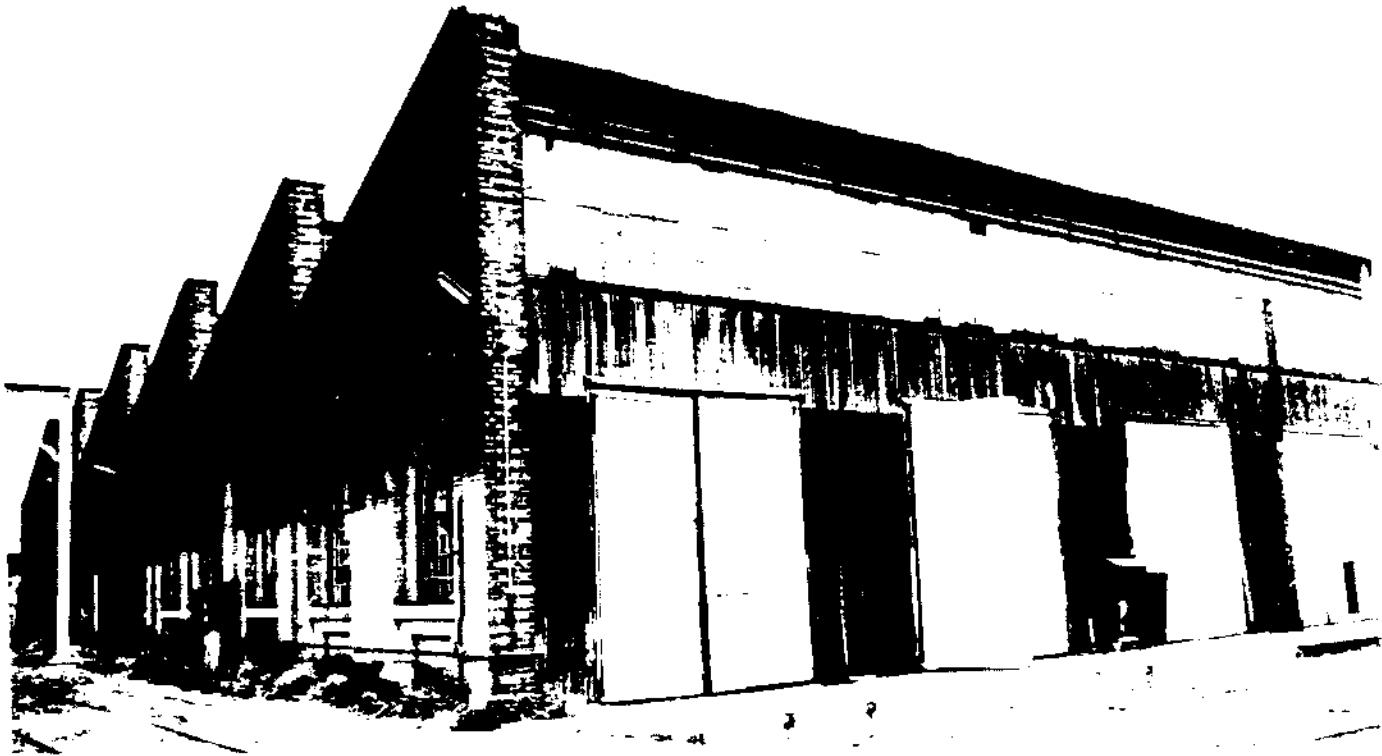


Fig. 36. Carriage Workshops, Car Repair Yard.

In 1912, the area on the western side of the Carriage Workshops was roofed over with corrugated-iron in the saw-tooth profile. The southern facade, facing the main suburban railway lines, was given a brick face wall with arched windows to maintain the presentation of facades established by the existing buildings (S17)

In order to allow an expansion of the Machine Shop, the Laundry was removed from the building adjacent to the Large Erecting Shop and re-established in a new building at Clyde where it still remains, known as the Clyde Laundry. The Millwrights Section and the Water Supply Section then moved from No. 11 Bay to the former Laundry building and the No. 11 Bay became part of the Machine Shop. This was a temporary arrangement while the Machine Shop was reorganised.

Fewtall, F., Works Manager, 14/5/55.

Fig. 37. Loco Workshops, New Loco Shop. Extended in 1914 by an additional 100 feet, the extension to the New Loco Shop reproduced the architectural detailing of the existing building in every respect except the roof profile, which was saw-toothed rather than the twin-gables of the original. Saw-tooth roofs were favoured for the additional natural light they admitted to the interior of the building.



Other alterations included the conversion of the overhead cranes in Bays 9 and 11 from rope-driven to electric drive, the provision of a lockable Tool Room in Bay 14, the lagging of all steam pipes in the workshops with asbestos, the construction of an 110 ft long pit in Bay 4 for the storage of boiler plates and the purchase of two Hawthorn-Leslie mobile locomotive cranes for general use around the yard.

N.S.W.R. Shop Order 331/257.

N.S.W.R. Shop Order 30/6/14.

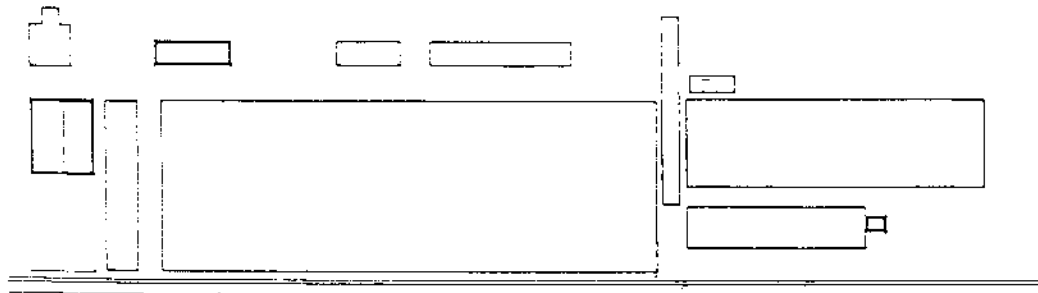
N.S.W.R. Shop Order 257/346.

N.S.W.R. Shop Order 4/7/14

With the expansion in the use of compressed-air in the workshops, an additional air-compressor, manufactured by Ingersoll-Rand and of 2600 cfm capacity, was installed in a new compressor house in the Foundry building. This was augmented early in 1915 by the installation of a second Ingersoll Rand compressor of 330 cfm capacity.

Fewell, F., Works Manager, 14/5/55.

Fig. 38
Loco Workshops : Site Plan - 1915
The New Loco Shop has been extended, the Oliver Shop established and a Compressor House added to the Foundry.



On the Carriage side of the Workshops, a large two-storey stores building was constructed west of the timber shed in the Stores Branch complex. The other stores buildings were less substantial timber and corrugated-iron buildings, built at various times since the establishment of the Workshops, all administered by the Railways Stores Branch. The new building rationalised much of the Stores Branch's activities under one roof in the centre of this area. Measuring approximately 200ft x 50ft, the building was of brick with sandstone sills, lintols and copings. The single gable roof was clad in corrugated iron. The long walls were finished without decoration but the short end walls were topped by high castellated parapets, with full length pilasters giving relief to the facade.

M.S.W.R. Shop Order 257/38.



Fig. 39. Carriage Workshops - Stores Building.

This building was constructed to rationalise the existing Stores facilities which had been housed in a collection of tin sheds in this area. The Railways Stores Branch had been on the Eveleigh site since its earliest days but were an operation entirely separate from the workshops.

Developments during 1915 continued the programs initiated the previous year. The No. 7 Bay Ground-Traverser was converted to electric drive, the Machine Shop wall-mounted steam-engines were replaced by electric motors and an additional 25 ton electric overhead travelling crane was installed in No. 4 Bay.

Fewell, F., Works Manager, 14/5/55.

N.S.W.R. Shop Order 18/12/15.

Following the rearrangement of the Machine Shop, the Millwrights moved from the former Laundry into a section of No. 9 Bay. The Water Supply section, concerned with the supply of all taps, pipes, connections, tanks and other material concerned with the provision and use of water in the railways, also moved out of the former Laundry to a new workshop at Erskineville and the laundry building was subsequently demolished.

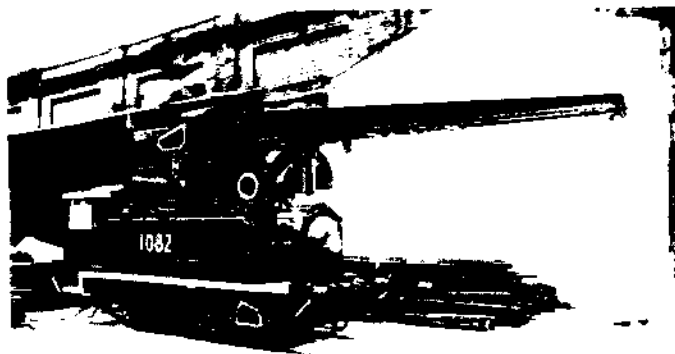


Fig. 40. Hawthorne-Leslie Locomotive Crane.

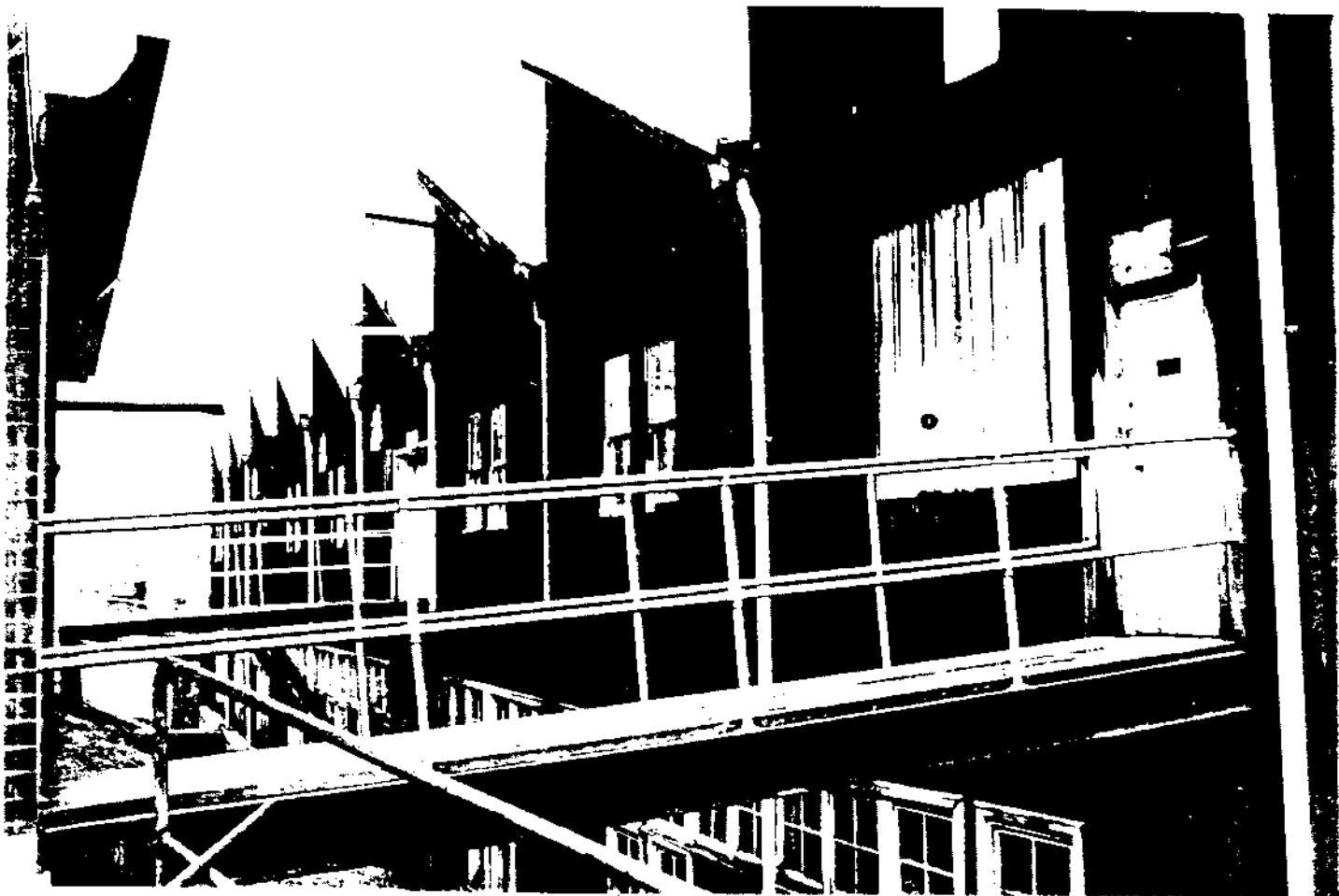
Two of these cranes were purchased in 1914 to provide mobile lifting facilities around the yard. Essentially a small locomotive steam engine, the steam also powered a crane and winch which were mounted above the locomotive boiler. (V21)

During 1916, electrification of machinery in the Machine Shop (Bays 10-13) was completed on the 3rd of June, Ajax forging machines were installed in the Blacksmiths Shop and a locomotive weighbridge was purchased and erected in the yard. As part of the war effort at this time, a trial production run of 5,000 18lb field-gun shells was made in the workshops using machines modified for the purpose. This was discontinued because the machines were on the whole inappropriate and the whole arrangement judged to be unsatisfactory for both the Army and the Railways.

Fewell, F., Works Manager, 14/5/55.

In 1917, a new Foundry building and a new Pattern Shop building were constructed on the southern side of the workshops. This required a resumption of two acres of land on the south-western end of the site to allow a rail siding to be built to connect to these two new structures. Both buildings were timber and steel framed, corrugated-iron clad with corrugated-iron roofs. They were both completed and in operation by December, 1917.

N.S.W.R. Shop Orders 258/272, 40/254
2160/259.



The Pattern Shop was built on two levels, the slope of the land at this point allowing ground level access to both floors. The upper level contained the Joinery Section in which all the patterns were manufactured. The lower floor was a large storage area for the patterns. The old Pattern Shop in Bay 14 of the Workshops was vacated and subsequently became part of the Machine Shop.

The new Foundry was provided with three separate sections, one each for iron, brass and steel castings and all new furnaces and machine moulding equipment was installed. The old foundry adjacent to the Large Erecting Shop was converted during 1919 to a Boiler-Mounting Section for fitting-up boilers with their necessary appliances, an Assembly Depot for storage of finished parts till required in the workshops and a Boiler Repair Shop for refurbishing boilers already in service.

Sometime prior to 1917, a Potash Washing Plant was established in a small corrugated-iron shed between Bay 15 and the site of the new Foundry. Containing large Potash tanks served by a hand-operated overhead crane, it was used to wash the grease and dirt from detail parts of locomotives, facilitating the operations of the various shops that may be required to work upon the parts.

Fig. 41. Loco Workshops, Pattern Shop. Built in conjunction with the establishment of the new foundry, the pattern shop had two levels with access allowed by the slope of the land to both levels. The lower floor housed the extensive collection of existing patterns while the upper floor contained the Joiners and Patternmakers workshop. (X34)

Fewell, F., Works Manager, 14/5/55.

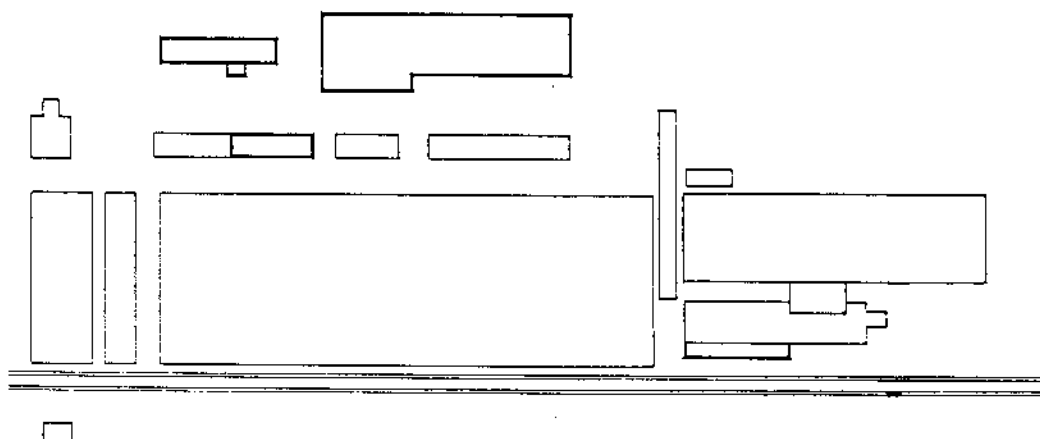
Inst. of Eng. Syd. Div., 11/10/22.

N.S.W.R. Shop Order 156,259.

N.S.W. Railway and Tramway Magazine, 12 p.37.

With the completion of the new buildings and the transfer of operations from the workshop building, the remaining shops were rearranged and rationalised. The Steam Hammer Shop was moved to a new shed behind Bay No. 1, Bays 1 and 2 remained the Blacksmiths Shop and Bays 3, 4 and 4a remained the Boiler Shop. Bays 5-8 contained the Old Erecting Shop, with the Traverser in Bay 7. Twenty-four engines and twelve tenders could be accommodated in this section. Bays 9-14 housed the new extensive Machine Shop, with the Tool Room on the northern side of Bay 14. The Millwrights were again moved, this time from No. 9 Bay to the northern side of Bay 15, which continued to house a Locomotive Store, much reduced in size, in its southern side. An additional development was the establishment of a photographic office in June, 1919 in rooms attached to the Tinsmiths Shop.

Fig. 42
Loco Workshops : Site Plan - 1920
The major construction was the new Foundry and the new Pattern Shop on the southern side of the workshops.



The Steel Foundry section of the new foundry was opened in 1919 using an oil-fired Stock Steel Converter as its main furnace. By 1922, it was deemed necessary to have an electric furnace for this section and a major extension of the Steel Foundry was undertaken for this purpose. Added on to the western end of the Foundry building, the extension and furnace installation was completed by November, 1923.

Inst. of Eng. Syd. Div. 11/10/22.

N.S.W.R. Shop Order 437/260.

In March, 1922 work commenced on an extension to the Works Managers and Timekeepers Office building in the north-east corner of the Locomotive Works. The twin-gabled two-storey building was extended on its western side by 36 feet on both levels, putting the bell tower into a central position in the building and the bull-nosed verandah supported on cast-iron columns with elegant iron lace capitals was extended, encircling the ground floor.

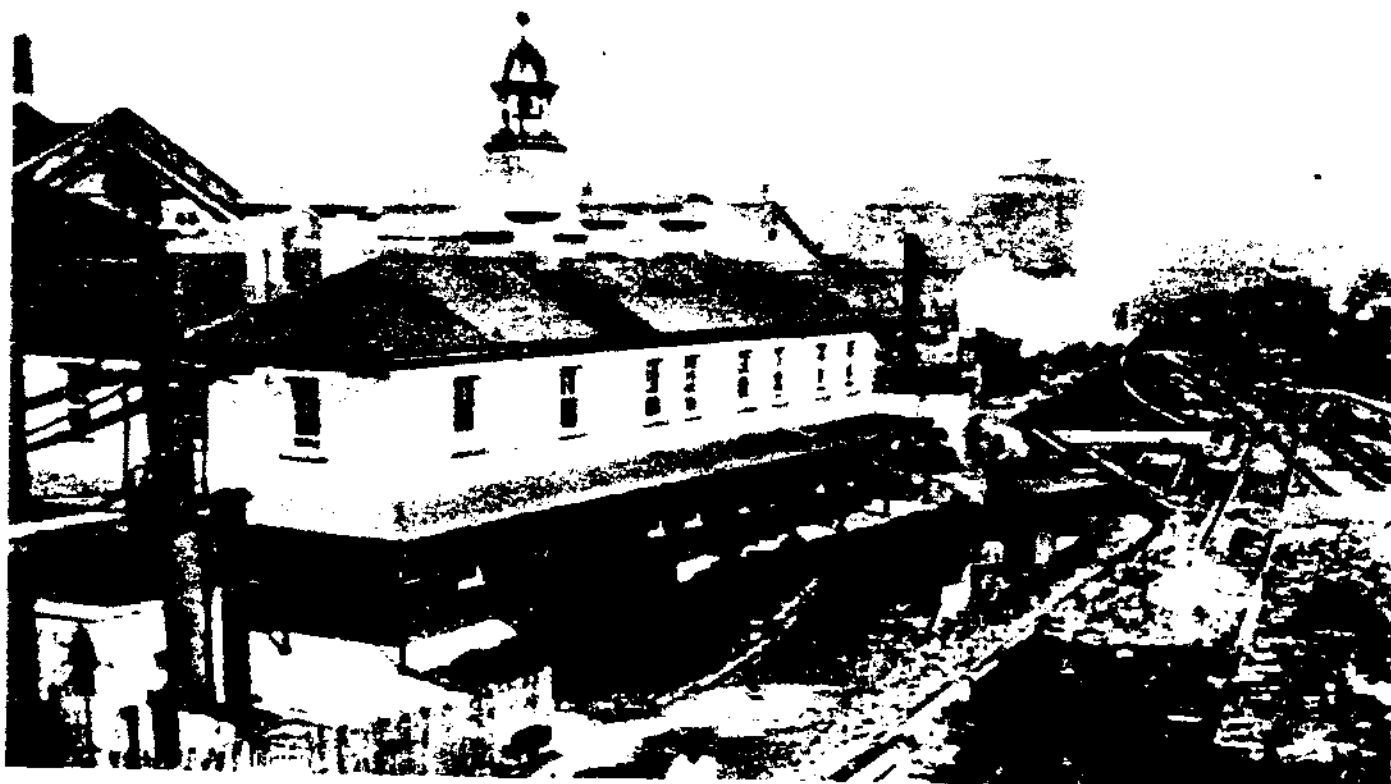
Other developments of 1922 included the removal of the No. 7 Bay Ground Traverser and the conversion of this bay into another workshop with a 35 ton electric overhead crane installed. A Grinnell fire-sprinkler system was installed in the Pattern Shop by Wormald Bros. In November and Calder House, used as the Works Manager's Residence since 1887, was vacated due to its poor condition. It was destroyed by fire in 1924.

In 1923, a major portion of the boiler repair work was shifted to a new facility established at Chullora. Two additional 35 ton C.J. Hasemer overhead cranes were installed in the Large Erecting Shop in July.

N.S.W.R. Shop Order 226/260.

Fewtall, F., Works Manager, 14/5/55.

Fig. 43. Loco Workshops, Works Managers Office. 1918 to 1928 saw enormous changes to the workshops at Eveleigh, with significant expansion of facilities, new buildings and additional lines and tracks. In 1922, a large extension was added to the western end of the Works Managers Office. The construction of the Illawarra line dives was commenced shortly after this was completed. (A6)

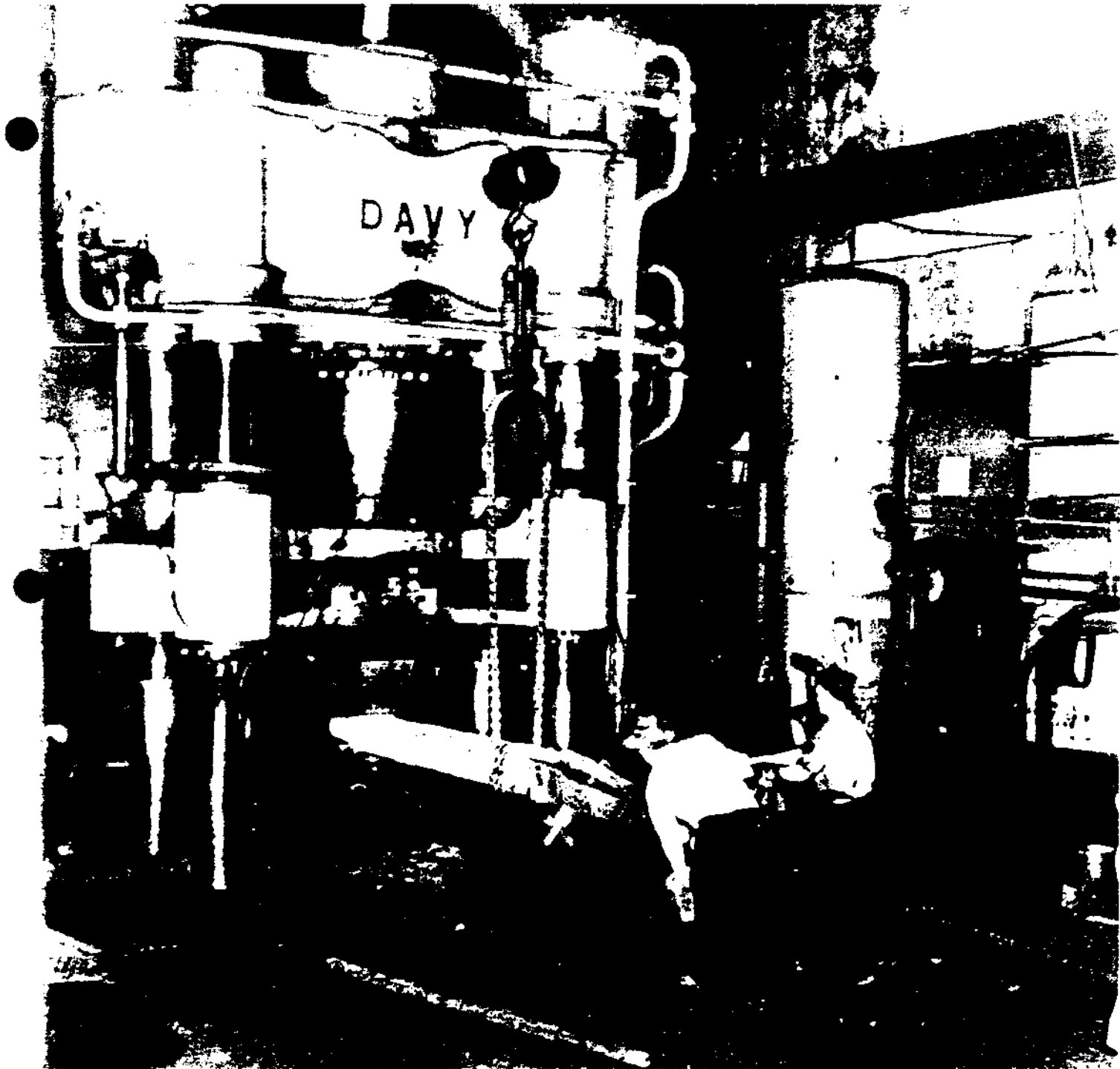


The following year, 1924, was marked only by the purchase of an Asquith portable radial drilling machine, some unspecified file cutting equipment and the installation of buffers on three of the overhead cranes in the Large Erecting Shop.

1925 produced more significant changes. The No. 1 Blacksmiths Shop in Bay 1 was completely rearranged and a 1500 ton steam-driven "Davy" press was installed in the northern side. Imported from England, it was used for the forging of the heaviest parts used on locomotives. Two boilers were installed with it to provide steam to drive the air-compressor which drove the press and the boilers were orientated through the eastern wall of the building with the furnaces inside and the flues outside. The furnaces did double-duty as heating furnaces for the metal to be pressed on the Davy.

Fewtall, F., Works Manager, 14/5/55.

Fig. 44. Loco Workshops, Blacksmiths Shop, Bay 1. In 1925, the northern half of Bay 1 was cleared and a 1500 ton capacity 'Davy' press was imported from England and installed. Powered by a steam-driven air-compressor, it had two boilers of its own installed to provide the necessary steam, the furnaces also being used for heating the material being worked on the press. (A19)



The quadruplication of the Illawarra Line in 1925 brought, as an initial step, the demolition of the northern bay of the Running Shed to provide more room in the yard for these lines. The two remaining bays were unaffected.

Wyllie, 1963, in A.R.H.S. Bulletin 291-31 p.945.

Also in 1925, construction commenced on an elevated timber coal stage on the northern side of the workshops, a 40,000 gallon water tank was erected on high ground near Cornwallis Street and plans were approved and construction commenced on a subway under the main yard.

E.W.C.S.C., 1968 in Eveleigh News No. 377



Fig. 45. Eveleigh Railway Yard, Illawarra Junction Signal Box. Following the quadruplication of the suburban rail lines and the completion of the construction of the Illawarra lines, the Eveleigh Railway Yard became a complicated array of tracks, sidings and junctions leading to the Central Station terminal. The management and safe-working of the yard was conducted from the elevated Illawarra Junction Signal Box. (A9)

As these works were underway, elsewhere in the works the mounting pressure on Locomotive repair facilities led to, in 1925, the decision to cease the manufacture of new locomotives at Eveleigh. The New Loco Shop was from this time used largely for locomotive repair work. Up to this time, one hundred and fifty-three locomotives had been constructed at Eveleigh. Twenty-two C32 class locos were commenced in March 1908, followed by five C34 class locos commenced in December, 1909, fifty C30 class locos commenced at the end of 1911 and thirty D53 class commenced in April 1913. Thirty-five C35 class locos were built between 1914 and 1923 and ten C36 class locos were built during 1924.

Fewtall, F., Works Manager, 14/5/55.

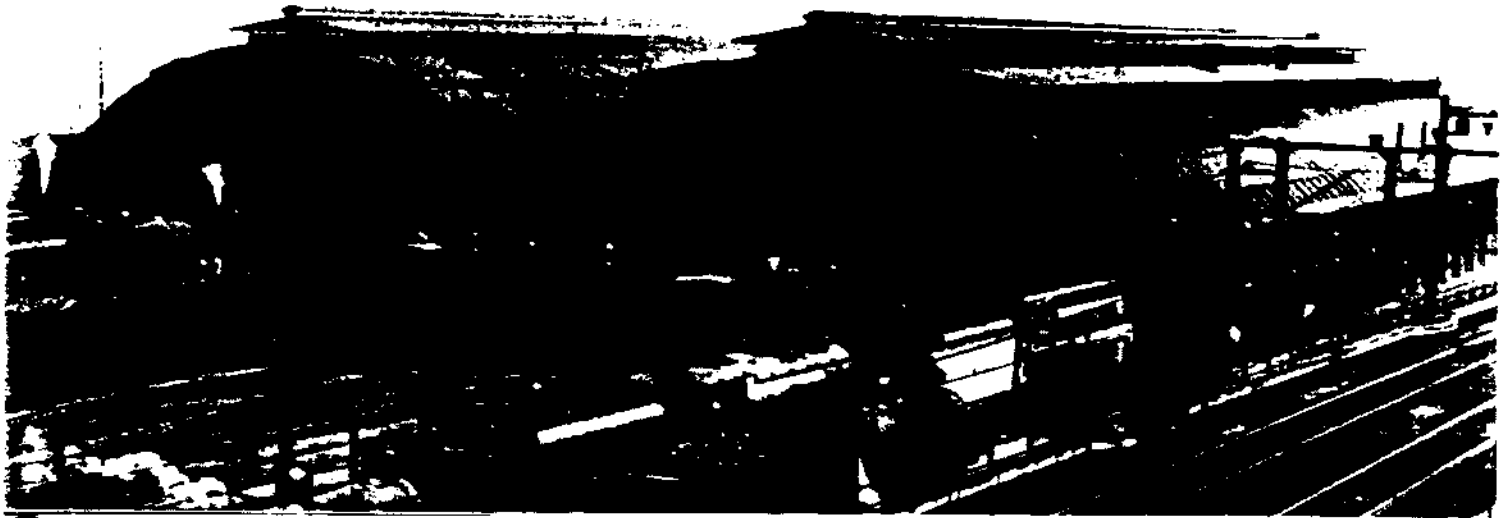


Fig. 46. Locomotive Running Shed, Eveleigh, 1930's.

