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HELPING CLIENTS MAKE A FUTURE FOR THE PAST

Australian Technology Park
Movable Collection Management Plan

FINAL DRAFT

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Prepared for

Australian Technology Park Sydney Limited

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1.0	ATPSL	First issue for review	6 February 2015
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3.1	ATPSL	Final Draft incorporating amended schedules	29 March 2015
3.2	ATPSL	Final Draft incorporating Executive Summary	13 April 2015

Executive Summary

The Eveleigh Locomotive Workshops Machinery Collection is a State-significant collection of historic machinery and tools dating from the late 19th century to the 1980s. The collection housed at ATP enhances the significance and understanding of the Eveleigh Locomotive Workshops and is a key element in interpreting the history. This Management Plan provides an overarching framework for managing the Collection.

Locomotive Workshops Machinery Collection Conservation Policy Framework

This report outlines the 2015 update to the (Section 170) Heritage and Conservation Register for Australian Technology Park (ATP) as the basis for the preparation of this Management Plan. Read and implemented together, the recommendations of this Plan and the Heritage and Conservation Register ('the S170 Register'), supersede previous Management Plans and Policy Frameworks for the Moveable Heritage Collection. Together, these Conservation Policies should be read in conjunction with the 2014 Conservation Management Plan for ATP prepared for the site by Godden Mackay Logan.

These documents will be used to update the five-year Heritage Asset Management Strategy (HAMS) conservation works priorities. Together, the updated Management Plan, the full detail of the S170 Register and the revised HAMS priorities, will be submitted to the Heritage Council to be endorsed as the conservation policy framework for the Eveleigh Railway Workshops Machinery Collection.

ATP Site Context

Implementation of this Management Plan will conserve the site's Moveable Heritage Collection and ensure statutory obligations are met.

The management framework set forth here is based on an assumption that the adaptive re-use of the site as a commercial business park shall continue for the foreseeable future. In this context the Moveable Heritage Collection at ATP is now generally in a safe and secure situation that will ensure minimal ongoing deterioration. It is a robust Collection and generally removed from physical visitor contact. It is not a collection in a museum setting, rather it helps to convey the history of the site, and establish the site's unique character within an active business park. Most at-risk items have had some degree of conservation treatment that has addressed or arrested deterioration (the Boilers and Boiler House being the notable exception).

There are significant community associations with, and involvement in, the site, the Collection and the Eveleigh Workshops precinct. Public interest and understanding of the site and the Collection is to be encouraged through provision of physical access and heritage interpretation of the site and its significant elements.

In the event access to or use of the Collection changes substantially from these existing conditions, this document and the policies contained within all site heritage management documents should be reviewed and, where necessary, amended and submitted to the Heritage Council to be endorsed.

Conservation Works Priorities

The Conservation Strategy is a prioritised framework of required conservation and maintenance works to ensure that the Collection is maintained, preserved and conserved through appropriate assessment and management. This report identifies qualities based on significance, risk and condition, in order to allocate a conservation priority. This assists prioritised allocation of funding, conservation and volunteer effort.

The immediate conservation works priorities proposed in this draft Plan are:

1. Boiler House and Boilers.
2. Davy Press elements and installation of billet holder racks.
3. Conservation and structural works to Blacksmith's Forges.

These priorities are not solely based on the condition and risk rankings, but also on broader goals for interpretation and presentation of the Collection and the site. These are particularly relevant in relation to ATP interpretation goals for creating a visitor destination and enhancing Bays 1 and 2 as the centrepiece.

The greatest benefit for the heritage values of the site will flow from aligning conservation and interpretive priorities, and these priorities may be influenced by a range of factors including available budgets, commitments to stakeholders and alignment with other works proposed at the site. On completion of these works further conservation works from the conservation priorities can be determined.

Provided the recommendations of this report are put into place, the high priority conservation projects are addressed, and the Collection continues to receive routine cleaning and maintenance in accordance with these recommendations, the Collection will continue to be conserved into the future.

Recommendations

In summary the principal recommendations of this Plan include:

Conservation Policy Framework

1. Movable Management Plan and Section 170 Register to be exhibited and endorsed.
2. The Heritage and Conservation Register be reviewed annually.
3. A full collection audit and update of the Plan be undertaken every five years, or if the use of the collection, or access to it, changes substantially.
4. The State Heritage Register listing be updated.

Note: The Management Plan should be read in conjunction with the Section 170 Register, and together these supersede all previous plans and policies for the collection. They will form the basis for updating the HAMS.

Interpretation

5. Opportunities for community access to the collection are integral to its management.
6. The interpretation and functional organisation of the collection in the context of the site and whole Eveleigh Railway Workshops Precinct be encouraged.

Conservation and Management

7. High priority recommendations to be addressed first.
8. Annual routine maintenance and monitoring be conducted on items that are either: located out of doors; in use; or that present an inherent risk.
9. Professional expertise be used for conservation and maintenance works, particularly where it involves disassembly or reassembly of machinery. Noting maintenance may be undertaken by volunteers, guided by professional advice.
10. Unexpected damage should be assessed by experts as soon as possible.
11. The Pivot Crane remaining at North Eveleigh is identified for archival recording and disposal in accordance with this Plan's Disposal policy.

Curatorial

12. Tagging of all items, including items with primary interpretive value.
13. Tagging of items in Bays 1 and 2 south be undertaken in conjunction with the tenant to confirm ownership, and review or revise the lease list accordingly.

1. Introduction

This report outlines the 2015 update to the Section 170 Heritage and Conservation Register for Australian Technology Park (ATP) as the basis for the preparation of this Management Plan for Moveable Items.

1.1. Ownership

The Australian Technology Park is wholly owned by the NSW Government's Urban Growth Development Corporation (UGDC). The site is managed by Australian Technology Park Sydney Limited (ATPSL). ATPSL is a State-owned corporate entity with the responsibility for and control of the Australian Technology Park, which forms part of the original Eveleigh Locomotive Workshops, Eveleigh.

1.2. Site context

This Management Plan has been developed to manage the site's moveable heritage collection and ensure statutory obligations are met, within the context of the site as a business park in an adaptively reused series of heritage buildings.

While a number of heritage items remain in active use within Bays 1 & 2 South of the Locomotive Workshop, the bulk of the Collection is on static display. It should be noted that the management framework set forth here is based on an assumption that this situation shall continue for the foreseeable future, i.e. the site shall continue to operate as a business park with limited operational use of the Collection. The current operational use of parts of the Collection by the active blacksmithing use in Bays 1 and 2 south is an important conservation outcome for the Collection and is supported and encouraged by the conservation and maintenance policies detailed in this Management Plan and the 2015 Heritage and Conservation Register. The collection is therefore not being managed within a museum context and a curatorial or collections management policy is not required as might be prepared for such an institution. This Management Plan also assumes that the Collection is static and will not materially change, in terms of removals from or additions to the Collection.

It is also important to note the significant community associations with, and involvement in, the site the Collection and the Eveleigh precinct. Public interest and understanding of the site and the Collection, is to be encouraged through provision of physical access to the Collection and heritage interpretation of the site and its significant elements, as required by the conservation and maintenance policies detailed here.

This Management Plan should be read in conjunction with the Conservation Management Plan for ATP prepared for the site by Godden Mackay Logan. Read and implemented together, the recommendations of this Management Plan and the Section 170 Heritage and Conservation Register, supersede previous Management Plans and Policy Framework for the Moveable Heritage Collection on the site. This Management Plan for the Collection, incorporating the full details of the 2015

Heritage and Conservation Register should be submitted to the Heritage Council and endorsed as the principal Conservation Policy for the Collection.

The Heritage and Conservation Register should be reviewed annually to ascertain changes to risks, condition and context and any necessary change to five-year conservation and maintenance priorities. A revision of this Management Plan and full collection audit (in accordance with the protocol at Appendix A) should be undertaken at least every five years or and prior to any significant development application for change of Park use or change of the Collection's use on the site and/or prior to the expiration of any Heritage Council endorsement.

Once updated the Management Plan for the Moveable Collection incorporating the Heritage and Conservation Register should form the basis of an update of the HAMS priorities for Conservation Works across the site. Together this suite of conservation and management policies should be resubmitted to the Heritage Council for approval.

In the event the use of the ATP site changes substantially from these existing conditions, this document and the policies contained within the Heritage and Conservation Register should be reviewed and, where necessary, amended to reflect and respond any new site context. The revisions to conservation policy for the Moveable Collection should then be submitted to the Heritage Office for approval.

1.3. Author Identification and Acknowledgements

The following staff members at Futurepast Heritage Consulting Pty Ltd have prepared this Statement of Heritage Impact:

MacLaren North	Director
Tony Brassil	Senior Heritage Consultant
Eleanor Banaag	Heritage Consultant
Corinne Softley	Research Assistant

1.4. Terminology

The terminology in this report follows definitions presented in The Burra Charter. Article 1 provides the following definitions:

Place means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

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.

Fabric means all the physical material of the place including components, fixtures, contents, and objects.

Conservation means all the processes of looking after a *place* so to retain its *cultural significance.*

Maintenance means the continuous protective care of the f*abric* and *setting* of a *place*, and is to be distinguished from repair. Repair involves restoration or reconstruction.

Preservation means maintaining the *fabric* of a *place* in its existing state and retarding deterioration.

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.

Reconstruction means returning the *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material into the *fabric*.

Adaptation means modifying a *place* to suit the existing use or a proposed use.

Use means the functions of a place, as well as the activities and practices that may occur at the place.

Compatible use means a use that respects the *cultural significance* of a *place*. Such a use involves no, or minimal, impact on cultural significance.

Setting means the area around a *place*, which may include the visual catchment.

Related place means a place that contributes to the *cultural significance* of another place.

2. Site Location

The Australian Technology Park is located south of the South and Inner-West railway line corridor, between Redfern and Macdonaldtown Railway Stations, in the suburb of Eveleigh, NSW. It occupies the southern part of the former Eveleigh Railway Workshops Precinct. The Precinct covered the areas north and south of the South and Inner-West railway line and included the Locomotive Workshops and Alexandria Goods Yard (south of the rail line), the Carriage Workshops, Chief Mechanical Engineer's Office and ancillary workshops located at North Eveleigh (north of the line). ATP encompasses most of the area of the former Locomotive Workshops, however, it excludes the Large Erecting Shop to the west, still operated by RailCorp for heritage rail maintenance (refer Figure 1).

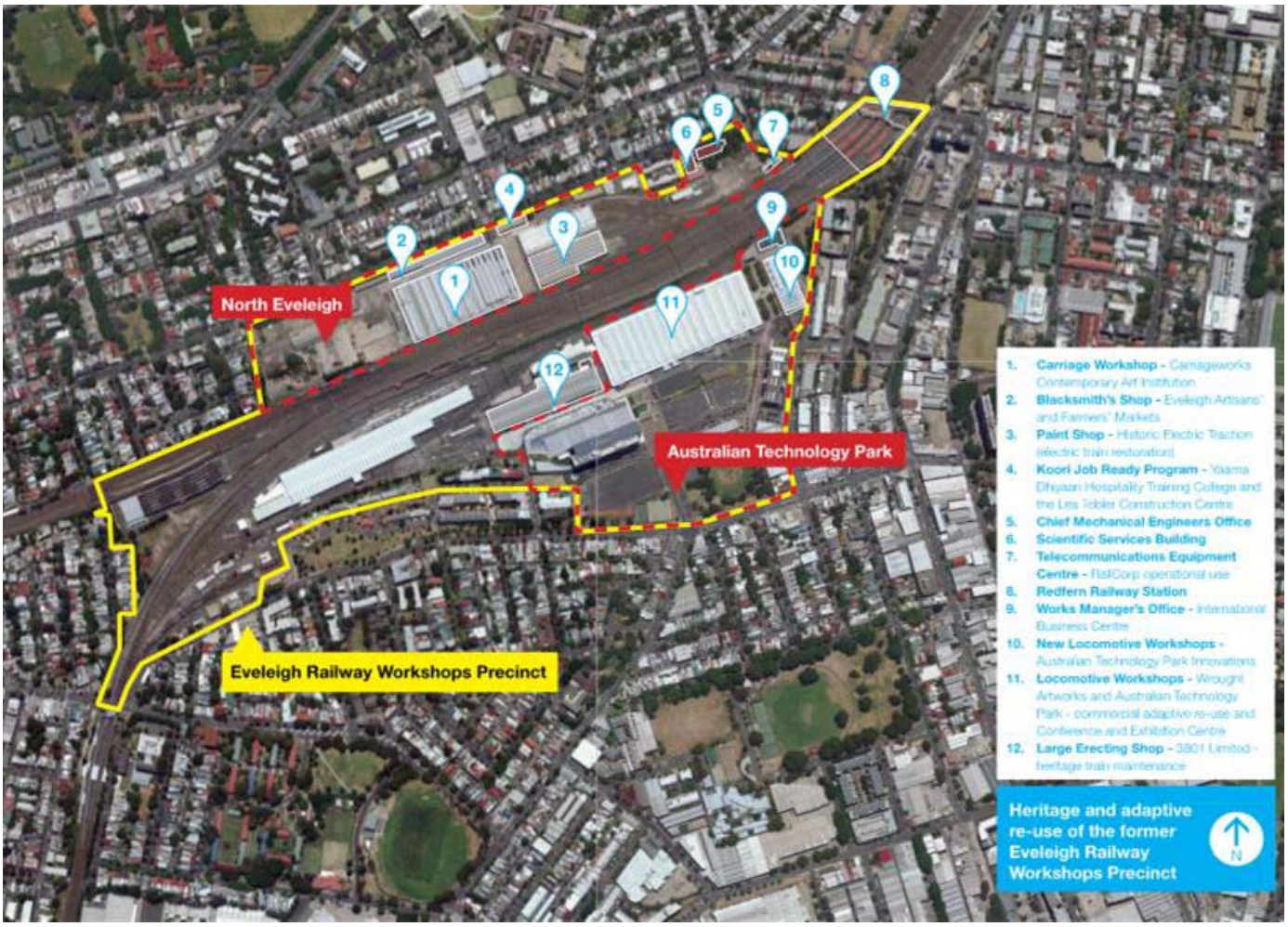

Figure 1 Australian Technology Park and the former Eveleigh Railway Workshops Precinct

The Locomotive Workshops building is situated along the northern boundary of the ATP site and is the most prominent structure within the precinct. The Locomotive Workshop contained key operations at the Eveleigh Railway Workshops from their construction in 1887 until the closure of operations in 1988. This building contains the majority of the Eveleigh movable heritage collection.

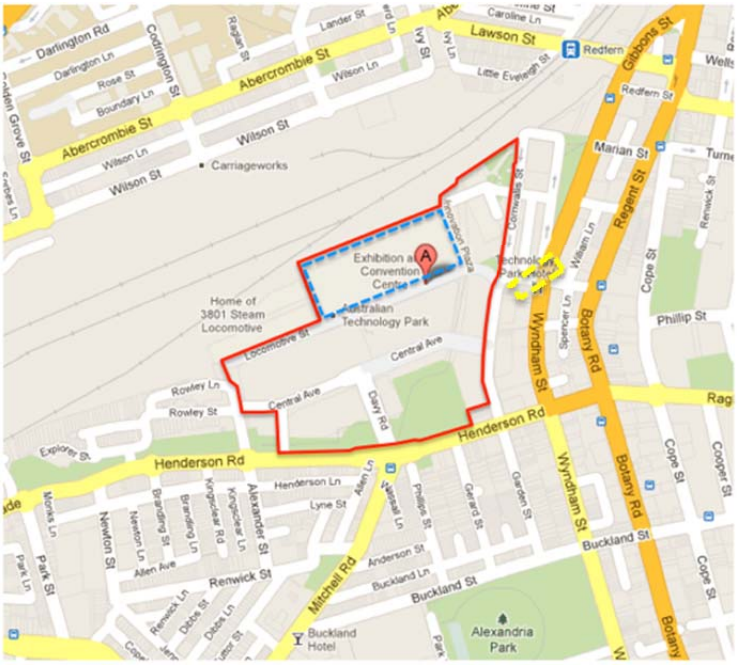

Figure 1. Map indicating the location of the Australian Technology Park (ATP). The approximate boundaries of the site have been outlined in red. The Locomotive Workshops building is indicated by the dotted blue line. The IBC building is outlined in green. *(Image Source: Google Maps)*.

Figure 2. Aerial image showing the subject site. The approximate boundaries of the site are outlined in red. The Locomotive Workshops building and the IBC building are outlined in yellow. *(Image Source: Google Maps)*.

Figure 3. Site Plan for Australian Technology Park Sydney *(Image Source: ATP)*.

2.1. Heritage Status

The subject site and built structures contained within Australian Technology Park are listed on the following statutory registers:

- **NSW State Heritage Register –** Eveleigh Railway Workshops, Great Southern and Western Railway, Redfern NSW 2016 *(Item #1140)*

  Australian Technology Park Heritage and Conservation Register (s170) – Eveleigh Locomotive Workshops Precinct, Locomotive Street, Eveleigh NSW 2015 *(Item #4745500)*
  – Locomotive Workshops Building, Locomotive Street, Eveleigh NSW 2015 *(Item #4745501)*

- **Railcorp Heritage and Conservation Register (s170)**
  – Eveleigh Railway Workshops, Redfern NSW 2043 *(Item #4801102)*

- **State Environmental Planning Policy (Major Development) 2005 Heritage Items in the Redfern Waterloo State Significant Site listing**

- **Sydney Regional Environmental Plan No. 26 – City West (1992) –** Items in the Eveleigh Precinct, Redfern NSW 2016 *(Schedule 4, Part 2)*

In addition to the above site listings, the Movable Heritage Collection is also listed on the following statutory registers:

- **NSW State Heritage Register –** Eveleigh Railway Workshops Machinery, Great Southern and Western Railway, Redfern NSW 2016 *(Item #1141)*

- **Australian Technology Park Heritage and Conservation Register (s170) –** Eveleigh Locomotive Workshops Machinery Collection, Great Southern and Western Railway, Redfern NSW 2016 *(Item #4745505)*

3. Previous Heritage Assessments and Management Documents

There has been considerable examination of the heritage values and assets of the Locomotive Workshops site and the vast majority of the heritage assets consist of items of machinery and moveable heritage such as tools, which relate to the use of the site as a Locomotive Workshop from 1888 until circa 1988.

In 1986, a site-specific heritage study was prepared by Don Godden and Associates Pty Ltd for Eveleigh Railway Workshops that was, at that time, under the management of one government agency (State Rail Authority). This comprehensive study involved in depth research on the history and development of the site, an assessment of the built heritage of the site and, more pertinently, a register of significant machinery.

The next detailed inventory of the Collection was established in a six volume "Management Plan for Moveable Items", produced in 1996 by Godden Mackay Pty Ltd. At this time, the Australian Technology Park had been established on the site of the former Locomotive Workshops under the governance of the NSW Department of Public Works and Services. The study developed a typology for the machinery and included an approach to classifying machinery and movable items and produced an inventory and significance assessment for machinery items within the ATP site only.

The 1996 Plan included conservation policies, management strategies, relocation recommendations, interpretive opportunities and a maintenance plan, as well as a number of oral histories. This report was endorsed by the NSW Heritage Office and was the catalyst for conservation and interpretive projects, particularly while site was managed by the Sydney Harbour Foreshore Authority (2001 and 2004). A Heritage and Conservation Register was not prepared during this period, and items not related to the Eveleigh Locomotive Workshops had been transferred to the site from the Chullora Railway Workshops and the Eveleigh Carriage Workshops, resulting in a muddling of the Collection.

3.1. The ATP Heritage and Conservation Register (S170 Register)

In 2008, ATPSL commissioned Futurepast to review the Godden Mackay study taking into consideration the many changes and movements since 1996, as a part of the preparation of a formal Heritage and Conservation Register for the site. The brief was to examine the heritage assets located within the Australian Technology Park, identify those assets with heritage value and make recommendations for the retention, management and, in some cases, disposal of those assets. This included an examination of the buildings, features, machinery and collections located on the ATP site. This work was undertaken to achieve compliance with requirements of the *State Agency Heritage Guidelines* and the requirements of Section 170 of the *Heritage Act*, in advance of the mandatory compliance deadline of December 2009.

In summary, the 2008 ATP Heritage and Conservation Register consisted of:

- 482 items, structures or assemblages, of which:
    - 403 were recommended for inclusion into the Register (2008); and
    - Seventy-nine items that could not be located or were deemed to be of low significance and recommended for disposal.

The Heritage and Conservation Register superseded the 1996 Godden Mackay report as an inventory of the site's moveable heritage. The review of the heritage assets located at the ATP, the compilation of the Heritage and Conservation Register and the completion of the Heritage Asset Management Strategy (HAMS) was undertaken during February–June 2008. The Register and the HAMS were endorsed by ATPSL in August 2008 and submitted to the Heritage Council in September 2008. The Heritage Council endorsed the ATP Heritage and Conservation Register at its meeting of November 2008.

The Heritage and Conservation Register report included a series of conservation recommendations for all moveable heritage items. In September 2008, Heritech Consulting Pty Ltd, in conjunction with Futurepast, prepared a series of Routine Maintenance Schedules for operating heritage machinery within Bays 1 & 2 South, to supplement the general conservation recommendations of the S170 Register (These are included at Appendix B).

In 2013, Futurepast carried out a review of the Heritage and Conservation Register. The 2013 Review included:

- General review of item names and headings, for consistency, errors, inconsistencies and update information where available;
- Review and updating of the locations, condition and maintenance recommendations for all items;
- Updating of the status of items based on the 2013 Disposals Report;
- Updating of photos for items which have been moved or altered; and
- Conversion of the database to a new online format suitable for remote access.

The 2013 Register Review resulted in 484 items listed in the Heritage and Conservation Register. Some items:

- Were located that were not able to be located previously;
- Were reassessed for disposal; and
- That had not yet been disposed of were incorporated back into the inventory.

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3.2. ATP Conservation Management Plan 2014

A revised Conservation Management Plan (CMP) was prepared for the site by Godden Mackay Logan Pty Ltd, which was endorsed by the Heritage Council of NSW in early 2014. This Conservation Management Plan includes relevant Conservation Policies (see section 9 of this report) as well as significant relevant background and historical data and largely adopts the moveable heritage recommendations from the 2008 Heritage and Conservation Register report. It also includes the following vision statement:

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.*

4. Statutory Compliance

The updated Heritage and Conservation Register and this Management Plan form the principal Management Framework, Conservation Policies and inventory of the site's moveable heritage. This Management Plan and the Heritage and Conservation Register supersede all previous policy and inventory for the Moveable Collection, including the 1996 Godden Mackay Conservation Management Plan for Moveable Items.

4.1. Section 170 of the Heritage Act, 1977

In accordance with the requirements of Section 170 of the NSW *Heritage Act* 1977, every government agency is required to maintain a register of heritage assets, known as a 'Heritage and Conservation Register' (the S170 Register). Section 170 of the Act requires the review and, if necessary, amendment of the register not less than once each year. The ATP S170 Register was completed in September 2008 and endorsed by the Heritage Council at that time. The Register was the subject to review in 2013. In 2015 a complete audit of the Collection has been undertaken, and the Register updated to include condition and risk assessment and detailed management priorities. To achieve compliance with the requirements of S170 the amended 2015 Heritage and Conservation Register will be submitted to the Heritage Council for upload to the State Heritage Inventory.

It should be noted that the Heritage and Conservation Register is a living database designed as an ongoing management tool and it should be reviewed annually to ensure it contains the most current information regarding the significance and management of individual moveable heritage items on site. A complete audit of the Collection (in accordance with the protocol at Appendix A) should be conducted every at least every 5 years but generally in accordance with the needs arising due to changes to risks and the condition of the Collection. This audit should form the basis for revised HAMS priorities (see section 4.2 below).

4.2. S170A of the Heritage Act, 1977 and Heritage Asset Management Strategy

The *State Agency Heritage Guidelines 2005 (SAHG)* require every government agency to prepare a Heritage Asset Management Strategy (HAMS) which outlines the agency's strategic approach to managing its heritage assets. Futurepast prepared a HAMS for ATPSL in 2008. The HAMS was endorsed by the Heritage Council in that same year and was revised and updated in 2013 to reflect work completed and future priorities. The 2013 – 2018 HAMS was endorsed by the Heritage Council in March 2015. One of the key tasks for the 2013-2018 HAMS was the preparation of a 'Small Item Management Plan'[1]. This document fulfils the intent of that HAMS objective.

[1] ATPSL *Heritage Asset Management Strategy 2013-2018*, page 11.

4.3. ATP Conservation Management Plan 2014

An update of the 1996 Management Plan for ATP's Moveable Heritage Collection is required to achieve compliance with the requirements of the 2014 Conservation Management Plan for the ATP site. Policy 1.3 of the CMP recommends:

> *The s170 Heritage and Conservation Register and the Management Plan for Movable Items [1996] 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.*

This document fulfils the intent of that action point in the CMP.

4.4. Condition D2 of DA 077-0311

Condition D2 of DA 077-0311 relates to the preparation of an Interpretation Strategy. It was applied to the consent for the construction of the walkway infrastructure in Bays 1 and 2 North. It required:

> *Details of proposed interpretive signage and media and associated re-organisation and display or relocation/disposal of machinery is to be the subject of a detailed review of Heritage Significance, Scope of Works and Statement of Heritage Impact (this must include details of all conservation works proposed to the Subforeman's office demountable building, overhead travelling crane and any other machinery or tools for display) and to be subject to appropriate consultation. Such details and outcome shall be approved by the RWA or successor agency prior to the issue of an Occupation Certificate. The approved Interpretation Strategy must be implemented to the satisfaction of the RWA or successor agency.*

In seeking the City Council's approval for actions intended to achieve compliance with this condition, ATPSL identified that management and interpretation of the moveable collection is an ongoing and complex task and that the method of achieving compliance with the condition would also need to achieve compliance with other statutory requirements and the commitments set out in the HAMS and CMP 2014 which have both been endorsed by the Heritage Council.

The City of Sydney has approved compliance with this condition through the conduct of two inter-related projects that relate to the Australian Technology Park site and the Moveable Collection. The approved approach reflects the views expressed in community consultation that an holistic approach to the site is the most appropriate mechanism to conserve and interpret the heritage significance of the site and the

Collection. The two projects that will achieve compliance with this condition (and other statutory) requirements are:

1. Implementation of the Interpretation Strategy detailed in the *Review of Interpretation Actions for Bays 1 and 2 and ATP*, which is intended to achieve the obligations for interpretation stipulated in condition D2;
2. The *Heritage and Conservation Register Update* and *Moveable Heritage Management Plan Project* is intended to meet the requirements of condition D2 in relation to the review of condition risk and heritage significance, prioritisation of conservation works and display or relocation/disposal of machinery.

The Interpretation Actions are being separately addressed by ATPSL and this document and the 2015 Heritage and Conservation Register update together fulfil the second part of this condition's requirements.

5. The Eveleigh Railway Workshops Machinery Collection

The Eveleigh Railway Workshops Machinery Collection is an item of State Heritage Significance listed on the State Heritage Register.

The State Heritage Register listing for the Eveleigh Railway Workshops Machinery Collection was gazetted in 1999, based on the previous the overarching governance of the site by the State Rail Authority. At that time, the site included areas in north and south Eveleigh and west as far as the Macdonaldtown depot. The original SHR listing for the Eveleigh Machinery Collection includes items identified from this wider area. The SHR Eveleigh Railway Workshops Machinery listing includes items under the management of other government bodies, including Sydney Trains and Transport Heritage NSW. These items have not been included or assessed in this study.

After the Workshop's closure, it was partially divested and is now managed by several different entities, including ATPSL, Sydney Trains (parts of South Eveleigh to Macdonaldtown) Housing NSW (parts of South Eveleigh) and Transport NSW, Carriageworks (Arts NSW) and Urban Growth NSW who share responsibility for various parts of North Eveleigh.

The overall listing includes items that are located outside of the ATP curtilage and therefore not managed by ATP or included within the ATP Heritage and Conservation Register. It is recommended that the SHR listing be updated to reflect the current status of the Collection, as described in this Management Plan and the Heritage and Conservation Register.

5.1. SHR Statement of Significance

The following Statement of Significance for the Eveleigh Locomotive Workshops Machinery Collection has been taken from the NSW Office of Environment and Heritage, State Heritage Inventory.

> *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.

The following Statement of Significance is taken from the State Heritage Register listing for the Eveleigh Railway Workshops.

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)

5.2. The ATP Heritage and Conservation Register (S170 Register)

The ATP Heritage and Conservation Register (the 'S170 Register') was originally prepared for ATP in 2008 and updated in 2013 by Futurepast. It consisted of:

- 484 items being listed on the S170 Register;
- Some items that were not able to be located previously, being located;
- Items on the S170 Register that have been reassessed for disposal; and
- Items that had been marked for disposal previously but had not yet been disposed of.

While the Collection Reviews undertaken in 2008 and 2013 had comprehensively documented the current status, conditions and maintenance requirements for the Movable Heritage Collection, they did not provide a high-level framework for managing the Collection for the long-term. Nor did they provide prioritised work schedules for major conservation works or for routine maintenance works undertaken by ATPSL's Conservation Volunteers in accordance with the protocol at Appendix C.

This Moveable Heritage Management Plan provides not only a further update of the Register data for submission into the State Heritage Inventory but also provides overarching policies and guidelines to ensure the appropriate level of care is afforded to the Collection.

6. ATP Movable Heritage Management Plan

6.1. Brief

In late 2014 Futurepast Heritage Consulting was engaged by ATPSL to prepare this Moveable Heritage Management Plan, to draw together the policy framework for moveable heritage on the site.

This Moveable Heritage Management Plan is based on an audit of the Collection undertaken by ATP staff and volunteers (see protocol at Appendix A). The audit:

- Located, mapped and identified moveable items;
- Drafted condition reports and management actions for all items;
- Developed a risk score for items to be retained to assist in prioritising maintenance;
- Located and identified items the S170 Register identified for disposal;
- Allowed current photographs of items to be taken; and
- Built the capacity of existing staff and volunteers to manage and maintain the Collection in accordance with the relevant legislative and policy standards, while utilising specific expertise of experts where required.

As part of the preparation of this Management Plan, Futurepast undertook a peer review of this audit, which had achieved a revised and enhanced S170 Register. The purpose of the audit and peer review was to complete an up-to-date inventory of the Collection and prioritise major conservation works required and identify and document routine maintenance tasks. In part, this was required to prioritise activities and achieve the full potential of the considerable conservation work undertaken by ATPSL Volunteers.

This Management Plan report should be read in conjunction with the information held in the Section 170 Heritage Register, as the principle inventory of the site's moveable heritage. As such, it is intended to supersede all previous Management Plans and Policy Frameworks for the Moveable Heritage Collection on the site.

6.2. Approach and Methodology

The first phase of this project involved the peer review of the S170 Audit of the Movable Heritage Collection. This involved several days of fieldwork carried out by ATP Staff, Volunteers and Futurepast consultants.

Using the 2008 and 2013 SHI database information and the mapping, condition and risk scores drafted by staff and volunteers, Futurepast inspected the ATP site and identified movable heritage items that have been listed on the SHI. In addition to updating location information, they also audited description, condition and registration/tagging details as required.

As a follow-up process, Futurepast undertook a review of the data prepared by ATP staff and volunteers, confirming that items were appropriately described and assessed for condition. This peer review also considered whether the existing maintenance recommendations contained in the SHI needed updating.

The final phase of the fieldwork component will involve Futurepast consultants working in conjunction with staff and volunteers to identify items that are untagged and have possibly become disassociated from a larger group or assemblage of items.

In addition to the fieldwork component, this report, which identifies conservation risks and priorities and high-level collection management policies and guidance, has been prepared to supplement the object-specific data collected and included in the Heritage and Conservation Register.

6.3. The S170 Register Audit Data

The complete audit data has been included with this report in the updated 2015 Heritage and Conservation Register that accompanies this Plan. The collection audit and matching against the SHI data fulfilled a two-fold function for ATPSL. Firstly, it provided an up-to-date detailed condition assessment of the movable heritage collection. Secondly, it provided ATPSL with a tool for forward planning of conservation works and maintenance and to set conservation priorities. On top of identifying standard maintenance recommendations, the audit data captured a degree of risk and condition for every item which, when considered against the item's significance both independently and as part of the Collection as a whole, helped build a list of conservation priorities.

The data is provided in a format (Excel spreadsheet) that can be uploaded into the State Heritage Inventory as well as ATPSL's own facilities management system BEIMS (Building and Engineering Information Management System).

6.4. Challenges and Limitations

Updating the existing register

The most exhaustive part of the project was the fieldwork component to update the Register. The same challenges arose in this project as occurred in 2008 and 2013. These related to verifying the identity of items, their significance to the Eveleigh site and updating location details. In this instance, the challenges were less, as the Collection had been largely rationalised in 2008, where a number of items had been disposed of due to their lack of significance/relevance to the Collection. Regardless, a significant number of items were found untagged and their association with an existing item in the SHI had to be re-established. If an item was not able to be re-associated with an item or assemblage in the SHI, it had to be reassessed for significance and either numbered as a new item or recommended for disposal.

In addition, many items are catalogued at an assemblage level only – e.g. "Rack of tools". Individual tools within the rack have not been catalogued and assessed for condition; rather recommendations have been provided for the entire group. This is appropriate for the current use and context of the Collection but does not provide the type of individual item management that would be found in a museum context.

Risk and Condition Ratings

One of the desired outcomes of this project for ATPSL was the ability to be able to use this audit as a facilities management tool, allowing forward estimates for major conservation projects and programming of regular maintenance. Scaling items against a rating system for both condition and risk achieved this prioritisation.

Items were applied a condition rating from 1 (excellent) to 4 (poor) with a rating of 5 meaning "urgent work required". These ratings were applied in addition to a brief comment describing the physical condition. Some assumptions were applied to the Collection as a whole, where it was found that all items possessed a similar condition. For example, a general level of surface rust, grease and dust was found for all items throughout the Collection.

Risk ratings were developed as part of the Audit process to give an understanding of how each item was at risk from its condition and how these risks can be mitigated and prioritised. The risks that were identified and the associated ratings were as follows:

1. Surface Corrosion – any amount of surface corrosion that is notably greater than that commonly and consistently found throughout the Collection. Ratings of 1 (lesser degree) and 2 (greater degree) were applied to each item.
2. Structural Corrosion – any signs of structural instability caused by corrosion, such as cracks, losses in fabric, structural deformities, etc. Ratings of 1 (lesser degree) and 2 (greater degree).
3. Damage - Describes any other form of damage that is not caused by structural corrosion, which can include bent/damaged elements, missing pieces, etc. Ratings of 1 (lesser degree) and 2 (greater degree).
4. Theft/vandalism – a rating of 1 is given as an indicator that the risk is present. For items at risk of theft/vandalism, it may be subject to factors such as being outdoors or the item being not secured/easily stolen.
5. Fire/weather/environment - a rating of 1 is given as an indicator that the risk is present. For items at risk of effects of fire/weather/environment, it may be subject to or exhibiting signs that it is directly being affected by environmental factors which have the potential to deteriorate its condition.

Further explanation of the above risks and ratings is generally included in Item specific condition comments included in the audit spreadsheet (Heritage and Conservation Register).

Access

Access to elements of the Collection was limited in Bays 1 and 2 South of the Locomotive Workshop, which is the area currently occupied by Wrought Artworks Pty Ltd, as an operating workshop. During the fieldwork only items that were on the ATP/Wrought Artworks "lease list" (S170 Register items within Bays 1 and 2 South in the care of Wrought Artworks) were included in the assessment. Further identification/assessment of the untagged items in Bays 1 and 2 south is recommended, together with a revision of the lease list if required.

6.5. Results

The detailed results from the fieldwork audit can be found in the updated draft 2015 Heritage and Conservation Register, which accompanies this Management Plan. To better prioritise the conservation works required, the items within the Collection have also been classified according to their rare or iconic status within the Collection (a key Item) or as a 'contributory item' (for further details refer Section 7). A multiplier was applied to the above ratings based on whether an item was assessed as being a Key element of the Collection (multiplier of 2) or Contributory to the Collection (no multiplier). This has been used to reflect the higher priority to be given to items of greater significance to the Collection (refer also Chapter 7).

The majority of items can be considered in "good" condition and at limited risk of further deterioration, with the assumption that all items exhibit a minor degree of surface corrosion, grease, dust and wear-and-tear. There are a small number of items that exhibit more severe deterioration, exhibited in greater degrees of surface and structural corrosion, physical damage and risks of theft, vandalism and environmental effects. These have been identified through the risk ratings (described above). Using these rankings these items have been classified and prioritised as either 'at risk' or at 'low risk'. Generally Items classified as 'at risk' were classified as such because their current condition was poor or they were located outside.

The majority of items on the Heritage and Conservation Register have been located and identified and any details regarding condition, location, risk and maintenance recommendations have been updated. Items without identification tags have been matched against the SHI using description keywords and photographs. A number of items are untagged, and tagging of all Items is an important next step in the management of the Collection.

Items that have been disassociated from their context have been reassessed for significance with assistance from subject matter experts such as Guido Gouverneur of Wrought Artworks, Tony Brassil of Futurepast and Richard Butcher (ATPSL Volunteer and former Eveleigh Workshops Blacksmith).

7. Conservation Strategy for Movable Heritage

This Conservation Strategy is a prioritised framework of required conservation and maintenance works to ensure that the Collection is maintained, preserved and conserved through appropriate assessment and management.

In the case of the ATP Movable Heritage Collection, it is very much a case of "the whole being greater than the sum of its parts". In other words, the significance of the Collection is not immediately evident when the items are viewed individually. However, as an assemblage in its entirety, which includes machinery, hand tools, outdoor displays and building fixtures (boilers, turntables, tanks and water towers), the Collection is integral to the significance and interpretation of the Eveleigh Locomotive Workshops.

Taking this into mind, the approach towards conservation work is not a simple process of undertaking conservation works in a descending order of most urgent to least urgent. Factors such as risk, significance and interpretation will also dictate how conservation work is prioritised and carried out. This report identifies four qualities based on significance and risk, against which we can assess condition, in order to allocate a conservation priority.

KEY items

"Key" items are iconic to the development and significance of the Eveleigh Railway Workshops. They may be iconic in terms of being machines and tools that are specific to the railway uses, production and manufacture that happened there. They may also be classed as iconic in that they are rare pieces or unique to the site, very early pieces of machinery for which the operation has long been superseded and it presents a research opportunity, or iconic in that it is a very emotive piece that presents a high level of interpretive value.

'Key' items have been given a multiplier of 2 against the risk and condition ratings, to elevate their conservation priority due to their greater relative significance to the Collection.

➔ The Davy Press is a Key item of the Collection. It does not necessarily fill a rail-specific function (in that it is a standard industrial machine typical of blacksmith operations at an industrial scale in the early 20th century), however, its rarity as the only one of its kind in the Southern Hemisphere, its grand scale and interpretive value make it an iconic collection piece.

CONTRIBUTORY items

"Contributory" describes items which may be generic, typical, not unique or not railway-specific but which still support the significance of the Collection as a whole and facilitate the interpretation and understanding of the story of the Eveleigh Locomotive Workshops. No multiplier has been applied to 'Contributory' items.

➔ Blacksmith's hand trolleys are contributory items to the Collection. They are numerous, hand-made, functional pieces that are not unique to the Eveleigh Locomotive Workshops or blacksmithing specifically. At an individual level, they also have little historic or other significance. However, they can play an important part in the historic representation of a blacksmith's forging station when the space is appropriately organised and interpreted. They are also representative of the types of items that were manufactured on site, as required by the workforce. The operational nature of Eveleigh as a place of industry is an integral part of its significance. The hand trolleys can contribute to this significance in that sense.

AT Risk

The discussion and factor of risk relates to both management and condition. Items identified as "at risk", include items at risk of loss of significance or deterioration and/or items that are vulnerable to environmental conditions such as exposure to the weather, vandalism, theft and wear. In general, any risk identified for the Moveable Collection relates to the potential for long-term degradation. No Items were identified at any immediate threat of loss.

➔ The four C-36 Class boilers are identified as being at risk. They are, at present, in poor condition and are located out of doors. No conservation works have occurred since the 1980s closure of the site. The annexe building in which they are housed is open on the south side, exposing the machinery to weathering and litter. These items are at risk of continued deterioration and loss of significance due to poor condition.

LOW risk

Items that are considered to be of "Low" risk refers to items that are fixed or not easily moved, items housed indoors and within secured spaces, and items that have been newly conserved and are in good condition.

➔ The Ryerson Spring Forming Machines are considered to be at Low risk. They are currently housed inside the Locomotive Workshops, in the central aisle of Bay 3. The items have been installed as interpretive pieces within the office area of the Locomotive Workshops. There is a small timber and wire security fence surrounding the item, limiting public access. In addition, their position within the Locomotive Workshops works to actively (dedicated security patrols) and passively (regular pedestrian traffic) monitor the items for damage. The items have been the subject of recent cleaning activities by ATP heritage volunteers, using techniques specified in the 2008 Heritech report (Appendix A).

MAINTENANCE items

Maintenance items are those items that are in good condition, have few if any conservation issues and no substantial risks associated with their continued conservation. These items require ongoing maintenance only, in accordance with the recommendations of this report.

The following basic ranking matrix for the various elements of the Moveable Heritage Collection is based on a consideration of the risk ranking for the various items and their relative significance to the Collection.

It should be noted that all items make a contribution to the Collection and a ranking of 'Key' versus 'Contributory' should not be taken to imply that items of lower value are unimportant or should not be retained within the Collection. The relative scale assists prioritised allocation of funding, conservation and volunteer effort.

Similarly, the consideration of risk is relative to the overall circumstances of the Collection. For virtually all items, there is a good degree of physical security and weatherproofing; therefore, even items 'at risk' are still relatively sound and secure. The particular risk factors need to be understood relative to the overall circumstances of the ATP site and its ongoing use.

Note that as work is undertaken to items, their conservation priority category should be reassessed. Items will shift from higher to lower categories as works are carried out, and thus conservation and maintenance requirements will change over time.

Additionally, some works will be suitable to be undertaken by Volunteers or non-technically trained members of staff (particularly cleaning and maintenance tasks). Other works will require ongoing professional and trade involvement (e.g. major machinery conservation works).

	KEY items	CONTRIBUTORY items
At risk	Conservation Priority Level 1 - HIGH E.g. Boilers	Conservation Priority Level 2 – MEDIUM E.g. Urinals or big jib crane (risk to weather deterioration and vandalism, but significance is limited as it's not a rail specific item)
LOW risk	Conservation Priority Level 2 – MEDIUM E.g. Davy Press (Iconic significance low risk as indoors, well maintained, no threat of theft)	Conservation/Maintenance Priority Level 3/4 – LOW

7.1. High Conservation Priority – Key Items at Risk

Conservation Priority 1 items are Key items which are 'at risk', including those items which are of greater contribution to the Collection. They may be at risk due to their condition or physical circumstances. In general, any risk is of long-term degradation, not immediate threat of loss. This ranking applies principally to important items that are in poorer condition due to being located out of doors or those that will make an important interpretive contribution to the Collection if appropriately conserved and displayed. These are detailed in the Schedule at Appendix D.

The following items have been considered Key pieces to the Collection and are at High risk based on condition and environmental factors:

Item Name	SHI #	Risk score	Suggested timeframe
Boilers x 4	4745188 - 4745191	32-40	1-2 years
Blacksmith's Forges (No 4, and 19)	4745328, 4745357	24-40	1-2 years
Davy Press Steam Reservoir	4745004	24	1-2 years
De Burgue Electric Shears	4745206	12	2 – 5 years
Wheel Press	4745210	12	2 – 5 years
Flange Press	4745211	12	2 – 5 years
Traverser	4745427	12	2 – 5 years

7.2. Medium Conservation Priority – Contributory Items at Risk or Key Items at Low Risk

Conservation Priority 2 items include items which have previously been conserved but are located out of doors, machinery which is still in active service, machinery which has been disassembled or items such as overhead cranes which can present a general safety risk if not inspected and maintained. Many of these items do not require anything more than regular inspection and routine maintenance. These are detailed in the schedule at Appendix E.

In some cases, conservation is a matter of reassembling items to ensure components are not lost and that the item is able to be interpreted and/or operated in future. Items located in public areas are included in this category, due to the minor risk of vandalism, graffiti or theft (although this is generally not a significant issue, given the nature of the site's use and security arrangements).

The following items are considered Key pieces to the Collection at low risk based on condition and environmental factors:

- All active machinery in Bays 1 & 2 South.
- All inactive machinery in Bays 1 & 2 South (Rootes Blowers, plate rolls etc.).
- Covmac Continuous Forging Machine reassembly (Bay 2S).
- Fielding & Platt Spring Buckling Press reassembly (4745158, 4745465 Bay 4).
- De Burge Electric Shears (Bay 1 Annex).
- Wheel Press (Bay 10N).
- Flange Press (Bay 10N).
- Traverser (Bay 10N).
- Turntables (Outside Bay 5 and Bay 13)
- Steam Crane (Innovation Plaza).
- Pivot crane (Innovation Plaza).
- Water Tower (Garden Street)
- Hydraulic Accumulators (Outside Bay 4).
- Fuel Oil Tanks (Innovation Plaza).
- Overhead Travelling Cranes (Bays 1, 4, 5 & 15).
- Iconic static display machinery (e.g. the Davy Press, the Arch Hammer, Hydraulic Power System, forging hammers).
- Static display machinery in internal areas (e.g. Bays 3, 4, 8, 10, 15 & 16).
- Elements associated with Key machinery (e.g. the Davy Press Billet Holders).
- Elements at risk of structural rust problems (e.g. the blacksmith's forges).
- Remnant lineshafts (remount with an appropriate machine such as Graham and Normanton Shaper).

The following items are considered Contributory pieces to the Collection and are at Risk based on condition and environmental factors:

- Urinal (Outside Bay 8).
- Other overhead travelling cranes.
- Oil and Water Overhead Tanks (Bay 2 S exterior).
- Small items of machinery in poor condition (e.g. the welders, bucket with tools 4745344).
- Subforeman's Shed (Bay 1 N).

In most cases, these items will require ongoing routine maintenance and cleaning, with some items requiring reassembly. Items such as cranes will require regular inspection to ensure they are structurally sound (where static) or certified as fit for use (where in service).

7.3. Low Conservation Priority - Key items at Low risk

The items in this category require minimal conservation at a level that may be appropriate to be undertaken by Volunteers, with an appropriate degree of professional assistance. These are detailed in the Schedule at Appendix F.

7.4. Maintenance Priority – Key & Contributory items at Low Risk

The following items have been considered Contributory pieces to the Collection and are at Low risk based on condition and environmental factors. These are detailed in the Schedule at Appendix G. Works to these Items are generally carried out by ATPSL Volunteers (in accordance with the protocol at Appendix C). This work by the Volunteers is an invaluable asset to the conservation of the Collection and includes:

- ***Priority 4Aa –*** *Initial Clean (pending ATP's list of items already worked on by Volunteers). Note: once initial clean complete, item will move down in priority to Priority 4B)*
- ***Priority 4B –*** *Maintenance Clean (ongoing routine cleaning).*
    - Static display machinery in internal areas (Bays 3, 4, 8, 10, 15 & 16)
    - Static display machinery in Bays 1 & 2 North
    - All hand tools, tool racks, work in progress
    - Small jib cranes
    - Small items of machinery in good condition
    - Items with no provenance, or typical, that have been installed as interpretive pieces

8. Conservation Works Priorities

It is important to note that, with a few exceptions, the vast majority of the Collection is reasonably well housed, secure and subject to a relatively small degree of risk.

The conservation strategy developed above, in conjunction with the risk and condition analyses carried out in the audit, provides a basic framework to allow the prioritisation of conservation works. Based on these the following list of conservation recommendations has been prepared. These should be considered large-scale conservation projects that will require a specific condition assessment and treatment plan.

The conservation priorities set out below are not based solely on the condition and risk rankings, but also by broader goals within the site for interpretation and presentation of the Collection and the site. Wherever possible, the greatest benefit for the heritage values of the site will flow from aligning conservation and interpretive priorities, and these priorities may be influenced by a range of factors including available budgets, commitments to stakeholders and alignment with other works proposed at the site.

It should also be recognised that there are various ways to conserve and interpret the heritage values of the site and its collections. Some methods of conservation could, for example, result in a highly conserved or 'restored' item, but with low authenticity (due to over-restoration). Thus conservation decisions which are not driven by a high level of risk to an item should be informed by the overall conservation philosophy for the site, and the intended interpretation and presentation of the specific item. It is important that conservation not be equated with making an item look "new", but rather ensuring that an item retains its authenticity and supports the understanding of the site's past.

8.1. Conservation Works Recommendation 1

Undertake conservation repairs to the Boiler House structure and the Boilers.

Discussion:

The boilers are important, iconic and emotive elements of the Eveleigh Railway Workshops. The boiler and boiler house structure are exposed to the full effects of the weather and exhibit damage and are in generally poor condition. Work should be undertaken to clean, repair/restore and interpret to audiences as necessary. Works to remediate the boiler house structure should be carried out before or in conjunction with conservation repairs to the boilers themselves, to ensure appropriate protection from the weather. A draft options paper was prepared for the Boiler House area in 2012, and is included at Appendix H.

8.2. Conservation Works Recommendation 2

Undertake necessary conservation work to Steam Reservoir, Furnace for Davy Press Billets and other elements, fabricate and install billet holder racks for Davy Press tongs, Bay 1 North, re-organise key elements (such as lock pins and wedges) for better interpretive understanding.

Discussion:

The Davy Press is another key element to the Eveleigh Workshops Machinery Collection. Elements of the assemblage require conservation work, and reo-organisation. Without work to interpret the billets and billet holders, the use of these items is difficult to understand and their relationship to the Davy Press is difficult to visualise. In addition, they are at risk of damage whenever they are relocated. A specially designed rack has been designed and specified, and aims to utilise remnant structural wrought iron beams from the site. These beams are now located in Bay 1N and the scope of works and design for the biller holder rack is included at Appendix I.

8.3. Conservation Works Recommendation 3

Undertake conservation and structural works necessary to the Blacksmith's Forges (4745328, 4745357, 4745090, 4745044, 4745059, 4745338, 4745298, 4745297, and 4745319).

Discussion:

The Forges are key elements of the Eveleigh Workshops Machinery Collection. Two of the forges are in very poor condition with parts of the floor and rear sheathing panels missing due to corrosion. Others, while in better condition, relatively, are also suffering structural corrosion with evidence of increasing surface corrosion and blistered paintwork.

8.4. Medium -Term Conservation Priorities

Mid-term conservation recommendations include a suite works of a lower priority than those above which should be Completed as soon as possible. Decisions about which of these works should be undertaken and at what time over the coming years will be influenced by interpretation outcomes, changing risk, condition and conservation priorities over time, and management context (such as continuity with other ATP projects and available budget).

These Projects include:

- Covmac Continuous Forging Machine reassembly (Bay 2S).
- Fielding & Platt Spring Buckling Press reassembly (4745158, 4745465 Bay 4).
- De Burge Electric Shears (Bay 1 Annex).

- Wheel Press (Bay 10N).
- Flange Press (Bay 10N).
- Traverser (Bay 10N).
- Remnant lineshafts (remount with an appropriate machine such as Graham and Normanton Shaper).
- Steam Crane (Innovation Plaza).
- Turntables (Outside Bay 5 and Bay 13).
- Conservation and interpretation works to the sub-foreman's office (Bay 1N).
- Relocations to facilitate Spring Shop Interpretation:
    - Relocate spring winder from Bay 10 to Bay 3
        - Relocate the shelf of mandrels/springs to Bay 3
        - Relocate the shelf of patterns from Bay 3 to Bay 10
    - Mount mandrels and demonstration springs to Lang Spring winder.
    - Relocate the work table/tools for the Graham and Normanton Shaper from Bay 1 to Bay 10
    - Shift the spring buckling press in Bay 4 to facilitate future re-attachment of the ram currently in Bay 1
    - Relocate lathe tools shelf from Bay 2 to Bay 10.

9. Conservation Policies

The main objective of the conservation policies is to provide a practical guide for the conservation and maintenance of the movable heritage items, to ensure that the heritage values are maintained and, where appropriate, enhanced.

The *Australian Technology Park Conservation Management Plan,* endorsed by the Heritage Council in 2013, continues to be the guiding policy document for the entire ATP site. It includes high-level conservation policies regarding the machinery collection, included below:

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 on 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.

While the above overarching policies give guidance on the future management of the Eveleigh Railway Machinery Collection as a whole, they do not detail specific conservation and maintenance recommendations for individual or groups of items.

The following type-specific recommendations have categorised items into groups based on factors such as their operability, interpretive function or opportunity, location, and curatorial requirements.

9.1. Non-operational machinery – static display

This type describes machinery items that have not been reconditioned to fill an operational function. They are currently on static display. These items do not engage their audience through any moving or operating parts and cannot be handled by the general public.

Conservation Actions

- These items should be maintained in a non-operational condition, dry and under cover at all times, for static display purposes.
- These items should be tagged as DECOMMISSIONED and should be permanently disconnected from all power sources, water or gas supplies. It should be kept dry and under cover at all times.

Maintenance Requirements

- Any guards, covers or hatches should be kept closed to limit the ingress of dust or accidental damage, unless kept open for interpretive purposes. Where it is necessary to leave guards or hatches off for an extended period, install clear perspex guards or panels over the openings.
- A maintenance regime should be implemented for these items, to include:
    - Annual dust through wiping, vacuuming or dry brushing.
    - Any exposed operating surfaces (e.g. piston or drive shafts, or other polished metal surfaces) should be sprayed or wiped with a light machine oil annually to retard rust.
    - Any surface rust should have loose flakes removed and the area should be treated with a rust retardant.
    - Any structural rust should be inspected by a specialist and repaired as per their recommendations.
    - Internal mechanisms should be stripped, degreased and repacked to prevent deterioration.
- The item should retain its patina of use and should not be completely repainted, unless necessary for the conservation of the item.
- Should a decision be taken to restore this item to operational condition, it should be inspected by a specialist to determine whether the restoration is feasible and the manner in which it should be undertaken.

Outdoor items should be subject to a more frequent and vigilant inspection and maintenance regime than indoor items.

9.2. Non-operational hand tools – static display

This type describes hand tools that have not been reconditioned to fulfil an operational function. They are currently on static display. These items do not engage their audience through any moving or operating parts and cannot be handled by the general public.

Conservation Actions

- These items should be maintained in a non-operational condition, dry and under cover at all times, for static display purposes
- Where the item is a part of an assemblage or a collection, it should be retained with that collection. Any items temporarily removed for display purposes should be appropriately tagged to allow their return to their original context.

Maintenance Requirements

- A maintenance regime should be implemented for these items, to include:
    - Annual dust through wiping, vacuuming or dry brushing.
    - Any surface rust should have loose flakes removed and the area should be treated with a rust retardant.
- Items of unpainted metal should not be painted under any circumstances.

Outdoor items should be subject to a more frequent and vigilant inspection and maintenance regime than indoor items.

9.3. Non-operational Cranes and Hoists – static display

This type describes crane and hoist machinery specifically, that have not been reconditioned to be operational lifting equipment. They may currently appear to be installed in situ within their original operational capacity. However, they are static display items that are not connected to any power supply and are not certified for operation or lifting.

These items do not engage their audience through any moving or operating parts and cannot be handled by the general public.

Conservation Actions

- Cranes and Hoists that are no longer serviceable should be tagged as DECOMMISSIONED, disconnected from all power sources and retained dry and under cover at all times as a static display item.

Maintenance Requirements

- A maintenance regime should be implemented for these items, to include:
    - Annual dust through wiping, vacuuming or dry brushing.
    - Bi-annual inspection regime to ensure the item is secure at the points of attachment, not subject to rust or deterioration and structurally sound.
    - Any item proposed for reuse as lifting equipment requires inspection and certification by qualified personnel.

9.4. Operational Equipment (machinery and hand tools) – used by tenants

This type describes both machinery and hand tools that have been reconditioned to fill an operational function. These items are located in Bays 1 & 2 South and the Bay 1 Annex They are currently used and maintained under agreement by a tenant of ATPSL. These items have moving and operating parts and cannot be handled by the general public. These items should only be operated by qualified personnel.

Maintenance Requirements

- Operational machinery should be maintained in an operational condition suitable for safe use. The item should be kept dry and under cover at all times. Where necessary, guards or other modern safety equipment should be installed as required, provided this can be done without compromising the heritage significance of the item.
- Wherever possible, operational machinery should be maintained in accordance with the manufacturer's specifications. Where these are not available, the following general policies should apply:
    - Machinery should only be operated by people trained in the safe use of the equipment.
    - Machinery should be kept free of dirt and grime.
    - Any surface rust should have loose flakes removed and the area should be treated with a rust retardant. If necessary, machinery may be repainted to extend the operational life of the machine, in an appropriate paint and to match the existing colour scheme.
    - Any structural rust must be inspected and repaired by a qualified specialist before the machine is operated.
    - The machine must be inspected daily before use to ensure it is safe to operate and that all obstructions have been cleared. Gaskets and hoses must have no leaks or breaks and all fasteners must be tight. Joints and valves should be regularly inspected and appropriately lubricated before operation.
- Operational machine must be regularly lubricated and oil should be changed annually. The machine should be fully overhauled by a qualified machinist every 400-500 hours of operation, or as directed by the manufacturer.
- Records should be kept detailing all servicing of operational machinery including the nature of service, any damage noted and any repairs undertaken.
- Operational machinery, which is no longer serviceable, should be tagged as DECOMMISSIONED, disconnected from all power sources and retained as a static display item.
- Operational hand tools should be kept dry and under cover at all times. The item should be free of rust, burrs, cracks or other damage before usage. Any surface rust should be treated with appropriate rust retardant. Operational hand tools should be lubricated as necessary.

- Hand tools that are no longer appropriate for safe usage should be retained on site, and incorporated into a static hand tool display.

See also the machine-specific maintenance schedules in Appendix A of this report.

9.5. Operational Cranes and Hoists – used by tenants

This type describes crane and hoist machinery specifically, that have been reconditioned to be operational lifting equipment. They are generally installed in situ within their original operational capacity. The item may be connected to a power supply and should be certified for operation or lifting. It should not be handled by the general public, and only be operated by trained and certified personnel.

Maintenance Requirements

- Operational lifting machinery should be maintained in an operational condition suitable for safe use. The item should be kept dry and under cover at all times. Where necessary, modern safety equipment should be installed as required, provided this can be done without compromising the heritage significance of the item.
- Wherever possible, operational machinery should be maintained in accordance with the manufacturer's specifications. Where these are not available, the following general policies should apply:
    - Machinery should only be operated by people trained in the safe use of the equipment.
    - Machinery should be kept free of dirt and grime.
    - Any surface rust should have loose flakes removed and the area should be treated with a rust retardant. If necessary, machinery may be repainted to extend the operational life of the machine, in an appropriate paint and to match the existing colour scheme.
    - Any structural rust must be inspected and repaired by a qualified specialist before the machine is operated.
    - The machine must be inspected daily before use to ensure it is safe to operate and that all obstructions have been cleared. Gaskets and hoses must have no leaks or breaks and all fasteners must be tight. Joints and valves should be regularly inspected and appropriately lubricated before operation.
- Records should be kept detailing all servicing of operational machinery including the nature of service, any damage noted and any repairs undertaken.
- Operational machinery, which is no longer serviceable, should be tagged as DECOMMISSIONED, disconnected from all power sources and retained as a static display item.

9.6. Curatorial / Registration recommendations

These recommendations are in reference to curatorial/registration recommendations that should be implemented throughout the movable heritage collection. Adequate and appropriate curation of the movable collection is critical to its maintenance.

- All items to be retained as a part of the S170 Heritage and Conservation Register, including those items primarily with interpretive value, require tagging.
- Tagging and inventory control have been problematic at this site over the last 20 years and it is recommended that the existing 2008 tagging, inventory and numbering system should be retained.
- New tags should be engraved aluminium tags (e.g. ID card style tags) neatly hole punched and secured to the item with 316 stainless steel cable ties (as per 2009 advice from the Heritage Office).
- Each tag should state:
    - The words “ATP Heritage Item”
    - The Item Name, as per S170 Register
    - The database number or barcode, as per ATP Asset Management System
    - The Item Location (e.g. Bay 1S, Column 6E)
    - Any mechanical/electrical items not in service should be labelled DECOMMISSIONED

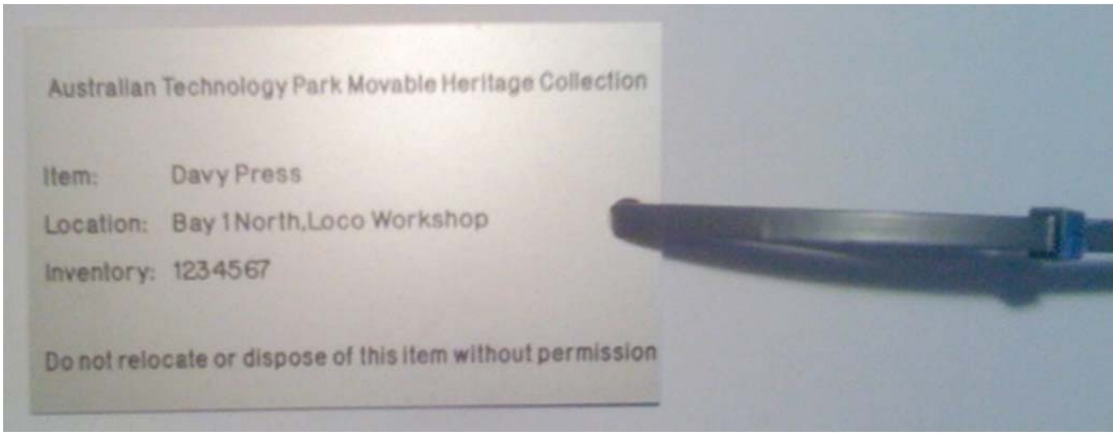


Figure 4. Movable heritage tags from the 2008 S170 Register project.