The expansion of the yard and tracks due to quadruplication and the Illawarra lines brought, with the need for additional space, the demolition of the northern bay of the Locomotive Running Shed in 1925. The ridge and furrow roof profile of the original design had been converted to the louvred monitor and glazed skylight panels in 1905.

The elevated timber coal stage was completed in mid-1927. Constructed of 12 inch by 12 inch ironbark posts with 14 inch by 7 inch cross-members arranged in a simple truss, it stood 28 feet high and carried an elevated track for coal trucks to deliver coal into one of eleven hoppers for discharge to locomotive tenders standing on the lower track running beneath the stage.

E.W.C.S.C., 1968 in Eveleigh News No. 37

Other developments around this time that affected the Eveleigh Railway Yard were the electrification of the suburban rail lines and the construction of the Illawarra dives by cut and cover methods, completed in July of 1927. The subway under the Yard, commenced in 1925, was also completed in July, 1927 for a final cost of 1850 pounds.

By the end of the year, a new Tinsmiths and Plumbers Shop had been built on the bank above the Pattern Shop. Of corrugated-iron on a timber frame, it was established to give both these sections more spacious accommodation as their operations had outgrown their previous shops over the twenty-five years since they moved in. The former Tinsmiths Shop adjacent to the Wheel-Press House was subsequently converted to a Welding Shop, welders having previously been housed in several different areas. The Grinding Shop was closed at this time and was later used for various other purposes.

Fewtall, F., Works Manager, 14/5/55.

In February of 1928, two new Traversers were installed in the Large Erecting Shop at a cost of 7058 pounds. This appears to be the last new building or purchase of new equipment that occurred in the workshops until 1935, the period of the Great Depression. Apart from this lack of growth, the Workshops appear to have managed through the difficult times without major setbacks.

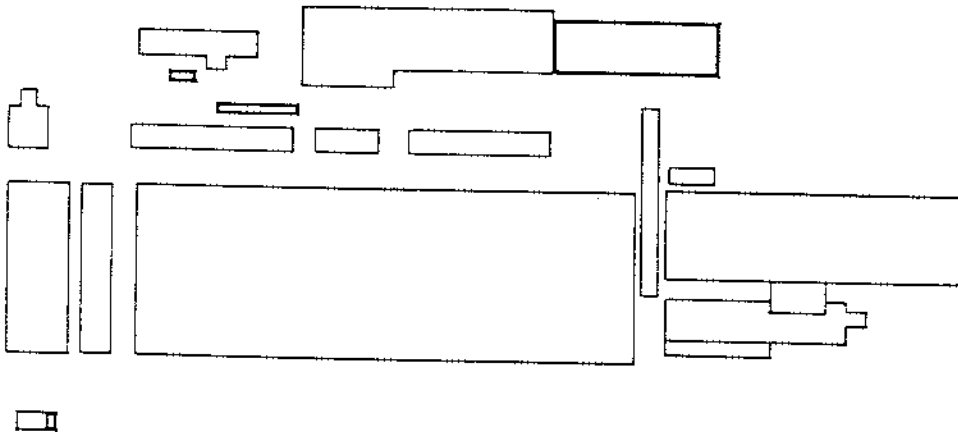


Fig. 47
Loco Workshops : Site Plan - 1930
The new Steel Foundry and the new
Tinsmiths and Plumbers Shops have been
constructed. The Works Managers Office
has been extended.

The equivalent period 1910-1935 brought far less activity and development in the Carriage and Wagon Workshops than for the Locomotive Workshops. 1913 saw extensions to the Paint Shop and the Carriage Repair Yards, as previously mentioned, with the construction of the large stores building in 1914. The Traverser between the Paint Shop and the Wagon Shop was extended in 1915 and two 25 ton T. Goodall and Co. electric overhead cranes were installed in 1920. Although the dates are unclear, a number of buildings came into existence in the Carriage Workshops area that were erected between 1914 and 1924. The Materials Testing Laboratory was established in a large two-storey brick building on the ridge beside the Chief Mechanical Engineers Office. The roof was a hipped single gable clad in red terracotta tiles. Below this on the flat ground to the east of the Paint Shop were two adjacent stores and general workshops buildings constructed in weatherboard and fibro, both single storey buildings with corrugated asbestos concrete roofs. On the western end of the Carriage Workshops, in the Stores Branch area, a residence was constructed of brick with corrugated iron roof near to the Stores buildings.

N.S.W.R. Shop Order 21/6/15.



Fig. 48. Carriage Workshops, Stores Residence. Whether originally built as an office or a residence for the controller of the Stores Section, this small building spent most of its time as the Hostel and Canteen Manager's Office, following the conversion of the Stores building to a Hostel. (C2 24)

To the west of this was a large timber framed, corrugated-iron clad oil storage shed with a timber loading platform on its southern side. All of these structures were in existence by September, 1924. 1924 also saw air-driven spray-painting equipment installed in the Paint Shop. During 1927, the buildings, traversers and sidings around the shops were altered to create 6 roads of track into the workshops. In 1929, the gas supply was connected from the Department's gas works to the Paint Shop. Nothing further occurred till 1934 when a buffet or canteen was erected and the old Ambulance Room was removed, to be replaced by a new facility in 1937.

N.S.W.R. Shop Order 265/263.

Fig. 49. Carriage Workshops, Train Equipment Stores. Erected during the 1920's as a drawing office and unspecified workshop, these buildings have housed a variety of uses leading to their present use as Train Equipment Stores. (C2 36)



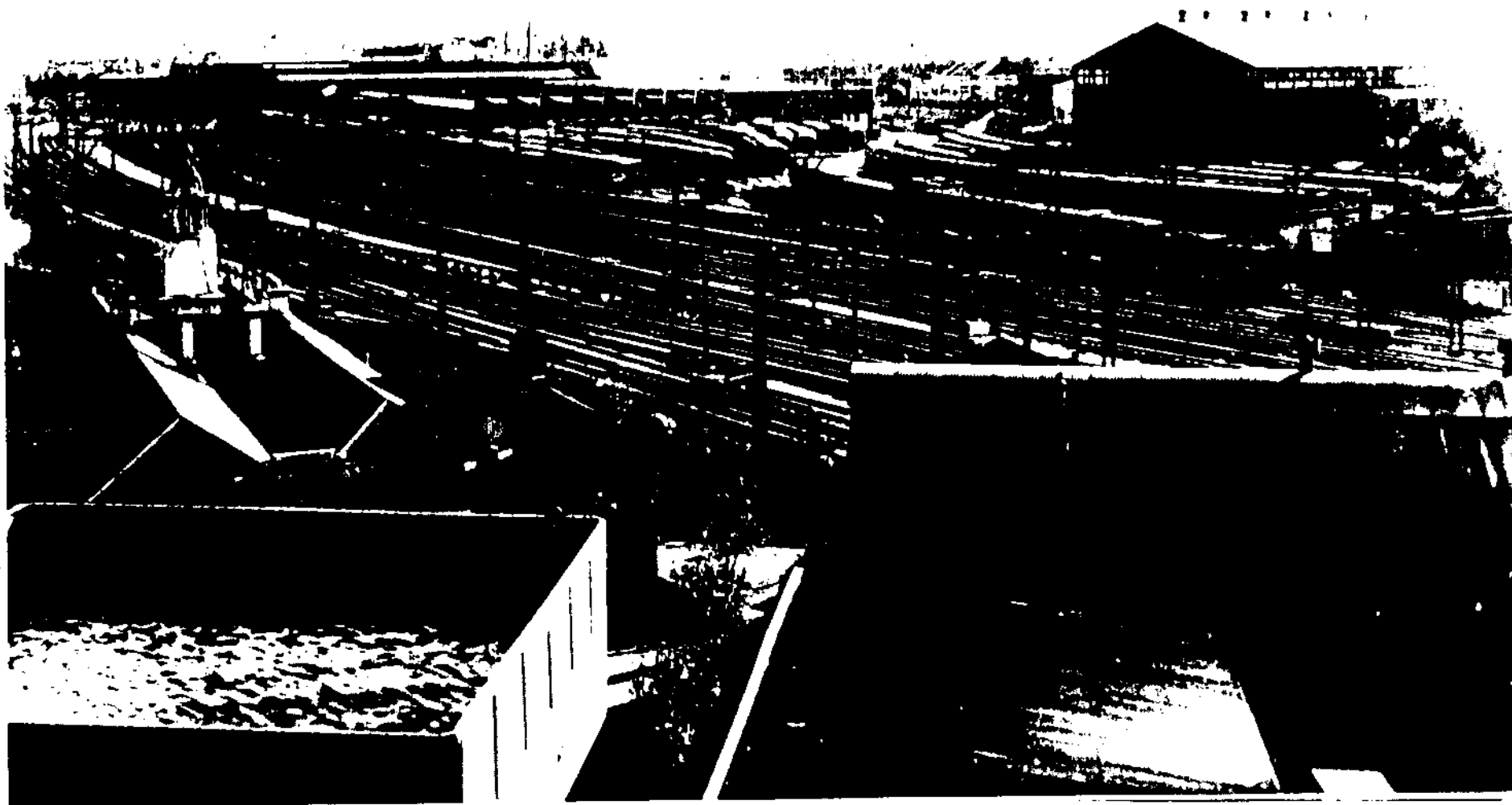


Fig. 50. Carriage Workshops. The extension to the Paint Shop, erected in 1912, was built in corrugated-iron, having a similar design and arrangement as the original, except that the saw-tooth roof was orientated at 90° to the original. The Trimming Department was moved into the enormous corrugated-iron shed at some stage during the 1930's, a temporary arrangement that lasted for the next fifty years. (B 2-9)

**EVELEIGH WORKSHOPS
HISTORY AND DEVELOPMENT
1935 - 1970 FROM EXCELLENCE TO OBSOLESCENCE**

By 1935, the Eveleigh Workshops had grown into a solid and mature operation, with its role within the Railway's system established and complete. Eveleigh was the central Locomotive and Carriage and Wagon Repair facility as well as handling most of the heavy forging and parts casting for the system. Technology brought in with the twentieth century, electricity and steel for example, had been embraced and adopted where appropriate and the interrelationships between various departments and shops were well established. The improvements made during the early 1920's were obviously sufficient to carry the works through the Depression without mishaps or problems and it's not until the latter half of the 1930's that new equipment was required. The advent of the Second World War then brought changes of a different kind.

During the financial year 1935/36, the air-compressor plant was upgraded by the addition of a 750 cubic feet/minute electric air-compressor installed in the Compressor House adjacent to the existing steam-driven compressor. Acquired from the Walsh Island Dockyard, it enabled the steam compressor plant and the two Babcock and Wilcox boilers to be taken off line and overhauled.

The lack of development at Eveleigh during the 1930's was also related to the development of other Workshops in the system - with Eveleigh established and running smoothly, new constructions and developments in other departments could be undertaken at the other Workshops. In 1937, the opening of a new large locomotive repair depot at the Chullora Workshops enabled much of the repair work to be removed from Eveleigh and the Old Erecting Shop located in Bays 5 and 6 was vacated later in the year. The machinery and equipment appears to have been left in place for sometime as the transfer of machinery to Chullora was not completed till May 1940.

Two Massey electro-pneumatic vertical hammers were installed in the Oliver Shop during 1938, a year also notable for the installation of eleven separate shower facilities around the workshops. Two were installed in the New Loco Building, 2 in the Boiler Shop, 3 in the Tender Shop and 4 in the Large Erecting Shop. These were completed by March, 1939.



Fig. 51. Loco Workshops, New Loco Shop. There was no work involving the maintenance and repair of Locomotives that could not be carried out at Eveleigh. Two or three cranes combined could lift the largest locomotives for, as in this case, the replacement of bogies or any other work. The additional light available by the use of the saw-tooth roof arrangement is apparent in the southern half of the building. (C22)

Fewtall, F., Works Manager, 14/5/55.

Fewtall, F., Works Manager, 14/5/55.

With the outbreak of war in Europe, negotiations between the Department of Defence and the Railways Department were initiated again as all heavy engineering shops throughout the country were pressed to assist in the manufacture of military equipment. The lessons of the First World War experiment had been learned and in early 1940, Bays 5 and 6 were cleared of machinery and plans drawn up for the installation of equipment supplied by the Department of Defence for the manufacture of 25lb field-gun shells. A mezzanine floor supported on timber columns was added to Bay 5 and the machinery installed by February, 1941. The Tender Shop (Bay 8) was altered in May 1941 to suit a munitions annexe and one bay of the New Loco Shop was utilised for the assembly of tanks supplied from elsewhere in parts. This latter arrangement lasted only until a better location was found elsewhere in the Railway Workshops system. Another contribution to the war effort was the manufacture of the special tools required in the manufacture of Bren Guns. Although the guns were manufactured in Defence Department factories, the whole of the machinery required was manufactured in the Machine Shop at Eveleigh.

Fewell, F., Works Manager, 14/5/55.

These arrangements were in general a temporary solution while the Defence Department organised its own factories. By 1943, Bay 8 was vacated and the Millwrights gradually transferred from Bay 15 to this location. By 1944, the tank assembly section had vacated the New Loco Building and the space was subsequently adopted as an extension of the Machine Shop for the heaviest and largest machining work.



Fig. 52
Carriage Workshops - Ambulance Room
Constructed in 1937, this Ambulance Room has thick brick walls, a tiled roof and overhanging eaves to provide a cool and quiet environment for injured or ill workers.

On the Carriage Workshops side, the war saw the building of several temporary barracks-type accommodation buildings and the conversion of the large brick stores building to a hostel for the accommodation of transient railway employees and Defence Department workers. A canteen building and kitchen were constructed adjacent to the hostel. The stores residence was used during this period as the Hostel and Canteen Supervisors Residence.

Additionally, at some time during the 1930's, the large corrugated-iron shed housing the Trimming Shop was erected in the location of the 'Calder House' which had burned down in 1924.

About 1942/43, concrete air-raid shelters were erected in various locations around the Workshops, generally against embankments or in sheltered corners of the site. Small box-like structures, they were designed more as protection from flying debris than as full scale bomb shelters.



Fig. 53
Loco Workshops - Bomb Shelter
During the Second World War, several reinforced concrete box-type bomb shelters were erected in convenient locations around the workshops. Fortunately, they were never required.

During 1944, plans were drawn up and construction commenced on a major extension of the Works Managers Office, transforming it into a much larger building. The alterations were sympathetic to the original but changed it significantly with extra and larger windows fitted, internal walls and openings changed and an additional section built on the eastern side. These alterations were completed by the end of 1947.

Plans: N.S.W.R. Ways and Works Branch N
102/144 to 102/146, 23/3/44.

At the same time a large addition was erected on the southern side of the Foundry to house new staff amenities for the foundry staff. Of two storeys, it contained shower and locker room facilities on the lower floor and a meal room on the upper level sufficient to accommodate three hundred men.

Plan: N.S.W.R. Ways and Works Branch
975/34.215. 8/12/43.



Figs. 54 + 55. Loco Workshops - Works Managers Office.

Between 1944 and 1947, a twin-gabled addition was made to the Works Managers Office on the eastern side to provide additional administration space. Maintaining the architectural detailing of the original, it was of similar proportions and materials. (Q 34, A2)



With the end of the war in 1945, the production of 251b field gun shells in Bay 5 ceased and the machinery, owned by the Defence Department, was removed soon afterwards. The Workshops settled back into their normal routines with only few alterations and additions over the next few years.

1945 also saw the reintroduction of the construction of new locomotives at Eveleigh. The first locomotive, a C38 class number 38-06, rolled out of the Large Erecting Shop on the 29th of November, 1945. The first five of this class were built at the Clyde Workshops, then Eveleigh built the even numbered locos and Clyde built the odd, each producing a further thirteen. The last one of this class was completed in September, 1949, to be replaced in production by D58 Class locos, the first of which was completed at Eveleigh on the 19th January, 1950. Thirteen of this class were built, the last being completed in April, 1952. No further new locomotives were constructed at Eveleigh after this time. All of these locomotives were built in the Large Erecting Shop.

Fig. 56. Loco Workshops, Large Erecting Shop.

In 1945, the construction of new locomotives was recommenced at Eveleigh, this time being undertaken in the Large Erecting Shop. The first of these, a C38 Class Number 38-06, was rolled out on the 29th November, 1945. Twenty-six locomotives of this and the D58 class



In 1946, the transfer of Fitting Shop machinery from Bay 15 where it was housed during the war, to Bays 6 and 7 was completed by August. An extension to the crane runway of the 5 ton crane in the Blacksmiths Shop (Bay 1) was undertaken in October of that year. In March 1947 eighteen 25 cycle AC welding power points were installed around the Workshops. In 1948 a five ton electric overhead crane was installed in the Potash Tank House in addition to the hand-operated crane already installed.

Fig. 57. Loco Workshops, Foundry. In 1944, an extensive staff amenities centre was constructed on the southern side of the Foundry for the foundry staff. Hidden between the foundry and the now demolished Alexandria Goods Shed, little attempt was made to integrate it the existing building design. It was supported on columns above a siding which extended to the Pattern Shop nearby. (W 31)



In February 1949, plans were drawn up to convert the Bay 5 mezzanine level to a staff canteen and meal room with a recreation facility. This was carried out later in that year.

Few developments or alterations occurred during the 1950's apart from the cessation of new locomotive construction in April 1952 and the addition of two new electric air-compressors of Australian design built by Thompson's of Castlemaine, each of 1500 cfm capacity, which were installed in 1954.

Fewell, F., Works Manager. 14/5/55.

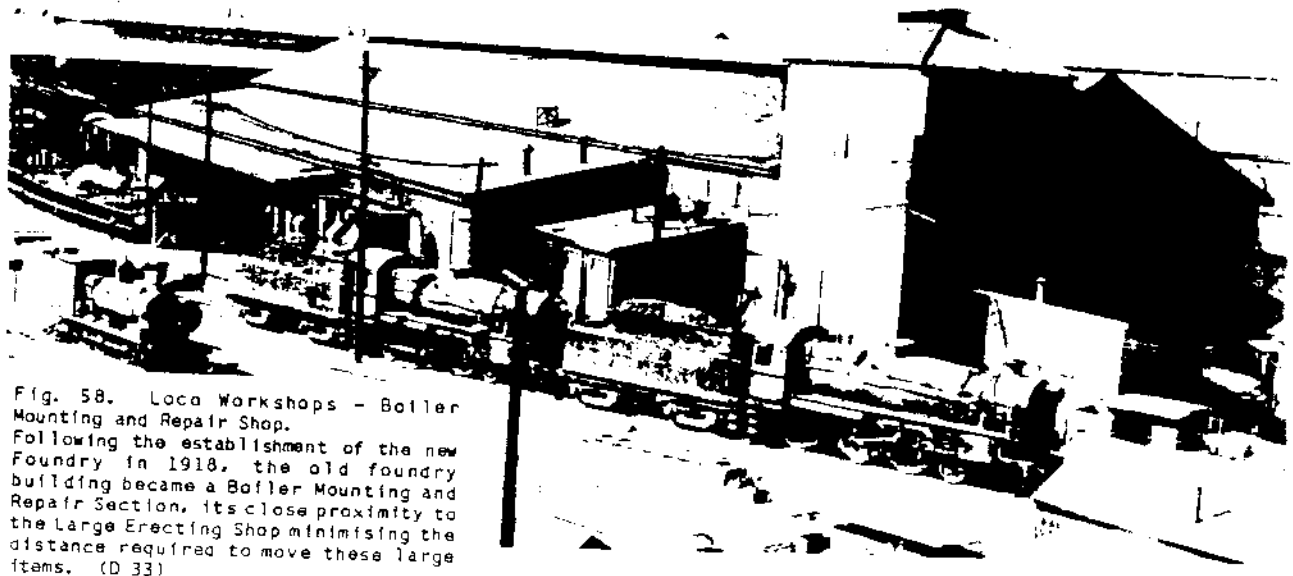


Fig. 58. Loco Workshops - Boiler Mounting and Repair Shop. Following the establishment of the new Foundry in 1918, the old foundry building became a Boiler Mounting and Repair Section, its close proximity to the Large Erecting Shop minimising the distance required to move these large items. (D 33)

The national coal strike of 1949 brought a host of difficulties for the railways with their dependence on coal as a fuel supply.

Although the crisis was endured without serious setback, much of the Gasworks machinery was severely damaged by the low grade brown coal it was forced to use during this period. As a consequence about 1958 the gas manufacturing plant was demolished and the Workshops began drawing gas from the city supply, using the old gasworks as a storage and distribution centre.

Fig. 59. Eveleigh Railway Yard, Departmental Gas Works. Since the earliest days of Eveleigh, the Railways Department had manufactured its own coal gas in a plant adjacent to the Carriage Sheds in the south-western corner of the site, coal being easily available during the era of steam trains. The equipment was damaged during the Coal Strike of the late 1940's by the use of inferior grades of coal. With the steam era decision was made to
 . (U 3)

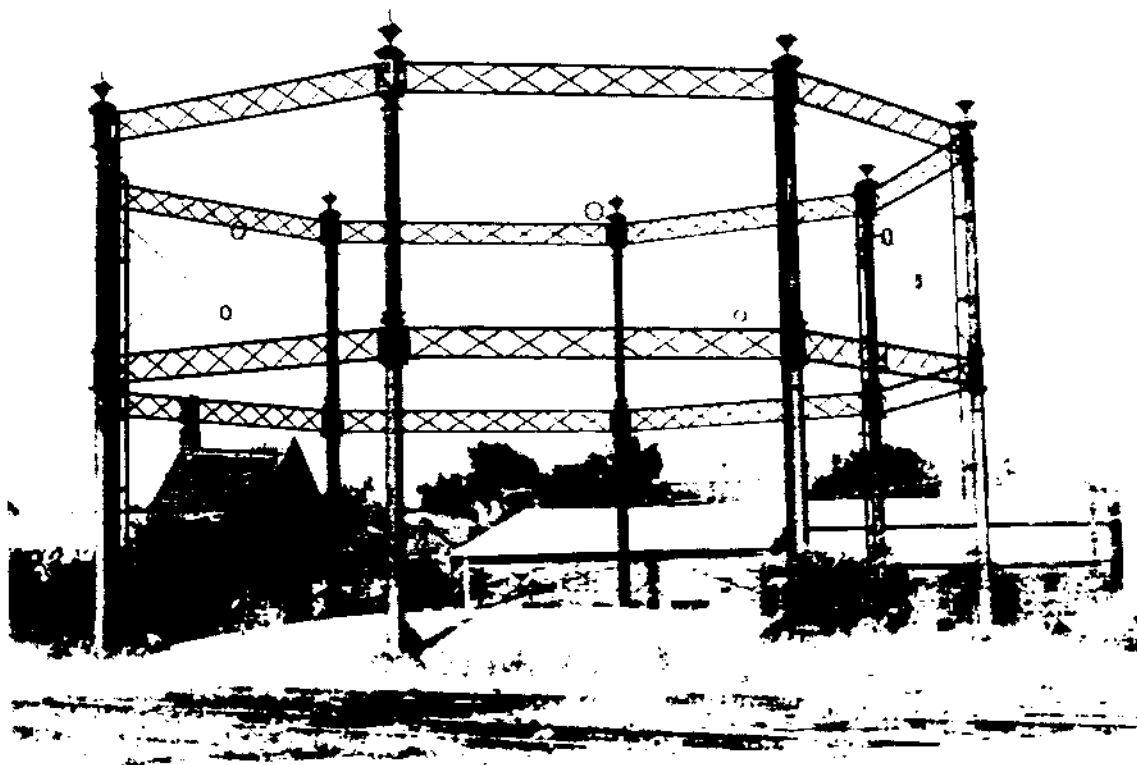
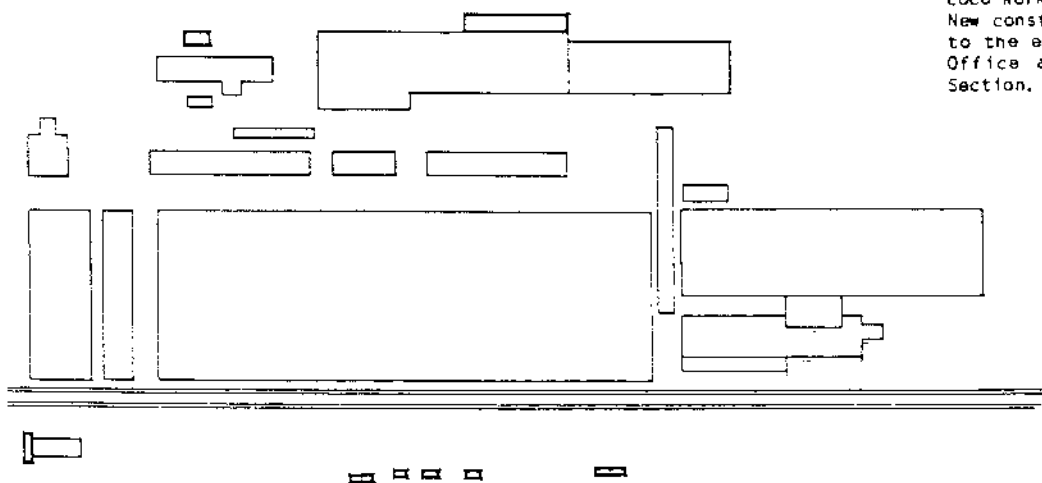


Fig. 60
 Loco Workshops : Site Plan - 1950
 New constructions since 1930 are limited to the extension of the Works Managers Office and the new Foundry Amenities Section.



A summary of the history and operations of Eveleigh Workshops prepared by the office of the Works Manager in 1955 provides a good indication of the level of production in the Workshops for this period, perhaps its peak level prior to the introduction of diesel locomotives which led to the downgrading of operations at Eveleigh.

Report by Works Manager, 14/5/55.

At that time, the Eveleigh Workshops was overhauling 239 locomotives annually. The three foundries were producing 525 tons of non-ferrous castings, 412 tons of steel castings and 7,717 tons of iron castings per year. The Spring Shop was manufacturing and repairing 33,200 locomotive, carriage and wagon laminated springs and 25,500 engine and wagon coiled springs per year, a total of 2,000 tons of metal work. The Machine Shop, occupying seven bays of the Workshops, provided 7,000 separate items per year in addition to the milling and machining of parts for the repair of locomotives. The two boiler shops were repairing an average of 94 boilers per year. Electric motors were driving most machinery around the shops with a total available power of 8,691 horse power and the total staff employed around the works averaged 3,000.

Fig. 51. Locomotive Running Shed, Locomotive Turntable. There were at one stage three of these large turntables around the workshops, large enough to carry a locomotive with tender. One remains in the south-west corner of the site, used in conjunction with the sand-loading facility. (D 34)



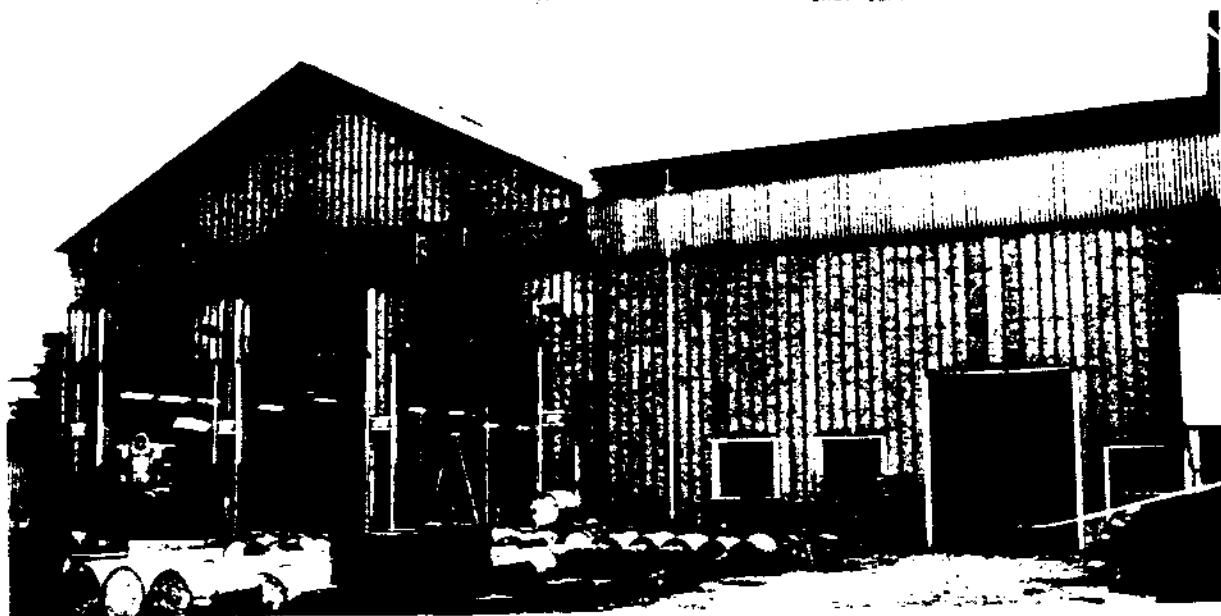
The 1950's and 1960's brought a new era to the railways with the introduction and re-equipment with large diesel locomotives leading to, by the middle of the 1960's, the complete abandonment of steam locomotion. Due to Eveleigh's historical place as a steam locomotive workshop and the lack of available space on the site for additional facilities, diesel construction, maintenance and repair facilities were erected at other workshops, with Eveleigh continuing to service steam locomotives until the change over was complete. Coincidental with this was the development and re-equipment of the electric train and carriage fleet with the now familiar air-conditioned cars.

As the steam locomotive fleet was gradually reduced in size during the late 1950's, the operations of the workshops decreased and the spare garaging space in the Running Shed, used almost exclusively for steam locomotives, increased. In 1962, the southern of the two remaining bays of the Running Shed was demolished to make room for a new building to house a repair depot for air-conditioned cars. Known as ACDEP, it was a steel framed pressed-aluminium clad building of two bays, completed in June, 1966.

Wylie, 1963, in A.R.H.S. Bulletin 291-31-
p.945.

The last passenger service in N.S.W. to be hauled by a steam locomotive ran during 1963. Where appropriate, the steam locomotives were then used to pull goods trains and for shunting and yard services, otherwise they were disposed of. In 1964, the Boiler Repair Shop located in the former foundry on the north side of the Large Erecting Shop was dismantled and the building was remodelled as a Diesel Locomotive Service Depot. This was completed in June of that year.

Fig. 62
Loco Workshops - Diesel Loco Servicing Depot
The Boiler Mounting and Repair Shop, built in 1899 as the Foundry, was demolished in 1964 to make way for a shed in which Diesel Locomotives were housed while routine service and maintenance was undertaken.