- Tenants of Bays 1 and 2 should be required to tag their equipment similarly, to avoid any future confusion regarding the ownership of equipment.
- Condition and risk assessment audit is to be carried out at least once every five years to monitor the Collection and prioritise ongoing conservation and maintenance works.

9.7. Interpretive Opportunities

All items in the Collection have the opportunity to be interpreted, either as an individual item or as part of a group/assemblage of items.

- Key items in the Collection should be interpreted. This should be done through active interpretive devices, as well as reinstating associations with other items.
- Where possible, key and contributory items that relate to each other should be functionally reorganised so that the space can be better interpreted.
- Continue the interpretation for the Sub-foreman's Shed, Pump Room, Bays 1 & 2 North and the Davy Press/billet holders, as per the 2013 HAMS.
- Develop a digital application for smart devices, as per the 2013 HAMS.

9.8. Disposal Policy

The Eveleigh Railway Workshops Machinery Collection has been reduced and rationalised several times since the closure of the Workshops. The latest exercise of rationalisation and disposals occurred in 2013 following a Disposals Plan prepared by Futurepast Heritage. Items in the current collection have been assessed as having a key or contributory nature to the significance of the Eveleigh Railway Workshops, with only a few exceptions.

During the current audit 37 Items were found that warrant further investigation and consideration for use for interpretation purposes or disposal.

Four items previously identified as missing from the Collection have still not been located, and it is recommended that the SHI be updated accordingly.

The Pivot Crane remaining at North Eveleigh is identified for archival recording and disposal in accordance with this Plan's Disposal policy.

- Items within the Collection may be disposed of in circumstances where it meets several of the following criteria:
    - The item has no known provenance to the Eveleigh Railway Workshops;
    - The item is of low significance in its own right and makes a limited contribution to the significance of the Collection as a whole;
    - The item is in an irreparably poor condition;
    - The disposal of the item will not significantly diminish the significance of the Collection as a whole.
    - The item does not relate to the locomotive manufacturing history or processes undertaken within the Locomotive Workshops;
    - The item poses a significant safety risk that cannot be eliminated or

made safe through cost-effective means (e.g. asbestos);
- The item is a component of a larger item, system or structure that lacks integrity and cannot be effectively interpreted through retention of that component.

- The disposal of items from the Collection should be guided by the following procedures:
  - The recommendation for disposal must be based on a thorough assessment of each item by a qualified specialist or heritage advisor;
  - The justification for disposal for each item should be clearly outlined in a brief report;
  - The Heritage Council is notified at least 14 days prior to disposal, in accordance with the requirements of S170A of the Heritage Act;
  - Prior to disposal, each item should be fully recorded, including multiple photographs;
  - The avenue for disposal should follow the following order:
    a. Offer item to a collecting institution including:
       i. Carriage Works
       ii. Powerhouse Museum
       iii. Transport Heritage NSW
       iv. Trainworks - Thirlmere Railway Museum
       v. Tram and Bus Museum
       vi. Australian Railway Historical Society
       vii. Other railway historical societies
    b. Offer the item for private sale
    c. Dispose of the item as scrap or waste

- The final destination of the disposed items and the date of their disposal should be retained on file. The S170 Register should be updated at that time.

10. Conclusions and Recommendations

The Moveable Heritage Collection at ATP is now generally in safe and secure conditions that will ensure minimal ongoing deterioration. Most items at risk have had some degree of conservation treatment that has addressed or arrested deterioration (the Boilers and Boiler House being the notable exception). Opportunities exist for ongoing work to elements of the Collection to improve the appearance and interpretability of the Collection, and this should be guided by the overall goals for heritage interpretation at the site.

Provided the recommendations of this report are put into place, the high priority conservation projects are addressed and the Collection continues to receive routine maintenance in accordance with this Plan, the Collection will continue to be conserved into the future.

10.1. Conservation Policy Recommendations

Moveable Management Plan and Heritage and Conservation Register to be Exhibited and Endorsed

This Management Plan has been developed to manage the site's Moveable Heritage Collection and ensure statutory obligations are met, within the context of the site as a business park in adaptively reused heritage buildings and modern buildings. This Plan should be read in conjunction with the 2014 CMP for the Park.

This Plan, together with the (Section 170) Heritage and Conservation Register provides the Conservation Policy Framework and detailed inventory of ATP's significant heritage elements. Together this Plan and the updated Register supersede all previous Management Plans and Policy Frameworks for the Moveable Heritage Collection on the site.

It is recommended that this draft Plan and draft Heritage and Conservation Register update (and any future updates of these documents) be placed on non-statutory public exhibition, in accordance with the ATPSL Heritage Projects Management Policy.

Once any submissions received during the exhibition have been considered by ATPSL these documents should be submitted to the Heritage Council, to be endorsed as the principal conservation policy for the Moveable Collection.

A revision of this Management Plan and full collection audit (in accordance with the protocol at Appendix A) should be undertaken at least every five years (to ensure HAMS priorities are kept current) and prior to any significant development application on the site and/or prior to the expiration of any Heritage Council endorsement - and be resubmitted to the Heritage Council for approval.

In the event the use of the ATP site or the Collection changes substantially from the existing, this Management Plan and the policies contained it, the Heritage and Conservation Register and HAMS should be reviewed and, where necessary, amended to suit the changed context of the site and Collection. Any revisions of these documents should be submitted to the Heritage Council to be endorsed prior to major changes in the use or intensity of approved development on the Site.

Collection Audit and HAMS Update

The priorities identified in this Management Plan will form the basis for an update to the five-year conservation works priorities contained in the HAMS. Beyond that, the Collection should be reviewed every year and audited every five years (in accordance with the protocol at Appendix B).

The annual review of the Collection and thus the Heritage and Conservation Register should ascertain changes to risks, condition and context and any necessary changes to conservation and maintenance works priorities. The annual review should incorporate results of routine maintenance and monitoring on Items out of doors, in use (in Bays 1 & 2 South) or that present an inherent risk (e.g. overhead cranes). This annual review should be used to revise priorities for conservation and maintenance, and associated management and conservation policies, within the five-year HAMS planning period.

It is important that the ATP HAMS be maintained as a working document for planning and prioritising heritage asset management actions for the Park. A revision of this Management Plan and full collection audit (in accordance with the protocol at Appendix A) should be used to review and update the HAMS every five years. Together, the Plan, Register and revised HAMS should be submitted to the Heritage Council to be endorsed prior to the expiration of any previous endorsement.

In effect, should the Park cease to be owned by a State Agency, the management initiatives (Heritage and Conservation Register and Heritage Asset Management Strategy) required by section 170 and 170A of the Heritage Act, 1977 should be maintained and updated as part of the routine management of heritage assets.

State Heritage Register Listing Update

Following exhibition of this draft Plan and register and consideration of any submissions received, they should be submitted to the Heritage Council to be endorsed. It is further recommended that the SHR listing be updated to reflect the current status of the Collection as described in this Management Plan.

10.2. Interpretation Recommendations

Continuing public access to the Collection and interpretation of the history and significance of the site is critical. There are significant community associations with, and involvement in, the site, the Collection and the Eveleigh Workshops precinct. These should be recognised and encouraged.

Opportunities to improve access and interpretation of collection items should be an integral part of ongoing site management. Volunteer involvement in the interpretation and maintenance of the Collection is a highly important element of heritage interpretation and should be facilitated and encouraged.

Where possible, key and contributory items that relate to each other should be functionally reorganised so that the space can be better interpreted. Public access and interpretation should be conducted in accordance with the 2014 CMP, the Eveleigh Stories Interpretation Strategy and the Bays 1 and 2 Development Concepts Plan and the HAMS. Interpretation of the ATP site in the context of the whole Eveleigh Railway Workshops Precinct is important – linkages and collaboration with other parts/owners of the Eveleigh Precinct are encouraged.

10.3. Conservation and Management Recommendations

Once the high priority recommendations identified in this report have been addressed, the ongoing conservation works can be guided by priorities for the interpretation and presentation of the site or the availability of volunteers.

Routine maintenance and monitoring should be conducted on Items out of doors, in use (in Bays 1 & 2 South) or that present an inherent risk (e.g. overhead cranes). This should be undertaken in accordance with the detailed recommendations above.

Priorities for conservation and maintenance works set out in this Plan and the Register should be programmed through the building and facilities management system for the Park (BIEMS or similar).

Specialist Expertise Required

It should be noted that major conservation works require ongoing professional expertise, particularly where this involves disassembly or reassembly of machinery. Maintenance of the Collection by volunteers is appropriate (at Appendix G) with specialist supervision and guidance and is an important and cost effective mechanism for achieving minimum maintenance (refer protocols contained in Appendix A and C).

Where the Collection is to be used for interpretive purposes, consideration should be given to the conservation issues arising for any items of the Collection, in terms of their display. Where necessary, specialist advice should be sought and appropriate management measures put into place.

Unexpected Damage

In the event the Collection suffers significant damage from an unexpected event (e.g. flooding, weather damage), expert advice should be sought as soon as possible to ensure affected items are safe, any additional damage is minimised and an appropriate process is put in place for restoring the item(s) and (if possible) eliminating the cause(s) of the accident.

10.4. Curatorial Recommendations

Tagging is required for all items (including those items with primary interpretive value). This should be undertaken in accordance with the detailed recommendations above, and is an important next step in the management of the Collection.

In relation to Bays 1 and 2 south where a large number of untagged items are located, it is recommended that ATPSL work with tenants of Bays 1 and 2 to achieve tagging of all equipment in that space to avoid any future confusion regarding the ownership of equipment. If necessary a review and revision of the lease list associated with the tenancy should also be conducted.

All Items identified for disposal should be archivally recorded and disposed of in accordance with the Disposal Policy.

Finally over the long term an audit of the Collection should be carried out at least once every five years to monitor the condition of the Collection and its location and tagging status. This should feed into five-year conservation and maintenance priorities for inclusion in the HAMS and any necessary update of this Plan.

Appendix A – Heritage and Conservation Register Audit Protocol

Appendix B – Maintenance of Operational Equipment (Heritech Report)

Appendix C – Protocol for conservation treatment by ATPSL Volunteers

Appendix D – Audit Excerpt - Conservation Priority 1 Schedule

Appendix E – Audit Excerpt –Conservation Priority 2 Schedule

Appendix F – Audit Excerpt –Conservation Priority 3 Schedule

Appendix G – Audit Excerpt – Maintenance Schedule

Appendix H – Draft 2012 Options Paper Boiler House Area

Appendix I – Davy Press Billet Holder Scope of Work and Design Options

Appendix A – Heritage and Conservation Register Audit Protocol

Appendix A – Heritage and Conservation Register Audit Protocol

Initial Audit and Mapping

- The beginning of the audit included writing a list of all items found in each bay plus identifying their location on a map.
- This involved assigning a continuous numbering system for every item found in the bay, independent of the SHI and then using this number and writing it on a scaled map of the bay to identify its current location.
- It worked best to start at one end of the space and to complete each section, beginning at the north end of the dividing corridor on the east side of Bay 1 for example before moving to the next section between the columns. Items were listed as found as one walked around that section and all along the east side of the building. When this was completed the west side of bay 1 north was then listed.
- In preparation a print-out of SHI summaries (which includes descriptions and photographs) from the SHI inventory for that space was placed in a folder to refer to as a means to
- identify items in the area. It worked well to later tick off items in the summary list for that bay to keep track of items found in the audit. There is also a bound printed copy of the whole SHI for the site to refer to which is now in the office, however not all items have been included in this, or they may be in a new location on the site.
- A large number of items had not been tagged, particularly in bays 1 & 2 where there were many multiple items, tools and offcuts throughout the space. Where there was a cluster of unidentified objects, we categorised them as a group with one item number.
- Where possible we differentiated the container or table they are sitting on or in and listed this separately.
- The numbers of items were also included in the inventory where it was a small quantity that could be readily counted. For example, 5 circular discs, 1 spanner or a broader description was given of the type of items in a cluster, describing their shape or the material they were made of if they could not be easily named.
- Where there was number of untagged and unfamiliar items it was also useful to add a comments or notes columns to the list and note any specific features to help identify them later, or for smaller items to indicate if they were located on a shelf, at the base of a machine, stacked in a pile etc. to assist to locate and to distinguish them from similar items later.
- The initial inventory list included: an item number, the current ATP location using the mapping code already established (i.e. Bay 1N 15E, denotes Bay 1, N = north

end of the building, 15 being the area between the north end wall and column 15, and E = east side of the building). The name of the item on the tag was listed, along with the location written on the tag, which in some cases was different from the current location.

- We then rechecked the section area to ensure all items were listed in the inventory, and added items that may have been missed during the first walk through.
- On a scaled map diagram (A3 size), that included the location of the row of 15 columns in each bay to indicate the different sections, the item number was written to pinpoint its location in the section. To save time a paper sign was affixed to the corridor fence and the column number identified to make mapping easier.

Photographing objects

Untagged items

- Due to the large number of untagged smaller items in Bays 1 & 2 North, it worked best to photograph these items first, and separately, as a means to identify the item and to check if they corresponded with existing descriptions and images found in the SHI online or in the hard copy summaries.
- The current time and date was set on the camera so that a date stamp was recorded on the image. It was important it was included to record and monitor the condition of the item at that specific time, as the item may have undergone changes since it was last photographed.
- When photographing the item a small white board was placed next to the item and the location code was written on the board in thick texta. We also used a measuring tool, a 1 meter ruler on or adjacent to the object to give a sense of the size of the object in the photograph. Placing the ruler on the object also helped to identify the specific item being photographed as usually there were other similar objects nearby which also appeared in the photograph. The image was composed so that the entire object was visible in the photograph, as well as the white board and ruler.
- The white board was placed next to the item/machine, so it did not cover parts of it with the item. It worked well to focus on the board so that the lettering was legible and adjust the tilt of the board if it was flaring and difficult to read in the image. The exposure was adjusted as necessary.
- The images were then uploaded and saved to the computer at the end of each day.

File Management

- The computer assigned an image file number in chronological order to each image file once uploaded. The photographs were labelled separately underneath in the metadata fields first. These fields include 'tags' where a title or name can be added. The identifying item number was typed in the 'tag' title field of the image, e.g. 'Untagged item # 57'.
- It was important that the metadata tag embedded within the image file was correct and was completed before relabelling the image file name assigned by the computer during the upload, or before copying the file to other locations. When the mouse is placed over the image the tags appear which include: the item/or SHI number, the date and time when the image was taken, the file size etc.

Tagged Items

- Items clearly identified with an SHI number and a tag were photographed separately. The procedure was similar however the SHI number was also written on the white board, along with the location code.
- Where the machine was quite large several photographs were taken, to include a rear or side view also.
- The images were uploaded and saved to the computer at the end of each day. A separate folder was created for tagged item images.

File management

- The procedure was largely the same as above, however the SHI number was used to identify the image. e.g. in the field tag title it was labelled as 'SHI 4745367'
- Where there was more than one image of the item the initial image was labelled with the SHI number, and then any additional images labelled with the SHI number and 'b', 'c' , 'd' etc. as the computer does not allow image files to have the same name.
- Where there was more than one object with the same SHI number to differentiate each separate component the image was labelled first with the SHI number and then we added a dash or underscore and number for each individual item. For example, where there were 3 items with the same SHI number and one photograph of each then the metadata tag for the image was labelled '4745367_1a', and for the second object '4745367_2a, and the third object '4745367_3a'.
- Where there was an additional image for the third item with the same SHI number it was labelled as "4745367_3b'.The letter 'a' was only used in cases where there was more than one object with the same SHI number. Otherwise additional images of the one item start with the letter 'b'.

- After completing the metadata fields the image file name was relabelled with the same number and letter used in the metadata tag field. The image file name was then renamed with the SHI number to ensure accuracy.

Identifying untagged items

- The SHI online site and/or the hard copies were used to assist with the process of identifying untagged items. SHI images and SHI descriptions were used as clues to identify untagged items. Some items were untagged but included as part of a group of objects, or in the case of individual tools the rack on which they hung may have be tagged and identified with an SHI number which also includes the untagged surrounding tools.
- We also conducted electronic searches ('Control F') to identify items in the spreadsheet to see if they matched descriptive terms or numbers used in the SHI data that was later added to the spreadsheet. An SHI number or an object name was used in the search field.
- In addition we consult with heritage volunteers and professionals to assist in naming and identifying untagged objects. This information was then added or the spreadsheet corrected to include this additional information.

Condition reporting & risk ratings

- After completing the initial mapping and inventory list each item was then examined and a few sentences were written detailing the physical condition of the item, noting if and where there was any corrosion, loose paint, parts that appear to be loose or missing or if the item was damaged etc.
- A general condition rating was assigned for the item or group of items to numerically describe its condition status An overall rating was given to the object, rated on a four point scale, 1 = Excellent, 2 = Good, 3 = Fair, 4 = Poor.
- A more detailed risk rating was then assigned to indicate factors influencing its ongoing preservation on site and to help establish conservation priorities. For example, as most of the movable collection consists of machines or tools made of metal the issue of rust was the most significant factor influencing the longevity of the collection. Initially rust was rated on a scale of 1 -4. 1 indicating the most severe structural rust, and 2 a lesser degree of structural rust, 3 indicating a greater degree of surface rust and 4 a lesser degree of surface rust. Following advice from our heritage consultants this scale was later modified in the spreadsheet so that separate categories were created for structural rust and for surface rust. The rating was changed to 1 - 2, with a rating of 1 for a lesser degree of rust, 2 for a greater degree of rust. It was assumed all aged metal items would display surface rust and if there were larger areas or degrees of rust then this would be noted in the rating, otherwise it would not be rated.

- Other risk factors, rated with a 1 only to indicate its presence, included; multiple items (where a number of items were grouped together with the same SHI number), theft/vandalism, damage , loss of historic context/authenticity, and fire/weather/environment. This last category was used to indicate for example if the item consisted of wooden elements which would be at risk in the case of fire, or if the object was located on the exterior of the building and subject to weather, or in an environment where its condition was compromised, such as its proximity to an exterior doorway and at risk due to added dust, grit or bird droppings, or nearby activities etc.

-
- Due to the large quantity of items, particularly smaller objects and tools that have not previously been tagged, items previously listed as untagged were further qualified to indicate if they were at risk if not easily identified. A rating was given to indicate if the item was untagged and not identified as part of a previous SHI listing (rated 1), untagged but listed in the SHI (rated 2), or tagged (rated 3) to differentiate items. The SHI inventory number was then recorded in the column when this had been identified through SHI descriptions, locations and photographs, and “untagged” removed from the SHI No. Column in the spreadsheet.

Conservation Management priorities

The type of treatment required for the maintenance of the collection was divided into several categories. A registration category was used to indicate if the item or group of items required sorting, further cataloguing, auditing (such as checking the quantity of tools on a rack against the amount listed in the SHI), or tagging. This was abbreviated in the spreadsheet with their initials C= catalogue, A = audit, S = sort and T= tag.

A treatment category was assigned to indicate the specific management priorities needed for the item. These included; if the item needed to be repaired (such as reattaching loose parts or applying rust retardant), whether the item was in operation (such as items used in the Blacksmithing Workshop as part of the leasing agreement in Bays 1 & 2 south and therefore subject to regular safety and operational guidelines), whether the item just needed regular maintenance (such as cleaning), or if it was a crane (though not in operation) and had to be managed accordingly. These categories were abbreviated to R = repair, O= operational, M=maintenance, C=crane. Where it was recommended the item needed some kind of further assessment, such as relocation, structural assessment, rehousing or disposal this was indicated by in a secondary column. These categories were abbreviated to F= further assessment, with explanatory notes provided in the condition report.

Bays 1 & 2 South – Blacksmithing Workshop

An inventory was also completed of all the items in the blacksmithing workshop. A large quantity of items and equipment (including heritage-style equipment) is owned by the tenant. These items were listed in the inventory and Guido assisted with identifying which items were his in the workshop. These items were physically tagged and a paper tag and the initial “G” written on the tag to indicate it was not part of the original workshop or the SHI.

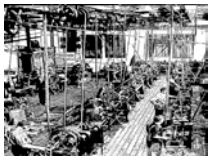
Due to time constraints and with the greater proportion of items belonging to the tenant it was decided to then temporarily tag and identify those items that were part of the original railway workshops that had not already been tagged. Some of these items and small fixtures have not been included in previous SHI listings. These items were tagged with a paper tag and a bright green spot was placed on the paper tag and “SHI’ written on the tag.

In the spread sheet a column headed “Provenance” was created to indicate if the item was not part of the original workshop. The initials “GG” were placed next to the item in Bays 1 & 2 south where the item belonged to Guido.

In addition when identifying SHI items in the workshop the original lease list number was included in the spreadsheet against the SHI item.

Appendix B – Maintenance of Operational Equipment (Heritech Report)

HERITECH CONSULTING



Futurepast
HERITAGE CONSULTING PTY LTD

ROUTINE MAINTENANCE SCHEDULES

FOR HERITAGE MACHINERY AND EQUIPMENT

IN THE EVELEIGH LOCOMOTIVE WORKSHOPS

BAYS 1 AND 2 SOUTH LEASE AREAS

HeriTech Consulting with Futurepast Heritage Consulting P/L

Prepared for ATP Precinct Management P/L

Revision 2 (October 2008)

Table of Contents

Introduction

This document outlines the maintenance requirements for the operational and non-operational machinery as well as the hand tools, non-powered equipment can cranes and hoists within the lease area of Bays 1 and 2 South, Loco Workshops Building, Australian Technology Park.

The document sets out details annual maintenance schedules for the operational machinery, which the tenant is required to implement and which the ATP will verify as required.

Maintenance schedules have also been provided for the non-operational machine tools within the lease area, as well as for the hand tools, other non-powered equipment and cranes and hoists within the lease area. These maintenance requirements should also be implemented on an **annual** basis.

This document was prepared by John Gibson of HeriTech Consulting, with input from MacLaren North, Futurepast Heritage Consulting.

The authors would like to thank ATP management and the present tenant, Wrought Artworks, for providing information and access to the site.

PART A – OPERATIONAL MACHINE TOOLS, MAINTENANCE REQUIREMENTS

The following schedule has been developed to provide guidelines to the tenant of Bays 1 and 2 South on the appropriate lubrication and maintenance of operational machine tools in the care of, and use by, the tenant.

Under the operational conditions that once prevailed in Bays 1 and 2 of the Eveleigh Locomotive Workshops it was necessary to have maintenance schedules that demanded scheduled down-time for repair, adjustment and lubrication of machines on daily, weekly and monthly schedules.

This is not necessary in the present circumstances, where many of the machines are in irregular or occasional use and even those in more regular use are not subject to the same intensive use as was the case during the operational period of the Workshops.

The fact that much of the work carried out by the present tenant does not involve consistent high duty cycle use of the machinery and equipment has been taken into account in the preparation of this schedule.

Therefore this schedule sets up a regime for an **annual** inspection and maintenance program to be undertaken by the tenant and reported on to the management of Australian Technology Park. Space has been left in each machine-specific schedule for the addition of other maintenance tasks, or to record specific repairs, as required.

Machines that are considered to be in intermittent use by the present tenant includes:

Heritage Register No.	**Item Name**	**Location**
4745051	Brett Type Impact Punch	1S 9E
4745060	Massey 7 CWT Electro-pneumatic Hammer	1S 2E
4745081	Ajax Continuous Forging Machine	2S 5W
4745085	Covmac Continuous Forging Machine	2S 6W
4745096	Massey 2CWT Electro-pneumatic Hammer	2S 3E
4745098	Massey 2CWT Weight Pneumatic Hammer	2S 2E
4745112	Spring King Eye Rolling Machine	2S 6W
4745113	Vicars Vane Pump for Spring King Eye Rolling machine	2S 6W
4745114	Controller for Spring King Eye Rolling machine	2S 6W
4745116	Graham & Normanton Shaper	2S 3W
4745117	Town & Sons Borer	2S 2W
4745118	Landis Screw Cutting Machine	2S 2W
4745120	Cincinnati Milling Machine	2S 6W
4745182	Bennie Metal Guillotine	2S 2E

4745405	Pedestal Grinder	2S 1W
4745180	6’ plate rollers	2S 1E
4745033	Rowland Grinder	2S 4W
4745203	Fuel Tank	2S Annex

Specific maintenance schedules have been prepared for each of these items. For all other items within the lease area, generic conservation recommendations have been provided. Should any additional items be identified as in use, or if any non-operational machinery is reconditioned and put back into service, a similar annual maintenance schedule should be prepared for each item.

Machine: Brett Type Impact Punch

Location: 1S7E

Maker: Brett Patent **ATP Heritage Register Number:** 4745051

Model: Type AD, Size 8 **Serial Number**: NSWTD 28883 SOP M 4227

Maintenance Task	08	09	10	11	12
Grease driveshaft plumber block bearings (at top.)					
Check oil in gearbox/coupling on motor.					
Oil/grease main flywheel bearings.					
Oil/grease dovetail ways (2 access screws) and punch/die.					
Oil main shaft bearings with gear oil at 6 points provided.					
Check for wear in bearings on drive shaft at top, and on flywheel.					
Check belt for fraying/tears – replace as necessary.					
Check dovetail ways for wear, adjust as necessary.					
For preservation bright steel surfaces to be cleaned and coated with oil/preservative.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

Lanoline based preservative – "Lanox".

Machine: Massey 7CWT Electro-pneumatic Hammer

Location: 1S2E

Maker: B & S Massey Ltd. Manchester **ATP Heritage Register Number:** 4745060

Model: **Serial Number:** C 1457 PTC NSW HH 1 EVE

Maintenance Task	08	09	10	11	12
Check oil supply and refill as necessary – use recommended oil only – see below.					
Grease ram.					
Check condition of motor bearings, repack with grease as required.					
Check condition of 'V' belts for cracking/deterioration replace as required.					
Remove inspection covers, check for wear and correct lubrication.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Serious wear may determine the useful remaining life for this machine.

Maintenance Materials – oils/tools, etc

Use pneumatic hammer oil only. Reservoir filler is on NE side of base.

Machine: **Ajax Continuous Forging Machine**

Location: 2S4W

Maker: The Ajax Manufacturing Co., Cleveland **ATP Heritage Register Number:** 4745081

Model: **Serial Number:** NSW GR No. 702

Maintenance Task	08	09	10	11	12
Check motor bearings for dryness and wear – adjust/repack as required.					
Check belt tension – adjust as required.					
Check belt for deterioration/cracking – replace as required.					
Check oil cups on flywheel bearings – refill as required.					
Check oil reservoirs on crankshaft bearing, and big end bearing – refill as required.					
Lubricate all oil holes on shaft bearings and slides.					
Check for wear in slides – adjust where necessary.					
Oil all shafts and linkages.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

HP Gear oil or HP grease as appropriate.

Machine: **Covmac Continuous Forging Machine**

Location: 2S6W

Maker: Coventry Machine Tool Works Ltd **ATP Heritage Register Number:** 4745085

Model: **Serial Number:** NSW TD No. F3099

Maintenance Task	08	09	10	11	12
Check motor bearings for wear and lack of lubrication – pack as required.					
Check 'V' belts for deterioration/cracking – replace as required.					
Check oil pressure pump and lubrication system for leaks and correct supply.					
Check brake band for excessive wear – adjust as required.					
Check main bearing for correct lubrication & wear – lubricate and adjust as required.					
Check drive gear and pinion for wear and lubrication – grease gears					
Check and big end bearing for wear and lubrication – adjust and lubricate as needed.					
Check all slides for wear and lubrication – adjust and lubricate as required.					
Check and refill oil reservoir					
Check all levers and linkages for free operation, oil bushes where required.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Note machine is presently disassembled. Should be re-assembled and maintenance in accordance with schedule.

Maintenance Materials – oils/tools, etc

HP Gear oil or HP grease as appropriate.

Machine: **Massey 2CWT Electro-pneumatic Hammer**

Location: 2S3E

Maker: B & S Massey Ltd., Manchester **ATP Heritage Register Number:** 4745096

Model: **Serial Number:** NSW GR No. 886

Maintenance Task	08	09	10	11	12
Check and grease motor bearings if needed.					
Check 'V' belt drive for slack and deterioration. Adjust tension, replace as required.					
Ensure horizontal main shaft greasers are full and adjust to grease bearings					
Adjust bearing caps if wear is apparent.					
Check greaser on piston rod (supply to big end bearing) fill and adjust.					
Ensure grease can on left, near main bearing, is full of grease and adjusted to grease top bearing.					
Check and grease ram rod.					
Check ram rod slides for wear and lubrication – adjust and lubricate as necessary.					
Completed – Wrought Artworks					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

Use general purpose high pressure grease where required, or HP Gear oil.

Machine: **Massey 2CWT Weight Pneumatic Hammer**

Location: 2S2E

Maker: B & S Massey Ltd., Manchester **ATP Heritage Register Number:** 4745098

Model: **Serial Number:** NSW GR No. 887

Maintenance Task	08	09	10	11	12
Check and grease motor bearings if needed.					
Check 'V' belt drive for slack and deterioration. Adjust tension, replace as required.					
Ensure horizontal main shaft greasers are full and adjust to grease bearings					
Adjust bearing caps if wear is apparent.					
Check greaser on piston rod (supply to big end bearing) fill and adjust.					
Ensure grease can on left, near main bearing, is full of grease and adjusted to grease top bearing.					
Check and grease ram rod.					
Check ram rod slides for wear and lubrication – adjust and lubricate as necessary.					
Completed – Wrought Artworks					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

HP Gear oil or HP grease as appropriate.

Machine: **Spring King Eye Rolling Machine**

Location: 2S6W

Maker: Vickers **ATP Heritage Register Number:** 4745112

Model: **Serial Number:** NSW TD No. SP 4

Maintenance Task	08	09	10	11	12
Check unions on oil supply pipes for looseness, tighten if loose.					
Check unions on oil supply pipes for leakage, repair if leaking.					
Check for wear on all moving parts, adjust and grease as required.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Items not associated with the machine operation should be removed from the concrete pad i.e. pump and timber blocks.

Maintenance Materials – oils/tools, etc

HP Gear oil or HP grease as appropriate.
Hydraulic oil where appropriate.

Machine: **Vickers Vane Pump for Spring King Eye Rolling Machine**

Location: 2S6W

Maker: Vickers **ATP Heritage Register Number:** 4745113

Model: **Serial Number:** V 540 66 1 FA…

Maintenance Task	08	09	10	11	12
Check unions on oil supply pipes for looseness, tighten if loose.					
Check unions on oil supply pipes for leakage, repair if leaking.					
Check motor to pump flexible couplings (both ends of motor) for deterioration					
Check motor bearings for correct lubrication, repack as required.					
Check and refill the oil supply tank – note sight glass at rear.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

Hydraulic oil.

HP Gear oil or HP grease as appropriate.

Machine: **Controller for Spring King Eye Rolling Machine**

Location: 2S6W

Maker: Vickers **ATP Heritage Register Number:** 4745114

Model: **Serial Number:** -

Maintenance Task	08	09	10	11	12
Check unions on oil supply pipes for looseness, tighten if loose.					
Check unions on oil supply pipes for leakage, repair if leaking.					
Check rubber hoses for deterioration/cracking – replace as required.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

Use only hydraulic oil for the hydraulic system.

Machine: **Graham & Normanton Shaper**

Location: 2S3W

Maker: Graham & Normanton, Halifax **ATP Heritage Register Number:** 4745116

Model: **Serial Number:** NSW GR No. 1080

Maintenance Task	08	09	10	11	12
Check motor for lubrication – grease at grease nipples.					
Check all gearbox bearings for correct lubrication at oil cups, refill as required.					
Check and lubricate all operating lever bearings at all oil caps.					
Check the two gearbox reservoirs for correct oil level.					
Check bull wheel bearings and ensure correct lubrication.					
Check the cross head drive bearings for correct lubrication.					
Oil all oil cups.					
Check and if required grease the bull wheel drive gears.					
Check the ram slide for wear, adjust as required					
Check the cross slide dovetails for wear and lubrication. Adjust and lubricate as necessary.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

Use High Pressure Gear Oil

Machine: **Town & Sons Borer**

Location: 2S2W

Maker: Frederick Town & Sons, Halifax **ATP Heritage Register Number:** 4745117

Model: **Serial Number:** No. 4349

Maintenance Task	08	09	10	11	12
Check and ensure that the oil reservoir at top is full at sight glass. Maintain level.					
Check and oil spindle.					
Check and fill coolant tank in base casting.					
Clean and oil machine table regularly.					
Check and grease main pillar					
Check armoured electrical cables for damage. Replace/repair as required					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

HP Gear oil or HP grease as appropriate

Machine: **Landis Screw Cutting Machine**

Location: 2S2W

Maker: Landis Machine Co., Pennsylvania **ATP Heritage Register Number:** 4745118

Model: **Serial Number:** NSW TD No. SC 539

Maintenance Task	08	09	10	11	12
Check and top up coolant tank in base.					
Check motor bearings, fill and adjust greaser to lubricate. Repack if dry.					
Check chain drive for wear/deterioration. Replace if necessary.					
Check and fill oil cups on main spindles (x 4).					
Clean and oil Capstan slides.					
Check gearbox for correct oil level at sight glass. Fill as required.					
Check and lubricate spindle drive gears (left end).					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

Use HP Gear oil or HP grease where appropriate.

Machine: **Cincinnati Milling Machine**

Location: 2S3W

Maker: Cincinnati, Birmingham **ATP Heritage Register Number:** 4745120

Model: **Serial Number:** NSW TD No. MH 3668

Maintenance Task	08	09	10	11	12
Check motor bearings and repack as required.					
Check 'V' belt drive for deterioration and slack. Adjust as required.					
Check the lubricator pump drive chain. Adjust if loose.					
Check and grease overarm dovetails, adjust wear as required.					
Check and top up the oil tank (right rear in base).					
Check oil level in main spindle gearbox (right rear side)					
Check and adjust main spindle for wear. (at rear).					
Check, adjust as required, and lubricate table dovetail slides.					
Check hydramatic feed oil box at sight glass (left bottom), fill with special oil – see plate on machine for detail.					
Check and fill coolant tank (left side).					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

Hydramatic oil – see machine plate for detail.

Machine: **Bennie Metal Guillotine**

Location: 2S1E

Maker: J. Bennie & Sons Ltd., Glasgow **ATP Heritage Register Number:** 4745182

Model: **Serial Number:** NSW GR No. 458 B6A - 22

Maintenance Task	08	09	10	11	12
Check motor bearings for correct lubrication – repack as required.					
Check and grease drive gears from motor to idler shaft.					
Check and grease idler shaft bearings – grease as required in 4 places.					
Check and grease main eccentric shaft bearings – 2 places.					
Oil counterweight bearing at 3 supplied oil holes.					
Ensure blade slides are correctly adjusted and lubricated.					
Bright steel surfaces to be cleaned and oiled					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

HP Grease, or HP Gear oil as required.

Machine: **Rowland Grinder**

Location: 2S4W

Maker: B.R. Rowland & Co. Ltd. **ATP Heritage Register Number:** 4745033

Model: **Serial Number:** NSW GR No. 845

Maintenance Task	08	09	10	11	12
Check motor bearings – repack as required.					
Check belt drive for correct tension and any deterioration – replace/adjust as required.					
Check and fill main shaft bearing cups (x 4).					
Ensure grinding wheels nuts are tight.					
Correctly dress each wheel to ensure concentricity.					
Adjust tool rests to 1.5mm from wheel surface.					
Fill coolant tank with water.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

HP Gear oil or HP grease as appropriate.

Machine: **Pedestal Grinder**

Location: 2S1W

Maker: - **ATP Heritage Register Number:** 4745405

Model: **Serial Number:** NSW GR No. 4057

Maintenance Task	08	09	10	11	12
Check motor bearings, repack as required.					
Check belt drive for tension and deterioration. Adjust/replace as required.					
Check and lubricate main shaft bearings as required.					
Correctly dress each wheel to ensure concentricity.					
Adjust tool rests to 1.5mm from wheel surface.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

HP Gear oil or HP grease as appropriate.

Machine: **6' Plate Rollers**

Location: 2S1E

Maker: **ATP Heritage Register Number:** 4745180

Model: **Serial Number:** NSW GR No. 782

Maintenance Task	08	09	10	11	12
Check motor bearings for lubrication – repack where required.					
Check idler shaft bearings – oil/grease as required.					
Check bearings for each roller and ensure correct lubrication (6 places).					
Check, lubricate and adjust slides.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

HP Gear oil or HP grease as appropriate.

Machine: **Fuel Tank**

Location: 2S Annex

Maker: **ATP Heritage Register Number:** 4745203

Model: **Serial Number:**

Maintenance Task	08	09	10	11	12
Check for external rust – treat as required.					
Check for internal condensation and drain as required.					
Check gaskets on pipe joints for leakage – replace as required.					
Check valves for leaks and smooth operation.					
Check bunding for cracks and patch as required.					
Completed – Tenant					
Verified – Australian Technology Park					

Maintenance Requirements – Special

Nil

Maintenance Materials – oils/tools, etc

Machine: Furnances (generally)

These recommendations apply to all operating furnaces within the lease area. During the inspection, it was not always possible to determine which furnaces were in use, even on an irregular basis. Furnaces which are not in use should be maintained in accordance with the schedule in Part B, below.

Maintenance Task	08	09	10	11	12
Check firebricks for glazing, deterioration or cracking. Replace where required.					
Checked and pack bearings on air blowers/pumps as required.					
Check electrical connections to air blower/pumps.					
Clean gas/oil nozzles.					

Heritage Register No.	Item Name	Location	Maintenance Year				
			08	09	10	11	12
4745047	Oil furnace (large)	1S 5W					
4745048	Furnace	1S 6W					
4745053	Furnace	1S 6E					
4745056	Oil Furnace	1S 5E					
4745079	Furnace for the Ajax Forming Machine	2S 4W					
4745086	Furnace for the Covmac	2S 9W					
4745095	Small Furnace	2S 3E					
4745097	Furnace with blower	2S 3E					
4745099	Furnace with blower	2S 2W					
4745111	Furnace for Spring King	2S 6W					
		Completed – Tenant					
		Verified – Australian technology Park					

Maintenance Requirements – Special

Nil

Machinery Condition Notes

As a part of the development of the Maintenance Schedules above, the key machines which are either in use by the tenant or potentially operable were inspected for condition. This inspection was visual only and did not involve the testing of the machinery or the disassembling of any components. In general, the machinery which is presently in use is in a good, operable condition. Those machines, which have not been in use for some time, appear superficially to be in good condition but would need to be overhauled before use. Other items which are not in use rage from fair to good condition and typically exhibit signs of external rust, dirt and grime.

Brett Impact Punch
This machine appears to be complete and in good condition, however, it would need to be run to determine whether it needs servicing. Punch & Die sets are on rack adjacent to the machine

Massey 7CWT Electro-pneumatic Hammer
Machine appears to be in good condition, but needs to be run to determine whether any maintenance is needed immediately.

Ajax Continuous Forging Machine
Many accessories are on the rack to SW of the machine. Machine appears to be complete and in working order, but would need to be run to check on this.

Covmac Continuous Forging Machine
Needs to be re-assembled, then checked for correct operation, wear.

Massey 2CWT Electro-pneumatic Hammer
Machine appears to be complete. It would need to be turned over manually or electrically to determine current state of slides and bearings.

Massey Weight 2CWT Pneumatic Hammer
Machine appears to be complete. It would need to be turned over manually or electrically to determine current state of slides and bearings.

Spring King Eye Rolling Machine, Pump and Controller
Machine appears to be complete and operational. Pump would need to be run and machine operated carefully to determine current state of ‘repair’.

Graham & Normanton Shaper
This machine is operational and clearly in very good condition.

Town & Sons Borer
This machine is operational and clearly in very good condition. Coolant pump feed pipe needs to be made functional.

Landis Screwcutting Machine
This machine is operational and clearly in good condition. It would need to be turned over manually or carefully electrically to determine any serious faults.

Cincinnati Milling Machine
This machine is operational and clearly in very good condition.

Bennie Metal Guillotine
This machine is operational and clearly in very good condition.

Rowland Grinder (large)
This machine is operational and clearly in very good condition.

Pedestal Grinder (small)
This machine is operational and clearly in good condition. It would need to be run to check on state of bearings.

6' Plate Rollers
This machine is operational and clearly in very good condition.

Hydraulic Ram Press
Machine is complete. All components and accessories adjacent. Machine appears serviceable (except for hydraulic supply), but could be 'frozen'. This could be checked with a hydraulic jack.

Tangye Hydraulic Press
This machine looks to be complete and appears to be in good condition. However, we would need to try and move the striker arm to see if it was 'frozen' or whether the bearings are in poor condition. Punch and dies for use with the machine need to be located.

Arch Steam Hammer
Seems to be in good condition, but would need to be 'turned over' manually to see if bearings etc need servicing.

Steam Hammer 20 CWT
Appears to be in good condition, but would need steam or air supply to test it for serviceability.

Allen Striker (1)
Machine is complete (except for power supply). May need to be stripped and cleaned before use. Striker Arm needs to be manually operated to determine whether machine is 'frozen' and condition of bearings.

Allen Striker (2)
Machine is complete (except for power supply). May need to be stripped and cleaned before use. Striker Arm needs to be manually operated to determine whether machine is 'frozen' and condition of bearings.

PART B – NON-OPERATIONAL MACHINE TOOLS, MAINTENANCE REQUIREMENTS

Bays 1 & 2 South of the original Eveleigh Railway Locomotive Works contain a range of non-operational machinery which is significant to the history of the pace and which requires a degree of routine maintenance. Generic maintenance recommendations are provided which apply to all items on the list below and tasks are to be completed on an **annual** basis.

Recommendations are split between Conservation requirements, which are generally one-off or long term management issues, and Maintenance requirements which need to be performed on an **annual** basis.

Conservation requirements for non-operational machinery

- Items should be maintained in a non-operational condition for static display purposes.
- They should be tagged as DECOMMISSIONED and should be permanently disconnected from all power sources, water or gas supplies.
- They should be kept dry and undercover at all times.
- The items should not have material stacked against or on top of them.
- Any guards, covers or hatches should be kept closed to limit the ingress of dust or accidental damage, unless kept open for interpretive purposes.
- Where it is necessary to leave guards or hatches off for an extended period for display or interpretive purposes, install clear Perspex guards or panels over the openings.

Annual maintenance requirements for non-operational machinery

- The item should be cleaned of dust annually through wiping, vacuuming or dry brushing.
- Any exposed operating surfaces (e.g. piston or drive shafts, or other polished metal surfaces) should be sprayed or wiped with a light machine oil or Lanoline based preservative oil annually to retard rust.
- Any surface rust should have loose flakes removed and the area should be treated with a rust retardant.
- Any structural rust should be inspected by a specialist and repaired as per their recommendations.
- Internal mechanisms should be stripped, degreased and repacked to prevent deterioration.
- The items should retain their patina of use and should not be completely repainted, unless necessary for the conservation of the item.

Potential for Future Operation

Should a decision be taken to restore a non-operational item to operational condition, it should be inspected by a specialist to determine whether the restoration is feasible and the manner in which it should be undertaken.

A number of items of non-operational machinery have quite a high potential for future operation:

- Tangye Bros 18" hydraulic ram press
- Arch Steam Hammer – 40cwt
- Steam Hammer – 20 cwt
- Allen Striker (1) and (2)
- Hydraulic Ram Press

The Steam Hammers should be able to be run on compressed air given a suitable volume and pressure.

The high pressure water operated machines (hydraulic power) could be attached to a modern portable oil based hydraulic pump and operated for demonstration purposes.

Non-operational machinery annual maintenance schedule

Heritage Register No.	Item Name	Location	Maintenance Year				
			08	09	10	11	12
4745041	Thwaites Rootes No. 5 Blower	1S 1W					
4745042	Thwaites Rootes No. 6 Blower	1S 1W					
4745049	Tangye Bros 18" Hydraulic Ram Press	1S 6W					
4745052	Hydraulic Press	1S 9E					
4745054	40CWT Arch Steam Hammer	1S 6					
4745057	20CWT Steam Hammer	1S 4					
4745061	Thwaites Rootes No. 6 Blower	1S 1E					
4745078	Frazing Wheel and Saw	2S 4W					
4745079	Furnace for the Ajax Forming Machine	2S 4W					
4745082	Frazing Wheel and Saw	2S 5W					
4745083	Frazing and Grinding Wheel	2S 6W					
4745086	Furnace for the Covmac	2S 9W					
4745091	Allen Striker (1)	2S 5E					
4745092	Frazing and Grinding Wheel	2S 5E					
4745094	Allen Striker (2)	2S 4E					
4745206	De Burgue electric shears	1S Annex					
4745406	Pilot arc welder	2S 2CW					
4745410	Frazing Wheel (disassembled)	2S 2CW					
4745471	Avery Platform Scale	2S 4W					
4745475	Reheating furnace	1S Annex					
4745476	Wall mounted manometer	1S Annex					
Completed – Tenant							
Verified – Australian technology Park							

PART C – HAND-TOOLS AND NON-MECHANICAL EQUIPMENT, MAINTENANCE REQUIREMENTS

Bays 1 and 2 South contain a range of hand tools and non-mechanical equipment, some of which is in use by the tenant while other items are present for static display only. All require some low-level degree of routine maintenance.

The items in question are listed in the schedule below, however it is not stipulated which items are in use, as it is recognised these types of items may come in and out of use on an irregular basis, depending on the nature of the work being undertaken within the lease area.

Recommendations are split between Conservation requirements, which are generally one-off or long term management issues, and Maintenance requirements which need to be performed on an **annual** basis.

Maintenance requirements for operational hand tools and non-mechanical equipment

- Items should be retained in service and should be kept dry and under cover at all times.
- Items should be free of rust, burrs, cracks or other damage before usage.
- Any surface rust should be treated with an appropriate rust retardant.
- Any structural rust should be assessed by a specialist and repaired in accordance with their recommendations.
- If required for operation, the item should be lubricated as necessary.
- Hand tools which are no longer in an appropriate condition for safe usage should be retained on site as static display items and be managed in accordance with the requirements for non-operation hand tool sand equipment

Conservation requirements for non-operational hand tools and other non-mechanical equipment

- Items should be maintained in a non-operational condition for static display purposes.
- Items should be kept dry and under cover at all times.
- Where an item is a part of an assemblage or a collection, it should be retained with that collection.
- Any items temporarily removed for display purposes should be appropriately tagged to allow their return to their original context.

Maintenance requirements for non-operational hand tools and other non-mechanical equipment

- Items should be cleaned of dust annually through wiping, vacuuming or dry brushing.
- Any surface rust should have loose flakes removed and the area should be treated with a rust retardant.
- Items of unpainted metal should not be painted under any circumstances.

Maintenance Schedule for hand tools and non-powered equipment

Heritage Register No.	Item Name	Location	Maintenance Year				
			08	09	10	11	12
4745044	Blacksmith's Forge	1S 2W					
4745059	Blacksmith's Forge No. 9	1S 2E					
4745062	Tool rack between columns (Bay 1 South - Rack E)	1S 6E					
4745064	Anvil	1S 1M					
4745065	Quenching Tank with Counter-Weighted Basket	2S 3-4E					
4745066	Rack of assorted tools (Rack A)	1S 6W					
4745067	Warning Sign for 40CWT Steam Hammer	1S 4E					
4745069	Metal Trolley Bins	1S 5					
4745070	Warning Sign for 40CWT Steam Hammer	1S 6W					
4745071	Billet holders and assorted tools	1S 6E					
4745072	Hot Metal Trolley	1S 7M					
4745087	Blacksmith's Forge No. 23 and Coke Bin	2S 9E					
4745088	Blacksmith's Forge No. 24	2S 6E					
4745090	Blacksmith's Forge No. 25 and Coke bin	2S 5E					
4745093	Blacksmith's Forge No. 26 and Coke Bin	2S 4E					
4745100	Stands of tools	2S 4E					
4745102	Rack of tools between columns (Bay 2 South - Rack D)	2S 3E					
4745103	Swage blocks	2S					
4745281	Stands of assorted dies	1S 7E					
4745282	Stands of assorted dies	1S 6E					
4745283	Stands of assorted dies	1S 7W					
4745284	Rack of assorted tools (Rack B)	1S 6W					
4745285	Rack of assorted tools (Rack C)	1S 6W					
4745286	Rack of assorted tools (Rack D)	1S 6W					
4745287	Rack of assorted tools (Rack E)	1S 6W					
4745288	Rack of assorted tools (Rack F)	1S 6W					
4745290	Tool rack between columns (Bay 1 South - Rack D)	1S 6E					
4745291	Tool rack between columns (Bay 1 South - Rack C)	1S 6E					
4745292	Tool rack between columns (Bay 1 South - Rack B)	1S 6E					
4745293	Tool rack between columns (Bay 1 South - Rack A)	1S 6E					
4745398	Rack of tools between columns (Bay 2 South - Rack C)	2S 4E					
4745399	Rack of tools between columns (Bay 2 South - Rack B)	2S 5E					
4745401	Stand of tools (portable)	2S 5W					
4745402	Stand of tools (portable)	2S 3M					
4745403	Stand of tools (portable)	2S 4M					
4745466	Rack of dies for Covmac machine	2S 7W					
4745467	Rack of dies for the Spring King Machine	2S 6W					
4745468	Rack of dies for the Ajax Machine	2S 5W					
4745469	Stack of dies for the Ajax machine	2S 5W					

4745470	Rack of dies and punches for the Ajax machine	2S 4W					
4745472	Anvils	2S					
4745473	Swage blocks	2S					
4745474	Swage blocks	1S					
4745478	Rack of tools between columns (Bay 2 South - Rack E)	2S 2E					
4745479	Rack of tools between columns (Bay 2 South - Rack E)	2S 2E					
4745487	Mandrel	1S 5					
4745491	Blacksmith's Forge No. 26	2S 4E					
4745540	Rack of tools between columns (Bay 2 South - Rack A)	2S 6E					
4745541	Rack of tools between columns (Bay 2 South - Rack E)	2S 2E					
	Completed – tenant						
	Verified – Australian Technology Park						

PART D – CRANES AND HOISTS

A number of cranes and hoists of different configurations are located throughout the lease area. It was not possible to determine which, if any, were in regular operation. It has been assumed than most are in infrequent use, at best, and that it is unlikely any have been inspected in accordance with the relevant occupational health and safety requirements. At this stage, it is assumed the cranes and hoists are essentially disused items for static display purposes.

Maintenance requirements for non-operational cranes, hoists and lifting equipment

- All cranes, hoists and lifting equipment should be inspected regularly to ensure the item is secure at the points of attachment, not subject to rust or deterioration and structurally sound.
- Items should be cleaned of dust annually through wiping, vacuuming or dry brushing.
- Any surface rust should have loose flakes removed and the area should be treated with a rust retardant.
- Items of unpainted metal should not be painted under any circumstances.
- Should there be any question about the soundness of the item, it should not be used for lifting until inspected by qualified personnel.
- If used for lifting, weights should never exceed the posted weight limit of the item.

Heritage Register No.	Item Name	Location	Maintenance year				
			08	09	10	11	12
4745045	7 CWT Jib crane	1S 2W					
4745046	10 CWT Jib crane	1S					
4745050	Jib Crane	1S 6W					
4745055	10CWT Jib Crane	1S 6E					
4745058	7CWT Crane	1S 2E					
4745076	2-Ton Jib Crane	2S 2W					
4745077	One Tonne Jib-Crane	2S 4W					
4745080	Jib crane	2S 5W					
4745084	10 CWT Jib-Crane	2S 9W					
4745477	Overhead monorail crane	1S					
		Completed - tenant					
		Verified – Australian Technology Park					

Appendix C – Protocol for conservation treatment by ATPSL Volunteers

Australian Technology Park Sydney
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Appendix C – Protocol for Conservation Maintenance Treatment by ATPSL Volunteers

Specialist Advice

This protocol is for Items identified as appropriate for maintenance by ATPSL volunteers. Where a heritage item requires specialist treatment professional advice is sought to obtain the appropriate treatment and products or professional services.

Equipment

Conservation supplies and equipment are stored in two locked cupboards above the security office outside Bay 8 South. Protective safety equipment such as gloves, safety glasses, protective masks and earplugs and hand cleaner are stored in these cupboards. The keys to the supply cupboards are kept at the ATP Management Office with the Facilities Co-ordinator (Harley Imber). If stock is running low then an order needs to be placed with the FC. Most supplies can be sourced in the Blackwood's trade catalogue kept on his desk.

There are three ladders on site to access the machines, some of which are located behind wire or glass fencing. Where the machine is behind fencing one of the step ladders is positioned on one side of the fencing barrier and another smaller step ladder is positioned on the other side of the barrier to then access the machine. These ladders are kept near the machine or stored in the stationery area of the ATP Management Office. There is also a large platform ladder that is used to access and clean taller machines on site, and it is currently situated in Bay 2 North. A bench grinder is affixed to a workbench in the Pump House and it is used for restoring smaller items such as tools. There is also a set of portable lights on a stand, also stored in the Pump House to provide additional lighting if required.

Summary of the steps for conservation work

1. The heritage item is initially cleaned with a dry bush, utilising wide bristle brushes and dry cloths to wipe down the item. The machine is usually cleaned from the top down. There is also a small vacuum cleaner available for small hard to reach areas of a machine. Large thick drop cloths and/or newspaper are used to protect the floor area around the machine when cleaning and degreasing work is done.
2. Vegetable oil, such as grape seed oil, is then dabbed on to a dry cotton cloth and is wiped all over the machine. This assists the degreasing process as it loosens the existing grease on the machine.
3. The oil and ingrained dirt and grease is removed by using fine grade steel wool wrapped in chux cleaning cloth (to protect the paintwork) and these are used to remove the grease and oil. When the built-up grease is difficult to remove a sponge scourer is also used to remove the grease.
4. For hard to reach, and detailed work on the machine small brushes are used, such as toothbrushes to scrub off the dirt. There are also reels of thin cord and string that are wrapped around circular gears to remove dirt in crevices

and around machine shafts. Dry cloths torn into strips are also used to wrap around machine parts to remove grease. In addition satay sticks are used to pick out dirt from holes and crevices.

5. The use of water to clean metal is kept to a minimum to reduce the risk of corrosion. However another method that has been used to remove built-up grease on a painted surface is to mix a small amount of bicarbonate soda, for example 1 tablespoon of bicarbonate soda is mixed with 500ml approx. of water, some detergent and a few drops of rinse-aid is then added to this solution to clean an area of the machine. A toothbrush, small soft-bristled scrubbing brush or a dishwashing brush is dipped in to the bicarb solution and the painted machine is then scrubbed. The solution is changed frequently if the machine is very dirty or a larger quantity of the mix is made up in a bucket to scrub the machine with. A spray bottle with clean water and a dry cotton cloth is then used to remove the dirty solution from the machine.
6. Once the machine is dry the rust is then removed by rubbing the metal with a wire brush, wet & dry sandpaper, or fine steel wool. Additional care is required if the surface is painted, in which case the area may be wiped with a dry cloth and a lanolin-based lubricant, such as Lanotec is applied.
7. For removing corrosion on small hand tools a grinding wheel fitted with disc pads is used to sand off surface corrosion.
8. The machine, particularly any areas of bare metal are treated with a lanolin-based lubricant to coat the surface and protect it against moisture and surface rust. Lanotec liquid is dabbed on to a dry cotton cloth and is wiped over the machine.
9. Finally detailing on a machine is completed, such as applying brasso liquid to clean areas of brass. However while areas of the machine can be highlighted the objective is to convey a sense of the working life of the machine, conserving and maintaining original finishes. Therefore efforts are made to preserve its working history, rather than making it appear to be brand new. This is in keeping with the recommendations outlined in successive ATP Conservation Management reports.

Other Materials

Where the heritage items contain a mix of materials care is taken to conserve each material appropriately. Some of the materials encountered in the moveable heritage collection include, canvas (belt drives), leather, wood, rubber, as well as a variety of metals.

Appendix D – Audit Excerpt - Conservation Priority 1 Schedule

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 S	Annex	630	4745188	2	C36-Class Steam Boiler No 4	4	40	1
2 S	Annex	626	4745191	2	C36 - Class Steam Boiler No 1	4	40	1
2 N	13E	226	4745357	2	Blacksmiths Forge No 4 with Coke Bin	4	40	1
2 S	Annex	628	4745190	2	C36-Class steam Boiler No 2	4	32	1
2 S	Annex	629	4745189	2	C36-Class Steam Boiler No 3	4	32	1
1 N	10E	11	4745004	2	Davy Steam Reservoir	4	24	1
2 N	11E	246	4745328	2	Blacksmiths Forge No.19 and Coke Bin	4	24	1

Appendix E – Audit Excerpt –Conservation Priority 2 Schedule

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 S	5E	449	4745090	2	Blacksmith's forge No. 25 and Coke bin	3	18	2
1 S	2W	829	4745044	2	Blacksmith's forge	3	12	2
1 S	2E	883	4745059	2	Blacksmith's Forge No.9	3	12	2
1 S	Annex	1090	4745206	2	De Burgue Electric Shears	3	12	2
10N	11E	2018	4745210	2	Massey Flange Press	3	12	2
10N	10E	?	4745211	2	Felding and Pratt Wheel Press	3	12	2
10N	14 -15	2044	4745427	2	Craven Brothers Traverser	2	12	2
2 N	12E	231	4745344	1	Bucket with metal tools	3	12	2
2 N	12E	239	4745338	2	Blacksmiths Forge No. 18 and Coke Bin	3	12	2
2 N	9E	276	4745298	2	Blacksmiths Forge and Coke Bin	3	12	2

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 N	9W	183	4745297	2	Blacksmiths Forge No. 36 and Coke Bin	3	12	2
novation Plaz	Centre	4002	4745218	2	Stephenson 7 Tonne Loco Crane 1083	1	12	2
1 N	14 - 15E	57	4745252	1	Balanced billet holder stand P	3	6	2
1 N	15E	55	4745025	2	Furnace for Davy Press Billets	3	6	2
1 N	12E	34	4745013	1	Lock Pins and Wedges for Crane Tongs	3	6	2
1 N	12E	33	4745003	2	Reservoir	3	6	2
10N	15E	2056	4745427	2	Wheel guard	3	6	2
13S	Exterior		4745444	2	Turntable - Bay 13	3	6	2
2 N	10E	265	4745319	2	Blacksmiths Forge and Coke Bin	3	6	2
2 N	14W	188	4745034	1	Quenching tank filled with misc.	3	6	2

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 N	10E	267	4745030	2	Wall Crane for Davis and Primrose Hammer No. 1	3	6	2
5S	Exterior		4745411	2	Turntable - Bay 5	3	6	2
NE Corner above IBC Building	Exterior		4745504	2	Water Tower	2	6	2
1 N	9W	66	4745268	2	Sub-Foremans Office - Demountable	2	4	2
Innovation Plaza	South		4745209	2	Wheel Shop Pivot Crane L41	1	4	2

Appendix F – Audit Excerpt – Conservation Priority 3 Schedule

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 S	6E	474	4745088	2	Blacksmith's Forge No. 24	2	8	3
2 N	12E	230	4745349	1	Lockers	3	6	3
2 S	4W	352	4745079	2	Furnace for the Ajax Forming Machine	3	6	3
2 S	7W	300	4745086	2	Furnace for the Covmac	3	6	3
2 S	6E	482	4745087	2	Blacksmith's forge No.23 and Coke Bin	3	6	3
2 S	3E	407	4745097	2	Furnace with blower	3	6	3
3S	Annex	6	4745464	1	Hand basin with pipes that are not connected	3	6	3
3S	Annex	3060	4745464	1	Plunger style metal implement currently being used as a stand	3	6	3
3S	Annex	44	4745185	2	Hyraulic system pump	3	6	3
1 N	10W	72	4745231	1	Lockers "Identified for Disposal"	2	4	3
1 N	11E	25	4745002	2	Davy Steam Intensifier	2	4	3
1 N	12E	35	4745001	2	Davy Press	2	4	3
1 S	7E	1	4745227	1	Height Setting Table & Swage Block	2	4	3

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
10N	12E	2021	4745131	2	Ward Hexagonal Turret Lathe	2	4	3
10N	11W	2083	4745212	2	Berry Hydraulic Pipe Bender	2	4	3
10N	14 -15E	2047	4745331	2	Low metal platform trolley	2	4	3
10N	11C	2042	4745419	2	Craven Overhead Travelling Crane L7	2	4	3
10N	10W	2086	4745456	2	White Twin Head Vertical Borer	2	4	3
10S	Exterior	4015	4745413	2	Urinal	2	4	3
3N	ATP management office		4745488	2	Military objects	2	4	3
3S	Exterior		4745192	2	Compressed Air System Reservoir	2	4	3
Innovation Plaza	South	4001	4745046	2	No. 24 10CWT Jib Crane	1	4	3
1 N	15E	58	4745276	1	Safety screen	3	3	3
1 N	15E	51	4745204	1	Line Shafting	3	3	3

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 N	10E	4	4745011	1	Warning Signs for Davy Press 1 of 2	3	3	3
1 N	10E	19	4745007	1	Steel Spacer tray (2 of 2)	3	3	3
1 N	11E	21	4745007	1	Steel Spacer Tray (1 of 2)	3	3	3
1 S	2W	835	4745074	1	Metal upright trolley	3	3	3
1 S	7E	1010	4745281	1	Stand of assorted Dies	3	3	3
2 N	11E	252	4745101	1	Anvil	3	3	3
1 N	12E	43	untagged	1	Cluster of sections of railway track & hook, pinch bar, brake rod, fire iron, and billet holder	2	2	3
1 N	14W	101	4745490	1	Balanced Billet Holder R	2	2	3
1 N	14W	100	4745489	1	Balanced Billet Holder Q	2	2	3
1 N	11E	26	4745484	1	Davy Work in Progress Group 2 (19 items)	2	2	3
1 N	14E	49	4745271	1	Safety Screen	2	2	3
1 N	14W	97	4745261	1	Balanced Billet Holder I	2	2	3
1 N	13W	83	4745259	1	Balanced Billet Holder N	2	2	3
1 N	13W	88	4745258	1	Balanced Billet Holder M	2	2	3
1 N	14W	102	4745257	1	Balanced Billet Holder L	2	2	3