In 1965, the remaining middle bay of the Running Shed was demolished as all steam locomotives had been either disposed of or moved to other depots and the space was required for alterations to the yard layout in this area. In August a new stores and amenities block was constructed on the north side of the Large Erecting Shop, adjacent to the recently created Diesel Loco Servicing Depot.

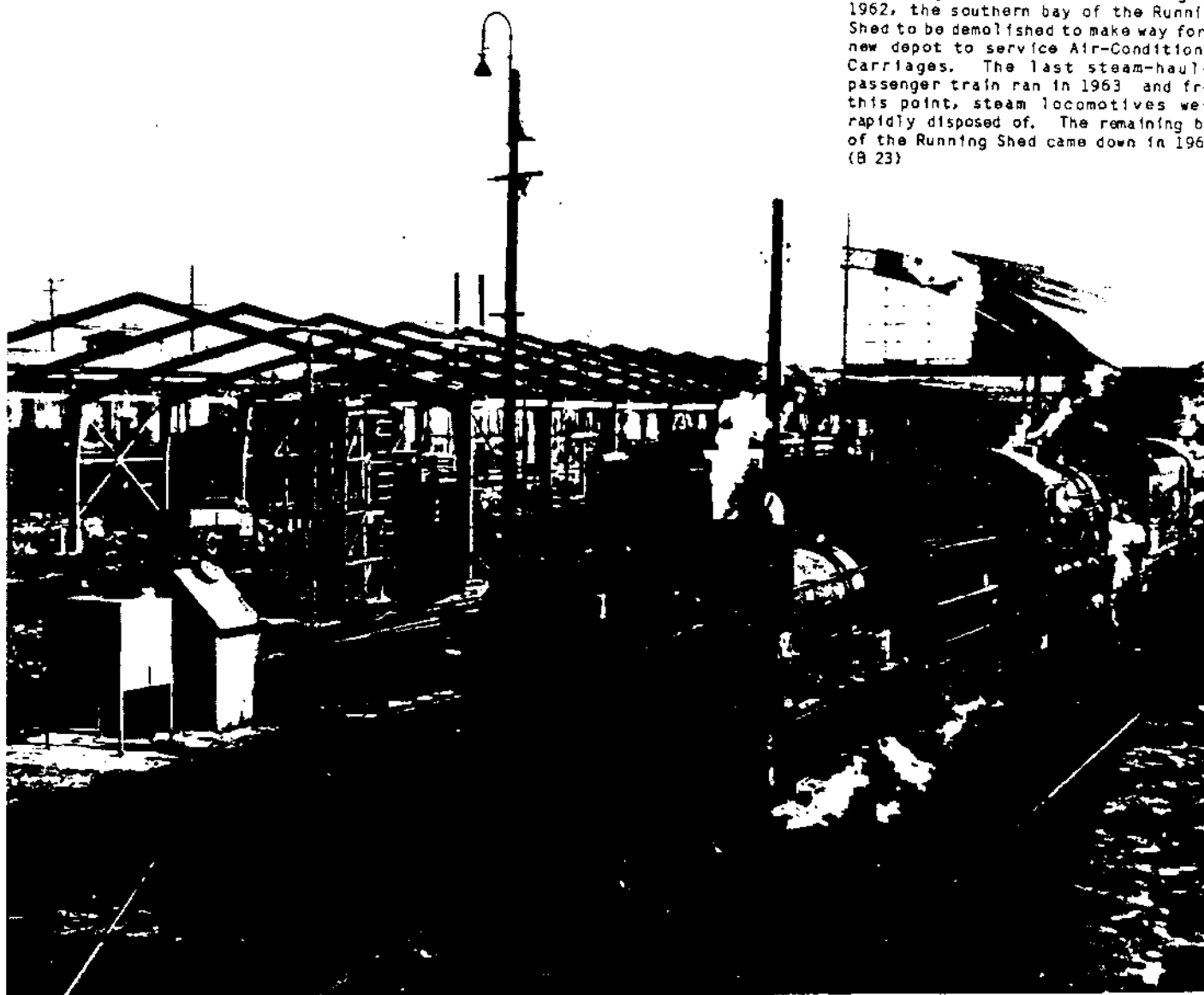
During 1966, at least one if not both of the Babcock-Wilcox boilers in the Compressor House was taken out of service. In July, 1967, the elevated coal stage was demolished, its service no longer required. When demolished, it was noted that the all timber structure had survived the forty years of duty with little deterioration either in its structure or the condition of the timber. In 1969, an annexe was constructed on the west side of the Diesel Locomotive Servicing Depot.

N.S.W.R. Workshop Conference, August, 1965.

E.W.C.S.C., 1968, in Eveleigh News, 377.

Fig. 63. Locomotive Running Shed Demolition.

Steam trains were being gradually phased out during the late 1950's, enabling, in 1962, the southern bay of the Running Shed to be demolished to make way for new depot to service Air-Conditioned Carriages. The last steam-hauled passenger train ran in 1963 and from this point, steam locomotives were rapidly disposed of. The remaining bay of the Running Shed came down in 1965. (B 23)



EVELEIGH WORKSHOPS
HISTORY AND DEVELOPMENT
1970 - ADAPTING TO A NEW AGE

By the early 1970's, the change in the Eveleigh Workshops from a central and fully equipped railway workshops capable of all aspects of construction, maintenance and repair of steam locomotives to an old complex of engineering shops filled with aging and obsolete equipment ill-suited to the requirements of the new railway technology was apparent and various rearrangements and re-equipment were made to update the works.

The Foundry was updated by the purchase and installation of an automatic high volume production moulding plant in conjunction with an induction melting facility. The emphasis of work performed changed to the high volume production type castings rather than the traditional jobbing work and examples of the types of items now manufactured included brake blocks, signal components, centre castings and suspension bearings.

Lyons, Fisher, 1985.

The New Loco Shop was converted to a Rail Motor Engine maintenance and repair shop. The Spring Shop was expanded to occupy the adjacent Steam Hammer Shop and the Oliver Shop was converted to Staff Amenities and a Production Store. The Blacksmiths remained in Bays 1 and 2. Bay 3 contained a Hot Spring Coiling Section in its northern half and a Heat Treatment Plant in its southern half and Bays 4 and 4a contained a Fabrication Shop. Bay 5 contained the Staff Canteen in its southern half and a portion of the Fitting Shop in its northern half. Bay 6 housed the Fitting Shop in its southern half and the Apprentice Section in its northern half, while Bays 7 and 8 contained the majority of the Fitting Shop. Bay 9 was given over to the production of wheels and axles and Bays 10, 11 and 12 contained the Machine Shop. Bays 13 and 14 housed an Air Brakes Shop in their southern half and the Tool Room occupied the northern half of both bays. Bay 15 housed a Rail Motor Test Room on the north side and a store remained in the southern half. The Large Erecting Shop was separated into its two bays with the northern bay concerned with the repair of bogies and the southern with the repair of locomotives.

Plan: Locomotive Workshops, Eveleigh N
L.W.E. 3-11777, 28/11/84.

The main responsibilities of the Workshops now are for classes 44, 45, 80, 85 and 86 locomotive bogie overhauls, rail car engine overhauls, component manufacturing and repair to support branch programmes, foundry, machine shop, blacksmith and boilermaker activities and the overhaul of the 73 class shunting locomotives.

Lyons, Fisher, 1985.

CURRENT OPERATIONS AT EVELEIGH WORKSHOPS (MAY, 1986)

LOCOMOTIVE WORKSHOPS

The Locomotive Workshops at Eveleigh no longer perform work of the quantity or the diversity of its former years as the centre of steam-locomotive repair and maintenance in N.S.W. Present operations largely centre around its role as a heavy engineering works and high-volume production moulding plant, with ancilliary specialist departments carrying out their traditional functions where these continue to have a role in modern component manufacturing. Other areas now house or have been modified to house functions relating to modern railway components. Current operations at present are subject to some degree of continual change as the railway managers endeavor to maximise the efficient utilisation of available resources for the ultimate smooth functioning of the railway system.

The locations and designations in the following list relate to Site Plan No. L.W.E 3-11777, dated 26/11/84 and as amended on 1/8/85. Operations are as performed on 16/5/86.

ENGINE SHOP

All repair or reconditioning of a diesel motor or any of its component parts is carried out in this shop. The motors are rail car engines from 600, 660 and 900 class rail cars, XPT locomotive engines and air-conditioned van power-car motors and any other diesel motor as may be required. Most types of motors and representatives of most major manufacturers in the diesel field including Rolls Royce, Cummins, Perkins etc are repaired and overhauled. The tradesmen in this shop are all Fitters and Machinists.

BLACKSMITHS SHOP (BAYS 1 AND 2)

This shop performs all hot-forgings of any nature as required. Today, much of the work formerly performed by blacksmiths is die-cast or drop forged but many pieces still have to be hand forged. Typical items created are locomotive bogie equalising beams, brake equipment, travelling crane wheel tyres and specialised tools. Products may be passed on direct to the consumer department or may be sent to the heat treatment section or the machine shop (particularly if not die-cast) for further treatment. Tradesmen employed are all Blacksmiths.

HEAT TREATMENT SECTION (BAY 3)

This shop performs all the annealing, case-hardening, hardening and tempering of metal items as required. Material generally comes from the blacksmiths shop or from the machine shop. Heat-treatment is usually a final process and completed items are generally sent direct to the consumer department. Common items treated are the pins and bushes for brake equipment. All tradesmen are blacksmiths.

SPRING SHOP (BAY 3)

Although not as extensive as previously the spring shop remains the only spring section within the N.S.W. railway system. The manufacture and repair of all large springs used on all vehicles - locomotives, carriages and waggons - by the NSW SRA is performed here. The major portion of work is the manufacture of large coil springs and as subsequent failure of these items is rare, repairs to these are limited to occasional retempering. The manufacture and repair of laminate springs is secondary but regular work. Tradesmen employed are elevated blacksmiths, trained within the section.

FABRICATION SHOP (BAYS 4 AND 4A)

Also known as boiler repair, this shop performs all boiler repair work that may be required. Boilers are almost exclusively of the stationary type nowadays, however the occasional steam locomotive restoration work is undertaken. In addition, any manufacture of metal plate items formed from metal plate greater than 10 gauge (1/8 inch or 3.2mm) such as truck body parts, hopper doors for wheat waggons, metal steps and similar items is carried out in this area. The tradesmen employed are boilermakers.

FITTING SHOP (BAYS 5,7,8 AND 9)

This shop performs all work necessary to wheels and axles, especially the fitting, grinding and polishing of bearings and journals. It is also responsible for the repair and overhaul of the brake air-compressors used on modern carriages and waggons. Tradesmen employed are fitter/machinists.

MILLRIGHTS (PART OF BAY 6)

This shop is staffed by specialist fitter/machinists and is responsible for the installation, maintenance and repair of all forms of tools, machines and cranes in the workshops. On occasion, this department may manufacture a machine to particular railway requirements. Adjustment, calibration and modification of machinery is also performed as required.

MACHINE SHOP (BAYS 10,11 AND 12)

This shop performs all the drilling, milling, turning, planing and grinding work required in the workshops. Any work requiring the operation of machine tools is performed and the subject material is related to the activity of other shops in the works. Some work is performed for other railway workshops for either load-sharing or specialist

equipment reasons. The machines in use vary from 19th Century pieces installed at the opening of the workshops to the most modern available. Tradesmen are of course fitter/machinists.

TOOL ROOM (PART BAYS 13 AND 14)

This shop is a branch of the machine shop and manufactures, maintains and repairs gauges and tools of all varieties for use around the workshops and other sections of the Mechanical Branch. It is also responsible for very high precision machining work as required. It is staffed by specialist fitter/machinists.

AIR BRAKES SHOP (PART BAYS 13 AND 14)

This section is responsible for any and all work required in the manufacture, repair and maintenance of the air-brakes fitted to modern rolling stock. Staffed by fitter/machinists.

RAIL MOTOR TEST ROOM (PART BAY 15)

Rail Motors repaired and reconditioned in the Engine Shop are brought to this shop for fitting-up, testing and tuning prior to being fitted to the rail cars.

LARGE ERECTING SHOP

Locomotives, rail cars and power vans requiring major repairs, reconditioning or work to bogies are brought to this shop and disassembled using the heavy-lift cranes and jacks as required. Parts are repaired or replaced from other shops in the works and sent to this shop for reassembly. This work is separate and in addition to routine maintenance.

DIESEL LOCOMOTIVE SERVICE DEPOT

This depot houses all regular service procedures for diesel locomotives. Items typically serviced include oil and water supply, brakes, bearings and electrical components.

FOUNDRY (INCLUDING IRON, STEEL AND NON-FERROUS)

This section is responsible for the melting and casting of all ferrous and non-ferrous metals required for use throughout the workshops and for the railway system. Primarily an iron-melting plant, in recent years automatic high-volume production moulding plant has been installed in the foundry, producing items such as brake blocks, signal components, centre castings and suspension bearings. Some jobbing work is carried out as required. A core-making section is provided for the supply of both jobbing cores and high-volume production type cores. All scrap iron and steel is provided from within the S.R.A. and most non-ferrous scrap also, with the exception of leaded-bronze and aluminium which is purchased outside. At present, in excess of 5000 tonnes of iron castings, 200 tonnes of non-ferrous castings and 100 tonnes of steel castings are produced annually.

PATTERN SHOP

This fully equipped pattern shop manufactures the timber patterns for all kinds of castings produced in the adjacent foundry. With the present emphasis on high-volume production items, operations are less than they once were but sufficient jobbing work occurs to maintain a regular activity. A large storeroom below the shop stores the patterns for future use as they are required.

TINSMITHS SHOP

This shop houses the operations of the tinsmiths, or sheet-metal workers as they are now known. They are responsible for the manufacture and repair of items fabricated from metal plate of a gauge less than 10 (1/8 inch or 3.2mm) as may be required.

COPPERSMITHS SHOP

This shop houses the operations of the coppermiths. They are responsible for the repair and maintenance of items fabricated from copper. Typical items attended by the coppermiths include fuel and air lines, tanks and radiators for diesel locomotives.

PLUMBERS SHOP

This shop houses the operations of the Plumbers for the workshops. They are responsible for the installation, repair and maintenance of water, sewerage and gas services, roof work, guttering and downpipes of all forms around the workshops.

CURRENT OPERATIONS AT EVELEIGH RAILWAY WORKSHOPS

CARRIAGE WORKSHOPS

At the time of the writing of this report, the operations at the Carriage Workshops were being reviewed and reorganised and most of the traditional activities were in the process of being abandoned. One section of the works was being rebuilt as a maintenance depot for the Suburban electric rail cars and when completed, a major part of the operations of the Carriage Workshops will be centred around this activity.

As the present situation is one stage in a process of change whereby most activities carried out in the past are being replaced by activities relevant to the modern railway rolling stock, a comprehensive description of the individual activities cannot be provided at this time.

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The N.S.W. Railway Workshops at Eveleigh.

A STATE ENTERPRISE.

In these days of social reform and industrial unrest, the public read of countless schemes of proposed amelioration which ever and anon are projected on behalf of the wailing masses, and all of which, their propagandists claim, are capable of adjusting the difference which have been growing up between Capital and Labour ever since these two forces were first separated by human ambition and discontent. Of these many schemes, State Socialism is probably one of the most favoured by advanced thinkers in Australia, and, in the railway workshops at Eveleigh, the people of New South Wales have a particularly happy

smoking carriage, ever below a thought on the outlay of capital, skill, and care expended in order that he may travel in comfort and security. Does the gay excursionist, travelling his 160 miles as 'single fare for the double journey,' never wonder how it is done? Or the trans-continental tourist, who travels from

hundreds of the operations which are carried on there.

The railway workshops were removed from Broken Hill to Eveleigh in 1887. The old shops were on a very small scale, and proved utterly inadequate to the demands which were made upon them; it being, indeed, stated at the time of the removal

of the Locomotive Department, which was divided into the engineering and the carriage departments. The former, under the management of Mr. H. B. How and the latter of Mr. Elston, both being of course, subject to Mr. W. Thow, Chief Mechanical Engineer and head of the department, whose portrait we give



W. Thow, B.M. Inst., C.E.
Chief Mechanical Engineer.

illustration of this principle at their very best. For here is an undertaking in which the State, as an employer, eclipses and outshadows all private contemporary enterprises—an industry in which the State employs 1,548 artisans and skilled workers, to whom it pays a roughly estimated, wage amounting to £2,200,000 per annum, while its distribution, probably, double this amount to a host of producers of raw material of every class and kind.

Does the weary brain-worker, whirled from his city seat, towards the Blue Mountains, while seated in a first-class

vehicle to Brisbane in something like 72 hours, does it never occur to him how marvelously the railways of this country have been developed? These are a few of the thoughts which crowd into the brain of the visitor to the Eveleigh engineering shops, as he gazes in amazement at the

to Eveleigh, that there were twenty years ago, of work? With the scope and verge afforded at Eveleigh, however, the operations are expanding every day. The workshops and yards occupy sixty-six acres of land, over eleven acres being under cover. This is the headquarters

Mr. Thow was at one time an articled pupil of Sir John Fowler, of London. After having considerable experience in England he entered the service of the most Australian Government, which he is only on his appointment to his present post.

The engineering department is most interesting, and, for the perfection of its machinery and appliances, the equal is to be found in the Southern Hemisphere. In No. 1 smithy shop, 150 mechanics are employed. Here all the heavy forging is made for renewals and repairs. Sixty-ton hammers, ranging in power from 100 to 200 tons, work multiformly down out of sleepers masses of heat metal. Their strokes, varying from a gentle rasp-like action, to a concussion of a ton weight. Here, also, are the large furnaces, two of them working in conjunction with the steam engines; the casting shop, and the three departments employed in bending the tires of carriages and waggon wheels. Just outside the workshops a large covered rack of iron and steel, containing some 150 tons, where it is gratifying to see the local or deskbank, New South Wales, very much in evidence. The operations in this shop are very interesting. Take, for example, the manufacture of coupling-hooks. First, the raw material is worked up of scrap iron, prepared in shapes, stamped out, in a pair of dies, by a 40-ton and 40-ton steam hammer. The hook is then passed on to another hammer where the shank is drawn out, first to a blacksmith, who trims and rounds off all; all this being accomplished without re-heating. In a shed to the rear stands what is known as the 'sea-bathing' furnace. Iron materials which require special strength and durability, are placed in this furnace and baked with bones-bast and certain chemicals for twenty-four hours. The process 'steels' the surface of any of work so treated. A Ross' patent blow the bellows of masonry smelting furnaces



The Turning and Machine Shop.



Sawmill and Carriage Shop.

and foundry—completes the equipment of the first section.

Passing on to No. 3 Smith's shop, we find the spring-makers and repairers. Here are furnaces for heating plates for setting and tempering, and a spring-testing machine. The carriage and wagon spring-makers have each day's work tested the following morning, every spring being submitted to a severe trial before being placed under any vehicle. While undergoing the test, the springs are straightened both by a steady strain and by violent jerks, so that they are tried under circumstances quite equivalent to railway traffic. In this department is another extremely valuable testing machine. This is for ascertaining and registering the various strains at which iron will break. The hydraulic testing power of this machine is 100 tons to the square inch, and, naturally, its services are most valuable in testing draw-gears, couplings, etc. For example, if a private firm supplies the Railway Department with a quantity of forged work, couplings, hooks, etc., a sample is tested by this machine which, while tearing the forging to pieces, registers at how many tons strain it lengthens, cracks, and finally breaks. Under such a trifling system of testing as this, no defective material or work can possibly pass. Another hydraulic machine in this department is for removing spring buckles, and is also ingenious and valuable. Here are also machines for cutting and drilling, for nibbing, studding, slotting, and for shearing the ends of the springs; a machine for bending links for coupling chains, a machine for punching links for connecting the springs to the vehicles (these are punched out of red-hot iron, the link being formed in the figure eight, and two holes punched at either end with one movement); a machine which makes iron bolts by a process which only occupies a few seconds; a machine which cuts up cold steel as if it were cheese; a revolving saw which cuts through red-hot iron at a great speed; two rollers for making ferules, etc.; a spring loom, and four gigantic steam hammers. In the No. 3 Smith's shops which have been so far traversed are forty-two fires, in addition to the furnaces, and Mr. Howe claims with pride that there is nothing equal to this department out of England. Improvements are being constantly made, and the equipment of machinery and tools is all that the heart of the mechanic can wish.

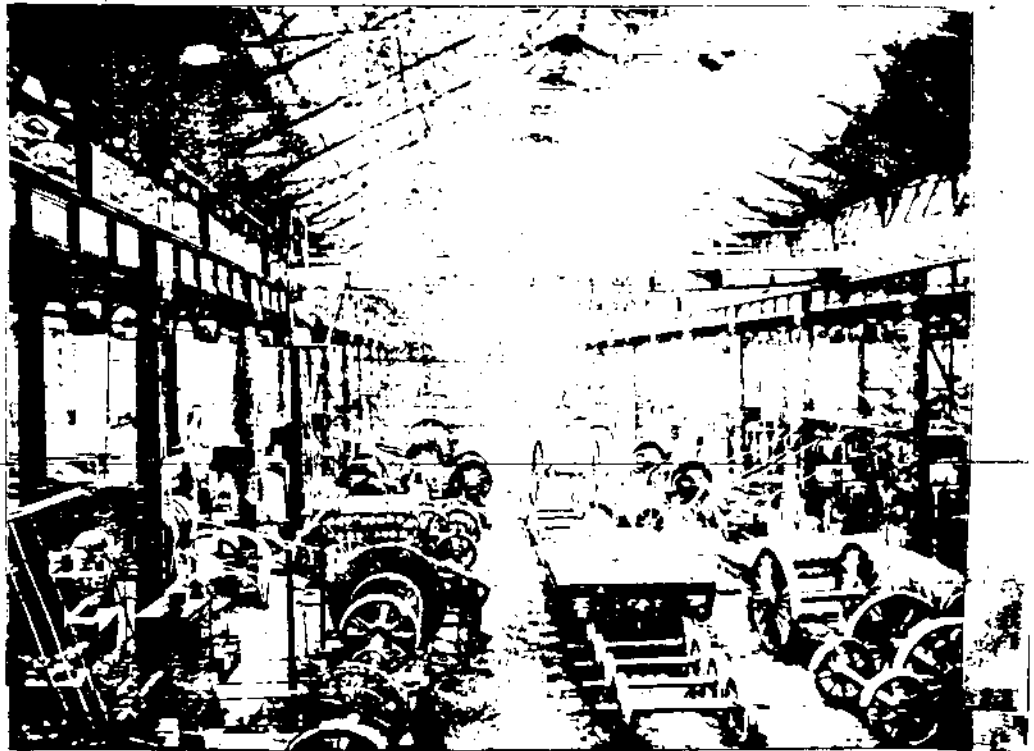
The next step is to the boiler shop, where the locomotive boilers are taken to pieces, renewed as required, and thoroughly repaired. This branch, under the management of Mr. Horrocks, affords employment

to 100 men. Seventeen locomotive boilers were in hand at the time of our visit. Among the more notable of the appliances in this shop are: A Tweedie's hydraulic rivetting machine, six ordinary and two special forges, the latter for heating boiler plates; Stowe's flexible drilling machine, driven by a cotton rope and extending half the length of the apartment—this machine may be attached to any boiler within its

largely carried on. The other machine tools are: A radial drilling machine, two punching and shearing machines, steam driven, in addition to a large hydraulic machine of the same class—the latter can shear or split a 7 ft. plate, a machine for boring along the edges of wheel flanges, a set of circular shears, drilling, screwing, and planing machines—the latter shave off uncouth curls of mild steel, iron, or

and boiler shops by double cylinder well engines, of twenty horse-power nominal, and two boilers of the locomotive type, which drive all the machinery. A pair of hydraulic engines, thirty horse-power, work the accumulator to supply the hydraulic machines.

Passing on in the natural order, the visitor next inspects the brass and iron foundry where, with Mr. Ellis as foreman,



Turning and Wheel Shop.

radius in which holes have to be drilled, and is also used for tapping and screwing in the stays of boilers anywhere in the shop without necessitating the removal of the boilers. One considerable feature in the renovation of boilers, is the substitution of copper plates for the worn out steel ones in the American engines. This is being

done with the greatest ease, a hydraulic machine and two sets of special rollers for bending plates, etc. In common with the other shops the boiler shop has a Boston overhead travelling crane, which transports the work up or down, or back ward or forward at the operator's will. The motive power is supplied to the engine

by six engines, assistants, and apprentices are employed. Here castings, brasses, and fittings for the complete railway system of New South Wales are made. The output from the foundry during the month preceding our visit was 113 tons of iron and 175 tons of brass castings. The component and tinmithy shops, with twenty-five workers, come next. Here a large stock of pistons, feeders, etc., are made and repaired.

Four large divisions are used as erecting shops, and are under the control of Messrs. S. and W. Johnson, foreman and assistant foreman respectively. This is the workshop of the steam engine, which makes its start in life from here, returns from time to time for repairs during its career, and is finally, when worn out, for disposal consigned to the locomotive engine. At the time of our visit, thirty-seven engines and tenders of all sorts, new and old, were undergoing repair in the name of the New South Wales and Sydney Harbour, a twenty-two ton travelling crane ran up and down lifting the big engines from place to place, as, being they were but leather tights, they were broken, new engines from the British portion of a large order then being executed were being received from the manufacturer's works.

The turning shop, with special lathe, slotting and drilling machines of the latest type, also present much to interest the visitor. Here, Mr. Crowfield, the foreman, employs 127 men. It is worth that the Westinghouse cranes and their parts are attended to. A pattern shop, with twenty hands, in charge of Mr. Green, and a large store for material complete the engineering block of buildings, of which faithful illustrations are presented.

A little further up the yard stands the railway engine shop, the stables, where the mechanics set forth on their daily journey. Some eighty four engine and boiler makers are employed here. The work for the engine drivers and boiler makers is done in the office of the superintendent, who were placed in charge of the engine drivers, and the boiler makers on our way out of the yard.



Carriage Painting Shop.

designs in the run-of-the-mill. The possibility of advancement is naturally a premium to industry among the cleaners; and the department, by this system, draws a plentiful class of men, whom it can trust from having an intimate knowledge of their whole careers.

A few steps across the line to the south side bring the visitor to the carriage branch, where new wonders of marvellous machinery and ingenious workmanship await him. Under the kindly guidance of Mr. Elston, it is quite possible to spend a very pleasant and profitable day in looking over the operations entrusted to his care. First to be seen is the paint shop, whence emerge the carriages glittering and gay, to provide accommodation and pleasure for the public. Here vehicles of every class may be seen, from the rummy sleeper or palace drawing car to the unpretentious goods wagon or ballast brake. No fewer than 100 men find employment in the paint shops, and probably twice the number in the carriage-building shops further along. In the latter, the wood-working machinery is as wonderful in its way as the iron-working machinery on the other side. Everything is worked on a system; there are no idle hands; no confusion; and is there anything that might be termed

laborious work; everything is done by machinery at a speed which, to the uninitiated, seems magical. Here the mail train and the passenger train are assembled, and the chisel, the plane and the hand-saw of the carpenter find no place—mechanical science has utterly supplanted them, and machinery now performs their functions with a swiftness, integrity and precision, and at fifty times the speed. In the carriage shop large numbers of vehicles are undergoing renovation, and new wagons are being turned out at the rate of about ten per week. At the far end of these shops a capacious store contains the ironmongery and upholstering ma-

terials employed in carriage-building. Taking them as a whole, there are many lessons to be learnt in a visit to the railway workshops at Eveleigh. A thorough inspection of them would occupy at least a week, although a cursory glance was accomplished, with some little difficulty, in one day. Probably one of the most striking features of the place is the careful organisation of the labour. There are no idlers, and nobody has time to waste work in order to gaze curiously at visitors. Operations go on day after day, and month after month, an unbroken chain of industry. As well have been inferred, the bulk of the work is done

by machinery. The 1648 employees supply the guiding intelligence and the attendance. The machinery cannot speak, but it can do everything else. As to the condition of the workers, it must undoubtedly be happy one. With short hours (eight hours a day), fair remuneration, intelligent occupation, and exceedingly comfortable workshops, what more can the workman desire? Here is supervision, certainly, but it is not carried to any objectionable extent; nor does such appear to be needed. The men are a superior class of workers, and look independent and comfortable. For a large model industry, doubtless in profitable times, we do not know where to look for a happier illustration than the workshops at Eveleigh.

Mr. H. H. Howe, Manager of the Engineering Department, entered the Government service in 1874, and worked his way up through all the grades till he held the position of Foreman of Works under Mr. Wharton. In 1901 he was transferred to the Locomotive Branch of the Railway Department, as Assistant Locomotive Engineer. After some years' service he returned to Eveleigh under the Commissioner to take the position of Works Manager, which he now holds.

The illustrations are from photographs by Kerry and Co., Sydney.



Mr. H. H. Howe, Works Manager.

SOME AUSTRALIAN WOMEN:

(Continued.)
(BY M. HURST BROWNE.)

PART VII. THE ANTI-SLAVERS.

But, but by no means least, come the white hand-to-hand workers in the great harvest field of humanity. So long as

she has shouldered the task of rescuing the fettered and perished of humanity, those orphaned, and worse than orphaned, little ones who, but for such workers as she, would be left to die in the gutters, or to live and squalor the tale of crime which ever ebbs and flows between the dens and

slums, but, feeling it incumbent upon her to do so, she carried out her purpose, and, with two or three friends, commenced monthly meetings in the very heart of the slums. Since then she has been joined by other helpers, and the work prospered. The Mission Hall is thrown open at ten

either, the head desecrated of this mission. "Well, Australia develop a worthy National Character" was the subject of a paper discussed with men vigorous and earnest, but there was one momentous phase of the question which was not

lished in consequence while the great Siberian line gives her a prepondering influence in Eastern Asia, not only politically, but also commercially.

It may, therefore, be safely said that the influence exercised by the railways upon the economical, political, and military situations of the country cannot be estimated, more especially if the great extent (Russia in Europe having an area of 2,081,370 square miles), the diversity of climate, soil, &c., and the generally bad condition of all other communications are taken into consideration.

The Locomotive Shops at Eveleigh.

It is hardly necessary to mention to our railway readers the position of the railway workshops at Eveleigh, but, to the stranger who may chance to read our pages, they will arrest his attention; should he be travelling by rail from Sydney, soon after he passes Eveleigh Station and on the left hand side, he will see the extensive range of shops which are devoted to what is termed "The Locomotive Side," the carriage and waggon shops being almost opposite, but on the right hand side of the line. The extent of the operations carried on there may be judged by the fact that, altogether, they give employment to 10 per cent. of the men engaged on the railways; and it is thought that a description of the establishments would be of interest, not only to the men employed, but generally to the Railway Service; more particularly as, recently, extensive alterations have been made to them, especially in regard to the new-erecting shops, and the equipment of the shops with the most modern machinery. In giving a brief description of the premises and machinery on the locomotive side it may be stated that the locomotive shops consist of 15 bays, the first four of which are 300 feet long and 60 feet wide. The remaining bays being only 50 feet wider. They give employment to over 900 men. The offices for the Works Manager and timekeeping staff are separate from the main buildings.