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 N	13W	87	4745255	1	Balanced Billet Holder J	2	2	3
1 N	14W	98	4745254	1	Balanced Billet Holder G	2	2	3
1 N	13W	84	4745253	1	Balanced Billet Holder H	2	2	3
1 N	13W	86	4745251	1	Balanced Billet Holder F	2	2	3
1 N	13W	85	4745250	1	Balanced Billet Holder E	2	2	3
1 N	14W	96	4745249	1	Balanced Billet Holder D	2	2	3
1 N	14W	99	4745247	1	Balanced Billet Holder B	2	2	3
1 N	10E	16	4745246	1	Metal work table for Davy Press	2	2	3
1 N	12E	28	4745239	1	Work table with clamping Mechanism	2	2	3
1 N	13W	91	4745237	1	Quenching Tank	2	2	3
1 N	14E	46	4745115	1	Four wheeled trolley	2	2	3
1 N	12W	79	4745018	1	Maintenance Tool Cabinets for Davy Press	2	2	3
1 N	13W	93	4745017	1	Large Spanner (2 of 2), also includes cluster of work horse, ,1 mandrel, large metal hook and rectangular metal shape.	2	2	3

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 N	13W	81	4745005	1	Balanced Billet Holder A	2	2	3
1 S	7E	3	4745226	1	Height Setting table	2	2	3
10N	13W	2073	4745428	1	Wheel Trolley	2	2	3
16S	8E		4745448	1	Small cart	2	2	3
2 N	15E	191	4745417	1	Timber Work Bench	2	2	3
2 N	13W	140	4745358	1	Quenching Tank	2	2	3
2 N	13E	223	4745351	1	Rack of tools between columns (Rack K)	2	2	3
2 N	9E	290	4745342	1	Hand crank	2	2	3
2 N	12E	236	4745341	1	Wooden shelf	2	2	3
3S	9C		4745374	1	Miscellaneous patterns	2	2	3
Innovation Plaza	South		4745209	2	Wheel Shop Pivot Crane L41	1	2	3
Innovation Plaza	Centre	4002	4745218	2	Stephenson 7 Tonne Loco Crane 1083	1	2	3
4N	11C		4745219	1	Craven Bros Crane - Name Plates	1	1	3
10N	13E	2028	4745104	2	Churchill grinder	2	0	3
10N	10W	2087	4745116	2	Graham & Normanton Shaper	2	0	3

Appendix G – Audit Excerpt – Maintenance Schedule

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 S	5E	946	4745047	2	Oil Furnace	2	4	4
1 S	7E	1005	4745052	2	Hydraulic [Platen] Press	2	4	4
1 S	7E	999	4745053	2	Furnace	2	4	4
1 S	2C	1092	4745064	2	Anvil on cast iron base	2	4	4
2 S	6W	329	4745111	2	Furnace for Springs	2	4	4
3S	Annex	11	4745464	1	Timber cabinet painted turquoise	3	3	4
1 S	6W	709	4745283	1	Stand of assorted dies	2	2	4
2 S	3E	412	4745063	1	Rack of tools between columns (2 south - Rack D)	2	2	4
3S	Annex	14	4745464	1	Work table with collection of tools and misc.	2	2	4
3S	Annex	10	4745464	1	Timber stool	2	2	4
3S	Annex	13	4745464	1	Small timber box	2	2	4
3S	Annex	25	4745464	1	White flourescent work lamp	2	2	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
3S	Annex	26	4745464	1	Various implements hanging on wall	2	2	4
3S	Annex	27	4745464	1	Small work bench	2	2	4
3S	Annex	37	4745464	1	Very low wooden bench/stand	2	2	4
3S	Annex	3038	4745464	1	Oil resevoir/metal box with tap fitting	2	2	4
3S	Annex	3049	4745464	1	Collection of various metal cylinders	2	2	4
3S	Annex	3057	4745464	1	Collection of large joints on floor	2	2	4
1 N	10E	23	4745486	1	Large Steel Billet	2	0	4
1 N	10E	8	4745485	1	Davy Work in Progress Group 3 (29 items)	2	0	4
1 N	15E	63	4745481	1	Large Crane Sling	2	0	4
1 N	14E	48	4745465	2	Bleeder valve for Fielding & Pratt Pump	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 N	15E	59	4745454	2	Crane Pulley Carriage and Chains	3	0	4
1 N	14W	95	4745383	1	Tool Rack	2	0	4
1 N	14W	106	4745362	1	Rack	2	0	4
1 N	15E	54	4745339	1	Bearing block bracket for suspended line shaft	2	0	4
1 N	15E	65	4745339	1	Brown & Sharpe line shafting	3	0	4
1 N	15E	50	4745311	1	Line Shafting	2	0	4
1 N	12W		4745279	1	Davy Press - WIP and hand tools	2	0	4
1 N	15W	112	4745277	1	Cluster of bolsters, mandrels,shoe horn die, bottom swage, form tool and handbasin	3	0	4
1 N	14W	104	4745275	1	Lockers "Identified for Disposal"	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 N	15E	52	4745273	1	Goulburn Per Way Workshops Plate "Identified for disposal"	3	0	4
1 N	14E	47	4745272	1	Toolbox	2	0	4
1 N	13W	82	4745269	1	Wrought Iron Beams	3	0	4
1 N	14W	103	4745269	1	Wrought Iron Beams	3	0	4
1 N	14W	108	4745267	1	Rack of Tools between columns (Rack R)	2	0	4
1 N	10E	7	4745266	1	Unfinished Steam hammer shaft 3 of 3	2	0	4
1 N	10E	6	4745265	1	Unfinished Steam hammer shaft 2 of 3	2	0	4
1 N	13W	94	4745262	1	Rack of Tools between Columns (Rack Q)	2	0	4
1 N	12E	42	4745260	1	Balanced billet holder O	2	0	4
1 N	13W	114	4745256	1	Balanced Billet Holder K	2	0	4
1 N	10E	24	4745248	1	Balanced Billet Holder C	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 N	13W	92	4745245	1	Metal Work Table for Davy Press (4 of 5)	2	0	4
1 N	13W	90	4745244	1	Metal Work Table for Davy Press (3 of 5)	2	0	4
1 N	12E	36	4745243	1	Metal Work Table for Davy Press 2 of 5	2	0	4
1 N	15E		4745242	1	Davy Press - Dies, swages and WIP	2	0	4
1 N	12W	80	4745238	1	Rack of tools between columns (Rack P)	2	0	4
1 N	11W	77	4745236	1	Rack of Tools between Columns (Rack O)	2	0	4
1 N	12E	113	4745235	1	Collection of Davy Press Tools	2	0	4
1 N	10W		4745232	1	Davy Press - WIP - billet offcuts	2	0	4
1 N	10W	74	4745230	1	Rack of Tools between columns (Rack N)	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 N	9W	69	4745229	1	Timber crate with Tools	2	0	4
1 N	9W	68	4745228	1	Rack of tools between columns (Rack M)	2	0	4
1 N	14W	111	4745207	2	Overhead Crane	2	0	4
1 N	10W	71	4745072	1	Hot Metal Trolley	2	0	4
1 N	13W	89	4745024	1	Metal table for Davy Press (1 of 5)	2	0	4
1 N	10W	73	4745023	1	Collection of Swage Blocks & Dies for the Davy Press	2	0	4
1 N	11W	75	4745022	1	Rack of Mixed Swages, Fullers, Templates & Hotsets	2	0	4
1 N	11W	76	4745021	1	Rack of Tongs & Swages	2	0	4
1 N	11W	78	4745020	1	Rack of Swages & Fullers	2	0	4
1 N	12E	38	4745019	1	Equalising beams for Diesel Locomotives	2	0	4
1 N	14E	45	4745016	1	Collection of Crane Slings	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 N	10E	5	4745015	1	Unfinished Steam hammer shaft 1 of 3	2	0	4
1 N	12E	44	4745011	1	Warning Signs for Davy Press 2 of 2	2	0	4
1 N	10E	9	4745009	1	Balanced Special Holder	3	0	4
1 N	12E	31	4745008	1	Metal case of shims	2	0	4
1 N	15E	60	4745006	1	Davy Work in Progress Group 1	3	0	4
1 N	15E		4745012	1	Davy Press - Punches, Dies and Swage Blocks	2	0	4
1 S	7E	2	4745017	1	Large Spanner (1 of 2)	2	0	4
1 S	2W	1093	4745041	2	Thwaites Rootes No.5 Blower [No 751]	2	0	4
1 S	1W	842	4745042	2	Thwaites rootes No.6 Blower [No 755]	2	0	4
1 S	2W	806	4745045	2	7 CWT Jib crane	2	0	4
1 S	3W	791	4745046	2	10CWT Jib crane	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 S	5E	955	4745047	1	Upright stand w thermostat & electrical switchboard	2	0	4
1 S	6W	727	4745048	2	Furnace	2	0	4
1 S	6W	723	4745049	2	Tangye Bros 18 Hydraulic Ram Press [Hydraulic Photolithograpic Press - Woodbury Patent]	2	0	4
1 S	6W	716	4745050	2	Jib Crane	2	0	4
1 S	7E	1016	4745051	2	Brett type impact punch	2	0	4
1 S	7E	1019	4745051	1	Solid metal cabinet door w handles	2	0	4
1 S	6E	977	4745054	2	40 CWT Arch Steam Hammer	2	0	4
1 S	5E	960	4745055	2	10 CWT Jib Crane	2	0	4
1 S	5W	757	4745056	2	Oil Furnace	2	0	4
1 S	4E	926	4745057	2	20 CWT Steam Hammer	2	0	4
1 S	2E	902	4745058	2	7 CWT Crane	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 S	2E	908	4745060	2	Massey 7CWT Electro-pneumatic hammer	2	0	4
1 S	1E	854	4745061	2	Thwaites Roots No.6 Blower [No.752]	2	0	4
1 S	6W	714	4745062	1	Rack of tools between columns (bay 1 South Rack E)	2	0	4
1 S	5W	736	4745062	1	Tools rack between columns (Rack E)	2	0	4
1 S	2W	812	4745066	1	[Portable] Rack of Assorted Tools	2	0	4
1 S	7W	700	4745067	1	Warning Sign for 40CWT Steam Hammer [1]	2	0	4
1 S	2W	809	4745069	1	Metal Trolley bin w 2 sides & long handle	2	0	4
1 S	4W	762	4745069	1	Trolley w 4 sides	2	0	4
1 S	4W	764	4745069	1	Trolley w 4 sides	2	0	4
1 S	4W	766	4745069	1	Trolley w 4 sides	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 S	3W	781	4745070	1	Warning sign for 40 CWT Steam hammer [2]	2	0	4
1 S	6E	1003	4745071	1	Billet holders and assorted tools	2	0	4
1 S	7E	1011	4745071	1	Billet holders and assorted tools	2	0	4
1 S	2E	1095	4745073	1	Jib Crane - Swivel Sling	2	0	4
1 S	4W	681	4745121	1	Bed from Societe Genovoise Hydraulic Jig Borer	2	0	4
1 S	5W	745	4745239	1	Tool Rack between Columns (Bay 1 South - Rack B)	2	0	4
1 S	6E	998	4745282	1	Stands of Assorted Dies	2	0	4
1 S	2E	903	4745285	1	Portable rack of tools (rack C)	2	0	4
1 S	4W	771	4745286	1	Rack of Assorted Tools (rack D)	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 S	5W	738	4745287	1	Rack of assorted tools (rack E)	2	0	4
1 S	6E	1094	4745288	1	Rack of Assorted Tools (Rack F)	2	0	4
1 S	4W	779	4745291	1	Tool rack between columns (Bay 1 South Rack C)	2	0	4
1 S	3W	792	4745292	1	Tool rack between columns (1 South - Rack B)	2	0	4
1 S	2W	810	4745293	1	Tool rack between columns (1 South - Rack A)	2	0	4
1 S	6W	713	4745320	1	Anvil base	3	0	4
1 S	2W	828	4745408	2	Anvil on cast iron base	2	0	4
1 S	7E	1025	4745408	2	Anvil on cast iron base	2	0	4
1 S	2W	827	4745474	2	Blacksmiths swage blocks in Bay 1 South	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
1 S	2W	826	4745474	2	Blacksmiths Swage Blocks in Bay 1 South	2	0	4
1 S	7E	1026	4745474	2	Blacksmiths Swage Blocks in Bay 1 South	2	0	4
1 S	Annex	1052	4745476	1	Manometer - wall mounted	2	0	4
1 S	2 - 6E	1036	4745477	1	Overhead Monorail crane	2	0	4
1 S	2 -3E	1035	4745483	1	6 cast iron floor plates	2	0	4
1 S	7E	1000	4745483	1	1 Cast iron floor plate	2	0	4
1 S	Annex	1059	4745483	1	Cast iron floor plate w inverted cut corners	2	0	4
1 S	Annex	1087	4745483	1	4 metal floor plates	2	0	4
1 S	2C	807	4745483	1	13 cast iron floor flates	2	0	4
1 S	2E	906	4745487	2	Blacksmiths' Mandrel	2	0	4
1 S	6E	992	4745055?	2	10CWT Jib Crane	2	0	4
10N	11W	2084	4745119	2	Herbert tool & Cutter Grinder	2	0	4
10N	12W	2079	4745120	2	Cincinati Milling Machine	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
10N	14E	2039	4745125	2	Whitlam Spring Coiler	2	0	4
10N	11W	2085	4745132	2	Ormerod vertical Shaper	2	0	4
10N	13W	2074	4745133	2	Webster & Bennett 60" Single Vertical Borer	2	0	4
10N	15E	2050	4745136	2	Spring shop rack & mandrels	2	0	4
10N	13W	2078	4745138	2	Herbert Twin Drill & Borer	2	0	4
10N	12E	2023	4745141	2	Department Lathe	2	0	4
10N	13W	2076	4745165	2	Pope Electric Motor & Base Plate	2	0	4
10N	13W	2077	4745167	2	Denham Centre Lathe	2	0	4
10N	10W	2088	4745168	2	Craven Axle & Journal Lathe	2	0	4
10N	12W	2081	4745169	2	Stirk Planer	2	0	4
10N	10E	2017	4745170	2	Metropolitan Vickers Motor	2	0	4
10N	11W	2082	4745171	2	Stirk Planer Motor Generator	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
10N	10E	2015	4745177	2	Richard's Vertical Borer with Dual heads	2	0	4
10N	15E	2049	4745205	1	Height setting table	2	0	4
10N	14 -15E	2046	4745264	2	Cabin for Overhead Travelling Crane - Craven 'L5'	2	0	4
10N	14 -15C	2045	4745270	1	Rail Trolley - 'Southern Aurora'	2	0	4
10N	14W	2072	4745345	2	Yellow Globe Pneumatic Hoist on wooden pallet	1	0	4
10N	10E	2016	4745415	1	Schedule' Bin, yellow with two triangular handles	2	0	4
10N	11-12W	2080	4745416	1	Bolt Rack	2	0	4
10N	13E	2029	4745418	1	Hand trolley	2	0	4
10N	13E	2035	4745420	1	Four Wheel Trolley Cart	2	0	4
10N	13E	2033	4745421	1	TEO Trolley	2	0	4
10N	12E	2024	4745422	1	Lockers	1	0	4
10N	12E	2022	4745423	2	Apprentice's Grinder	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
10N	12E	2025	4745424	1	Tool Box	2	0	4
10N	13E	2036	4745425	2	Spring Shop Rack & Coils & Tools	2	0	4
10N	13E	2037	4745426	2	Spring Shop Rack & mandrels	2	0	4
10N	14C	2043	4745429	2	Craven Overhead Travelling Crane L13	2	0	4
10N	15W	2059	4745430	2	British Electric Vehicle (BEV)	1	0	4
10S	5-6E	2000	4745200	2	Tangye 48" Wheel Lathe	2	0	4
10S	2W	2089	4745412	2	Column-mounted Jib Crane	2	0	4
10S	3W	2090	4745413	2	Column-mounted Jib Crane	2	0	4
10S	7W	2091	4745414	2	Column-mounted Jib Crane	2	0	4
10S	6E	2011	4745432	1	Rack associated with Tangye Wheel Lathe	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
10S	5E	2005	4745433	1	Tool shelf	2	0	4
11N	11C	2098	4745435	2	Craven Overhead Travelling Crane L21	2	0	4
11S	7W	2097	4745434	2	Column-mounted Jib Crane	2	0	4
11S	4W	2093	4745436	2	Column-mounted Jib Crane	2	0	4
11S	5W	2094	4745437	2	Column-mounted Jib Crane	2	0	4
11S	6W	2096	4745438	2	Column-mounted Jib Crane	2	0	4
11S	5C	2095	4745439	2	Craven Overhead Travelling Crane L14	2	0	4
12N	14C	2099	4745440	2	Babcock & Wilcox Overhead Travelling Crane L16	2	0	4
12S	4W	2101	4745441	2	Column-mounted Jib Crane	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
12S	6W	2100	4745442	2	Column-mounted Jib Crane	2	0	4
13N	14C	2102	4745443	2	Babcock & Wilcox Overhead Travelling Crane L18	2	0	4
13S	4E	2103	4745445	2	Column-mounted Jib Crane	2	0	4
14N	8W	2106	4745223	2	Column-mounted Jib Crane	2	0	4
14N	12E	2108	4745225	2	Column-mounted jib crane	2	0	4
14N	10W	2107	4745334	2	Column-mounted Jib Crane	2	0	4
14S	2-3C	2105	4745222	2	Vaughan and Sons Overhead Travelling Crane L20	2	0	4
15N	14E		4745126	2	Departmental Grinder	2	0	4
15N	15W		4745130	2	BSA Centreless Grinder	2	0	4
15N	9E		4745140	2	Cylindrical grinder	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
15S	1E		4745127	2	Craven Brothers Pedestal Drill	2	0	4
15S	7W		4745137	2	Brown and Sharp Universal Grinder	2	0	4
16C	9W		4745446	2	Craven brothers overhead traverser crane L15	2	0	4
16N	15W		4745447	2	Grinder	1	0	4
1N	15E		4745277	1	Davy Press - Circular swages, other swages and offcuts	2	0	4
1N	12E		4745012	1	Davy Press - Punches, Dies and Swage Blocks	2	0	4
2 N	11W	163	4745326	1	Quenching Tank with misc. objects & large hammer	4	0	4
2 N	11W	156	4745326	1	Rack of tools between columns (Rack D)	2	0	4
2 N	12E	234	4745482	1	Pallet Trolley	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 N	15W	123	4745475	2	Reheating Furnace	2	0	4
2 N	14E	199	4745406	2	Pilot Arc Welder	2	0	4
2 N	15W	120	4745395	1	Rack	3	0	4
2 N	14E	192	4745393	2	Portable welder	2	0	4
2 N	13W	141	4745382	1	Portable tool rack	2	0	4
2 N	13E	213	4745381	1	Portable tool rack	2	0	4
2 N	13E	214	4745379	1	Tool shelf for dies	2	0	4
2 N	10E	257	4745378	1	Tool shelf	3	0	4
2 N	9W	185	4745377	1	Toolbench for dies	2	0	4
2 N	14E	286	4745375	1	Crompton Parkinson Motor	3	0	4
2 N	14E	200	4745372	1	Collection of tools on top of workbench	2	0	4
2 N	14E	205	4745371	1	Toolbox	2	0	4
2 N	14E	206	4745370	1	Lockers 'Identified for Disposal'	3	0	4
2 N	15W	124	4745369	1	Steel Cabinet for Whitham Spring Coiler	2	0	4

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2 N	14W	136	4745367	2	Blacksmiths Forge No. 30 and Coke Bin	2	0	4
2 N	13W	137	4745366	1	Portable tool rack	2	0	4
2 N	13W	143	4745365	1	Toolbox	2	0	4
2 N	14E	204	4745364	1	Rack of tools between columns (Rack L)	2	0	4
2 N	13E	220	4745363	1	Two buckets of tools	2	0	4
2 N	13E	221	4745363	1	Two buckets of tools	2	0	4
2 N	13E	237	4745361	1	Stand	2	0	4
2 N	13E	217	4745360	1	Buckets of tools (4)	3	0	4
2 N	13E	218	4745360	1	Buckets of tools (4)	2	0	4
2 N	13E	219	4745360	1	Bucket of tools (4)	2	0	4
2 N	13E	222	4745360	1	Bucket of tools (4)	2	0	4
2 N	13E	215	4745356	1	Portable tool rack	2	0	4
2 N	13E	216	4745355	1	Portable tool rack	2	0	4
2 N	14W	134	4745354	1	Tool shelf for dies	2	0	4
2 N	13E	212	4745353	1	Tool shelf	2	0	4
2 N	13W	142	4745352	1	Trolley	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 N	13W	139	4745350	1	Rack of tools between columns (Rack B)	2	0	4
2 N	12E	244	4745348	1	Cluster of form tools, machine parts,gears,discs/set of molding curves(templates),rubber belts and 2x buckets with rods & swage blocks/mandrels[?} from the Churchill lathe	3	0	4
2 N	12E	241	4745343	1	Brownbuilt lockers	2	0	4
2 N	12E	229	4745340	1	Cylinder with scrap metal	2	0	4
2 N	12E	240	4745337	1	Rack of tools between columns (Rack J)	2	0	4
2 N	12W	145	4745336	1	Rack of tools between columns (Rack C)	2	0	4
2 N	14E	208	4745334	1	Rack	2	0	4

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2 N	11E	251	4745333	1	Timber crate with shaping rods	2	0	4
2 N	11E	248	4745332	1	Tool box (2 Items)	3	0	4
2 N	11E	249	4745332	1	Tool box (2 Items)	3	0	4
2 N	11W	159	4745329	1	Trolley (with broken bearing inside)	2	0	4
2 N	11W	161	4745329	1	Trolley (17 Items) x 3	2	0	4
2 N	14E	194	4745329	1	Trolley	2	0	4
2 N	11W	154	4745329	1	Trolley (17 Items)	2	0	4
2 N	12W	146	4745329	1	Trolley (17 Items)	2	0	4
2 N	14E	193	4745329	1	Trolley (17 Items)	2	0	4
2 N	14E	197	4745329	1	Trolley (17 Items)	2	0	4
2 N	14E	198	4745329	1	Trolley (17 Items)	2	0	4
2 N	9W	184	4745329	1	Trolley (17 Items)	2	0	4
2 N	11E	247	4745327	1	Quenching Tank with tools	2	0	4
2 N	11E	250	4745327	1	Rack of tools between columns (Rack I)	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 N	10E	260	4745325	1	Assemblage of tools	2	0	4
2 N	10E	289	4745324	1	Tool rest	2	0	4
2 N	10E	259	4745323	1	Anvil base	2	0	4
2 N	9E	271	4745322	1	Timber parts bin	2	0	4
2 N	11E	254	4745321	1	Large metal case/Metal guard	2	0	4
2 N	10E	258	4745318	1	Tray with dies/Floor plate with 17 tools	2	0	4
2 N	10E	287	4745318	1	Portable tool rack	3	0	4
2 N	10E	256	4745316	1	Rack of tools between columns (Rack H)	2	0	4
2 N	10W	170	4745315	1	Quenching tank w misc. tools	2	0	4
2 N	10W	166	4745315	1	Rack of tools between columns (Rack E)	2	0	4
2 N	9E	282	4745313	1	Workshop switchboard	2	0	4
2 N	9W	288	4745312	1	Churchill Grinder - Counterweight Guard	2	0	4

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2 N	9E	277	4745310	1	Metal bin for steel scrap	2	0	4
2 N	9E	281	4745308	1	Cart and tools	3	0	4
2 N	14E	196	4745307	1	Trolley with two motors and a gearbox Identified for Disposal	2	0	4
2 N	9E	278	4745306	1	Bucket of tools [x 3]	3	0	4
2 N	9E	274	4745305	1	Blower Identified for Disposal	2	0	4
2 N	9E	272	4745304	1	Timber box with tools	2	0	4
2 N	9E	268	4745302	1	Lockers	2	0	4
2 N	9W	180	4745300	1	Cluster of metal guards and cut outs (20 approx.), bucket of tools, block from davy press & wheel	2	0	4
2 N	9E	275	4745296	1	Rack of tools between columns (Rack G)	2	0	4
2 N	9W	178	4745295	1	Quenching tank w misc items	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 N	9W	176	4745295	1	Rack of tools between columns (Rack F)	2	0	4
2 N	11E		4745279	1	Davy Press - WIP and hand tools	2	0	4
2 N	11E	253	4745234	2	Anvil	2	0	4
2 N	10E	261	4745233	1	Hand trolley	2	0	4
2 N	14E	207	4745174	2	Edgwick Grinding Table	2	0	4
2 N	12E	243	4745172	1	Workbench and vice	2	0	4
2 N	10W	173	4745161	2	Furnace	2	0	4
2 N	12W	144	4745159	2	Furnace	3	0	4
2 N	12W	153	4745157	2	Department double floor grinder	2	0	4
2 N	12W	151	4745155	1	Quenching Tank	2	0	4
2 N	10W	165	4745151	1	Quenching Tank	3	0	4
2 N	14W	131	4745149	2	Long and Sons Spring Coiler MSC4	2	0	4
2 N	11W	160	4745139	2	Allen Striker Identified for disposal	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 N	15W	121	4745123	2	Pedding Haus Shearing Machine	2	0	4
2 N	10W	174	4745103	2	Swage Blocks (4 Items)/ Blacksmiths Swage blocks	2	0	4
2 N	11W	158	4745075	1	3x scrap metal bins with triangular handles (2x boxes filled with misc. items)	2	0	4
2 N	14W	133	4745040	2	Dual Grinder	2	0	4
2 N	14E	203	4745039	1	Timber workbench with vice	3	0	4
2 N	15W	125	4745038	2	Whitworth Lathe Bed	2	0	4
2 N	10W	172	4745036	1	Portable tool rack	2	0	4
2 N	9W	182	4745035	2	Hot Metal Circular Saw	2	0	4
2 N	14W	130	4745034	1	Rack of tools between columns (Rack A)	2	0	4
2 N	11E	245	4745033	2	Frazing and grinding wheel	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 N	12W	148	4745032	2	Davis and Primrose Steam Hammer No. 3	2	0	4
2 N	10W	168	4745031	2	Davis and Primrose Steam Hammer No. 2	2	0	4
2 N	13E	227	4745028	2	Davis and Primrose Steam Hammer	2	0	4
2 N	15W	128	4745027	2	Blacksmiths Forge No.29 and Coke Bin	3	0	4
2 N	11W	155	4745026	1	Rack of molds and templates for hammer shop	2	0	4
2 N	10E	291	4745029	2	Davis and Primrose Steam Hammer No. 1	3	0	4
2 S	3E	410	4745065	1	Quenching tank with counterweight basket	2	0	4
2 S	7W	301	4745069	1	Trolley [w sides]	2	0	4
2 S	5W	336	4745069	1	Trolley	2	0	4
2 S	5W	337	4745069	1	Trolley	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 S	5W	339	4745069	1	Two wheel axle w handle	2	0	4
2 S	4W	359	4745069	1	Trolley	2	0	4
2 S	2W	379	4745076	2	2- Ton Jib crane	1	0	4
2 S	4W	365	4745077	2	One tonne Jib crane	2	0	4
2 S	4W	356	4745078	2	Frazing Wheel and Saw	2	0	4
2 S	5W	345	4745080	2	Jib Crane	2	0	4
2 S	5W	346	4745081	2	Ajax Continuous Forging Machine	2	0	4
2 S	5W	335	4745082	2	Frazing Wheel and Saw	3	0	4
2 S	6W	317	4745083	2	Frazing and Grinding Wheel	2	0	4
2 S	6W	320	4745084	2	Jib crane	2	0	4
2 S	7W	311	4745085	2	Covmac Continuous Forging Machine	2	0	4
2 S	5E	440	4745091	2	Allen Striker (1)	2	0	4
2 S	5E	443	4745092	2	Rowland Frazing Grinding Wheel	3	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 S	4E	431	4745093	2	Blacksmith's Forge No.26 and Coke Bin	2	0	4
2 S	4E	420	4745094	2	Allen Striker (2)	2	0	4
2 S	3E	409	4745096	2	Massey 2 CWT Weight Pneumatic Hammmer	2	0	4
2 S	2E	399	4745098	2	Massey 2 CWT Weight Pneumatic Hammmer	2	0	4
2 S	2E	397	4745099	2	Furnace with blower	3	0	4
2 S	3C	415	4745100	1	Rack w dies	3	0	4
2 S	6E	486	4745102	1	Rack of Tools between columns (2 South -Rack A)	2	0	4
2 S	6W	321	4745112	2	Spring King Eye Rolling Machine	2	0	4
2 S	6W	322	4745113	2	Vicars Vane Pump for Spring King Eye Rolling machine	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 S	6W	323	4745114	2	Controller for Spring King Eye Rolling Machine	2	0	4
2 S	1W	382	4745117	2	Town & Sons Borer	1	0	4
2 S	3W	374	4745118	2	Landis Screw Cutting Machine	1	0	4
2 S	3W	375	4745120	1	Sign for 'Operating instructions Cincinatti Milling Machine	3	0	4
2 S	2E	391	4745180	2	Plate Rolls - Six Foot		0	4
2 S	2E	393	4745182	2	Bennie Metal Guillotine	1	0	4
2 S	Annex	625	4745203	2	Fuel tank	2	0	4
2 S	4C	418	4745284	1	Rack of assorted tools (Rack B)	2	0	4
2 S	4E	425	4745398	1	Rack of tools between Columns (2 South - Rack C)	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 S	5E	456	4745399	1	Rack of tools between columns (2 South - Rack B)	2	0	4
2 S	5W	343	4745401	1	Stand of tools (portable)	2	0	4
2 S	4C	417	4745402	1	Stand of tools (portable)	2	0	4
2 S	6E	471	4745403	1	Stand of tools (portable)	2	0	4
2 S	Annex	627	4745404	2	Steam Drum for No. 1 Boiler	2	0	4
2 S	1W	381	4745405	2	Grinder	2	0	4
2 S	7W	315	4745466	1	Rack of dies for Covac Machine	2	0	4
2 S	6W	324	4745467	1	Rack of dies for the Spring King Machine	3	0	4
2 S	4W	354	4745468	1	Rack of dies for the Ajax Furnace	2	0	4
2 S	5W	340	4745469	1	Stack of Dies for the Ajax Machine	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
2 S	5W	338	4745470	1	Rack of dies and punches for the Ajax Machine	2	0	4
2 S	5E	439	4745472	2	Anvil on cast iron base	2	0	4
2 S	3E	408	4745472	2	Anvils (6) in 2 S	2	0	4
2 S	2E	400	4745479	1	Rack of Tools between columns (2 South - E)	2	0	4
2 S	6E	478	4745480	1	Large metal slab table w timber block legs		0	4
2 S	4W	549	4745483	1	5 cast iron floor plates (diamond pattern)	2	0	4
2 S	6W	517	4745483	1	7 cast iron floor plates	2	0	4
2 S	5W	518	4745483	1	6 cast iron floor plates	2	0	4
2 S	4W	550	4745483	1	2 metal floor plates (plain)	2	0	4
2 S	4E	432	4745093?	1	Tools & mallets		0	4
3N	9C	4005	4745153	2	Ryerson Spring-Forming Machine No. 1	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
3N	9C	4004	4745154	2	Ryerson Spring-Forming Machine No. 2	2	0	4
3S	Annex	3001	untagged	1	Fire Hydrant/ Canister	3	0	4
3S	Annex	3002	untagged	1	Timber Ladder	2	0	4
3S	Annex	3003	untagged	1	Locker/ cabinet painted turquoise	3	0	4
3S	Annex	3004	untagged	1	Locker/ cabinet painted turquoise with cleaning equipment inside	3	0	4
3S	Annex	3005	untagged	1	Loose bricks and bag	2	0	4
3S	Annex	3016	untagged	1	Small set of drawers	2	0	4
3S	Annex	3028	untagged	1	Cardboard box filled with valves	2	0	4
3S	Annex	3029	untagged	1	3 piles on table of organised bolts and rods	2	0	4
3S	Annex	3031	untagged	1	Under tank on wall hanging seals	2	0	4
3S	Annex	3034	untagged	1	Metal tray with misc.	3	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
3S	Annex	3040	untagged	1	On top of box is 1 x large bolt and 2 x misc. item	2	0	4
3S	Annex	3041	untagged	1	Cabinet painted turquoise filled with misc.	3	0	4
3S	Annex	3042	untagged	1	Tray of valves	2	0	4
3S	Annex	3051	untagged	1	Plank on top of water tank	2	0	4
3S	Annex	3053	untagged	1	Cabinet painted blue filled with misc.	2	0	4
3S	Annex	7	4745464	1	Small mirror on wall with soap tray	2	0	4
3S	Annex	8	4745464	1	3 x small metal sheets	2	0	4
3S	Annex	9	4745464	1	Rubber tube approx. 1 metre in length	2	0	4
3S	Annex	12	4745464	1	Yellow plastic bucket filled with large screws	1	0	4
3S	Annex	15	4745464	1	Clamp looks newish	2	0	4
3S	Annex	17	4745464	1	Grinder looks newish	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
3S	Annex	18	4745464	1	Metal box small filled with misc.	2	0	4
3S	Annex	19	4745464	1	1/2 'Ampol' bucket filled with misc.	3	0	4
3S	Annex	20	4745464	1	1/2 Yellow bucket filled with misc.	3	0	4
3S	Annex	21	4745464	1	Small metal box filled with springs and bolts	3	0	4
3S	Annex	22	4745464	1	Metal shoe mould	2	0	4
3S	Annex	23	4745464	1	Incase of illness sign	2	0	4
3S	Annex	24	4745464	1	Hydraulic pressure valve sign	2	0	4
3S	Annex	30	4745464	1	Organised springs, coils, and misc. hanging on wall	2	0	4
3S	Annex	32	4745464	1	Metal block small	1	0	4
3S	Annex	33	4745464	1	Medium seals on floor	2	0	4
3S	Annex	3039	4745464	1	Small rectangle box with lid	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
3S	Annex	3043	4745464	1	Pile of metal discs	2	0	4
3S	Annex	3045	4745464	1	Metal jug	3	0	4
3S	Annex	3046	4745464	1	Paint tin formed into jug	3	0	4
3S	Annex	3047	4745464	1	Tray with misc. tool	2	0	4
3S	Annex	3050	4745464	1	Guage on wall	2	0	4
3S	Annex	3052	4745464	1	Pair of floorlights on stand	1	0	4
3S	Annex	3054	4745464	1	Collection of joints on top of cabinet	2	0	4
3S	Annex	3055	4745464	1	Light fitting	2	0	4
3S	Annex	3056	4745464	1	Switchboard	2	0	4
3S	Annex	3058	4745464	1	2 x metal chains	2	0	4
3S	Annex	3059	4745464	1	Piece of wood	3	0	4
3S	Annex	36	4745187	2	Hydraulic system overhead resevoir	2	0	4
3S	Annex	35	4745186	2	Hydraulic system steam pump	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
3S	Annex	48	4745184	2	Hydraulic system electric motor	2	0	4
3S	9C	4006	4745394	2	Pattern Rack and patterns	2	0	4
8N	10C		4745122	2	Genevoise Drilling and Boring Machine - Work Table	2	0	4
Bay 1N	15C	4021	4745207	2	Craven brothers overhead traverser crane	2	0	4
Bay 3 Annex	Exterior	4016	4745193	2	Hydraulic accumulators	3	0	4
Bay 3 Annex	Exterior	4017	4745194	2	Hydraulic accumulators	3	0	4
Bay 4N	9W	4012	4745152	2	Cowan Bros Spring Disassembler	2	0	4
Bay 4N	11C	4011	4745156	2	Hydraulic Press and Spring Tester	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
Bay 4N	11E	4008	4745158	2	Fielding and Pratt Hydraulic Spring Buckling Press	2	0	4
Bay 4N	10E	4007	4745160	2	Rice and Co Hydraulic Spring Buckling Press	2	0	4
Bay 4N	10C	4018	4745197	2	Craven brothers overhead traverser crane	2	0	4
Bay 4N	11C	4009	4745492	2	Spring Coiler - Smith & Coventry #1	2	0	4
Bay 4N	11C	4010	4745493	2	Spring Coiler - Smith & Coventry #2	2	0	4
Bay 4S	2C	4019	4745196	2	Arrol overhead traverser crane L6	2	0	4
Bay 5C	9C	4020	4745202	2	Ransomes and Rapier overhead traverser crane L8	2	0	4
Bay 5S	1W	4022	4745150	2	Spring Coiler MSC2 - Lang & Sons	2	0	4

Bay N/S	Section E/W	Map Item Number	SHI Tag Number	2 - Key or 1 - Contributory Item	Item Name	CONDITION 1 - Excellent 2- Good 3 - Fair 4 - Poor 5 - Urgent Work Req'd.	RISK SCORE	Conservation Priority (1,2,3) Maintenance Priority (4)
Bay 7C	9C	4023	4745221	2	Vaughan & Sons 5Tonne overhead traverser crane L17	2	0	4
Bay 8N	9C	4013	4745134	2	Genevoise Drilling and Boring Machine	2	0	4
Bay 8S	2C	4014	4745135	2	Societe Genevoise Hydroptic Jig Borer	2	0	4
Biomed	Ground floor lobby		4745128	2	Robey-Smith Bevel Wheel Planer	2	0	4
Innovation Plaza	South	4003	4745503	2	Davy Press Hydraulic Reservoir	2	0	4

Appendix H – Draft 2012 Options Paper Boiler House Area

Boiler Area, Locomotive Workshops, Australian Technology Park, Eveleigh

Conservation Options Report

DRAFT

July 2012

Prepared for

Australian Technology Park Sydney Limited

Prepared by

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Business Name	Futurepast Heritage Consulting P/L				
Client	Australian Technology Park Sydney Limited				
Project/Document Title	Boiler Area, Locomotive Workshops Conservation Options Report				
Project No.	081115	Issue	1.0	Date	20 July 2012

Prepared by		
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1. Introduction

1.1. The Brief

In September 2011 Futurepast Heritage Consulting Pty Ltd were commissioned by Australian Technology Park Sydney Limited to prepare a report on conservation and display options for the Boiler Area (Bay 2 Annex) of the Locomotive Workshops building at the Australian Technology Park. This brief was subsequently extended to include options for the Bay 1 Annex.

The purpose of the report is to analyse the areas in question and provide options for the conservation and display of these areas, for consideration by ATP management. Further detailed assessment of heritage impacts and statutory approvals may be required depending on the option ultimately selected. The various design options have however been prepared to minimise heritage impacts as much as possible, and the choices presented are largely ones of aesthetics and cost rather than relative impact.

1.2. Approach and Methodology

The methodology used in the preparation of this report is in accordance with the principles and definitions as set out in the guidelines to the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance - The Burra Charter and the NSW Heritage Manual.

This report will provide a range of conservation and display options for these areas, review the relevant statutory heritage controls, assess the impact of the proposal on the subject property and make recommendations as to the level of impact.

1.3. Limitations

The site, the dwelling and the interior of the subject property were inspected and photographed by MacLaren North and William Blackledge in September 2011. The inspection was undertaken as a visual study only and included an at-height inspection using a knuckle boom lift. There was no physical testing or intervention into any of the fabric.

The historical overview provides sufficient historical background to provide an understanding of the place in order to assess the significance and provide relevant recommendations, however, it is not intended as an exhaustive history of the site.

This report excludes consideration of the structural and masonry conservation issues, which are the subject of separate works managed by Tanners Architects and undertaken by builders AJ Bristow.

1.4. Author Identification and Acknowledgements

This report has been prepared by Futurepast Heritage Consulting Pty Ltd:

MacLaren North	Director
William Blackledge	Architectural Heritage Consultant
Amelia Parkins	Heritage Consultant
Sally Charalambides	Architectural Heritage Consultant
Prudence Macleod	Research Assistant
Nicky Corbett	Research Assistant

Information was sourced for this report from:

- Listing Sheet for the property from www.heritage.nsw.gov.au

1.5. Ownership

The site is owned by Australian Technology Park Sydney Limited.

1.6. Terminology

The terminology in this report follows definitions presented in The Burra Charter. Article 1 provides the following definitions:

Place means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

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.

Fabric means all the physical material of the place including components, fixtures, contents, and objects.

Conservation means all the processes of looking after a *place* so to retain its *cultural significance.*

Maintenance means the continuous protective care of the f*abric* and *setting* of a *place*, and is to be distinguished from repair. Repair involves restoration or reconstruction.

Preservation means maintaining the *fabric* of a *place* in its existing state and retarding deterioration.

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.

Reconstruction means returning the *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material into the *fabric*.

Adaptation means modifying a *place* to suit the existing use or a proposed use. **Use** means the functions of a place, as well as the activities and practices that may occur at the place.

Compatible use means a use that respects the *cultural significance* of a *place*. Such a use involves no, or minimal, impact on cultural significance.

Setting means the area around a *place*, which may include the visual catchment.

Related place means a place that contributes to the *cultural significance* of another place.

2. Site

2.1. Location

The Australian Technology Park is located in part of the area that was the Eveleigh Locomotive Workshops, south of the main railway line to Redfern Station. The Boiler Area is located to the south of Bays 2 and 3 of the Locomotive Workshops building.

Whilst historically the site was managed as one unit, since its shutdown as a railway workshop in the 1980s it has been split into separate management.

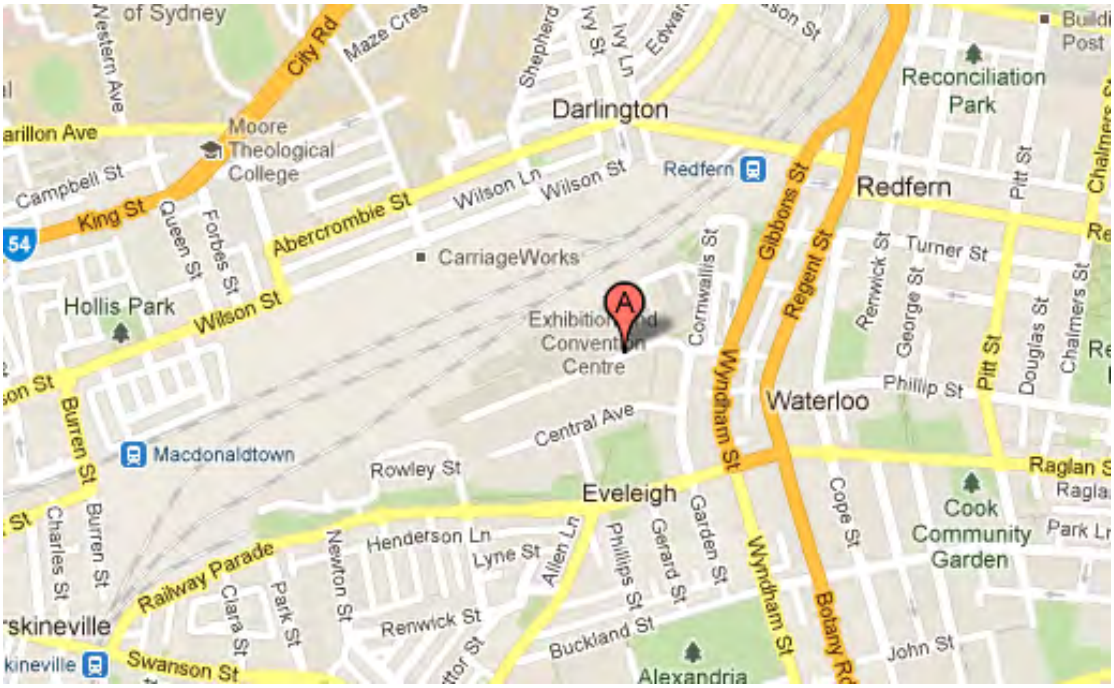


Figure 1 – Map of the location of the Australian Technology Park (marked by the 'A'), in which the Boiler area is situated *(Image Courtesy of Google Maps)*.

Figure 2 - Close-up aerial view of Locomotive Workshop. The approximate location of the Boiler area at the southern end of Bays 2 and 3 is indicated by the blue outline (Courtesy of Google Maps).

2.2. Description

The Boiler Annex consists of a skillion-roofed structure open on three sides and housing 4 boilers and associated machinery. The Boiler Annex is fixed to the south wall of the Locomotive Workshops and supported on a combination of steel posts and masonry columns at the corners. The west wall of the Annex was originally enclosed but was opened with an irregular rectangular opening at some point in the past. This area has been partially infilled with modern brickwork.

Figure 3 – Looking north into the Boiler Area in front of Bay 2.

The subject area of the Bay 1 Annex is a simple skillion roofed structure supported by iron poles and open on two sides. It is attached to the wall of Bay 1 to the north, and to the east wall of the closed in annex section to the west.

Figure 4 – Looking north into the Bay 1 Annex. Innovation Plaza is visible on the very right of photograph.

Figure 5 – Looking west from Innovation Plaza into the side of the Bay 1 Annex.

Figure 6 – Looking north-west into the Bay 1 Annex.

3. Statutory Listings and Controls

Heritage Status

The subject site is listed on the following statutory registers:

- NSW State Heritage Register;
- Sydney Regional Environmental Plan No 26;
- Australian Technology Park Section 170 Heritage and Conservation Register;
- Register of the National Estate;

The subject site is listed on the following non-statutory registers:

- National Trust of Australia (NSW) Register;

3.1. Environment Protection and Biodiversity Act 1999

The site is not included on the National Heritage List under the Environmental Protection and Biodiversity Act 1999.

3.2. NSW Heritage Act 1977

The site is included on the State Heritage Register (SHR), listed as Item #1140.

3.3. Regional Environmental Plan

The subject property is included on the Sydney Regional Environmental Plan No. 26.

3.4. Development Control Plan

The subject property is not included in any Development Control Plan.

3.5. Statement of Significance

There are two existing Statements of Significance relevant to Bay 1 North, being the State Heritage Register entry for the Eveleigh Railway Workshops and the S170 NSW State agency heritage register entry for the Locomotive Workshops Building.

The existing Statement of Significance for the Eveleigh Railway Workshops is as follows:

> *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.*

The existing Statement of Significance for the Locomotive Workshops Building is as follows:

> *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.*

4. Non-Statutory Listings

4.1. National Trust of Australia (NSW)

The site is identified by the National Trust of Australia (NSW).

5. Locomotive Workshops Boiler Area – Historical Background

5.1. Historical Overview

The Locomotive Workshops commenced construction in 1887 and were originally built in two parts. Bays 1 to 4, at the east end, contained the 'dirty' trades such as blacksmithing and boiler making, 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 boiler making 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 spring making, pattern making, welding, copper smithing 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 closed in 1988 and were converted to the Australian Technology Park in the mid-1990s.

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.

The current functions of the various bays at present are:

Bay 1 - Blacksmith shop/interpretation area
Bay 2 - Blacksmith shop/interpretation area
Bay 3 - Three levels of infill offices, commercial kitchen
Bay 4 - Atrium, reception/function area, three levels of office space to north
Bay 5 - Theatre, three levels of infill offices
Bay 6 - Two levels of infill offices, air conditioning plant on third level
Bay 7 - Two levels of infill offices

Bay 8 - Atrium, cafe, two levels of infill offices at north end

Bay 9 - Two levels of infill offices, boardroom

Bay 10 - Exhibition hall & machinery interpretation

Bays 11 to 14 - Exhibition hall

Bay 15 - Three levels of infill offices

Bay 16 - Café, two levels of infill offices

5.2. Boiler Area Overview

The boilers at the Locomotive Workshops were originally coal fired and provided power to hydraulic power system that drove the machines on site (including very large machinery such as the Davy Press seen in Bay 1).

The hydraulic system was installed c.1886 and is the oldest complete system of its kind surviving in Australia. Even with the advent of electricity, c.1904, the site was slow to move away from steam-powered devices due to the extent of the setup of the hydraulic system. Consequently, the main source of power for the industrial machinery remained steam until well into the twentieth century.

In the twentieth century the boilers were progressively converted to natural gas firing, whilst other machinery was converted to electricity.

The boiler area is essentially now an area of static display but has had minimal conservation or interpretation to date.

6. Physical Analysis, Condition Report and Repair Recommendations

Future*past* Heritage Consulting Pty Ltd carried out a physical assessment of the Boiler Area at the Locomotive Workshops on 8 September 2011. The analysis involved an investigation into the built form. It does not provide a detailed investigation of all fabric but an overview of the elements of the place to assist in determining significance, determine the condition and make recommendation for further investigation or repair.

6.1. Description

Exterior

The boiler area is located in a sandstock brick-built annex set to the south of Bays 2 and 3 of the Locomotive Workshop. The southern part of the annex is a lean-to structure providing shelter to the battery of boilers.

A hipped roof is set behind brick parapets over sandstone cornices on the open sides.

Interior

The north wall of the area is the blank south wall of the Locomotive Workshop. This wall is plain brickwork with service penetrations through to the main workshops. The west wall has been heavily adapted, considerably altering the original semicircular window. The eastern wall is mostly open with a substantial beam spanning the openings. The southern wall is mostly open, and supported in a similar manner to the eastern wall but with a single steel post.

The battery of four boilers are set on blocks, between which are access wells.

Structure

The roof structure is a sophisticated steel trussed rafter roof of 4 bays, the end bays being hipped. The trusses have 2 inclined struts. The top cord is a 'T' iron linked to other members by rivets, either directly or via plates. The two compression member struts are bar (upper strut) or angle (bottom strut). The bottom cord is a pair of steel flats linked to a tie rod.

The trusses are supported either in the wall (north wall) or on the sandstone ledge at the cornice course on cast iron shoes. On the west, east and south connection we would expect the shoes to be fixed down into the stone by lewises or lead grouted ragged bolts.

The tie rods are linked by a steel ring that gathers the tie rods (including the longitudinal rod restraining the spread of the hip sections) as well as linking the king rod of the trusses. At the intersection of the top cords at the hip, the members are linked by a cast iron (?) link member. This is a complex arrangement designed to maintain an inconspicuous roof behind the dominant feature of the parapet.

Roof and Roof Coverings

The roof is galvanised corrugated steel with a steel framed ventilator surmount. The vent has some intact galvanised steel louvers; the louvers on the north side are lost. The roof of the ventilator is curved galvanised corrugated steel sheet. The hip and cover flashing are galvanised steel. There are several penetrations through the roof, usually poorly flashed for vents and other services

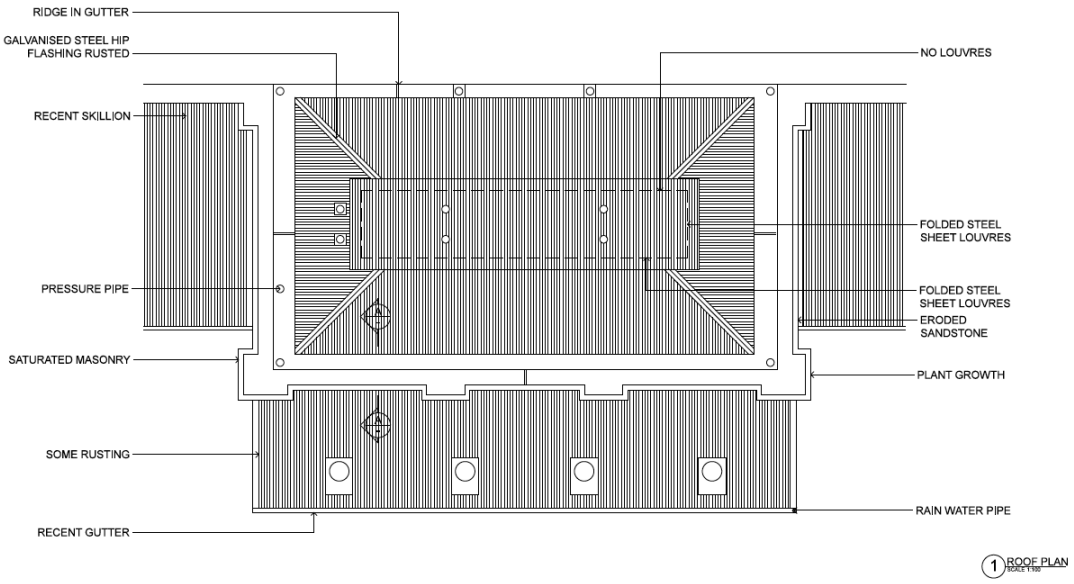


Figure 7 – Plan of the roof.

Rainwater Disposal

The perimeter cast iron guttering has several sumps into which stormwater drained into internal rain water pipes. The north guttering has 2 cast iron sumps which have been adapted to be plumbed into wall supported PVC drainage which discharge to the west and east. The western discharge discharges in turn into a recent galvanised steel hopper (which appears to pick the discharge from the NW corner sump) from

which water runs south to discharge beside the building. It is unclear how the SW and SE sumps drain. The plant growth in the piers suggest water attempts to discharge down the route of the original drainage which appears to have been built into the wall.

Originally the cast iron guttering sections would have been caulked (most likely in lead paste). The guttering appears to have been partially and inadequately flashed and bitumen caulked.

We have not calculated the capacity of the guttering for a 20 year event (the minimum standard for parapet guttering). That capacity will be directly related to the number and efficacy of the downpipes discharge.

6.2. Condition

Walls

The masonry structure is in good condition except where affected directly or indirectly by poor water disposals.

The masonry is deteriorated by:

- Rust jacking of the seating of steel joists and other steel embedments causing reactive cracking of the brickwork (Figure 8).
- Accelerated erosion of sandstone elements where they are periodically saturated by water (Figure 9).
- Plant growth in brick piers thriving on saturated masonry. The excessive moisture is deteriorating the jointing directly and indirectly (Figure 10).

The sandstone coping of the parapet is in poor condition. Screeding of the sandstone is breaking down revealing the earlier underlying failure of the sandstone element (Figure 11).

Figure 8 – Cracking of the brickwork caused by rust jacking.

Figure 9 – Erosion of sandstone elements and plant growth on the Bay 2 Annex.

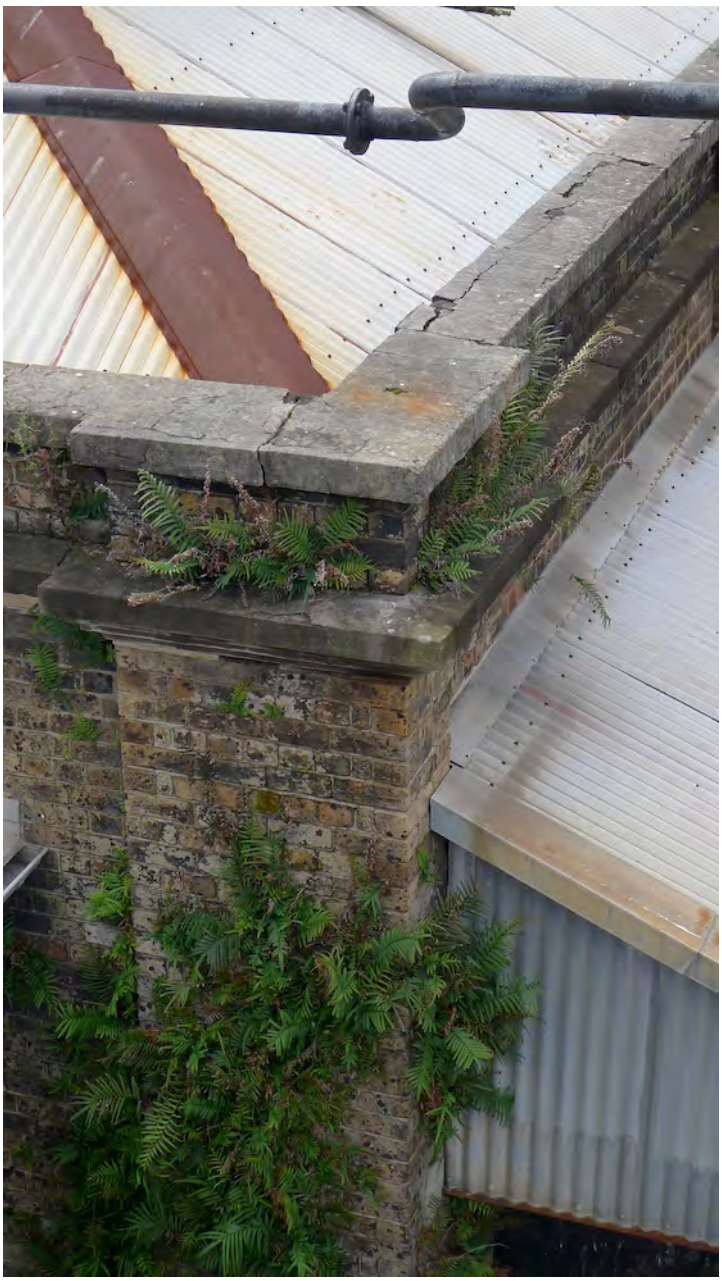


Figure 10 – Corner of the Bay 2 Annex showing plant growth indicating chronic saturation probably caused by the breakdown of the drainage within the pier. This occurs in the southeast and southwest corners.

Figure 11 – Note that the breakdown of the render is uncovering underlying fractures of the sandstone coping.

Roof Structure

The wrought iron/steel structure appears to be in good condition but superficially corroded. We recommend a structural engineer assess the structural adequacy of the structure.

The pattern of masonry cracking especially in the eastern elevation indicates rust jacking of the steel joist seating.

Figure 12 – Internal view of the roof structure of the Bay 2 Annex. Note the complex junction of tie rods at the hip apex.

Roof Covering and Flashings

The roof covering and attendant flashings are in poor condition. The louver to the roof surmount is damaged, corroded and incomplete.

Figure 13 – The roof covering of the Bay 2 Annex. Note the rusting hip flashings, the damaged and corroded louvers, the distorted capping to the surmount and poorly flashed penetrations.

Rainwater Disposal

The guttering appears to be in fair to poor condition and has been partially flashed by lead and coated with bitumen. In places the guttering is cracked. The adaptation of the guttering has been poorly designed and executed and consequently surface water disposal is inadequate and causing accelerated deterioration of the structure.

Figure 14 – Detailed photograph of the guttering of the Bay 2 Annex. Note the downpipe appears to discharge into a concealed downpipe. The associated plant growth would suggest the drainage line no longer functions and the surface water saturates the masonry.

6.3. Structure – Scope of works and repair recommendations

Generally:

- Deep clean all surfaces in conjunction with works to boiler

Walls:

- Investigate source of cracking
- Remove all vegetation
- Re-point open and decayed mortar joints
- Cut out and replace all decayed cornices and copings
- Cut out and treat seating of steel joists where associated with masonry cracking
- Open up around and beneath corner sumps at SW and SE corners, investigate sump outlet and condition of metal elements

- Stitch cracking as advised by Mott Macdonald following resolution of movement
- Flash coping and repaired cornices

Roof Structure:

- Assess the structural adequacy of the roof structure
- Assess the seating of the roof trusses and the condition of any metal embedments
- Clean, de-rust and repaint all exposed steelwork

Roof Covering and Flashings

- Replace all roof covering in new galvanised profile steel
- Reconstruct louvers to surmount ventilator, incorporate stainless steel anti-vermin netting
- Replace all roof flashing

Rainwater Disposal

- Assess the capacity of the existing gutter profile
- Reline existing guttering in elastomeric polyester PVC membrane (i.e. Wolfin Membrane), line sumps and weld connections to new or existing downpipes
- Redesign surface water disposal to allow two discharge points to adjacent roofs where the annex abuts the main block and three discharge points onto lean-to roof to south

6.4. Boilers – Scope of works for preservation (Prepared by Heritech Consulting)

For the purpose of this report the boilers are numbered 1 to 4, with number 1 at the eastern end of the set.

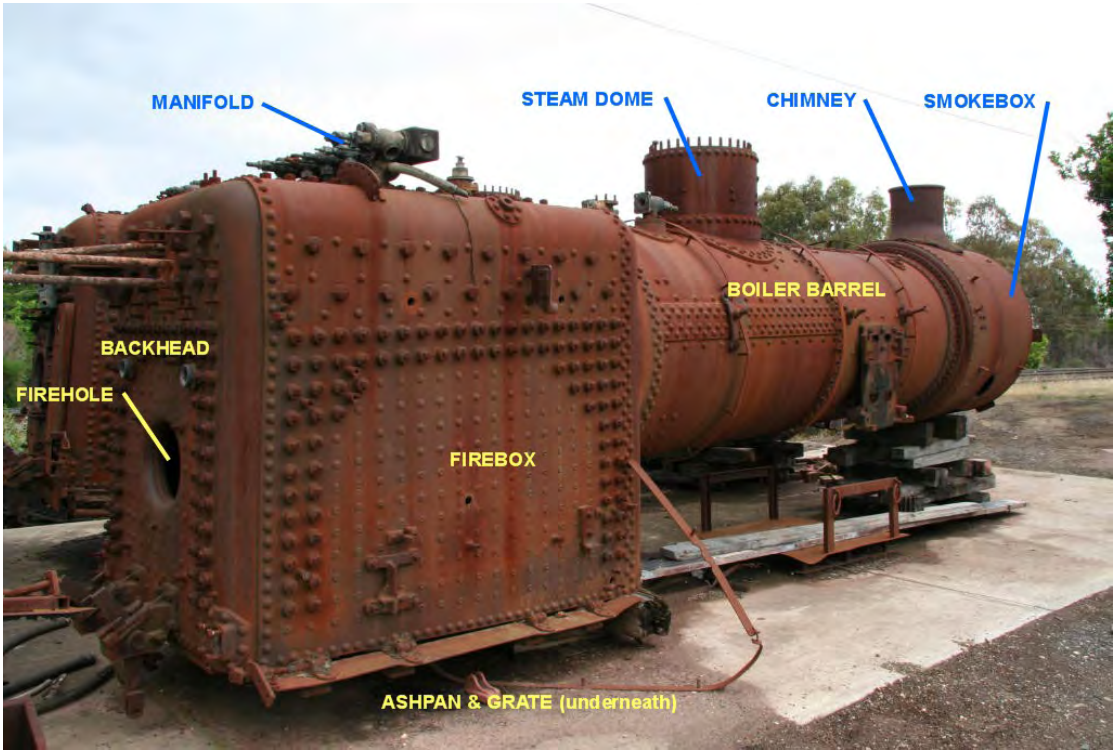
Description

The boilers are, in fact, those designed for C36 class railway locomotives. In many areas within the railway workshop system there was a need for steam at pressure to operate machinery. This was particularly so within the blacksmiths shops (Bays 1 and 2) where the roots blowers, the various steam hammers, and the double arch steam hammer were driven by steam. Therefore, it is not surprising that the workshops adapted four boilers initially produced for locomotives to produce the steam for the plant.