Shops Nos. 1 AND 2 are devoted entirely to forge and smiths' work and contain several steam hammers, ranging from five cwt. to two tons, and 21 smiths' forges. There are three steam hammer furnaces over which old locomotive boilers are mounted for generating the steam for the hammers. They are also equipped with tyre furnaces and necessary appliances for re-tying all wheels. Two mechanical strikers, worked by compressed air, have lately been introduced. Nut and bolt machines, with hot and cold iron saws, power-driven punching and shearing machines, slotting and drilling machines, hydraulic pressers and "bulldozer," with pneumatic cranes, for bending all classes of work, are installed.

Shops Nos. 3 AND 4 are wholly engaged on boiler work. Most of the machines in these shops are worked by hydraulic power, consisting of a stationary, gap, hydraulic riveter; with lifting gear overhead, portable hydraulic riveters; with cranes attached, a double-ended hydraulic punching and shearing machine, and a large hydraulic press for flanging plates. There are also tapping, plate-edged planing machines, bending rolls capable of bending plates up to 12 feet wide, punching and shearing machines, power-driven tube-plate boring and drilling machines. The whole of this machinery is driven by a pair of wall engines, and it will be greatly augmented at an early date, as a number of modern machines, electrically driven, and large hydraulic riveters are under order so as to render the shops capable of dealing with the whole of the new boiler work required

in future, as well as coping with the extensive repairs. These shops also contain ordinary smiths' fires and special forges for dealing with the flanging of plates and angle-iron work, and are equipped with two over-head, rope driven, travelling cranes, which run the full length of each shop, one of 10 tons capacity and the other 16 tons. Compressed air is also used for working portable tools, such as drills and pneumatic hammers.

Nos. 5, 6, 7 AND 8 SHOPS are used as erecting shops and contain pit and bench accommodation for dismantling, repairing and erecting engines. They provide sufficient accommodation for 24 engines and tenders. A ground-traverser is used for taking the engines in and out of these shops from the lines of rails outside the main buildings. Twenty-five-ton over-head travelling cranes run over three bays. These and sundry machines are driven by a pair of 50 horse-power wall engines.

Nos. 9, 10 AND 11 SHOPS are used for machine work and equipped with heavy wheel, duplex and axle lathes, tyre-boring, drilling, and spindle-boring machines, modern capstan lathes, special tapping machines, boring machines, and heavy milling tools, both vertical and horizontal, for dealing with foundation rings and all heavy work for new boilers, etc.; three small horizontal and vertical milling machines for general work, slide-bar and tool grinding machines, brass finishers' lathes, planer, rod grinding machine, large gap lathes, and numerous smaller lathes ranging from 16 to six inch centres for general work, cylinder-boring machines, and the usual heavy planing, shaping, slotting, and radial drilling machines, nut tapping, general and special screwing machines used in first-class locomotive works. There are two hydraulic presses, ranging from 200 to 750 tons in the shops. Air hoists have been introduced and are used, operated over heavy lathes and other machines, for lifting the work in and out. The whole of the machinery in these shops is driven by a pair of 50 horse-power wall engines. A large tool store, containing small lathes and a milling machine for making and repairing special machine tools and cutters, is attached to the building. A number of modern machines have recently been ordered for these workshops, such as special milling machines and lathes; they will be installed at an early date.

Nos. 12 AND 13 SHOPS are in process of transformation and will be set apart for the machines and interlocking work which it is intended to remove from Redfern to Eveleigh.

No. 14 Shop is occupied by pattern-makers and carpenters. It is equipped with wood-turning lathes, saw benches, planing machines, and all necessary appliances for constructing patterns for the department. The patterns, after use in the foundry, are stowed in this building for future purposes.

No. 15 Shop is used as a branch of the General Store under the Comptroller of Stores. It is conveniently placed in the vicinity of the Workshops for supplying material for daily use in the shops and for forwarding supplies of small details to country depots.

The copper-smiths, tin-smiths, plumbers and gas-fitters occupy small shops between Nos. 4 and 5, and all work done in the way of repairing tubes, steam-pipes, &c., lamps and Westinghouse air-pipes for engines and tenders, is prepared in them.

A large air-compressing plant—made by the Ingersoll-Sergeant Company and capable of compressing 950 cubic feet of free air per minute to 100 lbs. pressure—has recently been installed in an annex of the boiler shop,

from which air-mains are extended to the various shops for working lifts, pneumatic tools, etc. The air-mains are extended to the carriage and Waggon shops and will probably be led to the carriage-cleaning sheds at Redfern and Erskinville for the purpose of cleaning carriage cushions, carpets, etc.

There is also a large hydraulic plants with accumulator, weighted to pressure of 1400 lbs. per square inch for working the different hydraulic tools about the shops.

NEW FOUNDRY. It was found necessary, owing to the increase in boiler work, to extend the boiler shop into the old foundry, and a new foundry—300 feet by 60 feet—was placed at the end of the main building. It is fitted with all modern appliances for iron and brass moulding, including three cupolas for melting iron, and twelve furnaces for melting brass. It has also one 16 ton overhead travelling crane, two hydraulic jib cranes, five and two tons respectively; one steam moulding machine, two core-ovens, sand-mixing machine and Chilian mill, with special "rumblers" and emery wheels for cleaning castings. On the outside of the foundry, hydraulic lifts are arranged for raising the scrap on to the platform for melting.

NEW ERECTING SHOP. In consequence of the natural increase of work, a new erecting shop has recently been completed and occupies a site parallel with the new foundry. It is a substantial brick building of two bays, each 400 feet long by 55 feet 6 inches wide, and fitted with the modern appliances required in connection with repairing and erecting locomotives. It is equipped with four overhead electric-power cranes, each having a lifting capacity of 35 tons—two in each bay; and the necessary machines, such as lathes, shaping, drilling, milling and grinding tools, are driven by electricity from line shafting running the whole length of the building, and worked by an electric motor. Each bay contains three lines of road, the centre one being a clear road, and those on each side of it are used for stabling engines undergoing repair. These roads have pits between the rails, running from end to end of the building, and thus affording every convenience for men to get about the work beneath the engines. Provision is made, by the height of the building and cranes from floor level, for the heaviest engine to be lifted by the overhead cranes, and passed from one road to another, over other engines; this avoids unnecessary shunting.

A steam laundry is in operation adjoining the new erecting shop, equipped with engines, boilers, revolving washing machines, hydro-extractor, boiling tanks, etc., complete, and special ovens for drying the sponge-cloths and waste used for cleaning all over the railways.

In addition to the shops already mentioned, two large sheds have been erected at the end of the smiths' shop, one of which will be used for a heavy forge, and will be equipped with special tools, such as a 4-ton steam hammer, with hydraulic cranes, furnaces, boilers, etc., complete, a small rolling mill, heavy special shearing and punching machine for cutting up old boilers, etc., into scrap; and a heavy cold saw for cutting bar iron. The other shop will be used for general purposes.

It is intended to transform the rope-driven overhead cranes in these workshops into electrically-driven machines, utilising for that and other purposes the electricity generated at the Ultimo Power-house. The machinery for this change is now under order.

We hope to publish a description of the carriage and waggon shops and equipment in our next issue.

Snow Storms and Floods.

THE weather is an unending source of comment, and whether it is fine or whether it is wet, generally gives occasion for a few remarks. The "samples" which have been experienced recently are noteworthy enough to call for extended remarks. May and June this year hold the record for two months' rainfall, and not to be outdone, July opened with a heavy fall, succeeded on the 5th instant by a remarkable fall of snow on the western and southern highlands, so heavy, indeed, as to cause a complete interruption to traffic, and for the first time in our history, to cause the trains practically to be snowed up. Fortunately, the staff were on the alert, and it is gratifying to all concerned to know that the occurrences have practically passed without any serious damage to the lines, or without any undue detention to the traffic. The officers and men in the western district worked particularly well, and the belated passengers who had to spend the night in the blocked trains, speak most highly of the courtesy and attention that were shown to them by the railway staff.

Official report notifies that on the 3rd and morning of the 4th July, heavy general rains commenced to fall over the southern and western districts of the colony, and light rains over the northern districts, with snow in many places, the fall being particularly heavy on the western line between Katoomba and Bathurst, the average depth of snow being from 3 to 4 feet, and rising to 8 feet on the rails in some of the cuttings.

In consequence of these abnormal weather conditions, the following delays and interruptions to traffic took place:—Southern line: On the morning of the 6th a slip of about 4 chains long, and consisting of about 1000 yards of earth, occurred in the cutting at mileage 90-20 south, between Moss Vale and Exeter. The road was promptly cleared, the up-express being delayed 25 minutes. Between Junee and Albury very heavy rains fell on the 4th, 5th, and 6th instant, and the water was close to the rails in several places. At mileage 350-75 south, near Culcairn, the water was over the rails on the 5th instant, but rapidly subsided after doing slight damage to the permanent way, which was promptly repaired. A very heavy flood occurred at Wagga, doing considerable damage in the township, but the railway line was not affected to any extent.

On the Cooma line a washaway of considerable extent occurred on the 5th, at mileage 139-40, about 7 miles from Goulburn, and the surrounding country was flooded. Passengers were transhipped at the break, and in the meantime a temporary bridge was constructed at the spot, over which the traffic was resumed at reduced speed at 8 p.m. on the 6th. A slight slip also occurred at Billilngra, but was promptly repaired, and no delay to traffic resulted.

On the Camden line the water rose 12 feet over Camden Bridge on the morning of the 5th, and all traffic had to be stopped.

South Coast line: On the South Coast line very heavy rains were experienced, and slight slips occurred at a number of places between Waterfall and South Clifton. Repairs were promptly effected, and drivers were instructed to reduce speed over the dangerous portions of the road, and keep a sharp look-out. No serious delays occurred to trains on this line.

Western line: On the western line a very heavy snow-storm occurred between Katoomba and Orange. The

Railway and Tramway Musical Society.

ONE of the best concerts the above Society has ever given took place at the Institute on the 19th ult., when the proceeds were on behalf of the Indian Famine Fund. Unfortunately the weather was very unpropitious, and interfered with the attendance. The programme was a well diversified one, including instrumental items from the Society, W. J. Stent's Bango Club together with solos by Messrs. J. F. Truscott, Mrs. G. Leeder, Miss Lalla Ross, Mr. Edward Jenkins, a recitation by Mr. Orchard, a lightning sketch by Mr. F. A. Butler, a duet by Messrs. Sherlock and Cochran. The whole of the soloists were very successful in their efforts, Mrs. Truscott's beautiful contralto voice being heard to considerable advantage, while Mrs. Leeder and Miss Ross were greatly appreciated, the latter singing "Nenth My Lattice" from the "Rose of Persia." Mrs. Bissell accompanied in her usual sympathetic manner, and Mr. Sherlock occupied his usual post as conductor.

Children's Entertainment.

THE third of this series of entertainments was held on 24th ultimo, and was, if possible, even more successful than the previous ones. Masters E. Atkinson, J. Laidlow, S. McEvoy and F. Ellis secured well-deserved encores for their songs, and Miss Amy House was recalled for her display of skitt-dancing. Master Sedley showed himself a master of the banjo, while piano solos were excellently rendered by the Misses Murphy, Atkinson and Ruwald. Miss E. Thomas recited, while songs were acceptably rendered by the Misses Ellis, Ruwald and Laidlow; and a sand-jig by Miss Ellis was much appreciated. Dumb-bell exercises by Public School pupils, and a display of Indian Clubs by a team of young ladies, afforded excellent proofs of the poetry of motion. The performances throughout were of a very high order of merit, and the crowded audience, both young and old, spent a very happy evening.

The Carriage and Wagon Shops at Eveleigh.

FOLLOWING the interesting description of the "locomotive side" of the workshops at Eveleigh, which appeared in last issue, we publish hereunder a brief description of the Carriage and Wagon, which as mentioned are situated at Eveleigh, almost opposite the locomotive shops, but on the other side of the railway line. The buildings are necessarily extensive in view of the large stock of carriages and wagons required to conduct the traffic of such a large concern as the New South Wales Railways, and it is not surprising, therefore, to find that in these shops employment is afforded to over 520 men.

The main building of the Carriage and Wagon Shops consists of ten bays, each 300 feet long and 60 feet wide, and this arrangement is as follows:—

Shops No. 1, 2 AND 3, are devoted to the repairs and re-building of wagons, and the construction of new wagons. There are 15 roads, each providing sufficient accommodation for 70 4-wheel vehicles. A ground

traverser is used for taking the wagons in and out of the shops from roads outside the main building. There are two 12-ton overhead rope-driven travelling cranes, each running the full length of shops No. 2 and 3. Shops No. 4 AND 5, are used as a saw-mill. They are equipped with modern machinery for dealing expeditiously with the preparation of all timber required in these shops. The machines consist of saws, planing, moulding, toning, boring and shaping machines, a chain saw, mortising, sand-papering machines, saw sharpeners, grinding machines, &c. In all, there are 47 machines in the mill. No. 5 shop also contains the boilers and two pairs of 50-h.p. wall engines which drive the whole of the machinery in these shops.

No. 6 shop, is used as a smith's machine and fitting shop. It contains 12 smith's fires, two small steam hammers, a punching and shearing machine, and a bolt-making machine with furnace, also lathes for wheel turning and general work, shaping, drilling and screwing machines, and a duplex automatic screwing machine. The shop is equipped with a 5-ton overhead rope-driven travelling crane, which runs the full length of the shop. Outside this shop, at one end, is placed a plant for cleaning axle-boxes, by boiling them.

Shops No. 7 to 10, are used as carriage repairing shops. There are 13 roads, with accommodation for 29 bogie cars. For facilitating the lifting and removal of vehicles, two 12-ton overhead rope-driven travelling cranes are used; they run the full length of shops No. 8 and 9. A ground traverser is used for taking the vehicles in and out of the shops from the roads outside the main building. Two new 60-ft. traversers have been ordered for the Carriage and Wagon shops; they will be driven by electricity generated at the Ultimo Power House, and will be installed outside at each end of the main building, and the space now occupied by the present traversers will be filled up, thus giving increased accommodation for the repairs of carriage and wagons. Compressed air is laid on throughout the shops, and is used for the purpose of testing brakes, cleaning carriages, and for working portable tools, such as drills, dust ejectors, &c. A portion of No. 9 shop is used by the trimming staff, where the whole of the interior trimming material used in carriages is dealt with. Two pairs of hair-teasing machines are at work, also machines for dealing with hair felt used in making axle-box lubricators. A plant has recently been installed in No. 7 shop for electroplating all the metal work fittings used in the interior of carriages. It comprises dynamo, plating vats, and vats for stripping the old silver and nickel from the fittings; also buffing and polishing lathes. Adjoining the plating room are the carriage finishers' benches, where the whole of the interior woodwork for carriages is prepared ready for fixing in the vehicles. A store is located in No. 10 shop, which is a branch of the general store, and is conveniently placed for the supply of materials for daily use in the Carriage and Wagon Shops.

THE PAINT SHOP, is an entirely separate building, from the main shops (No. 1 to 10), and is 300 feet long by 160 feet wide, and contains six roads running the full length of the shop, and has accommodation for 12 bogie vehicles. On one side of the shop is a paint store and mixing room, fitted with paint mills and mixer, which are driven by a small engine. A room in which women are engaged in upholstering work is placed on one side of the shop, and contains four sewing machines. All the cloth and leather used for cushions and trimmings for

carriages is there dealt with. Compressed air is also conducted outside by pneumatic painting machines. The paint shop is heated by steam passing through suitable coils.

In dealing with the rolling stock, which consists of over 1,000 carriages and 11,000 wagons, a large quantity of timber is used annually, and to obtain the best results it is essential that the timber be thoroughly dry and well seasoned before being used. Various processes of seasoning have been tried, none of which have been so successful as that obtained by storage for lengthy periods in well-covered airy sheds. For this purpose, large sheds have been built, one at Eveleigh and the other at Alexandria, where various timbers, approximately equal to 3 years supply, are stored.

Proposed Castlereagh-street Tramway.

At a meeting of the Public Works Committee, on the 9th instant, Mr. H. McLachlan, secretary to the Railway Commissioners, was examined with regard to the proposal to construct a line of tramway along Castlereagh-street.

In his evidence Mr. McLachlan stated that the Commissioners strongly recommend the proposal, as being absolutely necessary to give relief to the tramway services. Since the original proposal was made the Commissioners recommended a departure in connection with the route, and they would prefer to see a single line laid down Castlereagh-street, turning round by the Custom-house, and returning by way of Pitt-street. Their idea was to use this route for the railway traffic, and so relieve George-street of the business. At the present time 150 cars a day were running in George-street, divided between the Newtown and railway routes. The number of trains in and out per day along George-street was 2280, but it had to be borne in mind that the traffic was much busier at certain times than at others. For instance, between 5 and 6 p.m. 87 trains left the Circular Quay, and as an equal number of trains arrived in, 174 trams passed up and down George-street in the hour. It could be understood, therefore, that with the congested state of the traffic and the narrowness of the street there was not much margin for the introduction of other routes into George-street, and the Commissioners did not think it was possible to convert the Leichhardt, Balmain, Forest Lodge, and Glebe Point trams, and conduct the business along George-street. If the railway trams were taken along the new route it left room for the accommodation of other routes. Castlereagh and Pitt-streets were admittedly not quite so convenient as George-street, but there was so little difference in the location that he thought there would be no inconvenience by the transfer.

Questioned as to the earnings of the electric system, he stated that the Commissioners were quite satisfied with the results so far, although it might perhaps be too early to give an absolute opinion as to the final results. No doubt renewals, for instance, would be heavier as time went on, but the earnings to date and the results were most satisfactory, and the introduction of the system had meant a big increase in business. On the Newtown line, for example, under the steam system the average earnings were £166 per day; on the electric the average was £256 per day, due no doubt to the great popularity of the electric system and the trams running along George-street, and so obtaining traffic which formerly went by omnibus.

In regard to the introduction of penny sections and cash fares, a great increase of business had followed the change, but it was not so profitable to the Commissioners. The change of sections had meant a falling-off in the total earnings, although a much larger number of passengers were carried, and in addition a largely increased expenditure had followed. The Commissioners, however, considered that when the whole of the tramways were worked under the one system—electric—the results would be better than they were now with the existing divided systems. Personally he did not consider the trams would ever be satisfactory for the railway business, and it would be a great advantage if the streets could be relieved of the traffic by a continuation of the railway line into the city. If the Commissioners had their way they would start the city railway to-morrow. On a busy day 50,000 people came in and out of Sydney by the trams. The tramway traffic also had assumed very large proportions, the electric trams on a busy day carrying 100,000 passengers, more than equal to what was carried on the whole of the steam lines. Adding the tramway traffic and the Ocean-street cable and the North Shore lines, a busy day's business on the tramways meant the collection of a quarter of a million fares, and this business was growing. He thought it very desirable that they should look ahead, and that any extension of the trams should be considered not merely on its own merits, but as part of a comprehensive scheme that would follow as the requirements arose; and in considering any tramway extension, the Commissioners always had in view its bearing on other likely routes.

Mr. C. B. Brain, electrical engineer, Department of Railways, submitted that the danger from city tramways was greatly exaggerated.

The suggestion of the Railway Commissioners, as voiced by their Secretary, to the Parliamentary Standing Committee on Public Works, that instead of running a double electric tram line from Circular Quay along Castlereagh-street to the Redfern Railway station, it would be better to lay one set of rails along Pitt-street to Redfern, and another back to Circular Quay along Castlereagh and Loftus-streets, has been received with a considerable amount of favour by the public. The proposal is that the trams should start from Circular Quay, turn into Pitt-street, then run along that thoroughfare to Redfern, and come back on a return current along Castlereagh-street. It is pointed out in support of this plan that the single track of rails will not take up so much room in Pitt-street as a double track, that it will effectually divide the vehicular traffic, will be less liable to cause a congestion of traffic in the busy portions of Pitt-street, and that when, under the new system of managing the city traffic by the police, heavy lumbering loads of wool, hides, timber, and other goods are relegated to bye-streets, the traffic of one of the leading thoroughfares of the city should be carried out in a satisfactory manner. The Railway Commissioners admit that the cost of laying down two single tracks is 25 per cent. greater than if a double track were laid, but they are confident that the great convenience the two lines will be to the public will amply repay the extra expense. It is understood that Ministers approve of the proposal, and the Minister for Works states that when the Public Works Committee reports as to the expediency of constructing the two single line scheme, the Government will be prepared to ask Parliament to sanction the carrying out of the work.

Appendix F

Godden Mackay, Eveleigh Workshops Management Plan for Moveable Items and Social History
Volume II—Social and Oral History, July 1996

**EVELEIGH WORKSHOPS MANAGEMENT PLAN FOR
MOVEABLE ITEMS AND SOCIAL HISTORY**

Volume II Social and Oral History

July 1996

Prepared for



City West Development Corporation



State Rail Authority



**Department of Urban Affairs and
Planning**

GODDEN
MACKAY

This is **Volume II** of a six-volume set of reports commissioned by City West Development Corporation, State Rail Authority and the Department of Urban Affairs and Planning.

Executive Summary

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Volume II Social and Oral History

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PREAMBLE

EVELEIGH WORKSHOPS SOCIAL HISTORY: FINDINGS RELEVANT TO THE ASSESSMENT OF THE SIGNIFICANCE OF THE PLACE

In relation to the Eveleigh Workshops the following aspects relevant to assessment of the significance of the place have been identified:

1. The site is important for its continued use for railway purposes over a one hundred year period, and its continued existence;
2. The important role played by public ownership of railway and public enterprise in the manufacturing of locomotives in Australian history generally and in NSW specifically;
3. Eveleigh's critical role in establishing an industrial infra-structure in NSW which assisted in the expansion of local engineering and manufacturing enterprises and the iron and steel industries;
4. Eveleigh's role as one of the country's largest employers and, relatedly, its continued recruitment of Aboriginal and migrant workers;
5. The continued adaptation of technological innovation developed elsewhere in the world for local conditions, notably locomotives, operating machinery and management systems;
6. Evidence of Australia's strong Trade Union involvement in industrial activity and the inter-relationship between the industrial and political wings of the labour movement throughout the twentieth century. Of critical importance are:
 - the part played by unions and the ALP in promoting manufacturing at Eveleigh;
 - Labour government support of Eveleigh workers demands;
 - tendency for some Eveleigh employees to enter into Labour politics; and
 - pioneering struggles over occupational health and safety and treatment of migrant and Aboriginal employees;
7. The important role played by Eveleigh in manufacturing labour communities by means of family recruitment and extensive social organisations formed in the workplace;

8. Important role in serving empire and nation through involvement in Royal tours and munitions manufacture; and
9. Its environmental and social impact on the surrounding locality of South Sydney.

EVELEIGH WORKSHOPS SOCIAL HISTORY: RECOMMENDATIONS

As noted in Section One, time and funding constraints limited the historical analysis and the oral history. Potential therefore exists for additional work.

Follow-up Interviews

These are critically important in eliciting additional information from interviewees that may have been forgotten, or may simply not have been uppermost in their memories during the first interview. On this basis, follow-up interviews with those who participated in this project are recommended. During the interviews already held, few focused directly on Eveleigh's machines. Their attention tended to be more generally on work practices and technological backwardness. Hence, follow-up interviews could be used to obtain information and stories associated with the operation of particular machines.

Oral History of Eveleigh's Marginalised Workers

(i) Aboriginal Employees and Residents

Extensive efforts were made to locate members of the Aboriginal community who either worked at Eveleigh or grew up in its surrounds. However, this was hampered by time constraints. The continuation of such efforts is recommended.

(ii) Women and Migrants

As noted in this Report, women and migrants played an important role in Eveleigh's social history. Unfortunately, the need to identify the experiences of Eveleigh's traditionally male-dominated Anglo-Australian labour force prevented the location of women and migrants for inclusion in the oral history interviews. It is therefore recommended that an oral history project which focuses specifically on the experiences of the women who worked in Eveleigh's munitions annexe during World War Two and of the migrants who were employed at Eveleigh from the 1950s be undertaken in the future. Such oral histories would enable analysis of the impact of gender and multicultural relations on Eveleigh's development. This work would also throw light on Eveleigh's continuing influence on the SRA.

Administrative History

The Social History could also be augmented by an administrative history of the Eveleigh Workshops. This could:

- (i) focus on the impact of public enterprise on Eveleigh's development to a greater extent than could be considered in the context of a social history;
- (ii) identify the relationship that existed between Eveleigh and other branches and workshops of the SRA;
- (iii) consider the history of Eveleigh's changing management strategies; and
- (iii) explore the influence of Eveleigh on the SRA today.

In this regard, an oral history project could be conducted which specifically focuses on retired managers and engineers. By this means some impression could be obtained of the atmosphere of the workshops from a management perspective.

First, I would advise that the eight master tapes, together with the transcripts produced from these interviews, be lodged with the State Library of New South Wales.

Second, I would propose that, subject to further editing, the Social History Report should be published. In my capacity as Deputy Director of the Industrial Relations Research Centre at the University of NSW, I would further propose that the Report be submitted for consideration as a part of the Centre's Industrial Relations Monograph series.

Third, I would recommend that funds be found to produce photographs of all those photocopies included in the Photographic Bibliography (Appendix One). This resource represents a comprehensive collection of visual materials from the SRA Archives, the Mitchell Library's Photographic Collection, various contemporary government publications and newspapers. Its potential as a future research tool is immeasurable. Moreover, its publication as a collection would provide a useful promotional device.

Study Output Recommendations

This project has produced several valuable resources for future use. The following recommendations specify appropriate archival storage and future opportunities.

The eight master tapes, together with the transcripts produced from these interviews, should be lodged with the State Library of New South Wales.

GODDEN
MACKAY

Subject to further editing, it is desirable that the Social History Report is published. In my capacity as Deputy Director of the Industrial Relations Research Centre at the University of NSW, I would further propose that the Report be submitted for consideration as a part of the Centre's Industrial Relations Monograph series.

Funds should be sought to produce photographs of all those photocopies included in the Photographic Bibliography (Volume IV). Its potential as a future research tool is immeasurable. Moreover, its publication as a collection would provide a useful promotional device.

1.0 INTRODUCTION

1.1 BACKGROUND

This social history, incorporating an oral history component, presents a broad overview of working life at the whole Eveleigh Workshops site between the 1880s and 1989. It is designed to provide material for the definitive heritage assessment of the workshops which takes social experiences into account. To this end, it gives a detailed account of the human involvement in the former operations of the site. This will, in turn, provide background and colour for promotional needs.

The history has been prepared in a format that enables it to be used as the text for a future publication on the history of Eveleigh Workshops after editing for the proposed target audience. A Photographic Bibliography is provided in Volume IV as a source of illustrations for use in the Eveleigh Workshops History and any future publications.

By contrast, with previous studies this history locates the site within a political and economic context. Using a broad chronological framework, it focuses on a number of themes that are pertinent to the site's significance. Through this approach it identifies those forces and events which shaped Eveleigh's development and also the experiences of those people who were associated with its operations.

1.2 SCOPE

What is social history? The Eveleigh Machinery Options Focus Group meeting, held on 1 May, 1996 agreed that social history can best be defined as the history of ordinary people. Implicitly, the inclusion of an oral history component, extends this definition to include the voices of these people in order to highlight their perceptions and experiences. This history, accordingly, allows the historical agents, be they managers or workers, to speak for themselves. For the sake of continuity, this approach is given to oral and documentary sources, alike.

For scholars, the concept of social history is, however, more far-reaching. As a methodology it has evolved through a number of different stages and orientations which have been characterised by concerns for 'History from Below,' the 'total social experience' and the social history of labour.¹ The approach taken here has been influenced by such historiographical trends. Accordingly, it focuses on Eveleigh as a place of work and social interaction by considering the way that the buildings on the site, the activities conducted in them, the organisational arrangements, managerial strategies, industrial conditions and technological innovations affected working life

and employee relations. Additionally, major events which affected any of these, such as wars, strikes and royal visits are taken into account.

1.3 APPROACH

As numerous heritage studies have found, machinery and technological innovation are crucial features of Eveleigh's significance. How can these be reconciled with the demands of social history? The approach taken can best be explained by defining precisely what is understood by the term technology. Instead of simply equating it with tools and machines, technology has been interpreted more broadly as being composed of both a material and a social component.ⁱⁱ In other words, this social history identifies the way that machines were organised and used, how those who operated them were controlled, how these operators felt about different machines, how they reacted to the introduction of new machines and finally, how they interacted with each other. This broad definition therefore encompasses management strategies, industrial relations and work-related recreation. It also draws attention to communal relationships. Community, for the purpose of this study, is taken to operate on two levels, as association and as place. The former focuses attention on the way that kinship and broader social interactions based on labour movement and political affiliations, as well as hobbies, intersected with the Eveleigh Workshops. The latter draws attention to the impact of the site on the residents who inhabited the surrounding locality.

Section Two gives a comprehensive overview of the way Eveleigh evolved and changed. It provides a chronological framework which sketches its functions and its spatial and functional arrangements. Section Three highlights the services performed by the workshops for the Empire, Nation and State during Royal visits, times of war and pandemic. Section Four shows how administrative arrangements, management strategies and industrial relations influenced work processes. In this regard, detailed attention is given to the General Strike of 1917 and its long term impact on the workshops. Here, too, consideration is given to working conditions, technological innovations and social life. It is in regard to these subjects that the oral sources provide greatest insight. The final section then uses such sources to highlight Eveleigh's environmental effects.

The study draws on a range of sources. These include books, articles, scholarly dissertations and government reports on the NSW Railways and leading figures associated with them. Other original documentary sources examined include newspaper articles, publications produced by the NSW Railways and Tramways Department for its employees and by the various unions and shop committees represented at the Eveleigh Workshops. Oral History transcripts have also been used extensively. Some of these were produced specifically for this project.

This component of the study resulted from the recommendations for further research made by the 'Eveleigh Railway Yards Locomotive Workshops Conservation Plan, in June 1995. The project team has extracted relevant information from other oral history transcripts, notably those produced for the NSW Bicentennial Oral History Project and for the Combined Railway Unions Cultural Committee's Oral History Project in addition to eight interviews undertaken specifically for this project.

1.4 LIMITATIONS

Time constraints have meant that this social history has been unable to specifically fulfil one of the Report's recommendations; that 'research with former workers who operated machines to provide operational information and stories associated with machines.' (S.2.8, p.6.) Some such information is embedded in the transcripts. However, additional time is required to effectively extract it for incorporation in a social history. It also proved impossible to quickly locate informants which represented the female and migrant presence at the workshops during and after World War Two.

The location, copying and compilation of a photographic bibliography, deemed to be essential to the preparation of this study and as a future reference source, was extremely time consuming. More material was discovered than anticipated. Volume IV containing the photographs collected will undoubtedly yield further useful information than has been possible to integrate here.