Of the boiler set, boiler 1 was apparently used to supply most of Bay 1 (south) needs, whilst boilers 2 – 4 were interconnected to supply steam to the hammers in Bay 2 (north and south).

Boiler Nomenclature

Steam locomotive boilers are rather complex devices, particularly when connected with various controls and ancillary equipment.



The diagram above gives a good insight into the main structural parts of a boiler similar to those existing at ATP. Because the ATP boilers were set up as stationary boilers, rather than being part of a moving locomotive, there are some significant differences to the normal layout. It is clear that changes have been made over time.

Predominantly, steam locomotive boilers are fired with coal, and to a lesser degree oil. Those at Eveleigh have been converted to be fired with gas. The fact that the boiler is stationary means that the normal source of a draught to burn the fuel does not exist. There is still the provision of a blower but this is insufficient in this case. The gas burners have been adapted to electrically driven fans to produce the draught. The Firebox door has been sealed and the gas burner modified to a replacement grate-and-ashpan arrangement. One advantage of gas firing is that there is no ash to deal with.

	
Restricted Firehole Door	Gas Burner (L), Blower (R)

In a steam locomotive water is pumped into the boiler using mechanical pumps and/or the injectors. In the ATP arrangement water is pumped into the boilers only using injectors (two per boiler).

Injector (L), Water Gauges (top)

The level of water in the boiler is measured using the water gauge(s).

The flue gasses pass through the boiler tubes within the boiler and are exhausted through the chimney. The chimneys of these four boilers have been extended upwards to ensure the waste gasses are exhausted away from harm.

Smokebox Doors and Chimneys

Steam from the boiling water is collected in the steam dome and directed to areas within the workshops through insulated steel pipes, passing through large control valves where necessary.

Steam Dome (R))

Steam Pipes & Valves

Each boiler is fitted with safety valves, which are designed to release excess steam to the atmosphere in the event that pressure within the boiler exceeds a set limit. The steam pressure is measured with gauges. The safety valves are located on top of the boiler.

	
Safety Valves (top of boiler 2, lower L)	Steam Drum (top of boiler 1)

A slightly different arrangement for steam collection at the dome exists on Number 1. Here, there is a large steam drum, which is a sizeable reservoir of steam for use by large volume machinery. It is most likely that boiler 1 therefore provided the steam supply to the Roots Blowers.

Condition

Considering the age of the system and the fact that the four boilers are in an exposed area of the works, the boilers are in reasonable condition, and whilst there is no consideration that they may be brought to working condition they could probably still be made operational.

The whole boiler area needs to be cleaned of rubbish and items that do not need to be left in the boiler house (such as old chairs, etc). For safety reasons, the walkways will need to be reinstated with new timbers. The steel ladders and supports appear to be in sound condition.

The main aesthetic issue is the corroded boiler cladding. The barrel of each boiler is covered with insulating material, and this is held in place with sheet steel cladding. The cladding, in turn, is held in place with steel bands (boiler bands), nuts and bolts.

During operation and when left standing moisture condenses within the insulation material. The condensate moves down through the insulation to the inside of the steel cladding. Over time this condensate corrodes the steel cladding.

Corrosion of Boiler Barrel Cladding

Conservation Detail

Boiler 1 (eastern end)

- Boiler cladding on the RHS needs replacing with a strip about 600 mm wide.
- Boiler cladding straps (2) need repair and refitting.
- Smokebox door, smokebox and chimney need cleaning, degrease and repaint in original colour (satin black).
- The light fitting on the chimney needs to be removed.
- Cladding around the firebox needs cleaning and repainting.
- Burner unit (orange, located next to firebox) needs to be cleaned and repainted in original colour and replaced on boiler.
- Remains of insulation on the floor need to be disposed of.
- Steam Header Tank (on top of the boiler) cladding needs replacement and new paint.
- The lockers (3x blue) on north wall of boiler house, ground level, should be removed.

Boiler 2

- The boiler barrel cladding (L) needs cleaning, degreasing and repainting in original colour (satin black).
- The smokebox door, smokebox and chimney need cleaning, degreasing and repainting.

Boiler 3

- Boiler cladding on the belly of the barrel needs replacement; all cladding needs cleaning and repainting.
- The smokebox door, smokebox and chimney need cleaning, degreasing and repainting.
- Access ladder under smokebox (now missing) is on the floor under boiler 1. The ladder needs to be repaired, cleaned, painted and replaced.

Boiler 4

- As for boiler 3, but barrel boiler cladding needs replacement, cleaning and repainting.
- The burner for this boiler is on the northern wall behind boiler 3. It should be cleaned, repainted and replaced in its correct position on boiler 4.

General

- No. 2 blower should be connected to the no. 2 burner with flexible tube (plastic is an acceptable material in this case) to simulate the working situation. This could be done for all boilers.
- The backhead of all four boilers are in good condition, they should be cleaned and repainted in original colour.
- The temporary lighting above the boilers (5) needs to be removed.
- The mess on the floor underneath the backhead of each boiler needs to be cleaned.
- The black plastic barrel behind boiler 4 is to be disposed of.
- Above the boilers – there are 8 builder's planks on the top of the boiler barrels to allow access. One of these should be removed and two set up to safely span between each of the boiler barrels
- Tops of boilers need to be cleaned down and repainted.
- Piping that carries steam is to be painted yellow or orange according to piping colour standards. The steam piping within the boiler house should be painted accordingly.

Summary

The boiler set located at ATP is in reasonable condition to enable, without too great an expenditure, their preservation from an aesthetic point of view. Some new fabric will need to be made up and used to replace existing fabric, such as with the boiler cladding.

The area can be cleaned and extraneous materials disposed of.

The external surface of the boilers should be cleaned down and repainted in original colours.

6.5. Plans

Bay 1 Annex

The Bay 1 Annex is an open-sided skillion structure supported on steel posts set into concrete. At present, it serves as a part of the workshop of the commercial blacksmithing tenant in Bays 1 & 2 South. There is also a large set of historic metal shears within the Annex. A pair of gates provide vehicular access to the east end.

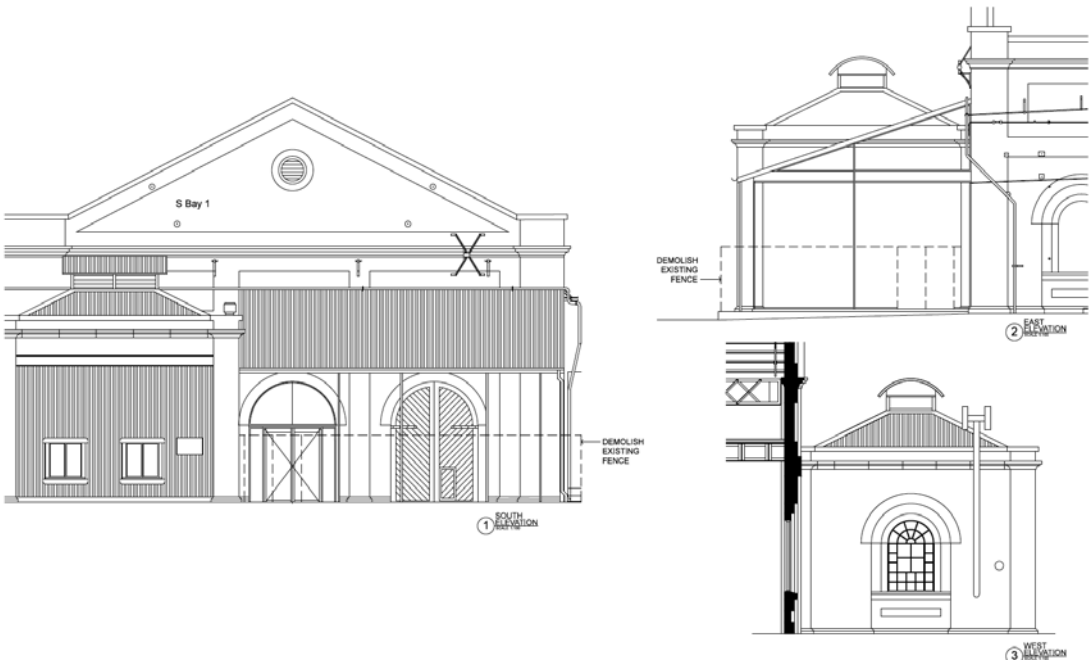


Figure 15 – The existing elevations of Bay 1 Annex.

Bay 2 Annex

The Bay 2 Annex contains the boilers and is primarily a display area.

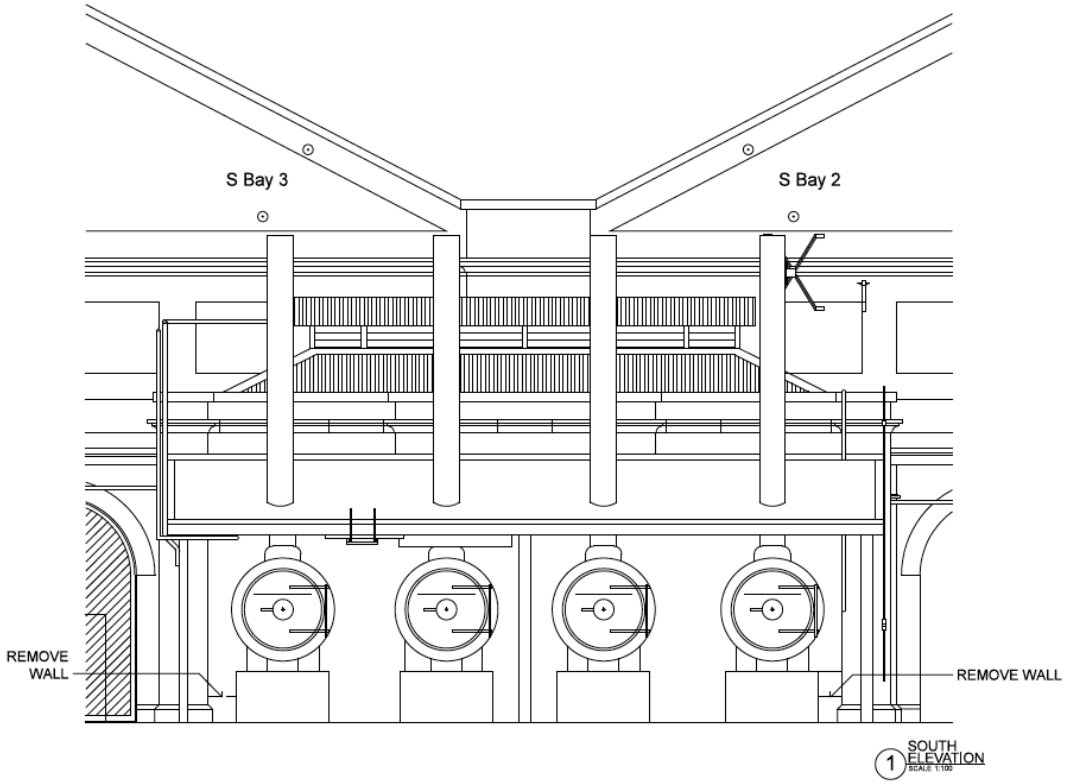


Figure 16 – The existing southern elevation of the Boiler Bay.

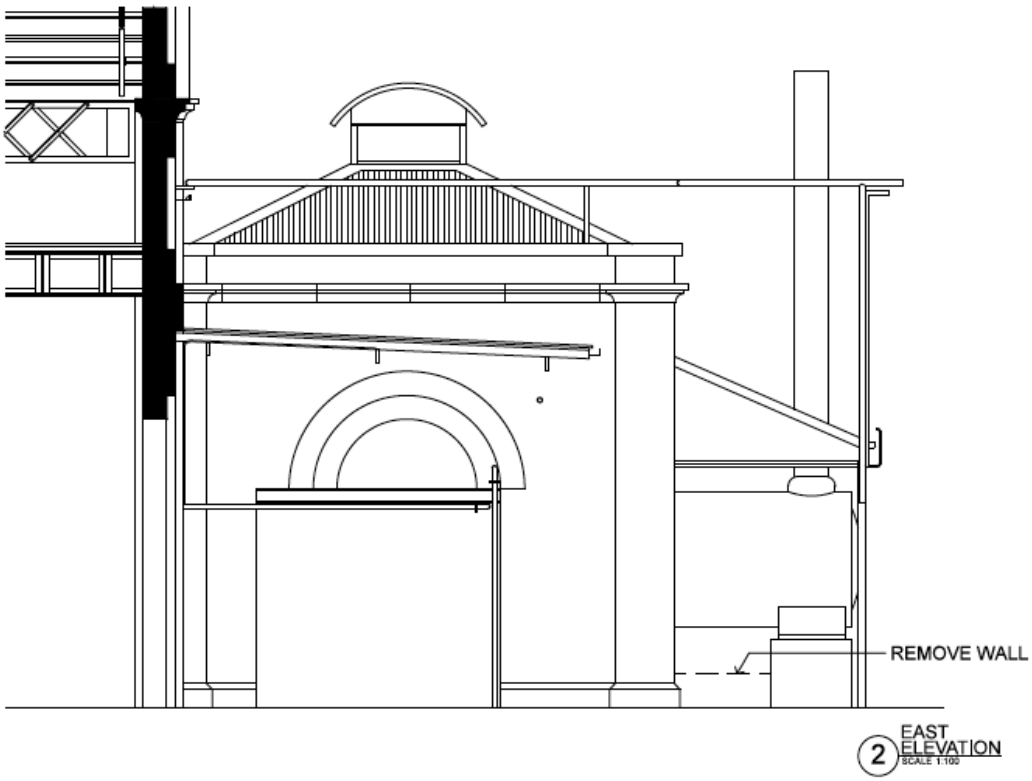


Figure 17 – The existing eastern elevation of the Boiler Bay. Note the cut-out in the wall which has been bridged with a metal beam.

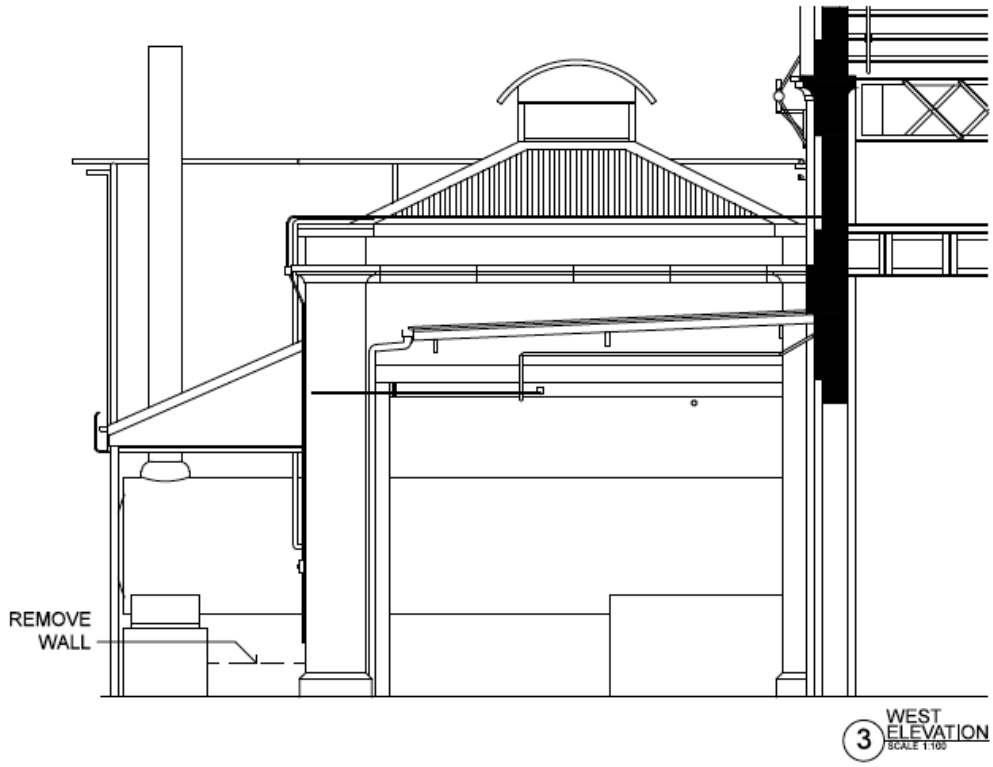


Figure 18 – The existing western elevation of the Boiler Bay.

7. Options for Screening, Bays 1 & 2 Annexes

In addition to a condition report and repair recommendations for the Boiler House and boilers, Futurepast has been commissioned to provide options for the screening of the Bay 1 and Bay 2 annexes to help maintain security of the premises and ensure the longevity of any repair/preservation measures, as well as preventing bird access.

Each potential screening option includes a brief discussion of suitability and cost estimates, taking into consideration both aesthetic and practical concerns as well as integration into the appropriate heritage management of the site.

All of the options involve the southern screen for the Bay 2 Annex being set back slightly within the space, allowing the ends of the boilers to be exposed for viewing. This helps to emphasise the boilers as the key heritage items within the annex and will add to the effectiveness of future interpretation methods.

In addition, all options will involve the selected screening material to be fixed to a rigid support frame inserted into the open spaces. The frames will be bolted or clamped to the supporting walls/formwork, subject to future design specifications.

Please see the appendices for larger format plans of the screening options.

7.1. Boiler Annex Option 1 – Glass Screening

This option involves the use of frameless glass to construct a screen that will completely enclose the open spaces of the Boiler Area.

Whilst being option requiring the greatest expenditure, a glass screen will have the most positive aesthetic impact. It will allow an unimpeded view to the interior of the Boiler Area, whilst still providing adequate security and impeding any rubbish or vermin from entering the space.

From a practical standpoint, however, the use of glass screening on the east side of the annex needs to take into consideration that this area is presently used for car parking. In order to ensure the glass is not damaged by accidental vehicle contact, the erection of bollards or some other protective measure will be required. Further to this, glass screens will require regular cleaning to ensure they remain in acceptable condition.

The design for the glass screening is detailed below:

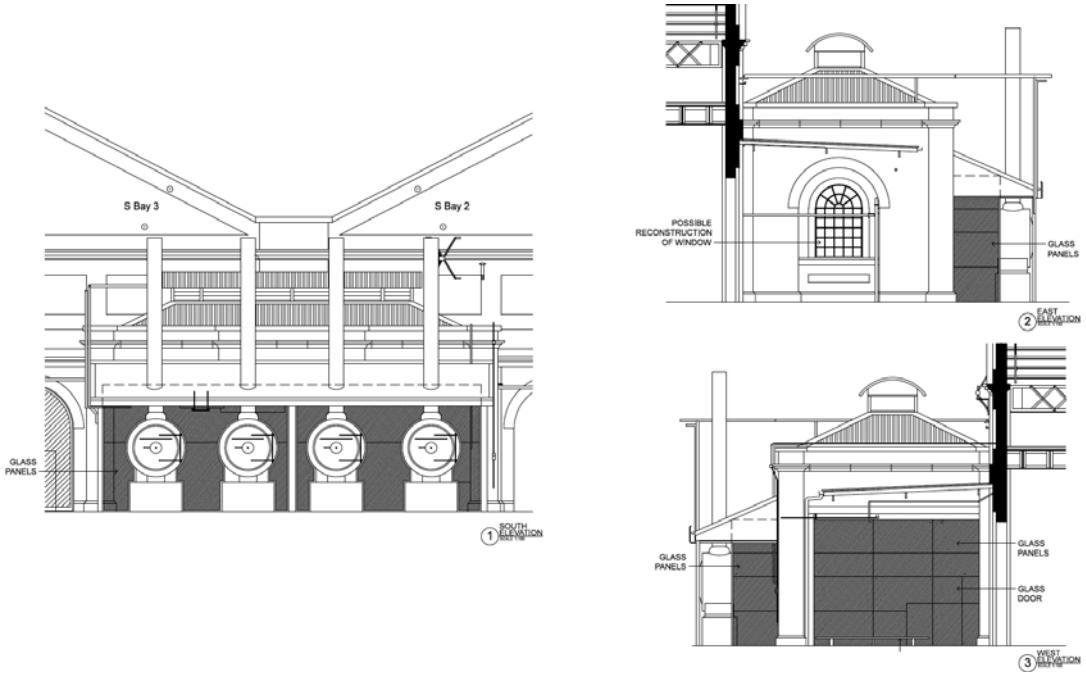


Figure 19 – The proposed elevations under option one.

7.2. Boiler Annex Option 2 – Stainless Steel Mesh Screening

This option involves the use of an open weave stainless steel mesh to construct a screen that will enclose the open spaces of the Boiler Area. All mesh would be stretched between a steel frame which would be mounted by clamping or bolting to the existing support framework for the annex.

There are several types of flexible stainless steel mesh that would be appropriate for use within the Boiler Area. Note that the use of rigid mesh is not considered to be a desirable option due to its bulk; the use of rigid mesh would significantly increase the weight of the screens and would obscure views into the space (see Figure 21). All of the flexible mesh options utilised open-weave stainless steel wire, which is stretched out and attached to a frame to form a screen. Each type is detailed below:

Ronstan Brand Mesh – this type is the most expensive of the three meshes (approx. $200 sqm.), however is aesthetically the most refined. The mesh is fabricated from stainless steel wire (1mm or 1.5mm diameter) held into a woven design by stainless steel ferrules for added stability. It comes in a variety of sizes, of these it is suggested that the 50mm or 60mm size would be the most appropriate (the sizing refers to the width of the spaces within the mesh) (Figure 22, Figure 23). A smaller size would likely be too fragile, as a certain level of robustness is required to ensure security, while a larger size increases the potential for vermin or rubbish to be able to penetrate the screen (Figure 24, Figure 25).

RaMeiJu Brand Mesh (1) – though slightly less visually refined than the *Ronstan* brand mesh, this mesh has been quoted at a significantly lower price per square-metre (approx. $40 sqm.) thus is more cost effective than the above choice. The mesh is fabricated in a similar manner to the *Ronstan* mesh, however utilises a slightly heavier grade stainless steel wire (1.6 mm to 2mm diameter) held into a woven design by stainless steel ferrules for added stability. It comes in a variety of sizes, of these it is suggested that the 40mm or 60mm size would be the most appropriate (the sizing refers to the diameter of the spaces within the mesh) (Figure 26, Figure 27). As above, a smaller size would likely be too fragile in terms of security, while a larger size increases the potential for vermin or rubbish to be able to penetrate the screen.

RaMeiJu Brand Mesh (2) – this type is considered to be the least desirable of the three choices from an aesthetic and practical perspective. Though it is the least expensive of the three and also utilises stainless steel wire (1.2mm diameter) woven into a mesh, this type does not include the stainless steel ferrules within the design. This reduces the stability and durability of the mesh, and also presents a finished appearance more akin to a basic chain-link style fence (Figure 28). This visually gives the impression of a temporary and ad hoc solution, which is undesirable within the professional heritage context of the site. However, the *RaMeiJu* brand mesh (2) is the most cost-effective choice in terms of outlay expenditure per square-metre.

All of the stainless steel mesh choices require less initial financial outlay than the use of glass as a screening material. They will have only a minimal visual impact and provide a mostly unobscured view into the interior of the Boiler Areas. Though there is the chance that vermin or rubbish could enter the space through the gaps in the mesh, the potential for this is fairly negligible and able to be managed through the use of smaller sized mesh and monitoring/maintenance of the space as required. Mesh screens also will provide adequate security by inhibiting access to the space. The stainless steel mesh screens have the benefit of being rust resistant and lightweight.

The design for the stainless steel mesh screening and images for the different types are detailed below:

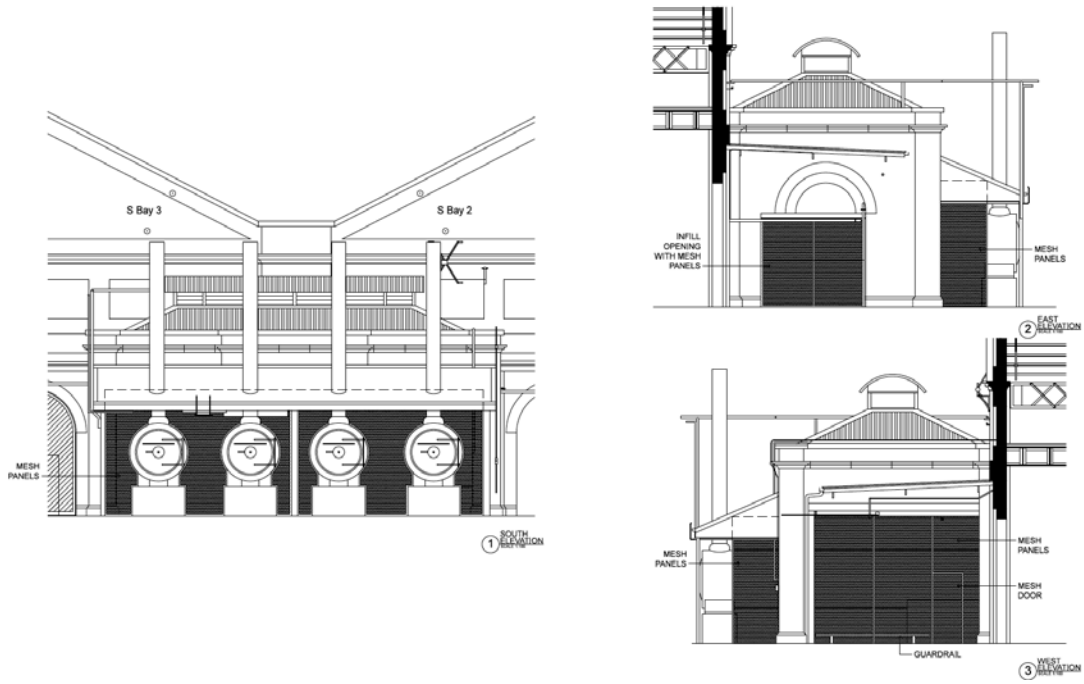


Figure 20 – The proposed elevations under option two.

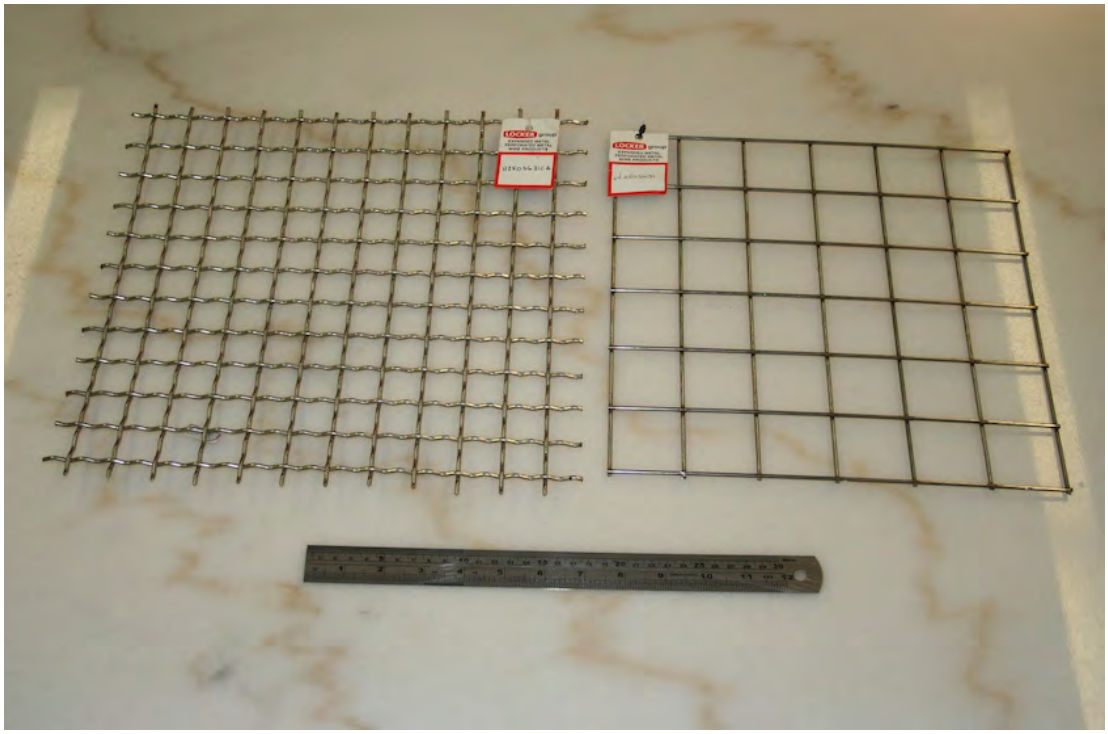


Figure 21 – Two examples of rigid stainless steel mesh, considered to be too bulky for screening use the context of the Boiler Area and Bay 1 Annex.

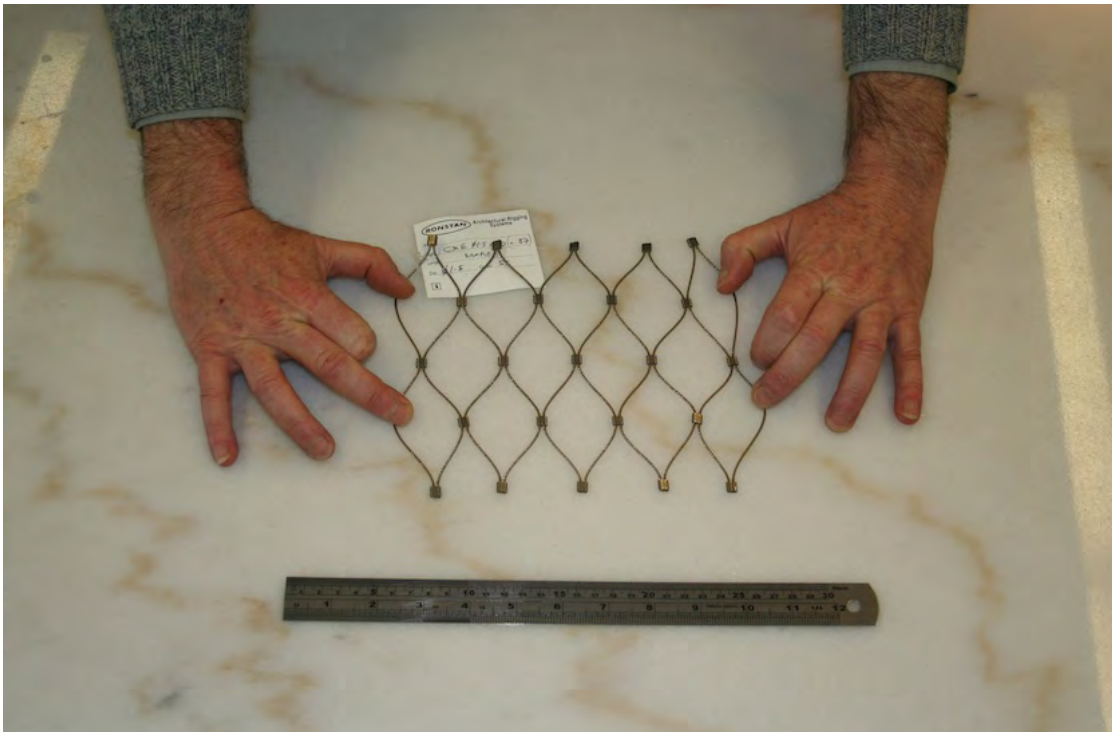


Figure 22 – *Ronstan* 50mm stainless steel mesh. A good mid-sized mesh.