Given the above constraints, this social history has simply drawn a broad picture of how Eveleigh's nature and operations shaped working life and the local community in which it existed.

2.0 THE NATURE OF THE EVELEIGH RAILWAY WORKSHOPS: ONE HUNDRED YEARS IN RETROSPECT

The advent of government control over railway transportation in New South Wales (NSW) in 1855, following the failure of private initiatives, was critically important in shaping the history of the Eveleigh Railway Workshops. Political and economic imperatives and public finances would continually shape its operations and employee relations.

Following public pressure for cost effective railway transportation, private efforts were made to establish the necessary infrastructure. By the early 1850s railway lines had been constructed with financial and legal assistance provided by the Government. However, the high costs of construction, coupled with technical and logistical problems, called into question the capacity of private enterprise to effectively establish a large scale transportation system as required by the colony's industries and population. A Report produced in 1854, by a Select Committee on roads and railways, recommended that Government should take responsibility. In September the following year public ownership and administration commenced when the property associated with the Sydney Railway Company was legally transferred to the Government.ⁱⁱⁱ

Railway building, repair and maintenance established a basis for future relations between the state and private engineering enterprises in NSW. Initially, such work was conducted by the P. N. Russell & Co., but after this firm closed down, Wearne & Breakspear undertook the manufacture of railway rolling-stock, including goods and stock cars, brake-vans, first-class composite passenger cars and tram-cars. In 1870 contracts between the NSW Government and the Mort's Dock & Engineering Company for the manufacture of rolling stock were extended to include locomotives; 60 locomotives were eventually supplied.^{iv}

The government railways were therefore singularly important in providing opportunities for engineering enterprise and local manufacturing. Railway workshops not only provided employment for skilled engineering craftworkers, but also the impetus for metal manufacturing in the private sector through their need for carriages, goods wagons, and locomotives. Hence, the development of railway transport was critically important in establishing the foundation for an industrial economy in Australia. It facilitated the expansion of large metal manufacturing and engineering firms during the 1860s.^v

In 1855, when the railway line to Parramatta Junction was opened, the Sydney terminus was located south of Devonshire Street on railway property. It was in this vicinity that the Government initially established repair shops consisting of small corrugated iron sheds and a two-storey stone building which operated as a Turning and Pattern Shop. (Refer to Volume IV, Photographic Bibliography.) The Redfern Yard facilities were extended in 1871, but the site itself proved inadequate 'for the requirements of the railway'. It was too small to handle the large increase in the number of engines used to meet the rapid growth of railway traffic which occurred during the 1870s. Accordingly, from 1875, recommendations were made to move the Metropolitan Workshops from Redfern to a site which was subsequently named Eveleigh. Originally a dairy known as 'Slade's Paddock,' this low-lying terrain was also known colloquially as 'Frog-Hollow' since it attracted frogs in wet weather.^{vi}

As the Locomotive Engineer pointed out in his annual report for 1879, on the Locomotive and Carriage Division of the NSW Railways Department, the lack of adequate workshop accommodation prevented his branch from conducting its work on a sound economic basis. In Burnett's view:

The absence of the necessary shed room for the locomotives, not only places these costly machines at a great disadvantage by exposing them to the injurious effect of dust and weather..., but also adds, in no small degree, to the cost of wages - notably in that for cleaning - owing to the great difficulty the men experience in doing their work when exposed in the open air, and, especially at night, to the wind and weather, with the imperfect light of hand-lamps.^{vii}

In order to remedy this problem, the Government purchased sixty-two and one quarter acres of the Chisholm Estate for the establishment of workshops. Included in the resumption was Calder House which was incorporated into the workshops as the Works Manager's Residence until 1922. (Refer to Volume IV Photographic Bibliography.) Additionally, Parliament voted a sum of 250,000 pounds for the new workshops and machinery.^{viii}

During the next two years, 1880-1881, work commenced on the site which included both sides of the line between Eveleigh and Macdonaldtown. A survey was conducted, excavations were begun and a plan was prepared which divided operations into four main sections: locomotive shops, running sheds, car and wagon shops, paint shop and stores. The plan proposed that the eastern side of the main lines would be occupied by the locomotive works (including a boiler, steam-hammer and smiths' shop, iron and brass foundry, tin and coppersmiths' shop, engine and tender repairing and paint shops, wheel machine and fitting shops, joiners' shops and stores), running sheds, engine and boiler houses, engine drivers' quarters, sand house and furnace, stores for locomotive department, two 50-foot turn-tables, water-cranes, one ordinary coal stage and one elevated siding over a coal stage, and

shunting yards. The buildings making up the locomotive shops were divided into two sections, one composed of four blocks, the other of eleven. Running between the two blocks was an annexe which was later replaced by a shop. Other annexes included the boiler houses, cleaning shops, engine houses and case-hardening shops. The second group of buildings included the running sheds which were capable of holding 126 engines. The lantern roof was comprised of extensive arches and 'skylights aggregating 48,000 square feet and another 2,400 square feet in the walls, making more than two acres of glass.' Subsequently in 1905, the lantern was lengthened when the roof was reconstructed and louvres were added. The western side was to be occupied by the carriage and wagon repairing shops (including wood working machine shop, fitting and turning shop, smiths' shop, paint shop, trimming shop) and railway stores. The point of this arrangement was to enable each of the divisions to communicate with the main lines without interfering with each other or interrupting traffic. And also to provide light and ventilation.^{ix}

In 1882, excavation and levelling for the workshops and the foundation for the running shed were completed. Additionally, the store was permanently established consisting of two galvanised-iron stores, an oil store and 'a handsome two-story brick building, containing eight large rooms' for the 'large clerical staff employed for the conduct of such a business.' Their accommodation was further enhanced by a balcony and verandah and a small garden.^x

Pressure for the 'completion of this important work' was initially exerted by the Railway Commissioner as early as 1880. However, progress was extremely slow. Two years later, the Locomotive and Carriage Division was still complaining about the shortage of space at Redfern and the need for the completion of the Eveleigh works. All in all it would take nearly 6 years for the works to become fully operational.^{xi} By 1884, the large running shed had been completed and occupied and two new 50 feet turntables had been put in. Two years later, four of the Locomotive Workshops (each 300' x 60') were in full working order, eleven were almost completed, the iron roofing had begun to arrive for ten others and the foundations had all been laid. It was also anticipated that the paint-shop would be handed over to the Locomotive Department during 1887.^{xii}

These arrangements would have profound social implications. For although the plans were repeatedly altered throughout the ensuing century, in response to increased demands and technological changes, the basic adherence to the operational divisions outlined above created sectional identities for the workers who inhabited the site. Likewise the roof would have a marked impact on working conditions.

By 1900, these shops employed 10% of railway staff, the locomotive shops employing over 900 men and the Carriage and Wagon Shops employing 520 men.^{xiii}

Once completed the workshops were essentially involved in maintenance and repair work. But from the outset, such activities were affected by the problem of obtaining sufficient rolling stock. Contracts with local firms for the manufacture of locomotives were entered into during the late 1870s, but local manufacturers were in no position to supply the quantities required nor were they able to effectively compete with the lower costs of imported locomotives. So although the Government wanted 'to deal liberally with Colonial manufacturers,' it could not disregard 'the interests of the general community'. Accordingly, from 1880 tenders were accepted from British firms for additional stock.^{xiv}

Britain was not, however, the sole supplier. American influences began with the arrival of the first Baldwin locomotive in 1877. Subsequently, further imports occurred which introduced eleven freight engines, and carriages and sleeping cars soon followed. As Burke points out, the 'trend towards American rolling stock climaxed during the 1890s' with the introduction of Pullman cars.^{xv}

These imports from America and Britain did not, however, adequately solve the problem of stock shortage, as the Locomotive Engineer, W. Thow, pointed out in his Annual Report for 1889. Moreover, the delays experienced in obtaining new stock materially affected the repair and maintenance of the locomotives that were in use. As was pointed out in the following year's Annual Report, despite:

the liberal expenditure in repairing the locomotives, it has been with the greatest difficulty that the traffic has been kept going, only thirteen additional locomotives having been delivered during the past year.

Given this constant pressure, the Commissioners advised the Government that the only real solution would come with the establishment of 'Locomotive Works in the Colony'. Only by these means would the Commissioners be able to 'properly equip' the lines 'with engines built under the personal inspection of our own officers' and to 'give employment to a large number of skilled workmen.'^{xvi}

These political and economic pressures would continue to plague successive NSW Governments. To deal with the immediate problem of inadequate stock, increasing numbers of more powerful engines were ordered that allowed for the haulage of longer trains. By the early 1890s, hundreds of engines were passing through the Eveleigh Workshops for what the Chief Mechanical Engineer described as 'exceptionally heavy repairs' and 'thorough overhauls'. At the same time the workshops were also engaged in the erection of 32 American engines and 8 Pullman sleeping cars.^{xvii}

These activities strained Eveleigh's erecting and boiler shops. As early as 1892 the Chief Mechanical Engineer pointed out that these facilities were inadequate. He therefore requested authorisation for proposed extensions which the Commissioners

had 'under consideration, but which' had 'been allowed to stand over for financial reasons.'^{xviii} This delay was to continue for some years given the economic pressures exerted by the Depression of the early 1890s. By 1897, Thow's plea for funding was more insistent:

The means which we have for executing repairs to locomotives are now insufficient. The work is not done with the rapidity and economy desirable. The increasing use of large and more powerful locomotives has outgrown existing facilities, and should be provided for by an extension of workshops and suitable machinery. Our present erecting shops are taxed beyond their economic capacity, and much time and labour are lost in getting our large and heavy engines into and out of shops which were designed and fitted with machines for dealing with much smaller engines.... In pursuance of the policy observed for some years past of employing one powerful engine where two smaller ones were employed before, it is manifest that the stock of large heavy engines must increase, and I venture to suggest that suitable provision should now be made for economically repairing them...^{xix}

The following year, Thow's appeals were finally met. A new foundry was constructed which enabled the conversion of the old foundry into an extension to the Boiler Shop, thus doubling the latter's size. Also during 1899 these additions were augmented by a new erecting shop which was to be 'fully equipped with modern machinery, electric overhead cranes and other appliances.' Moreover, the large expansion in traffic and general business which accompanied the general improvement in economic conditions, led to the placing of orders for ten additional goods engines and 400 goods wagons half of the latter to be built in the railway workshops.^{xx} Yet despite such measures, the constant need for more stock continued to plague the Government.

These developments highlight three political and economic factors which affected the planning, construction and operation of the Eveleigh Workshops, notably the influence of public ownership, the demand for local manufacturing and the continued need to rely on imported stock. How did these factors affect Eveleigh? As noted earlier, the workshops were born because local private interests were unable to adequately fulfil the Colony's need for a modern railway transportation system. The resulting public ownership of railways subjected the workshops to often contradictory pressures based on the demands of the wider community and the availability of public finances. So while Eveleigh had to function efficiently in order to assist in the transportation requirements of both primary industries and passengers, as we have seen, its development was constrained by political and economic exigencies. Invariably these were exacerbated by the continuously growing needs of the wider community.

The increased demand for the sufficient supply of rolling stock was constantly confounded. On the one hand, the arrival of the cheaper imports was often delayed. On the other, local manufacturers, though willing, often had insufficient resources to complete contracts. In many cases too, local firms simply put together engines from imported parts. Nevertheless, the Government was not immune to the continuing public demand that local manufacturing of locomotives be established for the good of the community. So although the tension between public and private interests had initially been solved in the former's favour, the tension itself remained. It would continue to influence Eveleigh's fate.

A partial resolution of the three political and economic pressures on the Eveleigh Workshops was provided by a Royal Commission, held during the early years of the new century, to inquire into the possibility of locomotive construction by the government or by private enterprises in NSW. Its 1904 Report recommending manufacture at Eveleigh was based on the argument that the machinery and plant, coupled with the staff of 1,150 men, could be effectively adapted to the task. The following description gives some indication of the nature of the shops and its operations at this time:

The main shop consists of sixteen bays, with a large erecting shop and foundry at one end, and a heavy forge and spring-smith shop at the other, the coppersmiths, tinsmiths, wheel-tying, and hydraulic press shop etc. being arranged at one side. Bay Nos. 1 and 2 of the main shop are devoted entirely to forge and smiths' work, and contain 50 smiths' forges, 2 root blowers, 2 heavy steam hammers... with furnaces, boilers and cranes, and other steam hammers... in addition to which there are 4 mechanical strikers operated by compressed air, power-driven punching and shearing, slotting and drilling machines, hot and cold iron saws, hydraulic presses, and a bulldozer... served by a pneumatic crane. At one end of the shops a special heavy punching and shearing machine is used for cutting up old boilers, and general heavy work, and a special case-hardening furnace... has recently been put into operation. Nos. 3 and 4 are used exclusively for boiler work... In addition, to the above, a heavy milling and large multiple drilling machine are in use, driven by separate electrical motors. Further to the south stood the running sheds, with 21 through tracks and accommodation for up to 126 locomotives. Dominated by three cavernous arched roofs, the structure covered a hectare of ground and contained another hectare of glass in the skylight of the lantern roof, while 1500 gas burners provided night illumination.^{xx1}

The Royal Commissioners' recommendation for the adaptation of these shops for locomotive manufacture sparked extensive debate, particularly as it flew in the face of opposition from the Railway Department's leading engineer managers. Indeed, while

admitting that locomotives could be manufactured cheaper by the Government, the Works Manager, H. B. Howe advised against mixing new work with repairs. Together with the Foreman Boiler, E. Fernley and the Foreman Erector, E. Atkinson, Howe argued vehemently that the Eveleigh site was inadequate to the purpose. As Atkinson put it: 'I think it would be far better to build new shops for erecting the new engines than to crowd them into Eveleigh Shops, where repairs are going on.'^{xxxi} This prophetic view would, after marked delay, affect operations at Eveleigh.

In the event, the Government opted for a more immediate cost-effective and politically expedient solution which would establish a long-lasting pattern. The Clyde Engineering Company was granted a contract for the manufacture of sixty locomotives, while Eveleigh was ordered to produce fifteen. For this purpose a new 'Loco Shop' consisting of two bays was built in brick on the Eastern Side. In 1908 the first of 22 "P" Class engines was constructed, in 1909, the first of 5 "N" class went into service and in 1911 the first of 50 "S" class was turned out.^{xxiii}

Yet even these efforts failed to solve the shortage of stock, particularly as the years 1911-1912 witnessed an excessive increase in traffic due to a substantial boost in primary production. Invariably, this situation led some railway administrators to promote imports from Britain as a solution. In the face of mounting pressure against such action, the newly elected McGowan Labor Government called another Royal Commission. This was particularly welcomed by members of the Amalgamated Railway and Tramway Employees' Federation employed at Eveleigh who had, since 1911, expressed great dissatisfaction with the comparatively greater number of orders for locomotives placed with the Clyde Company, despite the lower production costs, attained by the Eveleigh shops. Eveleigh mechanics disparaged the Railway Department's management for making 'no real effort to promote the industry of loco building' and for overlooking the fact that they had 'ample appliances [and] as good tradesmen as the world can produce'.^{xxiv} Their position would be echoed by a later generation of workers when this same issue recurred three decades later.

Specifically focusing on the extent to which Eveleigh could meet future locomotive requirements, the 1912 Royal Commission Report identified a decrease in repair and reconstruction work at Eveleigh from 20-22% in 1907 to 15% in 1912. By 1912, repair work was conducted concurrently with the construction of new engines, such as the new "S" engines which had been expedited by Eveleigh workers doing overtime and night shifts. This result led the Commissioner to conclude that with further extensions and alterations, 'the locomotive requirements of the State railways could be fully met by the State railway works, whether situate (sic) at Eveleigh or elsewhere.'^{xxv}

As Burke argues, the election of the State's first Labor Government with its emphasis on local production assured 'Eveleigh's role as a builder, alongside that of the Clyde Company... Government enterprise on one hand, private enterprise on the other - a pattern that was to recur in Australian commerce and industry.' To meet these new

demands, a range of alterations and expansions were made throughout the first two decades of the century. By 1912, the workshops covered 26 hectares and employed 3,270 people.^{xxvi}

Extensions to the Locomotive Workshops included:

an additional erecting shop in 1906, with a further extension in 1914; a new steam hammer shop in 1900; copper and tinsmiths shop in 1904; blacksmiths' shop in 1909; an extra foundry in 1911; and a new pattern shop in 1917. In 1917 also, an additional bay was added to the Carriage Repair Shop.^{xxvii}

In that year too, extensions were made to the machine shop, while in 1919 a new foundry for the production of iron, brass and steel castings was erected adjacent to the Alexandria Goods Yard, involving the further resumption of two acres. The old foundry, in the meantime, was converted into a shop for the repair of boilers, smoke-boxes and ash pans required for locomotive repairs.^{xxviii} Further alterations that were made during this period which involved changes in technology are discussed in a subsequent section, as are the implications of the above extensions for management practices and industrial relations. Similarly, the attempt to manufacture munitions at the workshops during the First and Second World Wars will be discussed in the section dealing with *Service to the Empire, Nation and State*.

However, the advent of World War One also affected Eveleigh's operations because it placed pressure on the Railway and Tramway Department to undertake workshop modernisation in order to enable production of equipment which had previously been imported. Indeed, an important characteristic of the period was the joint mobilisation by manufacturers, public service administrators, scientists and both public and private sector engineers, to ensure a greater self-sufficiency insofar as engineering equipment and manufacturing were concerned. All of these groups emphasised the great need for a marriage of science and industry in Australia.^{xxix}

Eveleigh played an important part in this regard as was illustrated by the Industrial and Models Exhibition organised by the Railway and Tramway Institute's Council, with the wholehearted approval of the Railway Commissioners. Held between 13 and 27 January, 1917 this exhibition aimed to demonstrate 'the possibilities of Australia to make herself independent of the outside world in the matter of manufacture in general and of industrial mechanical invention and development in particular.' This event was supported by the NSW Departments of Labour and Industry, Public Works, Lands and Mines, the Technology Museum and the State Timber Yards, together with numerous private firms, such as the Amalgamated Wireless Company (Australia), the Australian Gas Light Company and the Australian General Electric Company, all of which provided exhibits. Several 'outside bodies,' such as the Chambers of Commerce and Manufactures, the Trades and Labor Council and the

Sydney Models Society also displayed articles of British and Australian manufacture, as well as articles produced in the countries of other Allies.

The greatest number of exhibits, however, came from the different branches of the Railway and Tramway Department. The Department's Inventions and Suggestions Committee demonstrated 'a number of improved methods and devices for increasing efficiency and safeguarding life.' Exhibits included inventions developed after the outbreak of War as substitutes for enemy patents, torpedos produced in the Department's workshops, and newly adopted technology and techniques, such as high-speed steel tools, the use of the oxy-acetylene welding process and the 'Lucy' Superheater which had been produced in the Eveleigh Tool Room and New Locomotive Shop to take the place of tools and stock previously imported. (Refer to Volume IV: Photographic Bibliography.)^{xxx} The Department's managers were, in fact, extremely proud of these achievements. In March 1918, the Chief Commissioner James Fraser described the 'Lucy' Superheater, so named after its inventor E. E. Lucy, the Chief Mechanical Engineer, as having 'no superior in the world.' But this was not the sole innovation borne of necessity. The inability to procure boiler firebox tube plates and tyres, among other materials, was overcome by adopting a system which prolonged the life of boilers, while tyres were manufactured at Eveleigh from locally bought steel.^{xxx1}

During the 1920s railway stock continued to be produced locally by the Department of Railways at Eveleigh and by the Clyde Engineering Company's workshops at Granville, with some additional imports. Hence, the decade witnessed extensions to locomotive accommodation at Eveleigh to cater for the continued repair, construction and overhaul of locomotive engines and boilers and other goods stock. By this time, Eveleigh comprised an approximate area of 11,000 square metres. The Large Erecting shop for NN and K class work:

contained two bays, each 185 metres long and 17 metres wide, with three tracks extending through each bay. Locomotives entering by the centre track were lifted by two 36 tonne electric cranes and placed over the pits on either of the side roads. Stripping of the locomotives took place on the side tracks, the dismantled parts then being trucked along the centre road to other sections of the shop for machining or treatment; the re-assembly process followed in reverse order, the engine emerging on the centre track ready to steam. The large erecting shop where 567 men were employed had a capacity to repair and overhaul an average of seven locomotives a week, in round numbers 360 a year.^{xxx1} (Refer to Volume IV Photographic Bibliography.)

During this period too, a laboratory for the Locomotive Branch was built and improvements to the lighting facilities were made. It was in this context that the

Eveleigh works produced the first C36 class steam locomotive, deemed to have been the largest 4-6-0 built in Australia.

However, as had been predicted immediately after the turn of the century, the potential for extensions at Eveleigh was limited. Accordingly, in 1925, the Department acquired a new site at Chullora for new railway workshops. In 1927, following an inspection of the new site, the Institution of Civil Engineers reported that it was the intention of the Railway Commissioners 'ultimately to remove the whole of the workshops now at Eveleigh to the new site'. This shift would be a long time in arriving, despite recurring proposals for Eveleigh's closure.^{xxxiii}

In the meantime, the Great Depression took its toll on the public finances, so that from 1929 comparatively little rolling stock was constructed. By the mid-1930s the problem that had been experienced two decades earlier recurred. As the Annual Report for 1936 pointed out: 'the experience of the last two years... definitely demonstrates that the passenger traffic offering has outdistanced the construction programme'. However, as the 1930s progressed, most of the construction work undertaken gradually shifted to Chullora, while Eveleigh retained the bulk of the repair work.^{xxxiv} Additionally, this period witnessed increasing contracts to private companies. Of crucial importance in this regard, was the decision taken in 1935 to add diesel-engined trains to the Department's passenger rolling stock. Accordingly, in August of that year the tender of AEC (Australia) was accepted to supply and maintain ten diesel units. And while the passenger trailer cars, motor car bodies, underframes and bogies were made locally, the engines were constructed overseas, under contract, to be delivered during the 1936-1937 financial year.^{xxxv}

Yet again, these efforts failed to overcome the continuing stock shortage problem. The Annual Report for 1949 complained that local contracts of some 5 or 6 years standing had not resulted in deliveries, despite the 'continuous pressure' which had been exerted on the contractors and suppliers. Indeed, an 'investigation by the Australian Transport Advisory Council' into the deficiencies in rolling-stock throughout Australia, recognised that the desperate situation required an 'approach to the State Government on the subject of importation of certain types of motive power and rolling-stock.' As a result, the Government approved the placing of orders with Beyer-Peacock & Co. for 25 Garratt Locomotives, among other orders for wagons, vans and diesel electric locomotives from a number of other British and local firms. The first Garratts which arrived in Sydney in June 1952 were assembled at the Eveleigh Workshops which were also engaged in the manufacture of 25 D58 locomotives. (Refer to Volume IV, Photographic Bibliography.) Additionally, the 20 Diesel Electric 'Alco' locomotives, built for the Department by the American Locomotive Company in Canada, began arriving in 1951.^{xxxvi}

Dieselisation was a prolonged process which would have a profound long-term impact on the workshops because it necessitated a complete technological

reorientation. It also fundamentally affected those employees who had worked with steam all of their lives. As John Willis recalls:

JW I remember the first diesel arriving in the shed. That was a big occasion that day, a very big occasion. Because nobody at the time, you had steam fitters that grew up with steam and when dieselisation came in they were frightened to touch them, they didn't know what they were doing, they had to go through all their books again, what they were issued with, but it frightened a few, a few of them retired but a lot of them took it on and it did them good too. I think it was an experience for them because they didn't want to become involved in dieselisation, they started on the steam, grew up with steam and they wanted to retire with the steam. But they took it for granted, took it to heart. A lot of good men came out of it, it did a lot of good for a lot of the old time steam fitters. They became very, very knowledgeable.

LT Those who stayed on had to be trained again?

JW Trained, yes.^{xxxvii}

As will be seen in a subsequent section, while most workers adapted to the arrival of diesel locomotives, those who were too young to retire but could not see themselves working 'as a dieseler' transferred to other jobs with the Railways.^{xxxviii}

The pattern established at the beginning of the century in which the Eveleigh Workshops combined repairs and maintenance with assembly and manufacturing was, however, drawing to a close during the 1950s. As the decade progressed contracts were increasingly granted to both local and foreign firms, much to the consternation of Eveleigh workers. As Hearn has pointed out, in the post-war era experienced workers left Eveleigh for better paid jobs in private industry. Labour shortages, in turn, forced railway management to begin contracting out. During the late 1940s, for example, orders for locomotive repairs were placed with commercial boilermaking shops, a practise which increased during the following decade.^{xxxix}

In 1954, workers complained about the order for carriages from Commonwealth Steel Construction, amounting to 2.5 million pounds, while in 1957 they disparaged the Railway Department for placing orders with A. E. Goodwins for diesel locomotives. For although the repair of the Garratts had been done at Eveleigh, contracts for the construction of the diesel and electric locomotives carried 'with them the right for private enterprise to repair the Locos for periods up to five years, further reducing the need of Railway staff to carry out this function.' But even where work was retained by the Department the shift away from steam engines marked a profound threat to the Eveleigh Workshops because a diesel could be overhauled and placed back into service after five days. By contrast a steam locomotive took about twelve weeks for the same work to be completed.

These technological changes had profound implications for the nature of Eveleigh operations and also for those who were employed there. For example, the steam locomotives housed in the running sheds were moved out to make room for 'the stabling of diesel locos' resulting in the transfer of fitters and boilermakers to other depots. As the Eveleigh News reflected: 'Many will have to leave their long established homes to go to Country Depots or be forced to leave the Service.'^{x1} So, while Eveleigh workers acknowledged that 'Diesel & Electric Locomotion must be accepted by Railwaymen', they nevertheless began a campaign which demanded that 'all work associated with Dieselisation and Electrification of the Railways Industry, MUST be carried out by Railwaymen within the Railways Industry.'^{x1i} This threat to the livelihood of the 2,600 Eveleigh employees heightened in late 1957 when a report by Ebasco argued that Eveleigh should be abandoned 'because of its (sic) age and layout.'^{x1ii}

This report was not acted upon. Indeed, improvements were carried out at the Workshops which included the establishment of a spring manufacture and repair centre and refinement of foundry equipment. Nevertheless, the workers' concerns were not appeased; they continued to feel threatened by the continued phasing out of the steam locomotive. The demolition of the southern bay of the running shed, during the early 1960s, provided a particularly cogent example of the change to the site's operations even though the process was not completed until 1966. Not only did this development emphasise the death of steam locomotion, it also directly affected other activities. The 20cwt. forge in the Blacksmiths Shop was closed down because there was no longer work for it. In the face of such dramatic changes and the accompanying threat of redundancies, Eveleigh workers continued to struggle against the Department's tendency to contract work out to private enterprise.^{x1iii}

In fact, Eveleigh's life was to be extended for some time, even though the numbers employed there continued to decrease. In 1963, for example, a full work program of engine repairs was scheduled which stabilised the staff at around 2,000. By 1967, it appeared that Eveleigh had a new lease on life. In January the Air Brake Section was transferred from the Carriage Section to Bay 13 of the Loco Shops. In June, following the transfer of diesel repairs from Chullora Electric Carriage Shop, bogie repairs were commenced in the Large Erecting Shop. As the Eveleigh News put it, this development illustrated Eveleigh's continued capacity and provided 'a fitting answer to those who have advocated the abandonment of the Eveleigh Workshops.' Congratulations were thus extended to 'those in management who were quick to seize this opportunity to build for future activities', and to the Commissioner's positive response to public and union pressure to use Eveleigh to 'resolve the crippling shortage of electric. car rolling stock.' Added to this, in March 1968 new cleaning and servicing sheds were made available on the site of the old steam depot for the servicing and cleaning of air-conditioned trains such as the Southern Aurora and

Spirit of Progress. A new cafeteria was then opened alongside the Large Erecting Shed specifically for the shed and running staff.^{xliiv}

Thus Eveleigh had, in the short-term at least, survived the dieselisation of the locomotive fleet which was 'almost completed' by the end of the 1970-71 financial year. By this time, only 89 steam locomotives remained in traffic. Eveleigh's survival, was in fact characterised by efforts to make it up-to-date, as the 1974 Annual Report indicated by including a photograph of new machines being delivered to the Locomotive Workshops which were valued at over \$90,000. Two years later, a modern automatic plug board type turret lathe was also installed, 18 new industrial trucks and electric fork lift trucks had been provided for all the shops, a progressive programme of fitting selected machinery with metric dials had begun and improvements in amenities had been taken in hand. In 1977, a new axle turning lathe had been acquired and a new automatic brake shoe casting plant had been installed.

By the decade's end the modernisation of Eveleigh's foundry was successfully completed. New electric melting furnaces had been installed to replace the 70 year old cupolas and thus improve production and comply with the Clean Air Act. During this period, the Locomotive Workshops continued to do overhauls for all classes of locomotives as well as repairs to containers, wagons and a variety of rail motors. At the same time the Carriage Works continued to carry out overhauls, conversions, body painting and wheel repairs. Additionally, in 1978 these works were involved in three major projects: the preparation, mounting and dismantling of exhibits associated with the Silver Jubilee Train; the building of two carriages for the Travelling Museum Exhibit in conjunction with the staff of the Australian Museum; and the repair and refitting of 6 carriages for the track upgrading program.^{xlv}

On the face of it, Eveleigh appeared to be holding its own during the early 1980s, despite the implementation of a cost-cutting strategy by the State Rail Authority. During this period, the Carriage Workshops continued performing the operations with which it had been associated during the preceding decade. At the same time, the Locomotive Workshops continued to overhaul locomotives, bogies and high-speed diesel engines for all rail cars and manufacture locomotive components. A new operation was begun which involved the manufacture of wagon components for the Wagon Maintenance Centre at Clyde. Production schedules were consistently met and the introduction of new technology allowed these shops to increase productivity by 58% in the manufacture of machined items, according to the Annual Report for 1983. But despite these outcomes, a Review of Locomotive Depots in 1985/1986 recommended a revision of the locomotive maintenance program in order to reduce costs and rationalise resources. Accordingly, the Eveleigh Locomotive Depot was closed on 27 June, 1986.^{xlvi} This development signalled the gradual closing down of the Eveleigh Workshops, a century after they had begun operating.

Eveleigh's demise had, however, been anticipated for some time, as Jack Bruce recalls:

JK When Eveleigh finally closed had that been a long drawn-out process?

JB Very, very long.

JK I seemed to remember some suggestion in early 1950s that Eveleigh should close. It was more a political discussion I think at that stage. I think Eveleigh was always going from the time that Chullora was built. It was meant that that was where the workshop would be. But I think Chullora was built in 1924 so it was a long, long while before Eveleigh disappeared, to go out to Chullora. I think what saved Eveleigh for a long, long time was that the volume of work was just so great that no one workshop could handle it. And Eveleigh struggled along because it was needed. What couldn't be fitted in elsewhere was fitted in at Eveleigh and it was done at Eveleigh.

JK And how did that effect the men that worked there. Were they constantly worried or did they just say ...?

JB I think most of them accepted to "do the best we can with what we're doing now and it's inevitable that some change will come eventually". But the biggest struggle was right at the finish when we were left with people who had nowhere else to go and they eventually had to be dug out of Eveleigh.

JK Some were re-located to Chullora ...?

JB Re-locating whilst it could be done was done. ^{xlvii}

In fact, the Eveleigh Combined Unions Shop Committee complained in December 1986 that the SRA was 'deliberately running down the foundry work and making workers idle to justify closure plans' and force workers to accept transfers. A view that was justified given the SRA's announcement in February, 1987 of its intention to close the Loco Works by the end of that year. In the next two years the carriage works were closed as were the remaining engine shop and other services. In February, 1989 the 'on-again/off-again saga' of Eveleigh's closure finally came to an end. ^{xlviii}

3.0 SERVICE TO EMPIRE, NATION AND STATE

3.1 PREPARATION FOR ROYAL TOURS

The Eveleigh Workshops were initially drawn into serving the Empire in 1901 when they were engaged in the construction of a royal train for Australia's first Governor-General, Lord Hopetoun. It was first used in May of that year to carry the Duke and Duchess of York in their journey from Melbourne to Brisbane after they opened the first Federal Parliament. Subsequently, the royal car was used again for other royal visits, notably in 1920 by the Prince of Wales when he laid the foundation stone of Parliament House in Canberra, in 1927 by the Duke and Duchess of York when they visited to open the Federal Parliament in Canberra, in 1934 by the Duke of Gloucester and again in 1945 when the Duke was Governor-General. Finally, in 1954 when Queen Elizabeth II visited the Royal Car was altered to ensure comfort.^{xlix}

Contemporary descriptions of the royal car which attest to its grandeur implicitly highlight the craft skills of those Eveleigh employees who were involved in its preparation. As Hamilton Hyde described it in 1922, the train 'was an All-Australian triumph.' It was entirely locally-made, and it exhibited 'excellence of workmanship and artistic craftsmanship' because the 'men on the work put their hearts into the job and turned out a blue and gold masterpiece.'¹ The Railway and Tramway Magazine described the carriage interior in what Burke characterises as 'loving detail'. The observation and dining rooms, for instance had elaborately embossed ceilings and the walls were of solid clear oak, inset with niches for art treasures. The bedrooms were panelled in white ivory, picked out in gold scrolls, the spandrels were elaborately carved and the floors were 'carpeted with Wilton royal blue' with matching blinds, to mention but a few of the features. By the 1954 visit, such trimmings had been altered to a deep red.¹ⁱ

Memories of the preparation of these cars at the Eveleigh Workshops, however, provide some indication of how different people reacted to these cars. One impression is provided by Mary Lucy who was taken to see the Royal Saloon at the Eveleigh Carriage Paint Shop, as part of a school party, by her father E. E. Lucy, the Chief Mechanical Engineer during the 1920 royal visit. Instead of appreciating the craft work involved, Mary thought:

the royal party might have considered our carriage a trifle vulgar... the curtains were a startling Reckitt's blue and a great number of kangaroos, emus and kookaburras were carved into the pale and

*highly-varnished wood. Perhaps it was really nice but as a schoolgirl wanting everything to be "just so" it seemed a trifle bushwhacker to me.*ⁱⁱⁱ

By contrast, Hal Alexander's memory of the preparation's for the 1954 royal visit demonstrates that those who were actually employed at Eveleigh were highly appreciative of the work involved, even if, as radicals, they were irreverent towards royalty. Employed during the early 1950s as an electrician in the Carriage workshop, Hal recalled the preparations in the following terms:

HA The boss asked me would I air-condition the Queen's carriage in 1953 for the 1954 visit. He said, "What's your opinion of the Royal family?" this was the opening gambit, I said, "Them bastards. After the Revolution, those of them that are left, we'll have them shovelling the shit in the cinders pit over at the loco "I expected that from you," he said, "but I was told to ask the question. We want you to air-condition the Queen's carriage when she comes out and there would be lots of overtime." ... I nearly burnt it down actually, I had a big accident, but fortunately someone else saved it. A beautiful thing. It's still around, built about the 1900s. It's all the scroll work, hand-tooled scroll work. A lot of it's gold leafed. And antique furniture. Even the Queen's shithouse is a thing of great beauty if you look at it from one point of view.... That was my great claim to fame, I air-conditioned the Queen's carriage. And at the end of it, all the larrikins got on the back and we had to go for a test run to see if it worked and down the track and everywhere we'd stop at a railway station, we'd all stand and give them the royal salute to all the mob [laughs].^{liii}

Clearly, some Eveleigh employees held anti-imperialist views. But as we shall presently see, these views were not widespread and certainly did not prevent the workshops from performing a patriotic duty during times of war.

3.2 ASSISTING THE WAR EFFORT

Patriotism and empire loyalty were certainly a recurring feature of the Eveleigh Workshops. On 22 May 1900, for instance, the day before the public holiday proclaimed by the Government to celebrate the Boer War's 'Relief of Mafeking,' the Loco Shops at Eveleigh 'were decorated with flags, banners and Union Jacks, which had been purchased by the men and put up during the meal hour amid great cheering.' Further commemoration was also evident at 4.30 pm when all the employees gathered in the Loco Shops to hear patriotic speeches and to sing patriotic songs, culminating in an ardent rendition of the National Anthem.^{liv} The outbreak of war in 1914, witnessed similar scenes of imperial enthusiasm.

The loyalty to Britain that infused Australia's public culture certainly encouraged unanimous support for the Empire's war effort among rival Labor and Liberal politicians, as well as among the wider members of the community. At first, the advent of war 'acted as a binding force,' to the extent that it was arguably the first event after Federation which was shared by all Australians. Many railway employees responded by enlisting in the armed services. Others were subsequently involved in fitting out trains for the transport of injured soldiers. (Refer to Volume IV, Photographic Bibliography.)^{1v}

In addition, Eveleigh employees were drawn into the country's effort to manufacture munitions. This activity was not simply directed toward Imperial needs, but also provided an avenue for fulfilling distinctly national goals. Those who promoted such manufacturing perceived it as a means of expanding local manufacturing and particularly the embryonic domestic steel industry. Support for the local production of munitions thus represented the culmination of the manufacturers' long-standing struggle to build a strong industrial base in Australia. Likewise, the state's central role in munitions manufacture built on earlier government support for the local production of iron and steel, as well as the manufacture of locomotives. The potential for manufacturing munitions was, in fact, directly related to the expansion in railway construction and the establishment of steel works in Newcastle both of which had their origins in the years immediately preceding the war. Hence, the promotion of a local steel industry and munitions manufacture were viewed as heralding the emergence of Australia as a 'machinery manufacturing nation' rather than a 'huge repair' shop. The ability to produce 'everything from the pig iron to the finished product', it was believed, would eliminate the need to import locomotives and other railway stock.^{1vi}

The British call for munitions roused local manufacturers, engineers and public servants into action. Following the Federal Munitions Committee's request for assistance from those firms which were in the position to manufacture shells, the Engineering Association of NSW and the NSW Chamber of Manufactures compiled a list of firms which were willing to shift their activities to these ends. Meanwhile BHP extended its steelworks and formed, The Broken Hill Munitions Company Proprietary Ltd., to manufacture high-explosive shells and shell casings in works it planned to erect in close proximity to its steelworks. In addition, BHP entered into a contract with the NSW Government for the supply of high-explosive shell-bodies. Further, when the NSW Railways Department's engineers decided that shrapnel shells could be produced in the Railway Workshops, legislation was passed to authorise the Railway Department to manufacture arms and munitions. The Government's engineering workshops were soon heavily ensconced in the military effort.

The manufacture of munitions began in Australia in 1915 in the BHP steelworks at Newcastle, in the workshops belonging to the Mort's Dock Company, Hipsley and Waddell Company, the Goulburn Engineering Company, the Hoskins' Brothers' works

at Lithgow, as well as in the Eveleigh Workshops, the Walsh Island Dockyards and the Sydney Technical College Engineering Department.^{1vii} All in all, the Eveleigh and Randwick tramway workshops produced 14,330 18-pounder shell bodies, 8,000 copper bands and 15 sets of gauges for 18-pounder shells for the NSW Munitions Committee. In addition, they manufactured or assembled, tested and packed for shipment a large quantity of boring machinery for the Australian Mining Corps, including 13 petrol-driven, electric generating units among other equipment.^{1viii}

This attempt to manufacture munitions was however, stillborn. Britain did not supply sufficient information about precise requirements and NSW generally lacked the special plant required for the task. As a result, all orders and work of this nature ceased in July 1916 and the new companies formed for these purposes suspended their operations.^{1ix} From now on, advised Britain's Minister for Munitions, Australia could 'best help the Imperial Government by providing for her commercial requirements by the local productions of goods now imported from Britain.' Despite their disappointment, Australian manufacturers and engineers believed that such local production would augur well for local industrial development.^{1x}

Although the experiment in munitions manufacture failed to achieve its stated aims, it did help to promote the need for advances in local technology as well as greater efficiency in industrial and engineering practices. As will be shown in a subsequent section, these developments would have a marked influence on the management of the Eveleigh Workshops.

During World War Two the Eveleigh Workshops were used more extensively in assisting the war effort. Even before the outbreak of hostilities an inspection of the workshops facilities by Defence Department officials resulted in a request to the Commissioner for Railways for space to be made available for an annexe to manufacture 18-pounder shells. Preliminary plans developed in August, 1939 located the Munitions Annexe in the Tender Shop of the Locomotive Workshops under the Ministry of Munitions' 'Shadow Factory' Scheme. Machinery supplied by the Department of Supply and Development began arriving towards the end of that year. Tender repairs were then transferred to Chullora. In May 1940 production of 18-pounder shells began. At the same time railway staff devised improved tools and methods which were supplied to the Ministry of Munitions. Subsequently, in January 1941 the plant was converted for the production of 25-pounder shells. In November 1942 female process workers were introduced into the Annexe to overcome the male labour shortage and an additional gallery was built at the southern end of the shop for female staff. The gallery consisted of a meal room, change room and lockers, rest room and hot water for washing and shower baths. Virtually all the tools used in the Annexe were made in the Locomotive Works tool room, while all the machine maintenance was done by the Loco. Shops, millwrights. The Annexe ceased production on 12 June 1943.

Other parts of Eveleigh were also involved in the war effort. For a short time the machine section and the car and wagon shops were used for the machining of tank components. The Erecting Shed was used for fitting, assembling and testing numerous large machines. During early 1942 the assembly of ACI tanks was also conducted at Eveleigh before moving to the Completed Tank Assembly Shop at Chullora. All the designing and building of the jigs, fixtures and tools needed for the machining of 250-pounder aerial bombs was also conducted at Eveleigh.^{1x1}

The following extract from Jack Bruce gives some indication of the impact of this activity on the workshops:

JK I was going to ask you about the war activities. You would have come into Eveleigh when the war was already on?

JB Yes, well the war of course started in 1939 and I joined the Railway in January, 1940. There was a gradual build up to a war footing, not immediate but fairly quick. The first indications at Eveleigh were the coming of that part of the industry that made shells, 25 pounder shells - annex, the wartime annex.

JK And where was that located?

JB Do you know where, going through the workshops, the canteen area was. That and below it. Those bays immediately below that area, I think it was number 6 Bay, was given over to munitions manufacture and that area there - standing on those massive timbers - was all given over to the manufacture of 25 pounder shells. Immediately outside our shop, the copper smiths shop,... they built a huge schwarf [?] dump - an area fenced in which sleepers for the schwarf that came from the turning - and they were all turned from bar stock over the period. So there was a tremendous mountain of this schwarf that had to be dumped out there and then got rid of. That was an ongoing thing - day in and day out. That all took place against the wall of our shop. Noisy, bumping, it was loaded continuously. Loaded into a schwarf dump continuously loaded into s-trucks to be carted away. And it was done by those ... Leslie [?] cranes... They had those fitted up with a generator and an electro-magnet and that would pick up the schwarf, spin it around and dump it in these trucks. Day in day out. Ultimately, they became a little bit more sophisticated and the shells were then forged so that the actual machining was reduced to a minimum. They were forged and with a bore in the centre and that just had to be skinned up and shaped so the schwarf dump was extensively reduced. The works still went on and they turned out a massive amount of stuff. I think there they did the shells and a cap that held the detonating part. It was all taken away and loaded elsewhere, probably in a munitions factory somewhere. ...A bit hush hush.

- JK I guess the whole area would be under the Department of Defence?
- JB It was yes. It was fenced and taboo to the general staff. In the whole period it was there I never got inside the gate. You could look through the wire to the girls working in there.
- JK That was an innovation?
- JB That was quite an innovation yes. You'd get moved in from perching on the girls [laughs]. It was a mystery to see girls and women in the Eveleigh foundry in those days. And at the same time, of course, they developed the Army aircraft industry at Chullora.... Also we had the tank factory. The 35 ton tanks were built at Chullora. And the first two were built at Eveleigh.
- JK In the same area?
- JB At Eveleigh, just in the general workshop area. They had screens around them - a bit of hessian which you could pick up and look under [laughs]. I got a little bit of work on those as an apprentice with the tradesmen. Some of the installations of fuel systems - on the prototypes. I was quite intrigued, as a boy, to see these tanks growing with a great 44 gallon drum sitting up on the back of them. It was the funniest thing to take into a war - a piece of equipment with a 44 gallon drum of petrol sitting up on the back of them. That was purely until they'd worked out how much fuel they were going to use and a simple way of getting it to the engine. Eventually, those prototypes were finished and they went up to Chullora and they were built there.
- JK Why was everything developed at Eveleigh, rather than ...?
- JB Well it was purely ... trying out to see what they could do, presumably.
- JK I wondered if it had something to do with the skills were available at Eveleigh?
- JB Well, I think it was just decided that the Railway was going to go into it. They would build a prototype and that would tell them the skills that were needed and the machine that was needed and the space that was needed to build a workshop to do it. So they went on and built the tank factory. At the same time as Eveleigh, and ultimately Chullora, was building them... I don't think they ever went into battle.
- JK Did they?

JB ... the Eveleigh built tanks. They went into the services but I don't think they ever fired a shot in anger. By the time they got on there it was all over. Then they were battling to have one of those for preservation.^{lxi}

However, the manufacture of munitions was not the only way that the war affected Eveleigh employees. General staff shortages resulted in longer work hours and the curtailment of holidays as the following testimony from Bob Matthews attests:

BM I can remember about those days of the Eveleigh loco workshop because I started there just at the beginning of World War II and things changed dramatically from the old time of the workshops, because now we had a large influx of workers not only doing railway work but doing shells for the Army and also parts for tanks.

JK So the railway employees didn't work on those project?

BM No, they had a separate identity. They were all fenced off for security and nobody was allowed in there.

JK So you didn't have access to those areas?

BM No, never went in the gate. They were very security tight.

JK And whereabouts was that located in the yards?

BM It was located in about the centre of the workshop, just where finally they built the canteen over the top. Now, outside the canteen, underneath, all of the workshop in that area, going to the south and to the north, of the middle road was shell machines, turning shells. Manned a lot by women but there were men there, but as I say, we had no dealings with them whatsoever. They worked 24 hours shifts at the time, three shifts 24 hours a day....^{lxi}

Such shifts had a marked impact, as the following story told by Keith Johnson illustrates:

KJ I used to see the annex which was around 6 Bay and I used to see - where the canteen was years later - I used to see the people working - women and men - working on the machines and you'd heard stories ... because they were working so much that they put sand in one of the gear boxes of the lathe to slow it down so that they'd have a bit of time off. They probably got overworked, working so much overtime. That's only a story I heard.^{lxiv}

However, such long shifts were soon extended to the main Eveleigh workforce, as Keith recalls:

KJ Well ... sometimes we used to work twelve hours overtime a week. We used to work Saturday and one night. Sometimes we used to work three nights a week.^{lxv}

As Bob Matthews points out, these longer hours placed a great strain on employees:

BM Eveleigh workshop then started to work 24 hours a day. During my time there, during that bitter part of the war when we were very unhappy about what was going on, I worked for twelve hours a day, twelve days straight and I had two days off. That was a lot of work for people and then you had to get to work and get home again, but we did it for quite a number of years until the war was finished.....^{lxvi}

Such strain, in turn, resulted in industrial action by both traditional Eveleigh staff and munitions staff. As Stan Jones put it:

SJ At Eveleigh, for the first time we had the employment of women in the production of shells and they had men as well working side by side. They got on quite famously and took part in several stoppages which were quite a novelty as far as the workshops were concerned at that stage and er, generally speaking brought some new life into the workshops and helped to dispel the gloom which had existed... over the possibility of action following upon the experience of (the General Strike of) 1917.^{lxvii}

The war effort not only affected hours of work but also general conditions, as Bob Matthews recalls:

BM There were a lot of activities because we used to have fire fighting drills, air raid shelters built under the line outside the workshop where we had to go and do practice work and make sure, if an air raid came. All of the glass work in the workshop at Eveleigh was masked out - the air craft couldn't see it because of the 24 hour workshop being used... That made it very hot - no windows could be opened - so it was very hot or cold depending on the time of year it was.^{lxviii}

These conditions were obviously exacerbated by the war effort but they were integrally tied to the original nature of the buildings themselves, as a subsequent section will illustrate.

The use of this site during World War Two had important ramifications for the work done there in the post war period. Unlike the munitions manufacture which had been conducted during the earlier war period, the later effort was integrated into subsequent manufacturing as the following interchange demonstrates:

JK Were they able to use equipment that had been acquired (during the war)?

JB Practically everything.

JK So it all stayed in situ?

JB Practically everything stayed there. It lent itself so well to the manufacturing of aluminium cars, exactly the same things, built on exactly the same sort of frame but just a different shape. And the skills carried over. It lent itself very well to a peace time industry and they turned out a great, great deal of equipment.^{lxxix}

In effect, such developments fulfilled the aspirations of those who had advocated local involvement in munitions manufacture during World War One.

Socially too, the war had an impact on the Workshops. Due to the shortage of male workers, increasing numbers of women were employed in a range of jobs, including, labouring and cleaning, a fact which has been only selectively recalled by those interviewed for this project.^{lxxx}

3.3 GENERAL COMMUNITY SUPPORT

The Eveleigh Workshops also undertook a range of activities to fulfil the social needs of the broader community. Following both wars they were engaged in general repatriation and rehabilitation efforts.^{lxxxi}

During the Influenza Pandemic of 1918-1919 the Workshops were engaged in the production of masks for railway and tramway staff and the general populace. Eveleigh produced 22,000 mask frames and also equipped experimental cars with inhalation chambers. Additionally, the Workshops were engaged in the building of Baby Clinic cars which were later converted for the use of the Far West Children's Scheme. And in 1936, in cooperation with the Department of Health, the Eveleigh Workshops were engaged in the fitting out of a Dental Clinic car.^{lxxxii} (Refer to Volume IV, Photographic Bibliography.)

4.0 EVELEIGH AS A PLACE OF WORK

4.1 MANAGEMENT PRACTICE AND INDUSTRIAL RELATIONS

The public ownership of the railways shaped the nature of Eveleigh's administration and employee relations. Management was often subject to political intervention, while being constrained by legislative requirements. NSW Governments expected the railway system to operate on a commercial basis so that the demands on consolidated revenue would not be great. At the same time they opposed increased rates and fares on political grounds. Consequently, management was forced to devise a range of methods for controlling labour costs.

At the same time management had to contend with political pressure from employees who often appealed to Governments to redress their industrial grievances. These competing tendencies would continually influence management and industrial relations.^{lxxiii}

Management strategies adopted at the Eveleigh Workshops were, from the outset, shaped by the administrative policies which governed the entire workforce of the NSW Railways Department. They were also fundamentally shaped by the Workshops' need to recruit and keep highly skilled workers, to organise an extremely large number of staff and control labour costs. These factors were further complicated by the variety of jobs performed by railway employees. To deal with such circumstances the Department initially adopted an extensive body of rules and regulations to govern workers' behaviour. Gradually it also developed a centralised bureaucratic structure, incorporating an elaborate promotional hierarchy to administer industrial relations. On the other hand, railway employees responded to management's strict disciplinary code and its unsympathetic attitude to sickness and accidents by joining together, on an ad hoc basis, to oppose wage cuts and to reduce hours of work.

During the final two decades of the nineteenth century industrial relations practices were formalised as a result of the appointments firstly of C. A. Goodchap as Railway Commissioner in 1877, and later in October 1888, the appointment of E.M.G. Eddy as Chief Commissioner of the Railways, as well as by the passage of the Trade Union Act in 1881 and the Railways Act in 1888.^{lxxiv} Goodchap produced a classification sheet which formalised the notion of railway employment as a career. Henceforth, promotions and other benefits were integral to management's control strategies. Goodchap also introduced a range of welfarist methods which sought to elicit workers' loyalty. Integral to such methods was the formation of the Railway

Ambulance Corps in 1885. Commissioner Eddy continued Goodchap's bureaucratic and welfarist approach. He streamlined the chain of command and career structure by reorganising, rationalising and retrenching in the name of commercial efficiency. He also launched the Railway and Tramway Institute in 1891 to control workers' leisure, while simultaneously providing internal training to ensure a continuous supply of skilled workers.

Meanwhile, workers took advantage of the legalisation of trade unions. In 1882, for example, the Boilermakers Union made claims on behalf of members at the Locomotive Workshops for systematic overtime and for a closed union shop. Likewise, the Locomotive Engine Drivers and Firemen's Union struggled to promote its members interests. Finally, in 1886 an All-Grades Railway and Tramway Union was formed to centralise the fight against the abolition of breakfast breaks, sub-contracting in the workshops and management's withdrawal of free railway passes. In all of these disputes, unions continued to seek political support in the face of management intransigence. The formation of the Australian Labor Party, during the 1890s, and the advent of compulsory arbitration in NSW after the turn of the century, both reinforced this trend for state and political intervention. Both avenues assisted railway workers in obtaining union recognition, the eight-hour day, minimum rates of pay and railway passes for travel to and from work and during holidays.^{lxxv}

The extent of railway workers' industrial mobilisation was, however, fundamentally circumscribed. Eveleigh workers were divided by the Department's administrative categories, by the numerous trade unions represented in its workshops and by formal operational and spatial arrangements all of which created sectional identities. Additionally, racial and ethnic differences were reinforced by management practices. One Aboriginal informant whose grand-father, Happy Jack Harrison, worked as a labourer at Eveleigh during the late nineteenth century, claims that Aboriginal workers were called 'boys' and paid lower rates than their white counterparts.^{lxxvi} A more surprising example of social difference was manifested in 1912, when Eveleigh's Carriage, Wagon and Trimming Department employees, complained that British immigrants were receiving preferential treatment. One Trimming Department employee described the 'feeling of unrest' as follows:

Immigrants appear to hold sway. In the Carriage Department they have been placed on the permanent staff, while Australians, whose service goes back 7 or 8 years, are still on the temporary list.... We have no objection to our fellow British subjects coming to Australia, and while we would demand fair treatment for them, we must also demand fair treatment for the men who preceded them, or are native born.^{lxxvii}

However, divisions between workers were also exacerbated by inter-union conflicts over coverage and demarcation.

Nevertheless, the Workshops did provide a favourable climate for collectivism. Many workers were united either by craft traditions or the permanent nature of the Department's work. For others, spatial and temporal isolation limited companionship to fellow employees. As evidence tendered before the 1904 Royal Commission Inquiry into the Possibility of Locomotive Manufacture at Eveleigh showed, workers were able to impose informal norms on output. Not only were these formally sanctioned by their unions, but the latter were in a strong enough position to oppose the introduction of piecework and bonus systems in conjunction with locomotive production. In hard times, such camaraderie contributed to the emergence of solidarity which sustained extensive industrial action, as was evident in the approximately twenty-one strikes which occurred in Railway Workshops between 1915 and 1917.^{lxxxviii}

Such collectivism was one of a number of factors which caused management to begin implementing different forms of labour control following the commencement of locomotive manufacture. Other factors which influenced such managerial innovations included the fact that the Department's workforce tripled in the period 1897-1914, thus making it Australia's largest employer. Also important was the fact that the industrial legislation passed in 1908 and 1912, which increased award coverage over railway staff, limited the degree of control which management could exercise. The costs associated with wage increases and the increasing numbers of stoppages which occurred in the years before World War One thus forced railway management to implement new methods for ensuring labour efficiency.

In 1914, the bureaucratic branch structure was extended when the Railway Commissioner decided that uniform practices were needed across the entire Department. Accordingly, in May of that year, a Staff Board was established which consolidated control over all railway management functions.^{lxxxix}

Numerous expeditions to the United States of America (USA) by railway officers enabled the spread of American innovations. But the Department's adoption of new technologies was not simply a case of geographical relocation of technological hardware. Increasingly, in the pre-war period, management experimented with American approaches to labour organisation and control over work performance.^{lxxx}

The effect of World War One on domestic, economic and political conditions reinforced these trends. The increased cost of living, the enforcement of various controls over individual and collective liberties through the imposition of a wages freeze and censorship regulations, together with the conflict over conscription, heightened a sense of deprivation and exploitation among workers.^{lxxxii} The deteriorating economic, social and political conditions, moreover, inspired a greater sense of solidarity among workers and their families, who mobilised their labour organisations and informal community networks to defend their collective interests.^{lxxxiii} The resulting social disharmony reverberated throughout the Eveleigh

Workshops where workers increasingly sought to restrict output to ensure continued employment and 'a fair day's work for a fair day's pay. As the Deputy Chief Commissioner, James Fraser told a meeting of employees at the Locomotive and Carriage and Wagon Shops on 23 November, 1916:

There has been, during the last twelve months particularly, conditions of unrest. You all know it. I have had to deal personally with no less than 48 separate little strikes, stop-work meetings, and all that sort of thing.... We had trouble rather over two months ago with a certain section of your comrades; the moulders went on strike... they have remained out of work for over two months. The fact that there is no cast material being produced operates against the working of these Shops, so as to practically paralyse a section of the work, and because of that fact... we have to stand off over 300 employees.^{lxxxiii}

Added to these labour problems, railway management was faced with the inability to import machinery, as well as the escalating costs associated with the machinery and steel which it could procure.^{lxxxiv}

In their efforts to exert greater control over labour and also offset the costs associated with increases in the living wage which had been granted by the Industrial Court in 1915, leading railway administrators began a campaign to promote industrial efficiency. Central to this campaign was an attack on what James Fraser disparagingly referred to as the 'slowing down movement' in the Workshops. Workers were 'going through the motions but... producing nothing' because of a deliberate effort 'to prevent the output of work,' he claimed. In January 1917, Fraser told his Department's managers and foremen that this disease was spread by those who were 'saturated with poisonous ideas' and it resulted in industrial ferment 'where peace and contentment should reign.'^{lxxxv}

The Literary and Scientific Association which Fraser launched under the auspices of the Railway and Tramway Institute, in January 1917, provided an arena for management to attack such traditional collective work practises. Addresses before this body by leading Eveleigh managers gives some indication of their approach to work performance at this time. During the first Address, the Works Manager of the Eveleigh Workshops stressed that the practice of copying others had to be eradicated. If 'we are to be progressive', he continued, scientific methods, high standards and 'American methods in educating our young' had to be adopted. In a similar vein, the next Address, presented by James Fraser, described 'Slow Work' as a 'microbe' that was spread by 'misdirected effort,' idleness due to mistakes and careless operations.^{lxxxvi} The third Address by a Signalling Branch clerk went one step further in censuring workers' output restriction. To increase production and ensure 'properly directed effort', J. S. Dowling advised railway administrators to 'study

the number of motions necessary,' and eliminate unnecessary ones. It was a fallacy, he continued, to suppose that this would lead to unemployment; on the contrary, he stressed that it would simply cut costs. In the discussion which followed, the Eveleigh Machine Shop Assistant Foreman, S. J. Andrews, argued that papers such as Dowling's should be presented to apprentices to stop the 'pernicious influences in the homes of the boys of the workshops'.^{lxxxvii}

Against this backdrop, the Railways and Tramways Department began to gradually implement the efficiency methods associated with F. W. Taylor's scientific management. Taylor's system had initially gained a global audience as a result of his discovery of high-speed steel, which more than doubled the output possible in steel production. But because of the way Taylor enmeshed high-speed steel with his system of management, the latter rapidly obtained a global audience and a diverse following which extended to Australia. This system was extremely broad ranging. Included amongst its methods were the standardisation of tools and time and motion studies, the results of which were tabulated by engineer managers for incorporation into instruction cards for workers, payment incentive schemes, and functionalised foremanship which increased surveillance over workers through the employment of additional numbers of foremen.^{lxxxviii}

Also crucially important to the implementation of this system were 'important physical changes' to the layout of the Workshops which included a planning department, a centrally-controlled tool room and a routing system. Together these innovations were designed to ensure sequential operations by identifying and designating tasks to be performed, formulating written instructions, organising machines and tools in distinctive groups and supplying specific materials for specific tasks. By these means, Taylor hoped to prevent the loss of time which occurred when workers moved around workshops.

These methods were all adapted to the Eveleigh Workshops to varying degrees from around 1915. As noted earlier, during the early years of the War, high-speed steel was introduced to the Railway Workshops. This, at the very time when plans were put in hand to alter Eveleigh's physical layout through the extension of the Locomotive Workshops and the construction of additional erecting shops, pattern shops and a large up-to-date foundry. As was described in an undated report on the Eveleigh Locomotive Workshops which appears to have been written soon after the war, accurate tests were introduced 'of modern high speed steels' and 'no effort' was spared 'to secure that type of steel from which the greatest output results.' Moreover, tool operators working on lathes, drilling and other machinery were no longer 'allowed to grind their own.' Instead, special staff were given the sole responsibility for such work, 'clearance angles being standardised and not left to the whim of the particular man using the tool.' These innovations were in strict accordance with F. W. Taylor's instructions.^{lxxxix} Also during this period, the Department hired additional people as sub-foremen, or what one Labor MP referred to as 'taskmasters,' to extend

supervision over workshop labour. From June 1915, railway unions also began to resist the introduction of a card system of job-records. When a similar attempt was made a year later, unions successfully thwarted the initiative by lobbying the Minister for Railways through their Labor Party connections. They were not in such a fortunate position in 1917 following the split in the Labor Party over conscription and the election of the Nationalist Government.^{xc}

On 20 July 1917, despite previous assurances that conditions of labour would not be altered during the War, a new costing system was implemented in the workshops of the NSW Department of Railways and Tramways which involved the use of three cards for recording the time taken to perform work.^{xcⁱ} Unlike the time sheets which workers had themselves previously been responsible for, the new card system was to be entirely administered by sub-foremen. The recent appointment of 'a very large number of officers or shop foremen in the Railway Department', was, again raised in Parliament as a serious source of unrest on 2nd August, 1917.^{xcⁱ}

In Turner's view, the card-system's introduction to a Service already 'seething with discontent', simply brought 'an already heated situation to boiling point.'^{xcⁱⁱ} The unions alleged that this 'pernicious system' breached the industrial award and represented 'the thin end of the wedge, the first instalment of what is termed the Taylor Card System of America'. In short, they saw it as an attempted speed-up.^{xc^{iv}} The nature of the system itself, combined with the refusal by the Railway Commissioners and the Government to participate in negotiations regarding its introduction, fuelled a prolonged and bitter industrial dispute; 'the biggest industrial upheaval ever experienced' to that point in Australian history.^{xc^v}

Officially the strike commenced on 2 August when a joint conference of the major unions resolved to cease work. Accordingly, 5,780 of the Department's workers downed tools although by the end of the week this number had grown to 10,000. The strike then spread to other unions and by 22 October approximately 97,500 workers had become involved. Of these, about 77,350 were located in NSW; a figure which constituted approximately 14% of the State's workforce and 33% of its registered Trade Union membership. Only 15,000 of the NSW Railways and Tramways Department's 48,000 employees did not strike. In geographic terms the dispute extended beyond Sydney to the industrial centres of Newcastle, Broken Hill, Bulli-Wollongong, Lithgow, Bathurst and Goulburn and it received sympathetic support from trade unionists in Victoria and Queensland. In total four million working days were lost in NSW, at a cost of 2.5 million pounds. Additionally, throughout the strike, massive demonstrations were held in Sydney and other industrial centres in NSW in support of the strikers. (Refer to Volume IV, Photographic Bibliography.)^{xc^{vi}}

Towards the end of the strike's first week, Labor Parliamentarians protested against the Government's failure to settle the rapidly escalating dispute. They beseeched

Members of the Government to remember that they were 'responsible for the humane treatment of those in the employ of the State'. And they called for the appointment of an independent inquiry into the workers' grievances. Jack Lang stressed that this was something more than 'a mere idle strike' as sacrifices would not be made by the employees of the State's transport services 'unless some great principle' was at stake.^{xcvii}

This principle was multifaceted. It involved the traditional control which workers had been able to exercise over the performance and pace of their labour. Relatedly, although less directly, it centred on the traditional right of unions to negotiate over the conditions of employment. The manner in which the card-system was implemented was thus perceived by workers as a threat to the improvements in conditions and wages which had been achieved during preceding decades through the mediation of the State. In keeping with this tradition, the unions presented the Cabinet with a resolution which requested that the Government withdraw the card system and that it appoint an independent tribunal. This was summarily rejected by the Government.^{xcviii}

Protest increased in reaction to the Government's lack of support. Because the railways generally and the Eveleigh Workshops specifically, employed successive generations of family members, family groups soon joined the strikers at picket-lines and in the daily processions which marched from various Sydney suburbs to the Central Railway Station at Eddy Avenue and then on to the Domain. Stan Jones, whose grandfather, father and cousins were all employed at Eveleigh as moulders, machinists and boilermakers, recalled accompanying his father on such occasions. As he described the event:

the families of the strikers became closer to each other and the families of those who didn't go on strike correspondingly became closer too. One had the feeling of being in the fight and the others had to some degree feelings of guilt... Not that there were too many who belonged to families whose men did not take part in the strike.^{xcix}

On 9 August, a contingent of several hundred women led the daily procession before continuing to Parliament House. A deputation which represented 'fifteen thousand wives of the men on strike as well as women who had entered the industrial field to earn their own living' was then sent to interview the Acting-Premier, Mr Fuller. Its appeals to the Government for an Independent Tribunal were met with the same unresponsiveness. (Refer to Volume IV, Photographic Bibliography.)^c

The Railway Commissioners and their supporters in the Government went to great lengths to stress to the public that workers were 'being grossly and wickedly misled' by their leaders. On a daily basis, these authorities placed whole-page advertisements and manifestos in all the major newspapers denying any intention of

introducing 'the Taylor or any other system of speeding up'. The cards simply embodied a new 'system of bookkeeping,' a 'costing system', declared the Chief Commissioner for Railways, James Fraser. Their use was intended to increase efficiency and obtain 'the best work in the interests of the community'. By improving the records kept 'of time spent on certain classes of work' the system would show 'whether any worker was consistently and deliberately a slow worker'. In essence then, this innovation was designed to deal with what the Acting Premier referred to as the 'question of "go slow".' And those who equated it with scientific management were labelled 'extremists' and accused of 'deliberately conspiring against the public interest'.^{ci}

The Government took control of all privately-owned vehicles, applied to the Arbitration Court to de-register the 20 unions involved in the strike and issued an ultimatum to the strikers; either they returned to work or their jobs would be declared vacant. Only 1,300 workers returned before the ultimatum expired. These men became known as **Loyalists**. Those who remained on strike became known as **Lily-whites**; they wore buttons on their coats which were adorned by a white lily. It was an identity that was recalled with pride by Leslie Best, who was a shop boy in Eveleigh working with the spark-arresters estimators.^{cii} Two lilywhites who would later become prominent were J. B. Chifley, future Prime Minister of Australia, and J. J. Cahill who had been apprenticed as a fitter at Eveleigh in 1907 and was an active branch officer of the Amalgamated Society of Engineers before and during the 1917 strike. During World War Two he was a member of the McKell NSW Labor Government, later becoming Premier during the 1950s. The Government then began to recruit volunteer labour from the country. These 'loyalists' were also assisted by students from private boys schools and the University of Sydney.^{ciii} (Refer to Volume IV, Photographic Bibliography.)

The full force of the Arbitration System was brought to bear against the unions which supported the strike. Justice Heydon deregistered them on 23 August, 1917 stating that the unions' 'proper course was to come to the Court.' This, despite his own ruling that as 'a mere detail of workshop management' the system did not come within the Court's purview.^{civ}

The Railway and Tramway Dispute officially ended on 10 September, although waterside workers, seamen and coalminers did not return to work until mid-October. The notorious card-system was retained, strike-breakers kept their new jobs and all strikers were subject to extremely harsh terms of settlement. Union officials were blacklisted, together with those who were thought to be either sympathetic to the syndicalist organisation, Industrial Workers of the World (IWW) or simply 'indifferent' workers. In all 2,000 strikers were refused re-employment. Those who were re-employed found they had lost their seniority and superannuation rights. Ironically, the General Strike was later investigated by two Royal Commissions although their findings did little to eradicate the injustices experienced by the strikers. Only when J.

T. Lang became Premier in 1925 were those who were victimised restored to their positions, in keeping with Lang's pre-election pledge.^{cv}

This strike had a long-lasting impact on the Eveleigh Workshops. J. B. Chifley later said that it left 'a legacy of bitterness and a trail of hate.' In the short-term, the formation and registration of Loyalist Unions created formal divisions between workers. Additionally, on the shopfloor, Loyalists and Lily-whites refused to talk to each other or socialise during lunch-breaks.^{cvi} Many workers who joined the Eveleigh Workshops in later decades recalled the continuing hostilities caused by this event. Stan Jones, whose father lost his job as a result of his involvement in the strike and who obtained employment at Eveleigh during the late 1920s noted the continuing hostilities. He commented:

After the strike unionism became a somewhat difficult organisation. Representatives on the job found that they were being harassed by the new supervisors. The Railway Commissioner of the time gave assistance to what was regarded at the time as the Commissioner's or employer's union, that would be the NUR... this made it difficult for ordinary union activity on the job to be carried on.^{cvi}

Likewise, Frank Bollins said that even when he joined the railways in 1934:

the aftermath of the 1917 strike was still a predominant thought in the minds of many workers, and this was so right until the beginning of the 1960s, "remember the lessons of 1917" we were always told. "Don't let's go out on the end of the limb, don't do this, don't do that"...^{cvi}

This memory of the strike was not simply carried on by those who lived through it, or were employed at Eveleigh during the 1920s and 1930s. It was also continued by word of mouth from father or grandfather to son or grandson, as is evident in the testimonies of John Willis and Brian Dunnet, who were employed at Eveleigh during the 1940s and 1950s, respectively. Such oral transmission evidently also affected Eveleigh employees of long duration like Keith Johnson who worked there for 46 years and recalled the strike, albeit in very general terms.^{cix}

Given this profound impact, it is pertinent to identify precisely how the management strategy associated with the notorious card system actually affected work performance at Eveleigh. Although no clear evidence exists that a Planning Department was formally established, the duties outlined by Taylor for the planning experts were adopted in the workshops. The card system involved a conscious planning and sequential ordering of task performance by engineer/managers and sub-foremen, who were also responsible for grouping machinery according to the plans laid down, precisely in accord with Taylor's strategy. A routing system was also adopted at this time, as a Department report described:

the Machine Shop is being sectionalised in such a way that transportation during manufacture is reduced and complete concentration on the requirements of a particular section may be given to those employed in that section. Extremely satisfactory results have been obtained from this system, so far the extension of which will standardise the work and reduce labor (sic) by admitting of that form of sectional analysis without which the best results are unobtainable.^{cx}

Another innovation related to the reorganisation of the Tool Room and the manner in which workers were supplied with tools and stores at the Eveleigh Workshops. W. J. Knight's testimony before the Curlewis Royal Commission indicated precisely how these changes affected traditional work practices. For the past thirty years, he commented:

I have always been in charge of a job; any material I wanted I obtained from the store myself; if I wanted turps I would obtain half a gallon; of course, I might not use it all at once, but still I would have it by me.

Under the new system, by contrast, he had to 'have an order from the sub-foreman' to obtain any materials.^{cxⁱ}

In September 1918, as use of the card system was being extended, a new bonus payment scheme, known as the Halsey Plan, was introduced to the Eveleigh Workshops. Certainly, this was not F. W. Taylor's most favoured one. But he supported its use in conjunction with his system. In one American government enterprise in 1910 the Halsey Plan was combined with task setting by time study at the Watertown Arsenal. The choice of this scheme in NSW is hardly surprising. It was popular in Britain because it based payment on past performances. And it suited the Department's award structure because it did not alter minimum rates and allocated bonuses to specifically selected jobs. As at the Watertown Arsenal, its use at Eveleigh involved the calculation of standard times by an assessing officer chosen by the manager.^{cxⁱⁱ}

By 1919, the Railway and Tramway Magazine openly admitted that the card system's adoption involved the recording of employees' motions. In addition, the information recorded on the cards now included details concerning each employee's history, position, pay-rate, debits for offences committed and credits for increased output; precisely those details Taylor had specified for inclusion on his instruction cards. The card system allowed management to gauge precisely how much time was spent on every operation and to establish each individual's 'rate of output'. It also enabled the foremen to 'produce evidence to show a man was going slow by written record.'^{cxⁱⁱⁱ}

This strategy involved the restructuring of the foreman's supervisory function which relied on the additional foremen employed prior to the strike. According to W. T. Padgen, a machinist and President of the Amalgamated Society of Engineers, there was only one foreman in his workshop until 1914. But immediately before the General Strike this number increased to three and after it to 13, the 10 additional staff being designated to a new job classification of 'sub-foreman' which superseded that of the leading hand. When Padgen returned there in 1918, on an errand, he 'saw more foremen than workmen. They seemed to be falling over one another.'^{cxiv}

Under the previous system workers were allocated tasks every morning by leading hands. Later in the afternoon the time-keeper would walk through the works and ask each employee, 'Well, what have you been on to-day?' And each would divide up the total hours of the day and rely on his memory of the work performed during those hours. By contrast, after the card system was introduced, the sub-foremen could calculate the time taken 'instead of asking the men' because the cards included extensive details concerning the precise work performed, rates of pay, and job numbers. The duties of the sub-foremen were also extended. They were required 'to detail the work for each man to perform, and to supervise that work, check it, and see that the employee conducts himself properly.' It was up to them, rather than the workers, to record the time taken by each individual in the performance of tasks. This, according to Leslie Best was 'the fly in the ointment.'^{cxv} 'Who ever heard of foremen being told to stand over and watch good workmen in order to get good results from their labour?' asked the particularly strident opponent of this new recruitment policy, John Storey in the Legislative Assembly.^{cxvi} But despite such rhetoric on the part of Labor parliamentarians, the Department continued to increase the number of foremen. By 1918 railway workers were using the term 'over-supervision' in their objections to the card system's administration by the new sub-foremen. Padgen commented that 'nothing is more aggravating to a man than to have a very large number of officials continually hopping around him like flies around a honey-pot.'^{cxvii}

Workers, in fact, related such increased supervision directly to scientific management. As the General Secretary of the Amalgamated Railway and Tramway Association, Claude Thompson, told Justice Curlewis, 'the function of a sub-foreman was equivalent to that of a speed boss'; that is, one of Taylor's eight functional foremen. And, in turn, Curlewis commented that 'Mr. Fraser's description of the functions of the foremen correspond with Mr. Thompson's ideas of the functions of a speed boss.'^{cxviii} In fact, this correlation merely reflected the degree to which the unionised workforce distrusted those employees who became sub-foremen. According to Padgen, the sub-foremen were capable of including 'false particulars' on the cards which they filled in and locked in a box 'with Yale locks on the doors.' Curlewis asked: 'Did you say that the men were picked as sub-foremen who had no sympathy with working men, men who did not believe in a fair day's work, but in sweating men...?' To which Padgen replied emphatically: 'Yes, and I believe it too.'^{cxix}

The sub-foremen employed after the General Strike evidently exercised a high degree of surveillance and discipline over their subordinates. And they avoided the traditional unions which reflected the collective culture of work that had previously been dominant in the Department's workshops.^{cxx}

Railway management attributed the success of the card system to precisely such people. Following its introduction, production increased by 40% even though the labour force was decreased by 10%. One manager insisted that this was because those 'old employees' who regained employment with the Department after the Strike began working at a faster pace 'unconsciously.' They were, he said, 'drawn into the speed set up' and the 'vigilance incorporated into Eveleigh by the loyalist workers.' This process of change, he told Curlewis, was 'something like a man on a bicycle following a pacer.' In this case, he thought that the University graduates who had volunteered as strike-breakers had 'set a pace' that was 'to be envied.' It was this pace that had 'been followed as the other employees came back to work. (Refer to Volume IV, Photographic Bibliography.)^{cxxi}

The employment policy adopted after the 1917 Strike also gave management greater control over recruitment. The terms of this dispute's settlement granted the Commissioner of Railways unconditional 'discretion to select whom he chooses to fill those posts' vacated by striking workers. Such discretion invariably gave preference to strike-breakers particularly as the Government and the Commissioners had vowed to 'stand by' those 'who had come to the assistance of the country' during the industrial 'crisis'.^{cxxii} Additionally, Chief Commissioner Fraser told a meeting of Branch Heads in October 1917 that applications from those who had never before been employed in its workshops should be encouraged at the expense of those from strikers.^{cxxiii}

By favouring those who had no knowledge of past practices, the Department directly attacked the mutualistic ethic that informed labour organisation in its workshops. Padgen informed the Curlewis Royal Commission that:

it is a most remarkable coincidence that all those men who have previously held good records... and the only thing against them was that they had taken an active interest in trades unionism or politics, were debarred re-admission into the service.^{cxxiv}

In this way the Department's recruitment policy explicitly challenged the solidarity, borne from life-long employment and recruitment based on skill, kinship and labour movement networks^{cxxv}, which had existed in its workshops. As one Departmental manager pointed out, the greater output achieved by the 865 employed in 1918, as compared to that produced by the 1,134 employed prior to the General Strike, was due to the combination of the card system and 'the getting rid of undesirable

elements.' Leslie Best, an Eveleigh shop boy acknowledged that the use of the card system enabled a job that had taken two days to be reduced to one day. ^{cxxvi}

The system of bonus payments used in conjunction with the card system played an important part in producing this outcome. During the period 1921-1925 the number of Eveleigh employees affected by the bonus payment system increased fourfold. Indeed, the number of bonus tasks at Eveleigh expanded from 1,000 in 1927 to 4,198 in 1931. By December of that year 28.67% of the 2,891 workers at Eveleigh were employed on bonus jobs for more than half an hour.^{cxxvii} In response, Eveleigh workers formed shop committees in 1926 in order to fight for improved working conditions. These bodies effectively circumvented the Loyalist Unions, which re-employed strikers refused to join. At the same time, workers successfully mobilised their Labor Party connections. As already noted the first Lang Labor Government restored the 1917 strikers' seniority and also re-registered those unions which had been de-registered in 1917. Lang's intervention was crucial to improvements made to Eveleigh conditions. During his first period of Government between 1925 and 1927 he also introduced comprehensive workers' compensation. Then during his second period in Government he responded to railway unions' opposition to the card and bonus systems. In September 1931, Lang appointed the Clyde Engineering Company's works manager, W. B. Rogers, to inquire into the Locomotive and Permanent Way Branches. Rogers' report, in February the following year, found that assessed standards used for the bonus scheme at Eveleigh were 'absurd and extravagant,' management paid the bonus for unsatisfactory work' without conducting any audits on the system and the foremen's range of duties prevented them from keeping accurate records of bonus work. Despite management opposition to this report and continued support for the bonus scheme, in April, 1932 the Lang Government abolished both the card and bonus systems in the NSW Railways.^{cxxviii}

Henceforth, time allocation for task performance became more flexible. As Jack Bruce recalls:

JB ... The work that was given to you - a time would have been worked out between the foreman and other tradesmen in past time about how much time it would be reasonable to expect the job to be done in. Sometimes circumstances altered cases. Some might have needed more work, some might have needed less. Sometimes you could do it under or over the time. But it was fairly flexible but a reasonable time was expected that they would be done. Particularly things that could be organised. To get back to tubes again - a set of tubes would be expected to be able to be completed in, say, eight hours. ^{cxxix}

However, this flexibility was overlaid by extensive bureaucratic control over the time taken to perform work. As one railway engine driver put it: 'in our Branch there was no such thing as wasting time because you had that sheet and every minute you

were paid for was accounted for on that sheet.' The Department's Irregularity Clerks would 'go through the drivers sheet' and send memorandums to workers to explain why they had 'lost three minutes somewhere' and if workers did not respond in writing they were not signed on for work. John Mongan was very hostile to the Irregularity Clerk's demand for him to perform his work in a way that would save time. While 'that nincompoop' had never driven a locomotive, nevertheless, it was he and men like him that were 'rushing the likes of me that's doing the work.'^{cxix}

Colloquially known as 'bungs', such administrative procedures would continue to be used to effect time management in the workshops. Jack Bruce described the system and its impact on Eveleigh employees in the following interchange:

JK Did you have to fill in time sheets?

JB Yes. We were accountable for our 8 hours a days by the time sheet over a ten day period and they had to be completed and handed into the timekeeping section - the costing section.

JK And the notorious bungs, were they administered from the workshops?

JB Bungs came down through administration. Bungs were issued for all types of misdemeanours. A bung was a 'please explain' and they had the great technique of being able to fit you with a huge number of charges for the one offence. If a couple of apprentices were caught playing up, wrestling, whatever might have been happening, if that foreman considered that that was sufficient to report to management, a bung would eventually be delivered to the offender. But he wouldn't just be charged with wrestling on the job or something like that, it would be broken up into many things, idling your time was one of them, by behaving in such-and-such a manner - I can't think of the number of things that they managed to get out of that but it would be possibly four or five charges altogether that you were fitted with - idling your time, dangerous behaviour...

JK What was the process from that point? You had to put in a written explanation?

JB You had to submit a written explanation, it might be returned to your foreman to have words with you or you might be called to a higher ranking officer to deal with you, to tell you were being reprimanded. Minor things would finish at that, others would... be entered on your record. You're getting pretty serious then. If you built up a lot of those you were getting into a fair amount of strife.

JK Would your pay be docked because of that?

- JB Yes. That would virtually happen straight away. The time that you were involved in misdemeanours would be docked from you. Most of the problems were with you coming late, being late on the job. That is when people - young blokes - sleep in - a heavy night the night before - and they don't make it to work on time and they get a series of bungs.
- JK Was there any appeal process if you thought you were being hardly done by?
- JB I'm sure there was. You could complain to your union representative and they would represent your case. Minor ones and fellows with a reasonable record they would probably be able to get it eliminated completely. There would be nothing come out of it. If you got up to real serious things which would cause somebody to be suspended for a period of time or anything like that then the whole appeal process could be gone into.^{cxxxix}

Such procedures would continue to be used throughout the ensuing decades much to the chagrin of Eveleigh employees as the following article from the Eveleigh News indicates:

'BUNG' HAPPY POLICY

The number & nature of Bungs being served on employees is growing daily. One would think that the Department wants to get rid of employees instead of urgently needing them. In the Machine Shop a Driller was Bunged for early washing. He answered the Bung & clearly showed that he was innocent of the charge. This reply just spurred the Bung merchants on to greater efforts, they issued him with another -- Bung -- Charging him with Idling his time from 3.55 pm to 4.5 pm... In the Boiler Repair Shop an employee, who cuts the ends of Tubes, was away from his job having his saw sharpened. An Officer was at his machine when he returned, he demanded to know why he was away from his machine. The employee explained that it had been a practise [sic] for the past 30 to 40 years for the operator of the machine to take the blade & have it sharpened when necessary... The following day he received a Bung. Charges were (1) Idling his time & (2) Being away from his working location. Another two employees, working in the same Shop received similar Bungs. Their reason for being away from the job was that unusual and apparently unnecessary -- according to some people -- human function which makes it necessary to go to the Lavatory.

Don't you think it's time the Unions urgently raised this question of Bungs? cxxxii

During and after World War Two when, as noted earlier, hours of work were extended without a commensurate increase in pay, workers again resorted to collective action. The Australian Railways Union (ARU) mobilised in support of members on issues of hours, resumption of holidays, staff shortages and pay increases. Additionally, the employment of women in the railways at lower rates of pay than their male counterparts led to a massive equal pay campaign in which this union was very active. The period also witnessed a resurgence and spread of shop committees at Eveleigh. However, little improvements were forthcoming. By the mid-1950s, newspaper reports were claiming that organised time-wasting was evident at Eveleigh. These were challenged both by the ARU's State Secretary Lloyd Ross and the Transport Minister, W. E. Wetherall. The former, however, admitted that 'excessive overtime, low wages and lack of training for foremen in supervision' had created low morale and inefficiency. Wetherall, too, conceded that 150 Eveleigh employees had been punished in a three month period in 1955 'for loitering, not carrying out the orders of foremen, not doing work allotted to them, evading work and indiscipline.'^{cxxxiii}

The poor conditions during the 1950s caused many Eveleigh workers to become active in union matters and also in the Shop Committees. The latter are remembered fondly by most informants.

JB ... The Shop Committee was like a combination of all the unions that dealt with those things of a nature that didn't quite require union activity, amenities and facilities and 'fun things', concerts and that sort of thing, they would put out that type of news apart from union publications.

JK And were the Shop Committee's activities useful, did they achieve very much?

JB A great deal. They were continually working for better amenities and the safety issues and that sort of thing. More so than making it a full-blown union thing. They got us out of washing in buckets to washing in basins.^{cxxxiv}

In short, these committees, together with the unions, played an important role in industrial campaigns and also in assisting the European migrants who were employed in increasing numbers from the early 1950s. Both organisations helped old-hands and newcomers to deal with broad shop and industrial conditions, such as improved leave entitlements, ventilation and safety, sick pay and various types of leave. The shop committees were also active in supporting Eveleigh's Aboriginal employees.^{cxxxv}

The major industrial campaigns which were fought by Eveleigh workers from the 1950s until its closure related to pay increases and allowances. The most significant of these occurred in 1961 and 1970 (refer to Volume IV, Photographic Bibliography).

In 1983, the largest industrial disturbance since the 1917, occurred over the issue of retrenchments.^{cxxxvi}

Throughout the twentieth century, Eveleigh employees mobilised their representative bodies to improve their industrial conditions. However, such actions were not just played out through stoppages and in broader arenas such as industrial tribunals and the Parliament. Employees recurrently attended mass meetings both within the bounds of Eveleigh and also on its boundaries. One of the most important sites for meetings, recalled by all informants, was Ambulance Square.

As Bob Matthews recalled: 'The first aid room was a separate room near Red Square. Now Red Square was where all the meetings were held.... That's where the ambulance room was in that Square.' And as Jack Bruce elaborated:

JB Ambulance Square was Red Square because all the union meetings were held there and the union movement was pretty heavily into communist control. Actually most of the leading union bosses were communist affiliated so, hence it became Red Square....

JK And what type of speaker would you have had in the Ambulance Room? Only political speakers?

JB General union discussions. If some proposal was up, you were going to have a stoppage or something like that over some issue. It may be pay related, if there was a campaign developing for pay and the options would be put up to you in Ambulance Square and the opposition to it was aired.... They were fairly aggressive speakers and they fairly aggressively got people behind them. Political campaigns, we would have speakers from the party. I don't think we ever had any Liberals in there. But we had some very good speakers from the ALP, the unions were behind the ALP or the Communist Party.^{cxxxvii}

In fact, most of those interviewed recalled such meetings whether they were held at 'Red Square' or other locations.^{cxxxviii}

Some closely associated these confabs not only with unions but also shop committee activities.

Stan Jones, for instance, recalled that every month delegates would report to meetings of the carriage shop committee:

These meetings were held with the Commissioner's approval but there arose a problem. Being... in contact with the Labor Council and trade unions generally, the matters discussed by it at times were regarded by the Commissioner as being political. And because they were

banned from discussions in the workplace meetings were shifted outside the Eveleigh gates.

At Boundary St., for instance, where the Eveleigh Loco workshops were situated, and at Codrington St. for the carriage side,... the meetings used to be taken out into those areas... and the discussions would take place unhindered by any kinds of bans. But this was not satisfactory to the people involved and it became an objective to ... claim the right of free speech in the workshops themselves. This was finally attained in practice if not in open acknowledgment, by the authorities.^{cxix}

In fact, this right was revoked at various times, particularly during the industrial campaigns of the 1960s and 1970s.^{cxl}

Regardless of location, however, those mass meetings which were addressed by leading Labor politicians were especially well remembered. A visit by Jack Lang during an election campaign was described by Stan Jones in the following manner (refer to Volume IV, Photographic Bibliography):

It is interesting to note that in respect to the Boundary St. area this was the area chosen by Lang... to deliver what was regarded as his industrial policy speech. This became unsatisfactory too, and we campaigned to have election meetings held inside the workshops instead of outside. One of the factors leading to this was that the person supplying electricity for Lang to speak... cut him off the air... so it was decided this couldn't be repeated and from then onwards these meetings were held inside.^{cxli}

This was certainly the case by the 1950s when H. V. Evatt visited Eveleigh, an event recalled by Brian Dunnett and Jack Bruce:

JB Yes. I remember Doc Evatt coming in there, you would know about him I suppose, when he was opposing Menzies in his long reign there. That meeting did not take place in the Red Square but the Doc appeared in what was our canteen and entertainment area which was an elevated area which was originally the annex. ^{cxlii}

These memories highlight the way that Eveleigh employees identified a commonality of interests among themselves and their industrial and political representatives. It would be a mistake, however, to conclude that the majority of Eveleigh employees were class-conscious communists, even though these were well represented in the Workshops. Certainly, all those interviewed were union members and supported the industrial campaigns discussed throughout this section. However, testimonies also

indicate that the Eveleigh workers were differentiated by craft, functional and spatial arrangements.^{cxliii}

4.2 WORKING CONDITIONS

Oral testimonies, together with original documentary sources paint a poor picture of the working conditions experienced at the Eveleigh Workshops. All informants mention the dirt, smoke, noise and problems associated with sanitation. The following poem, published in the Eveleigh News in June 1954, provides a succinct description of the unhygienic practices workers were forced to endure.

*We wash in dirty buckets, where germs abound galore,
We cram our clothes in lockers 50 years of age or more,
For years we've fought & struggled for real amenities,
But according to the Rail Heads, they're liabilities.
Workers needs can't be considered,
If the Boss can improvise,
So the Rail Heads constant, years old cry,
Is "can't be done --- no use to try
Confound, the men's conditions we must economise."^{cxliv}*

These washing facilities are mentioned by all informants, as is the caustic soap that was provided by the management.^{cxlv}

Safety, too was a neglected issue. All informants mention hideous accidents and unsafe materials and work practices. In describing his work as a gland packer with the steam engines in the running sheds, John Willis provides evidence of these:

At the time I didn't know, I don't think anybody worried about it at the time either, was asbestos. It was very hot work and very dry work because we were always touching the asbestos and it was very hard to get off your hands and you were always covered in it. It was like a cottony type of stuff. You only had to touch it and it would break away all over you.

John's testimony indicates that work in the running sheds was especially dirty and dangerous:

JW My dad used to come home and tell some funny stories. Different names came up, funny names - Petrol Pete, Smoke-box Jack. These smoke-boxes were part of a steam engine and the most dirtiest part you could work in. You would go in with, say, clean overalls on but they wouldn't know you were in there and when you came out they couldn't see you, that's how black they were. They might have gotten an extra threepence or sixpence an hour for working in them but that was a terrible job, a terrible job, breathing in the fumes with no gas mask, not anything in those days, no air flows, nothing, that all came later, that all came a lot later.

LT But, there was a safety first movement, wasn't there?

JW Yes, there was a safety first movement but, as I say, there were 300 hundred engines in that shed at the time and being so black and dark that there was a lot of bumping up of engines and you could be working under any part of that engine and safety wasn't thought of. You can imagine with every - when they got to something like 240 pound of steam pressure they would sort of blow off and that noise was deafening, so if you had another engine up another engine you couldn't hear it. There was one death over there... A chap was working down in the drop pit and they dropped the wheels down from underneath the steam engine on a hydraulic jack and this day, that they were putting the wheels back, his head became involved between the wheels and the undercarriage of the steam train and squashed him, squashed him dead. That's the only accident I ever witness but there were a lot of other accidents but very close, very close accidents that could have ended up very seriously. It was a very dangerous place to work but you had to know what you were doing at the time, you took a lot of chances, a lot of risk.^{cxlvi}

Other sections were not as bad as the running sheds but they were still dusty, dirty and noisy. This was partly related to the machinery used and partly due to the nature of the buildings, as the following testimony shows:

JB I think safety was always an issue we always had people interested and doing some work with trying to keep things as safe as possible. But safety and noise conditions were not good in those early days. Despite valiant efforts by many people to keep the safety issue under control. Noise was a great problem, even with our own shop - hammers striking anvils and that sort of them created a great deal of noise. When you moved from that shop into areas that were occupied by boiler makers well those were absolutely deafening. Our tube sections were both located immediately alongside the

boiler makers. But the most that seemed to be used to help against noise was to put a bit of cotton wool in the ears [laughs].

JK Which didn't seem to do a lot?

JB No, and there were just so many deaf boiler makers and boiler makers' helpers. Outside of those things - safety, noise - great efforts were always made to keep the workshops clean. It was the responsibility of the foreman of the section to keep his workshop clean. They were inspected by safety groups to see that things were kept as well as they could be....^{cxlvii}

Ventilation also created its own additional problems.

JB The shop was reasonably well ventilated, plenty of windows and door space. And the roof over it was called a 'lantern roof', which had an elevated section in the middle of the roof with both sides open to the atmosphere. That applied right through all the shops, they had lantern roofs and plenty of ventilation. But still smoke was inclined to hang at times. Smoky conditions did exist depending on the atmosphere - a heavy atmosphere the smoke and fumes will remain in the shop. Again, I think that every effort was made to try and keep it under control.

JK Were the workshops hot in the summer?

JB They were hot. Within the copper smiths shop there would have been possibly twelve coke-fired forges and six or eight gas-fired forges. Very often all going at the same time. It was quite hot.

JK Very cosy in the winter?

JB Yes. Well you had your back up to the fire or close handy. One side of you was warm and the other side was freezing [laughs].

JK There was no heating?

JB All that heat then dissipated quite well in winter time, it all went out through the lantern roof, but it didn't keep the area warm.

JK What about the floor of the copper smiths shops, was that concreted or ...?

JB No, it seemed to be the thing in black smiths shops, copper smiths shop, forge shops, foundries, wherever you're working with hot metal it seemed to be the thing to have a basic earth floor was the safest way to go. So we had concrete and asphalt section but a big part of it was rammed earth. It was for

a long, long time. Ultimately the floor was concreted but in the early days it was very much earth and very dirty.^{cxlviii}

The expansive glass roof also proved to be a hazard, as Keith Johnson remembers:

KJ I remember, in 1947, New Year's Day, I was working afternoon shift and that's when a big storm hit around Eveleigh loco and broke all the glass in the roof. When we came in to work, they had called for volunteers, and most of the glass up in the roof had been knocked out so it wouldn't be dangerous. For many years later we would find bits of glass from these skylights - you would actually call them a skylight. The skylights would be in a row of about three lots about 30 inches to three feet long, so the skylight would be about nine feet on either side of the big 'V' in the roof and would extend mostly down the length of the building. When all this glass was knocked out they then got sheets of masonite and we had those sheets of masonite in there so you had to have big overhead lights on - big 500 watt lights I think they were - so you didn't get the direct lighting down onto your work place, you mostly had electrical lighting. They were like that for years before they got the glass. I wouldn't know whether it was ten to fifteen years those masonite pieces were up there.^{cxlix}

Stan Jones, the editor of the Eveleigh News commented about the delay in fixing the roof:

Conversing with a very old Redfern resident the other day, I was informed that Eveleigh Locos' present position was called 'Frog Hollow'. Seems to me that with a few more holes in the roof we'll be back to where we started from.^{cl}

But roof repairs did not entirely improve conditions, as Keith Johnson commented:

Then when the glass was back and in summer time, they used to put hessian, big rolls of hessian down the length of the bay to try to stop it being so hot with the sunlight shining in.^{cli}

These testimonies illustrate precisely how hard it was to work at Eveleigh. They also explain why the shop committee and union movements were so important to workers. Indeed, the committees' campaigns succeeded in winning numerous improvements, ranging from sanitary and general amenities to safety provisions.^{clii}

4.3 EVELEIGH EMPLOYEES AND TECHNOLOGICAL INNOVATION

In keeping with the definition of technology outlined in the Introduction, this section explores the interconnections between the material and social components of technology. Whereas earlier sections identified how technology was arranged in the workshops and the social relationships that arose as a result of the need to control technical operations, attention is now given to the social impact of technological innovation.^{cliii}

Technological innovation was a constant feature of the Eveleigh Workshops throughout its one hundred years of existence. As new inventions and designs were produced, new tools, machines, power sources and techniques for their use were continuously introduced to the workshops. Initially, technological innovations relied on British developments.^{cliv} But increasingly, after the turn of the century, American technological progress provided an important model. In 1905, the Engineer-in-Chief for Existing Lines, James Fraser, attended the International Railway Congress in Washington with the Secretary to the Railway Commissioners, Hugh McLachlin. The NSW Railways were also represented at the next Congress, held in Berne in 1910, by O. W. Brain, Chief Electrical Engineer and E. E. Lucy, Assistant Chief Mechanical Engineer. Subsequently, after World War One, the Government sent more engineers to America on fact finding missions. Eveleigh officials were generally represented in such ventures. Two mechanical and two electrical engineers were sent to America in 1919 to investigate technical matters relating to electrical furnaces. Subsequently, when steel cars became a feature of the American railroad rolling stock the Commonwealth Railways' Chief Mechanical Engineer and a draughtsman with the NSW Railways were sent to the USA to report on railway workshops and munition factories. On their return, the former submitted a report to the Minister for Home Affairs suggesting that steel coaches could be made in Australia at a comparable price and quality as those which could be imported.^{clv}

The implementation of new technologies can be broken into four distinct periods. The first occurring at around the turn of the century with the advent of electric power for the driving of tools; the second occurring between 1914 and the late 1920s with the continued acquisition of new operating machinery and the introduction of electric motors enabling a conversion from steam to electric haulage; the third period relating specifically to the process of dieselisation extending from the late 1930s to the 1960s; and the fourth, involving numerically controlled technologies during the final decade of the workshops' operations.^{clvi} Because few people are still alive who worked at Eveleigh prior to the late 1920s, it is difficult to assess how they responded to the innovations which were implemented during the first two periods. The Eveleigh News does, however, indicate that the installation of the Ajax machines in 1916 and the 1,500 tonne 'Davy' Press in the Blacksmith's Shop, sometime between 1923 and 1925, were deemed by Eveleigh employees to have been particularly important.^{clvii} Additionally, as most informants located for this study were employed at Eveleigh

from the 1940s, they provide the best insight into workers' perceptions of technology and technological change for the third and fourth periods.

From their testimonies, as well as other sources, the third period seems to have been characterised by contradictory trends. On the one hand, as noted earlier, dieselisation marked a profound change in the workshops' operations. On the other, out-dated machinery remained dominant. As the Eveleigh News pointed out in 1957, 'we have a lathe dated 1853, another 1884... overhead cranes 1885 and many other antiques.'^{clviii} Eveleigh employees had to use their skills to compensate for these problems as the following testimony shows:

KJ The machine I worked on in the tool room I think they must have had it there just after the First World War. I followed a fellow ... he was a good tradesman and I had to take on this machine making these dyes - Coventry dyes - dyes for the boxes and it was very hard with this old machine. The machine was very limited. And then we got a couple of decent universal milling machines. We had a few milling machines after the war. A lot of the tradesmen made the best of the machine they had. There were certain things like tightening a nut up here and ... I can tell you a story about that. When I first went to work on one of the lathes I knew that by tightening the nut up in a little spot would just swing the saddle around and when you cut the base of the drivers' brake valve that it would form a very flat surface. A fellow by the name of Rickards in the air brake section, he would take it and he had a special valve that he'd put in with marking on it. Then he'd get his little scraper and he'd scrape it and he used to take only ten or fifteen minutes to get it right because I did such a good job of it, because I knew a little thing about this old machine - I'm talking about an old machine. They had some old machines.

JK You had to make up with skill?

KJ Oh yes. [You had to] put a little packing, tighten a nut up here to get it to go right and you learned this. We never had good machines until Shirley bought the new machines which he put in 11 Bay. Then years later, getting near my retirement, they got the good machines in. In the tool room they had a decent thread grinder.^{clix}

However, as noted earlier newer technologies were gradually implemented from the 1950s. And while these tended to improve working conditions, they also had both desirable and undesirable social consequences, as Trevor Thorpe pointed out in the mid-1980s:

The pace of technological change in the previously, you could call it a technological backwater, has increased in recent years... However, of course with all this new technology they have the capacity to destroy jobs and it's been one of our major tasks from a rank-and-file and

union point of view to preserve and maintain as many jobs as we can... The technology has meant that the work has gotten lighter, its not as physical, not as physically demanding... I have noticed the changes, er, which are quite significant. Riveting has given way to welding, and there's been some of the welding techniques that I learnt as an apprentice have been superseded now by even newer welding techniques. The same with the fitting and there's been a tremendous technological change in the electrical trade for instance, er, in locomotive overhaul and maintenance, um lots of areas of electronic equipment have come in which have supplanted the old methods... and technology... All this has had a big effect on the actual numbers of people that are needed to overhaul a locomotive. Of course with that sophistication means that workers have to be more highly trained... However, we're pushing that as one of the basic issues to er redevelopment of the workshops. Its not merely enough to physically transform the workshops... we feel that er we've got to embrace quite a number of aspects of the new technology... I think there's a need for us to get in and mix it with management in relation to the type of technology that er we adopt, er there is a certain degree of co-operation in this area, for instance new machines and new methods, there's usually a fair degree of consultation with the workforce about the type of machine, the siting and the placement.^{clx}

As has been elaborated in Section 2.0, such technological improvements and co-operative efforts did not prevent the closure of the Workshops in 1989.

While Eveleigh employees looked forward to technological improvements, as long as employment was not threatened, nostalgia characterised the general attitude to the demise of the steam age. Bob Matthews' description of this age as 'a pretty thrilling sort of thing' is explained in poignant terms by Vaughan Givillian:

So it's an era that ... we thoroughly enjoyed, our work mates were great chaps and the trades all got together because we were all in the same sort of situation and so there was quite a lot of friendliness amongst all the different trades that worked in there... because you were more or less like a brotherhood... where you were all in the same boat involved with the steam engines and of course a steam engine to a tradesman and to the driver and fireman its understandable why they would be enthralled in them because they were like a living thing, they breathed and they worked and they expanded and contracted with the heat just like human beings do, you know, and when they got angry, they blew their top just like human beings and so I suppose it was an era where you can understand why people love steam

engines because they are just that living sort of thing... you know, it reacted to whatever you did to it.^{clxi}

Vaughan spent 29 years in the running sheds, 20 of these in the steam shed. His account of this experience illustrates that working with steam had immense social implications for the performance of work:

The change going over from the steam to the diesel found a big change in the way of life in the place because there was another sort of trade coming in... although there was still that friendliness amongst the trades there wasn't that camaraderie.... because the live steam engine made it that way... it blended us all together because of the feeling we had towards it... it was a challenge to stop something from leaking that had steam pressure in it, it was a challenge to see this big monstrous thing go by... and say with self-satisfaction well look I helped to put that thing out there... that sort of camaraderie today is gone because you don't see the driver very much. Now he comes into the shed to pick up his locomotive and goes, whereas before, he'd come in and he'd prepare his engine and oil it and you'd have a yarn with him and you'd know how his wife and kids were and today there's not that sort of thing needed any more because he comes straight from his barracks or straight from signing on and he just gets on the thing.... sits down in the seat and just pulls the lever and choonk and away he goes.^{clxii}

Despite the hard and dirty conditions engendered by the steam engines, Eveleigh employees evidently gained much pride from producing and maintaining them. Likewise, as this testimony shows, working with such engines fostered a collaborative spirit which blended in with other social connections which evolved in the Workshops.

4.4 WORK AND LIFE: THE SOCIAL DIMENSIONS

The collaborative spirit which characterised the Eveleigh Workshops was sustained not just by steam technology but also by life-long employment, Departmental recruitment of numerous family members^{clxiii}, and a strong labour movement tradition. For the most part, these sources of unity co-existed with craft and operational divisions. Yet, such sectional affiliations shaped the degree to which workshop employees identified with each other as Brian Dunnett informs us:

BD that was one of the things — people had a Railway identity. Their identity was very much related to their working situation and the numbers were very important because, as I say, there were 7,000 people working on the locomotive side and there'd be at least another 3,000 or 4,000 on the carriage side and there'd be a couple of other areas that were operating as individual sections, like running sheds

and Carriage Sheds It depended on what the occasion was, whether they'd see themselves as part of Eveleigh In the main, the organisational structure and their identity would be with the type of work they were doing as much as anything else. If they were actually working on the steam engines well then they identified with that piece or equipment, if they were working on carriage then they would identify there. The trades were associated ... whilst some trades did work on both carriages and locomotives ... there were a lot of specific trades, although more stronger in some areas than others. That played a part as well. For example, you wouldn't find too many carriage builders working on the steam loco side but there were one or two because even on locos there'd be the wood work to be done. But if they were on locos ... there'd be huge numbers of boiler makers and fitters and those sort of people.^{clxiv}

These sorts of differences are brought out by other informants. John Willis highlights the way running shed staff were isolated from those employed in the Locomotive Workshops:

LT You were at the Eveleigh Workshops the whole time?

JW No, they weren't the Workshops, they were the running sheds.... The running sheds were a different set-up from the workshops, very close to one another, walking distance, but we weren't really attached to them, we had our own section. Our running sheds were mostly wooden/tin structure whereas the workshops were all brick. They had a lot cleaner situation than we had. We had about 300 steam engines going out every day and it was very dirty, very dirty....

LT Can you tell me if anything special ever happened at the railway workshops and the running shed at Christmas time?

JW We'd have our break up parties at Christmas but mostly the workshops would have their own. We weren't closely attached that way. We'd have our own and they'd have their own and, if you could walk up and say, "Merry Christmas, Jack", "Merry Christmas, Bill", "See you mate", but they never sort of came down and interfered with ours and we never interfered with theirs.^{clxv}

Operational isolation also had social implications. As Hal Alexander commented:

'There was a bit of jealousy about the loco side and the carriage side. There was a dozen train tracks in between but it could have been a mile wide.'^{clxvi}

Such social divisions were also exacerbated by political differences between left and right factions of the labour movement, particularly during the 1950s.^{clxvii}

The influx of migrant workers during the 1950s provided another source of incipient social division, caused by language barriers and cultural differences. A pertinent example is provided by Hal Alexander who recalled:

'An Italian bloke, an electrician, he said to me, "What the name of that boss of yours?", I'd say, "Reg". He said, "Why you call him "Bluey"?" I said, "Because he's got... red hair, that's why", he said, "I don't understand". ^{clxviii}

Numerous informants mention the presence of such cultural differences. But as the testimonies of Jack Bruce and Louie Cavalier show, Eveleigh employees did make an effort to accept the newcomers. Jack Bruce described the situation as follows:

JK And how were the migrant people accepted into the workforce?

JB Very well I thought. We actually saw the first influx of the Italian and Greek people as migrants to Australia. They were very good really. In a very short time they became part and parcel of the workshop, got on very well. ^{clxix}

One reason for this integration can be found in the ARU's activities. Early in the 1950s this union's state secretary Jack Ferguson authorised a pamphlet in three different languages to explain the benefits of union membership. Later, the union recruited Louie as an Organiser. This development would have important ramifications for Eveleigh because Louie launched English language classes in the foundry in 1969. As he described it:

the management says to me, 'You can try for half an hour,'... So I got the volunteers, I picked some of the main ones who really need English, we study for half an hour - the management says to me, "Why don't you be a school teacher?" and I said, 'Why don't you get someone?' So what we did we picked some clerks from the management side.

In 1972, the railways extended this effort by launching formal English classes which spread from the foundry to the Carriage Works and then further to the Department's other workshops. ^{clxx}

These were not, however, the only activities which overcame the functional and spatial divisions elaborated above. A wide variety of clubs united those who held common interests in particular recreational activities. Among those formally organised by the Department were rifle and snooker clubs as well as the Ambulance corps. In addition, the Eveleigh employees themselves formed clubs around past-times such as chess, books and reading, films, gardening, table tennis, soccer, bowling and two-up. Social activities, such as concerts, annual picnics, farewells, flower shows (Refer to Volume IV, Photographic Bibliography) also created an overall atmosphere of

fellowship which is depicted in most oral testimonies. This fellowship among employees did not end with retirement. On the contrary, most informants comment on their continued social contact.^{clxxi}

The strength with which some Eveleigh employees identified with their place of work and the railways is evident in the following story told by Vaughan Givillian about a plaque commemorating two 'fairly dedicated Railway men' who died while still employed at Eveleigh:

they loved the Railways and loved trains and ... they really loved their job and so one of these chaps... he'd brought a train in from Central and I believe that while the train was being unhooked it rolled back and then rolled forward on him and crushed him and killed him and in his will he'd requested that his ashes be allowed to be placed on Railway property. The carpenter who worked in the running sheds... made the cement boxes for the ashes to go into and when the time came I think the family came and there was a small ceremony and the ashes were laid to rest here in this particular spot. Well later on a chap called Gordon Long, who was an extreme Railway enthusiast... and unfortunately for Gordon, as the years went on he ... got cancer... and so when he died he requested the same thing. ^{clxxii}

As these stories demonstrate, the experience of working at Eveleigh created emotional and social connections which extended well beyond working hours.

5.0 EVELEIGH AND THE SURROUNDING COMMUNITY

The Eveleigh Workshops had a profound social and environmental impact on the surrounding locality. As Annable and Cable point out in the South Sydney Heritage Study, 'the establishment and expansion of the railway system introduced a powerful and virtually unique factor at an early stage of the Precinct's development.' Indeed, they argue that the creation of the Eveleigh Workshops not only provided a major source of employment, it also shaped residential patterns. The Golden Grove estate, within which the workshops were situated, was subdivided in about 1881. The small allotments were advertised as 'workmen's dwellings' and most residential construction appears to have occurred during the late 1880s; precisely the time the Eveleigh shops began operating. Thus, residential and railway uses dominated the area, at least until the 1920s. When the Chullora workshops were developed during this period, the population around Eveleigh also began to decline. Gradually, many Eveleigh employees moved to the more southern and western suburbs.^{clxxiii}

A number of informants who followed their father's footsteps into Eveleigh grew up in this locality. Stan Jones recalled living in a number of houses in the streets surrounding the workshops, in close proximity to other members of his extended family who were also employed there. Both Stan and John Willis recalled their fathers coming home from Eveleigh for their lunch breaks. Others, particularly those who came to Eveleigh as apprentices from the country, lived in the locality's many boarding houses. One such apprentice was Bob Matthews, whose father worked on the railways at Parkes, and who therefore also followed in his father's footsteps because 'the railways had always been in the house, it was in the blood [laughs] and the opportunities were more easier to get in those days.' On arriving in Sydney, Bob had little choice but to board. But here, too, the railways generally, and Eveleigh specifically provided important social networks. As Bob put it:

BM I actually didn't get to know many people in the workshop but I just happened to be fortunate when I went to board there were two other apprentices and one was a boiler maker, who came from Thirroul, I think it was, and another apprentice who came from Orange. Luckily I had those [apprentices] boarding at the same place as I was and that kept me ... we had a little bit in common that way.

JK Were they working at Eveleigh too?

BM They were mostly at Eveleigh. They weren't there when I first came down. They came just after I got to the boarding house - it was only a private home - I can't remember how I got in there, how I got to know the people and got in. He was a railway man though. He worked at Enfield. The man and lady I was boarding with. ^{clxxiv}

Those who lived in close proximity to Eveleigh highlight the extent to which its activities affected the surrounding community. John Willis, for instance, describes his childhood impressions of the workshops when his father first started working there, as follows:

JW We could always hear the train whistles being blown over there when they were moving around - all Alexandria could I suppose. And I thought to myself "Oh, I'd like to go over and have a look at the steam engines" and he used tell me, "No it's too dirty, you don't want to go over there, stay away from there, don't let me catch you, none of you kids coming over there". But we used to sneak over but not go inside. They had a big wooden bridge there and they had a watchman and you couldn't go passed him so we used to just look out through the paling fences at all the steam trains. It fascinated me and think "Oh, look at that one, there's another one and there's another one". After that, when I first started there, I looked at the place, my first real look at it and I ran away. Yes, really. It frightened me.... It was frightening because there was so much going on. So much movement. Straight away you thought "Oh, I'm going to get run over". ^{clxxv}

The noise emanating from the workshops also pervaded the surrounding community. One Aboriginal resident recalls:

AM I was born here at Redfern at 17 Cornwallis Street. Cornwallis Street is situated right out the front of Eveleigh Railway. ... As a young boy ... what I really remember about Eveleigh Railway was always the noise, you could always here that clang clang with the hammers and the whistles. We used to live by the whistles. Your first whistle would be at 27 minutes past seven. That would be the two minutes to get ready to go and start work. Then the next one would blurt out at 7.30. That was usually the time for me and my sister to leave home and go to school. ... But many of the days spent down around in Cornwallis Street just listening to the music of those bloody things. You could walk up the street there and you could pick the sounds out of the hammers and you'd be making up little songs to them [humming] then you'd know that the next hammer would come on after that. They had different pitches, different sounds. ^{clxxvi}

However, local residents were not simply subjected to the noise of the workshops. Its dirt and grime pervaded the local atmosphere much to the chagrin of some residents, as John Willis describes:

JW The housewives in Henderson Lane, this is the lane that ran along the old steam shed, they went to walk all over the Bridge one day in protest against the black grime that used to come out of the steam engine over their washing and they demanded to see the head of the railway.

LT And what happened?

JW They were told to get off the Bridge and go back, and go and complain to their local member. They put out their white sheets and there'd be these black spots all over them and you could never get that grime out. Once it was there it was there. The other thing was we used to play cards, again at the back of Henderson Lane, mum would play over there and the shunting that used to go on the yard of a night you'd have a handful of cards and the next thing they'd be all up in the air. People used to jump out of their beds [really] - it would go on 24 hours a day.

Eveleigh also had a social impact on the locality. Allan Madden and John Willis both identify the numerous pubs which served workshop employees after their shifts were over. During the second half of this century, however, such recreational patterns changed as many long-standing employees moved to the suburbs to be replaced by European migrant and Aboriginal residents.^{clxxvii}

6.0 CONCLUSIONS

Eveleigh's history is a history of public enterprise and the government administration of railway transportation in NSW.

Throughout its hundred years of operations these Workshops had a profound impact on the broader community. Their part in the repair, maintenance and manufacture of locomotives linked those who worked at Eveleigh to the country's industrial and technological development. The production of munitions at the shops also provided an immense service to both the Empire and the Nation. The same can be said of the construction and preparation of the Royal train and the masks made at Eveleigh during the Influenza Pandemic. As one contributor to the Railway Budget declared:

taken all round, the men work together most harmoniously, and the whirr of the wheels and the clang of the hammer would always seem to speak, if they had a language of iron, of earnest effort and a hearty desire to do the best for the good of the service.^{clxxviii}

Certainly, oral and documentary sources indicate that Eveleigh employees were committed to the railways and to their duties as public servants to fulfil the community's need for transport.

Even a disruptive event like the General Strike of 1917 indicates the extent to which Eveleigh's employees perceived their work and their conditions to have broad social implications. The fact that so many workers outside the railways joined them in this dispute illustrates just how widely shared such views were in the State of NSW, as well as beyond it.

Eveleigh's longevity, its propensity for employing entire family groups and its association with steam locomotion also produced enduring social connections which remain to the present day. Despite, or perhaps because of the hard conditions which existed in this workplace, it continues to have a striking presence in the memories of those who were associated with it.

The social history of the Eveleigh Workshops is at once a story of technological innovation, human inventiveness, collaboration and endurance.

7.0 END NOTES

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- iii. John Gunn, Along Parallel Lines: A History of the Railways of New South Wales, 1850-1986 (Melbourne University Press, 1989) pp.13-47; 'Railways and Tramways,' The Cyclopedia of New South Wales: An Historical and Commercial Review, Descriptive and Biographical Facts, Figures and Illustrations, An Epitome of Progress (McCarron, Stewart and Co., Sydney, 1907) pp.253-258; George A. Gilder, 'The Early History of the Railways of New South Wales' Journal of the Royal Australian Historical Society (JRAHS) Vol. XVII (IV), 1931, pp.215-238.
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- xi. AR for 1880, p.10 (SRAA R8\2); AR for 1882, ibid., p.14.
- xii. George Cowdery, Appendix, AR for 1884, p.24. (SRAA R8/6); George Cowdery, Appendix, AR for 1886, p.15. (SRAA R8/8).
- xiii. 'The Locomotive Shops at Eveleigh' R. & T. Budget, 21 July 1900, p.239; 'The Carriage and Wagon Shops at Eveleigh' R. & T. Budget, 21 August 1900, p.250. .
- xiv. AR for 1880, op. cit., p.11.
- xv. David Burke, Making the Railways (State Library of New South Wales Press, Sydney, 1995) p.82, pp.86-89.
- xvi. AR for 1889-90, pp.5-6 (SRAA R9/2).
- xvii. Chief Mechanical Engineer's Report, Appendix II, AR for 1890-91, pp.19-20 (SRAA R9/3); Chief Mechanical Engineer's Report, Appendix II, AR for 1892-3, pp.20-21 (SRAA R9/4); Ten Years' Retrospect, Appendix to the Report of the Railway Commissioners, August 1899, p.50 (SRAA R9/11).
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- cvi. Stan Jones, op. cit..
- cviii. Interview with Frank Bollins conducted by Russ Herman in 1988 for the Combined Railway Unions Cultural Committee's Oral History Project.
- cix. Interview with John Willis, op. cit.; Interview with Brian Dunnett conducted by Joan Kent on 10 May, 1996 for the Eveleigh Social History Project; Interview with Keith Johnson, op. cit..
- cx. Curlewis, op. cit., p.57, p.65; 'Eveleigh Locomotive Workshops,' op. cit. p.35.
- cx. Curlewis, ibid., p.9, p.27.
- cxii. Patmore, op. cit., (1985) p.354-55; Taksa, op. cit., (1993) p.424.
- cxiii. Curlewis, op. cit., p.8, pp.11-13, p.17, p.62, p.77; R. & T. Magazine 1/12/1919, p.58;
- cxiv. Curlewis, op. cit., p.41, p.47.
- cxv. Curlewis, op. cit., p.10, pp.14-15, p.17, p.22. See also pp.43-45 for the way unionists described these changes; Leslie Best, op. cit., transcript p.13.
- cxvi. NSW Parliamentary Debates Vol. 67, 1917-1918, p.192.
- cxvii. Curlewis, op. cit., p.47
- cxviii. Curlewis, ibid. pp.36-37.
- cxix. Curlewis, ibid. p.40.
- cxx. Taksa, op. cit., (1993) Chapter Two; R. & T. Budget 1/9/1916, p.2.
- cxxi. Curlewis, op. cit., p.59.

- cxix. Holme, op. cit., p.28.
- cxviii. Justice Edmunds, op. cit., p.xlii.
- cxvii. Curlewis, op. cit., p.42; Edmunds, ibid., pp.xxv-xxviii.
- cxvi. Prior to the General Strike, Sydney Trades Hall had provided rooms specifically for the location of workers for Government jobs. During the Strike these were closed down when the Government no longer saw fit to employ union labour. AW 31/5/1917; Holme, op. cit., pp.37-38.
- cxv. D.T. 9/8/1917; Curlewis, op. cit., pp.15-17; Leslie Best op. cit., Transcript, pp.12-13.
- cxiv. Patmore, ibid., p.315.
- cxiii. Hearn, op. cit., p.87; Patmore, 'Systematic Management...', op. cit. pp.315-317.
- cxii. John Robert Bruce, op. cit..
- cxxi. R. & T. Magazine 1/2/1921, p.50. Interview with John Mongan conducted by Lucy Taksa on behalf of the NSW Bicentennial Oral History Project, 19 March, 1987. [Transcript held by the State Library of NSW, p.21, pp.30-31.]
- cxviii. John Robert Bruce, op. cit.
- cxv. EN 7/7/1954.
- cxiiii. Hearn, op. cit., pp.87-92; Gunn, op. cit., p.420. See further: EN 21/7/1954.
- cxiii. John Robert Bruce, op. cit..
- cxii. Hearn, op. cit. pp.87-88, pp.145-147; EN generally 12/5/1954 - 22/11/1972, especially, 24/8/1966; 7/11/1962.
- cxvi. Gunn, op. cit., pp.440-441, p.488, pp.520-521; Hearn, op. cit., pp.166-167, pp.185-187.
- cxvii. Bob Matthews and John Robert Bruce, op. cit..
- cxviii. In addition to Jack Bruce, such meetings were mentioned by John Willis, Keith Johnson, Brian Dunnett.

- cxxxix. Stan Jones, (1988) op. cit..
- cxl. Refer to EN 1961-1972.
- cxli. Stan Jones, op. cit.
- cxlii. Brian Dunnett, op. cit.; John Robert Bruce, op. cit.
- cxliii. Refer to Appendix Two, Oral History Transcripts.
- cxliv. EN 9/6/1954.
- cxlv. Refer to Appendix Two, Transcripts.
- cxlvi. John Willis, op. cit..
- cxlvii. John Robert Bruce, op. cit.
- cxlviii. John Robert Bruce, ibid.
- cxlix. Keith Johnson, op. cit.
- cl. EN 7/7/1954.
- cli. Keith Johnson, op. cit.
- clii. Refer to Eveleigh News, 1950s to 1970s.
- cliii. Willis, op. cit., p.2. Refer to Introduction, Sections 2 and 4.1.
- cliv. See for example: R. & T. Budget 15/9/1892, pp.2-3.
- clv. R. & T. Budget 7/10/1905, p.335; Proceedings of the International Railway Congress Association, 7th Session, Washington, 1905 (P. Weissenbruch, Brussels, 1906) pp.22-33, Part XIII, pp.188-189; R. & T. Magazine 1/5/1919, p.184; 1/5/1920, pp.373-374; A.M. 25/1/1916, p.28; 25/7/1916, p.10; Proceedings of the International Railway Congress Association, 8th Session, Berne, 1910 (P. Weissenbruch, Brussels, 1911) Vol. 1, p.49, p.62; R. & T. Magazine 1/5/1919, p.184; 1/5/1920, pp.373-374; A.M. 25/1/1916, p.28; 25/7/1916, p.10.
- clvi. Refer generally to Annual Reports from the 1890s to the 1980s; R. & T. Budget 21/7/1900, p.240; Hyde, op. cit., pp.178-179; 'Railway Development... to 1955,' op. cit., p.3, p.7.

- clvii. EN 24/8/1966; 19/10/1966.
- clviii. EN 3/4/1957. See further, John Robert Bruce, op. cit.
- clix. Keith Johnson, op. cit.
- clx. Interview with Trevor Thorpe conducted by Russ Herman in 1987 on behalf of the Combined Railway Unions Cultural Committee Oral History Project.
- clxi. Interview with Vaughan Givillian conducted by Russ Herman in 1987 for the Combined Railway Unions Cultural Committee oral History Project.
- clxii. Gillian, ibid.
- clxiii. Refer to interviews with Bob Matthews, John Willis, Brian Dunnett, Bill Leech, Stan Jones, Frank Bollins.
- clxiv. Dunnett, ibid.
- clxv. John Willis, op. cit.
- clxvi. Hal Alexander, op. cit.
- clxvii. Bob Matthews and Brian Dunnett, op. cit.
- clxviii. Hal Alexander, op. cit.
- clxix. John Robert Bruce, op. cit.
- clxx. Hearn, op. cit. p.147.
- clxxi. Refer to R. & T. Budget and Magazine, 1892-1930; EN, 1954 to 1972; Volume V, Transcripts, particularly those of Brian Dunnett and John Robert Bruce.
- clxxii. Vaughan Givillian, op. cit.
- clxxiii. South Sydney Heritage Study, op. cit., Vol. 2, pp.367-368, pp.380-381.
- clxxiv. Bob Matthews, op. cit.
- clxxv. Stan Jones op. cit. (1983); John Willis, op. cit.
- clxxvi. Interview with Allan Madden conducted by Joan Kent on 16 April, 1996 for the Eveleigh Social History Project.

clxxvii. Allan Madden, ibid.; John Willis, op. cit.; Annabel and Cable, op. cit., pp.381-382.

clxxviii. R. & T. Budget 16/8/1894, p.219.