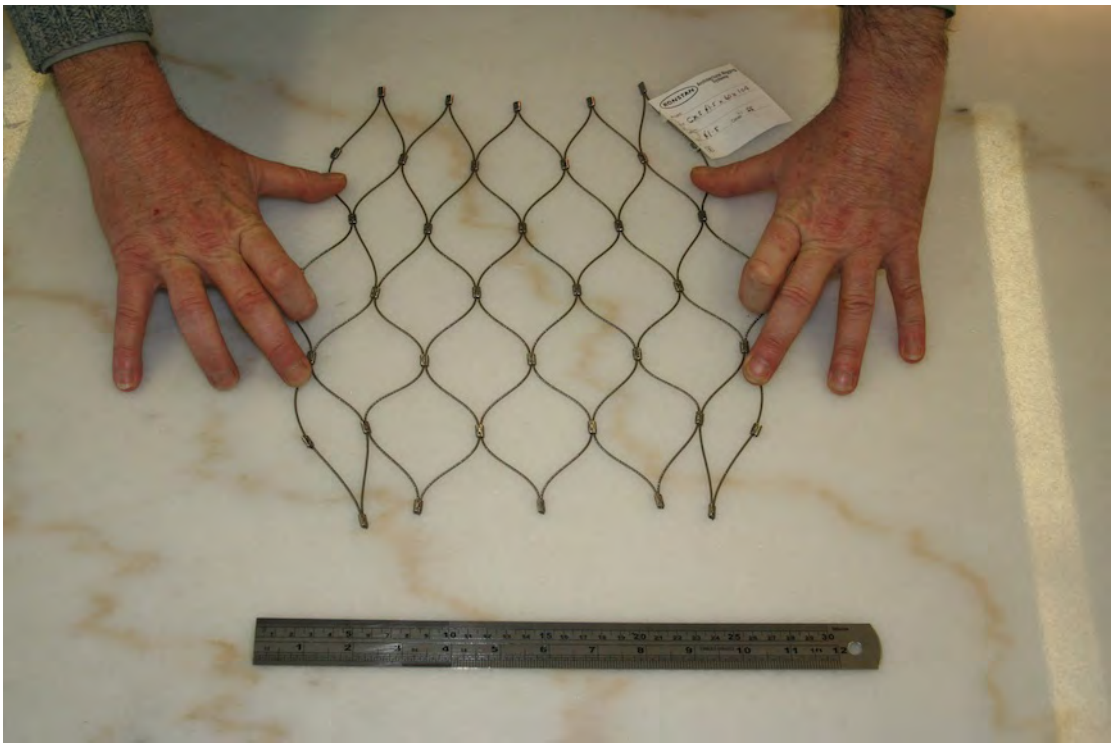


Figure 23 - *Ronstan* 60mm stainless steel mesh. A good mid-sized mesh.

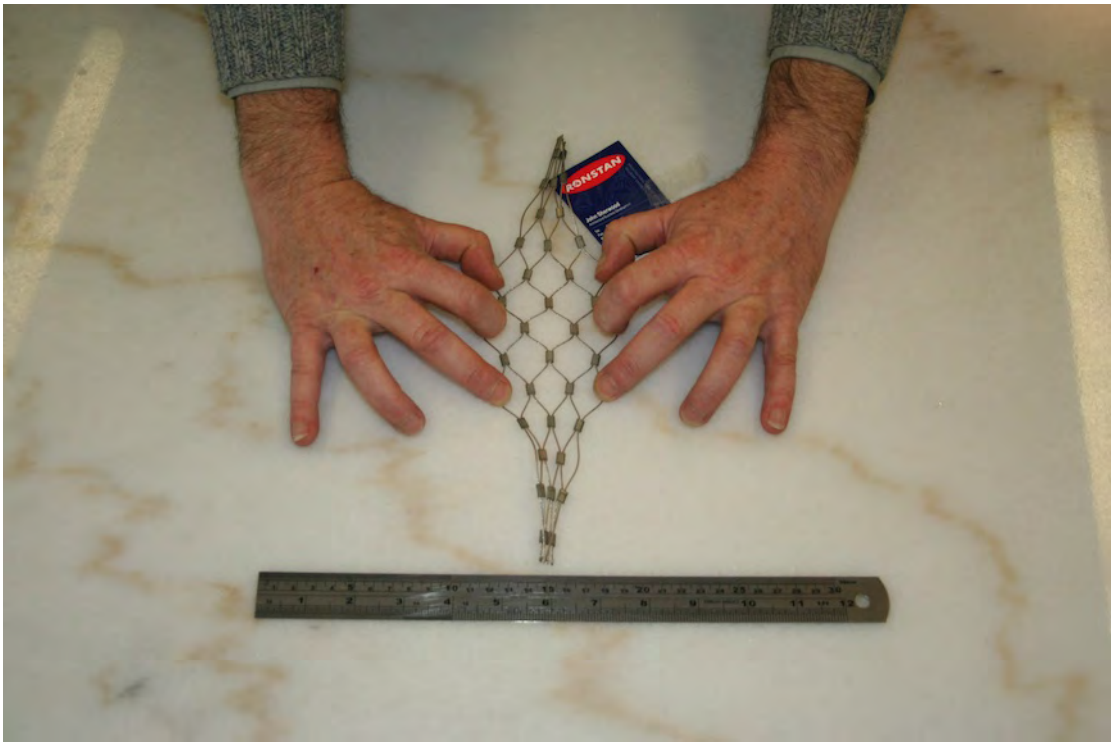


Figure 24 - *Ronstan* 20mm stainless steel mesh. This mesh is likely to be too small and thus visually intrusive.

Figure 25 - *Ronstan* 80mm stainless steel mesh. This mesh is likely to be too open and may allow bird ingress.

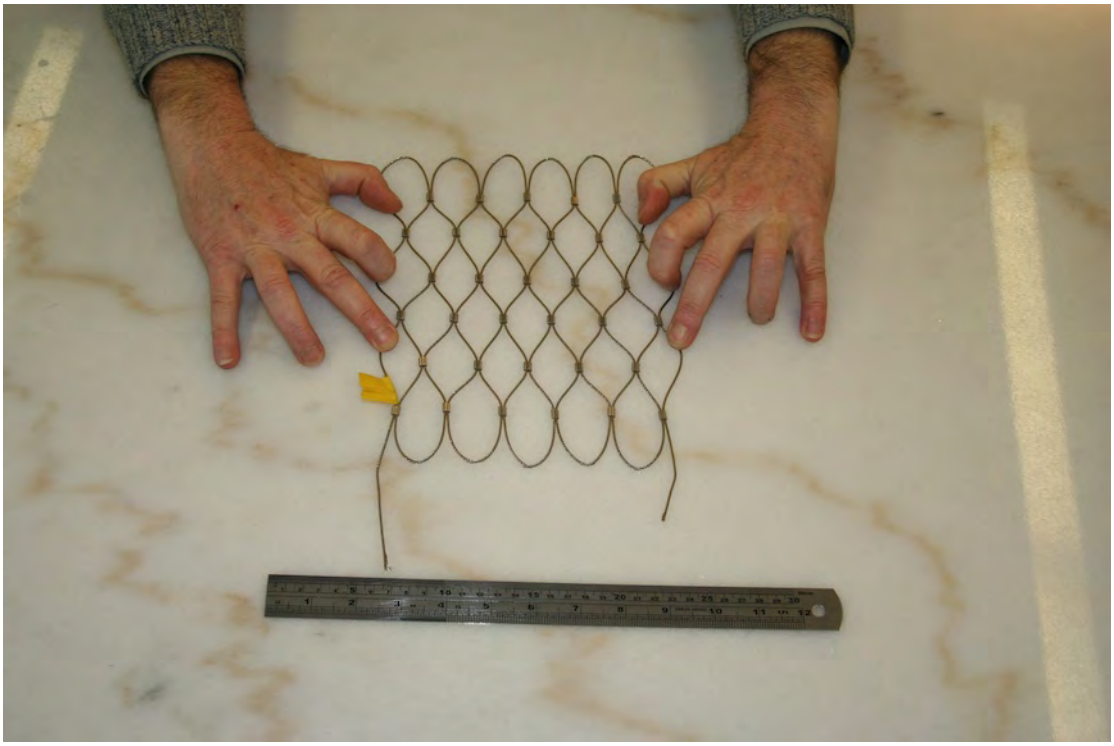


Figure 26 – *RaMeiJu* 40mm stainless steel mesh.

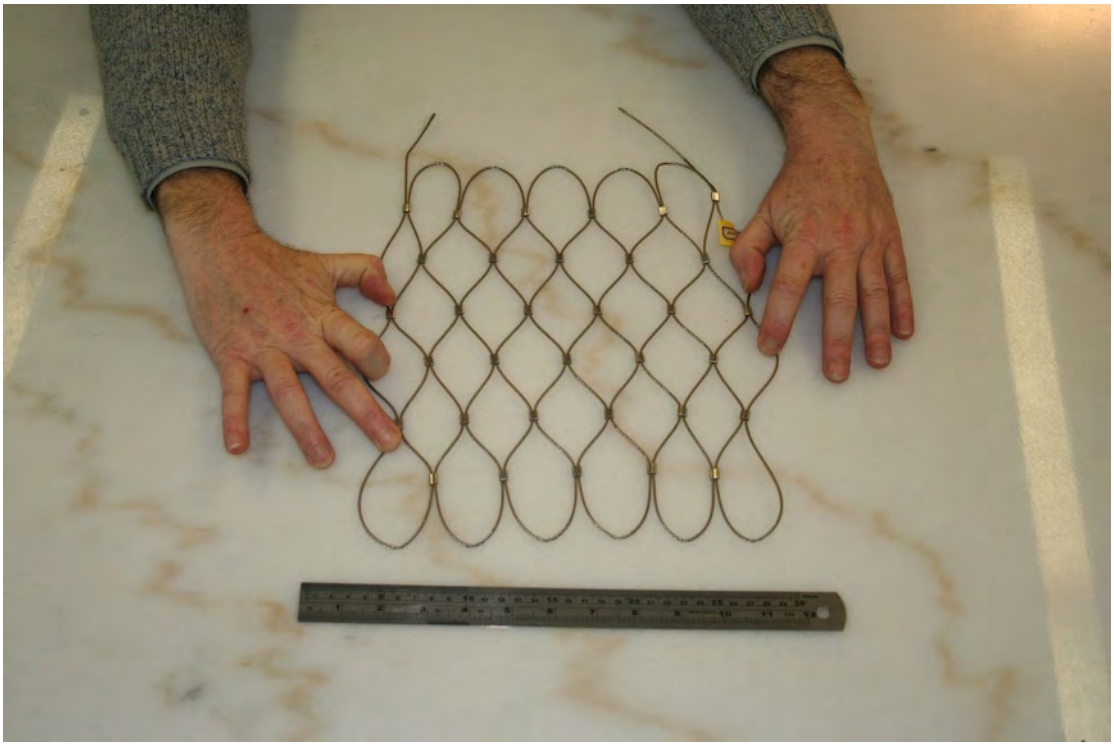


Figure 27 – *RaMeiJu* 60mm stainless steel mesh. This is a similar, but slightly less refined mesh than the Ronstan.

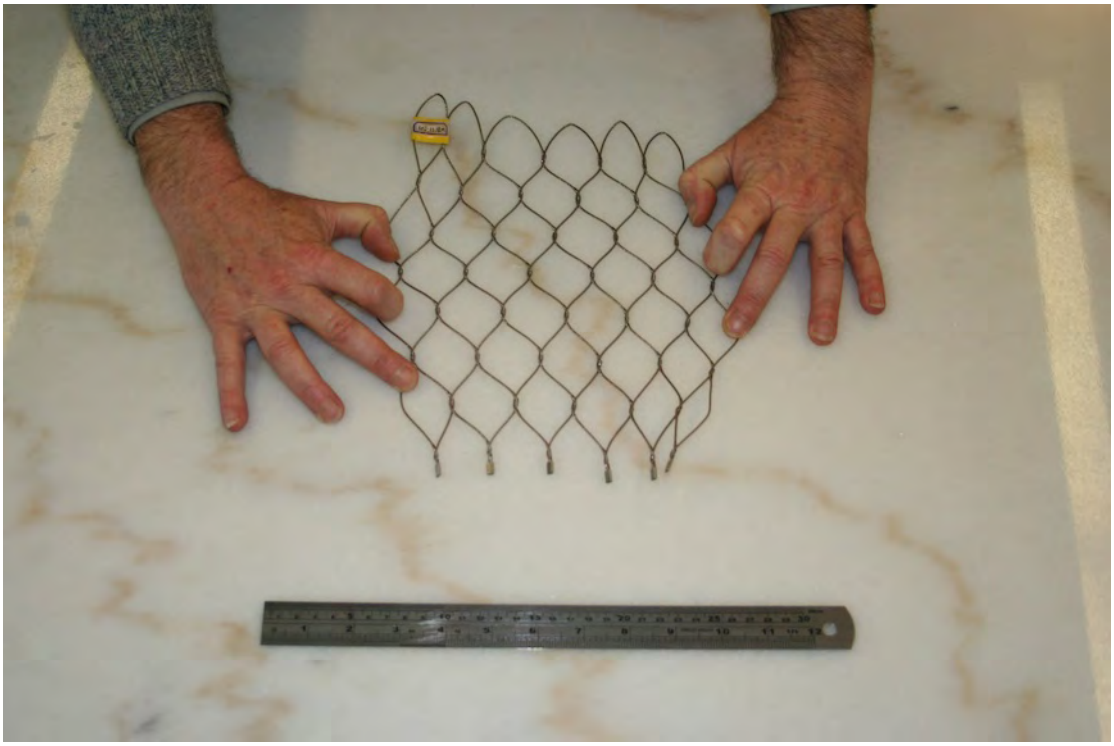


Figure 28 – *RaMeiJu* stainless steel mesh without ferrules. This mesh will likely have a similar appearance to a standard chain link fence.

7.3. Boiler Annex Option 3 – Combined Glass & Stainless Steel Mesh Screening

This option involves the combined use of glass and stainless steel mesh to construct a screen that will enclose the open spaces of the Boiler Area. Glass would be utilised to construct the screen to a height of two metres, above which one of the stainless steel mesh choices presented in Section 8.2 would be used to fill the remaining open space.

The use of both glass and mesh resolves some of the initial cost of glass fabrication and installation by reducing the required surface area. Further to this, the aesthetic and viewing benefits of using a glass screen are still achieved, with the stainless steel mesh at the top ensuring security as well as airflow.

The practical concerns of using glass adjacent to a parking area, as well as the potential for some rubbish or vermin to penetrate the mesh screen, need to be considered, however this combined option can be seen as an appropriate and desirable solution.

The design for the combined screening is detailed below:

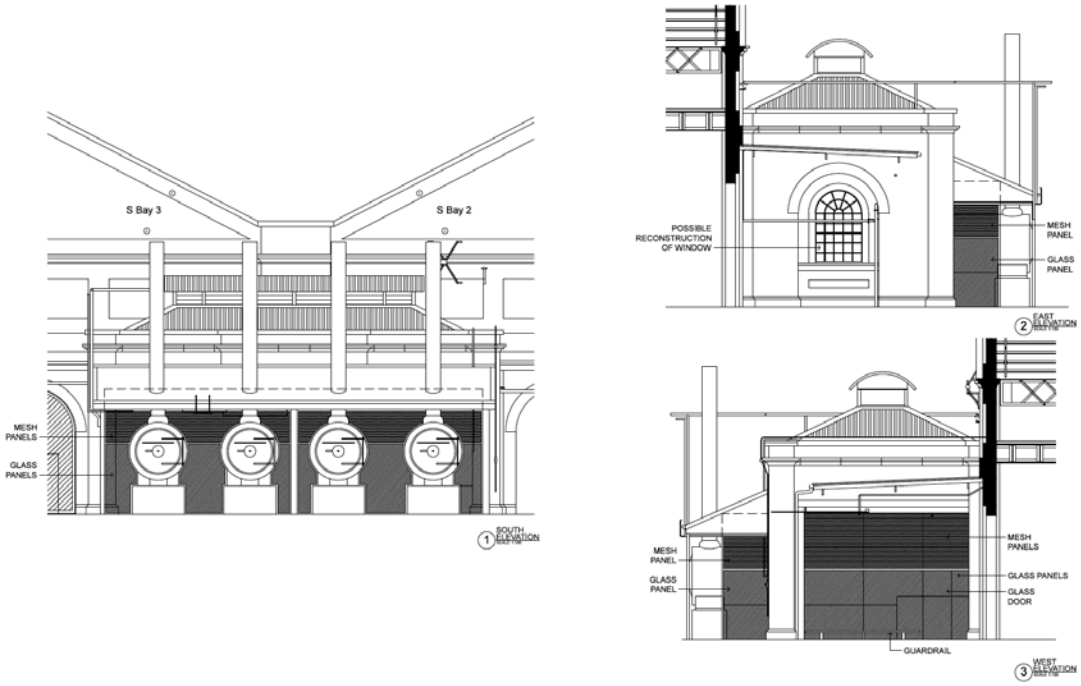


Figure 29 – The proposed elevations under option three, glass to circa 2m, with wire mesh above. This shows the optional reconstruction of the west wall of the Boiler Area.

7.4. Boiler Annex Supplementary Option – West Wall Reconstruction

This option is not compulsory, however could be undertaken as a component of the screening works.

The west wall of the Annex was originally enclosed, however was opened at some time during the history of the site with an irregular rectangular opening (Figure 16). This area has been partially infilled with modern brickwork, however there is the potential to restore the original form. The potential reconstruction of the wall, including the original window, is detailed in Figure 19 and Figure 29.

The alternate option to reconstruction would be to infill the opening with the chosen screening material (glass or stainless steel mesh) as can be seen in Figure 20.

7.5. Bay 1 Annex Option 1 – Full Mesh Screen

The open area of the Bay 1 Annex also requires screening as a component of this works program to increase security and ease maintenance. The use of glass screening in this space was considered undesirable. As such, the use of stainless steel mesh, as detailed in Section 8.2, is advised.

Option 1 involves the use of a full height screen of the selected mesh type, completely enclosing the open space while still allowing mostly unimpeded view through the space. This would enable full security of the Bay 1 Annex, but, due to the open aesthetics of the mesh, would not compromise the heritage value of the space.

The design for the full height screening is detailed below:

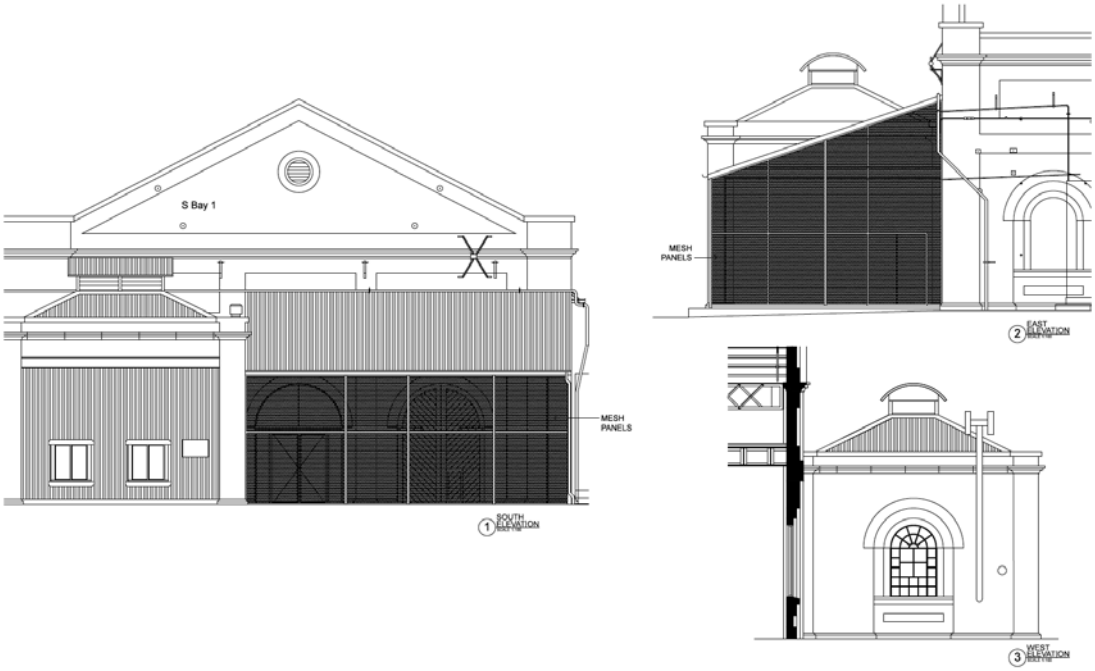


Figure 30 – The proposed elevations of Bay 1 Annex under option one.

7.6. Bay 1 Annex Option 2 – Half Mesh Screen

Like the above option, Option 2 involves the use of a stainless steel wire mesh screen to enclose the open space within the Bay 1 Annex. However, rather than a full floor to roof screen, this option presents the use of a half height screen. Though this option leaves the top of the Annex open to airborne litter and/or vermin, the use of a half-height screen reduces construction costs and, given it is erected to a suitable height, will still ensure the security of the space.

The design for the half height screening is detailed below:

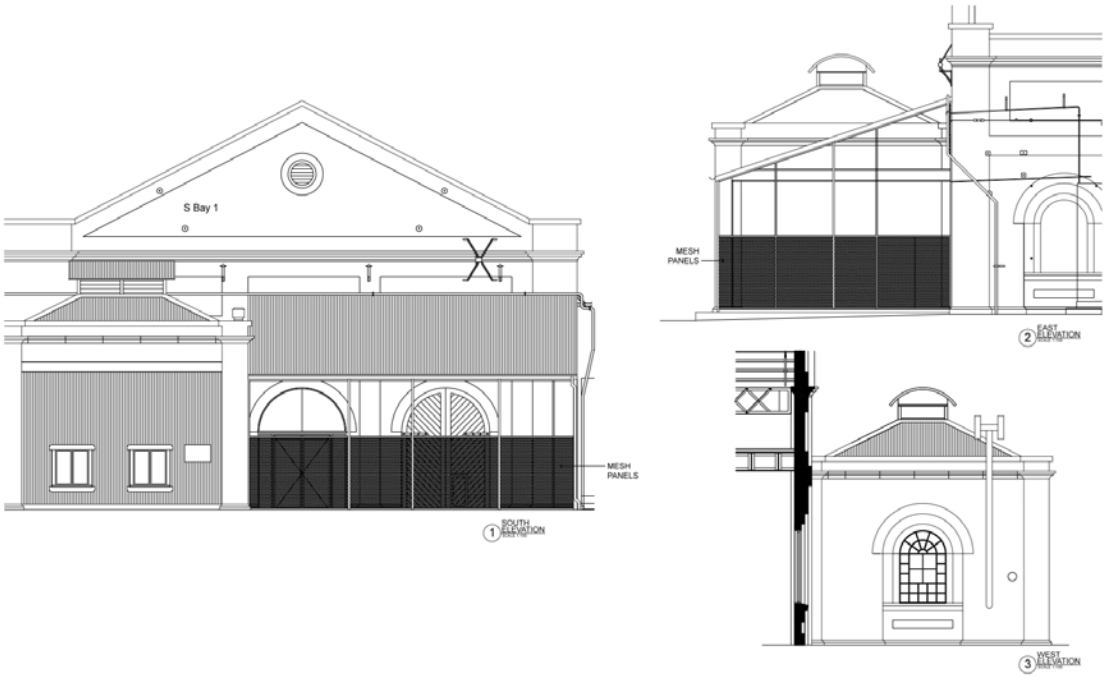


Figure 31 – The proposed elevations of Bay 1 Annex under option two.

8. Ancillary Works

In addition to the repair works and screening of Bay 1 Annex and the Boiler Area, some ancillary works are required.

The lighting within both Annex spaces is no longer operational and requires replacement. This could be a simple renewal of the existing fluorescent light fittings or there is also the potential to install spotlights as a component of this upgrade, to highlight the items of heritage significance.

As mentioned above, a consideration in the selection of the screening option will be the potential for future interpretation. The ability for viewers to see into the spaces that are being screened, in order to achieve a full and immersive audience experience, is essential. Detailing a full interpretation methodology is beyond the scope of this report, however it is suggested that any future interpretation plan involve appropriate signage at a bare minimum. Any further interpretation details are to be determined at a later date.

9. Conclusion and Recommendations

There are several areas of the Bay 2 Annex that require repairs, detailed in Section 7. In particular, work will need to be undertaken on the roof and structural elements to fix the significant water damage. These repairs are considered necessary not only to amend existing damage, but also to prevent future serious degradation. These works are recommended regardless as to which enclosure option is selected.

Within the scheme of repair works, there is also the opportunity for the conservation of the boilers, as detailed in Section 7.4 (set by Heritech Consulting), which outlines the scope of works for repair and preservation. This work will assist in the preservation of the heritage value of the boilers and ensure their longevity, and will provide a good basis on which to formulate a future interpretation plan for the space. Again, these works are recommended regardless as to which enclosure scheme is selected.

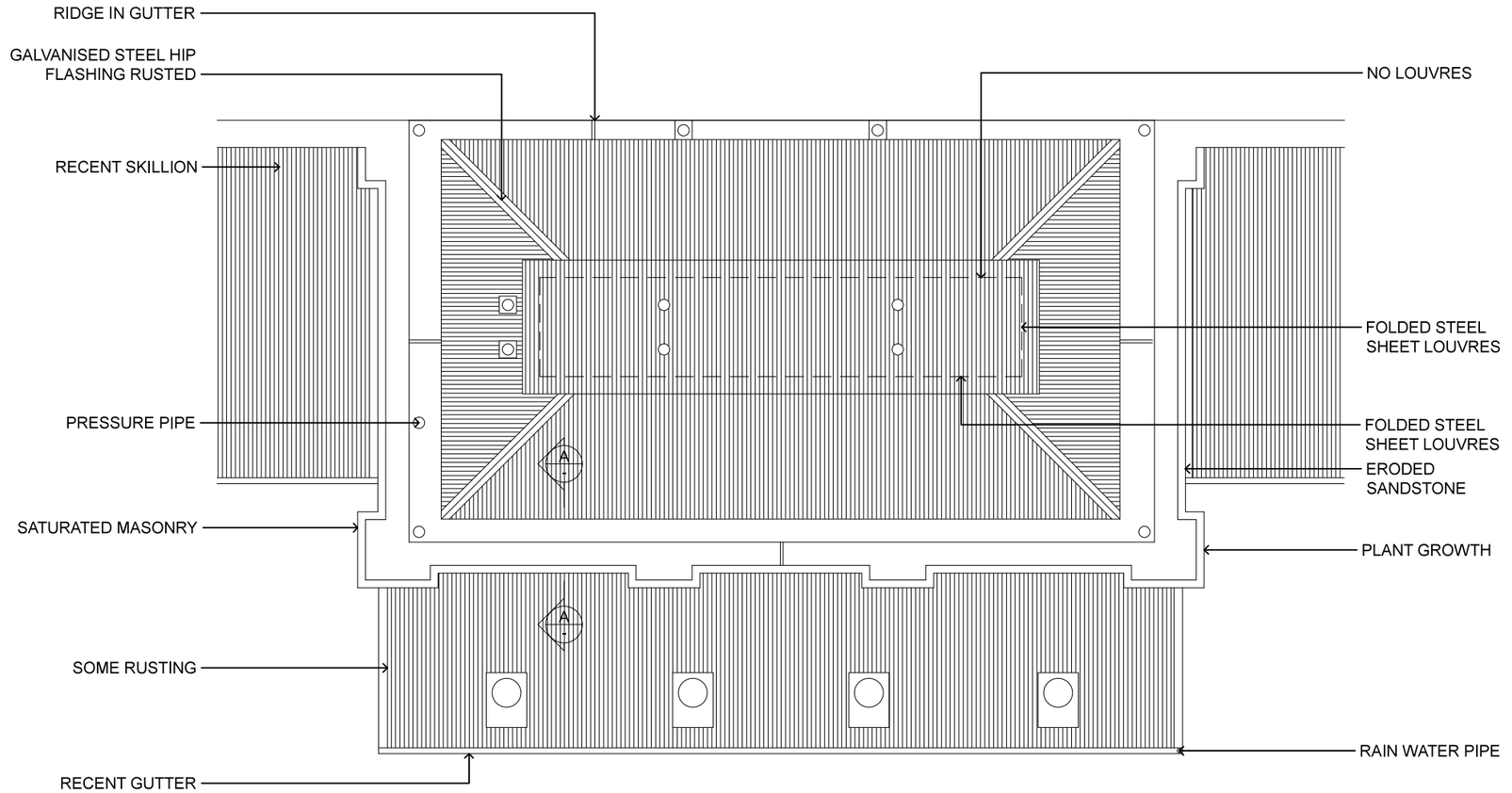
The need for screening for both the Bay 2 Annex and the open space of the Bay 1 Annex was also identified in order to ensure the security of the spaces and prevent the infiltration of rubbish and vermin. Several options have been presented for the screening – the use of glass, stainless steel mesh, or a combination of the two for the Boiler Area, and the use of either a full-height or half-height stainless steel mesh screen for the Bay 1 Annex. The aesthetic and heritage implications of each option have been presented, as has practical considerations such as cost and suitability. Any one of the presented options would be seen as a desirable outcome, therefore the decision will be dependent upon which option best fulfils the requirements of Australian Technology Park Sydney Limited, including aesthetics, cost and maintainability.

It is recommended that ATPSL:

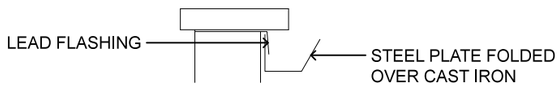
Review this report and

- Budget and schedule the base repairs of the Boiler House structure
- Budget and schedule the base repairs of the Boilers and ancillary equipment
- Review the proposed options for screening and select the desired option
- Review the proposed reconstruction of the west wall

Appendix A – Boiler House option plans



1 ROOF PLAN
SCALE 1:100



A PART SECTION
SCALE NTS

Futurepast
HERITAGE CONSULTING PTY LTD

ISSUE	DATE	AMENDMENT	ISSUED BY
A	18.8.11	Issued for review	AP

70 60 50 40 30 20 10 0 10mm

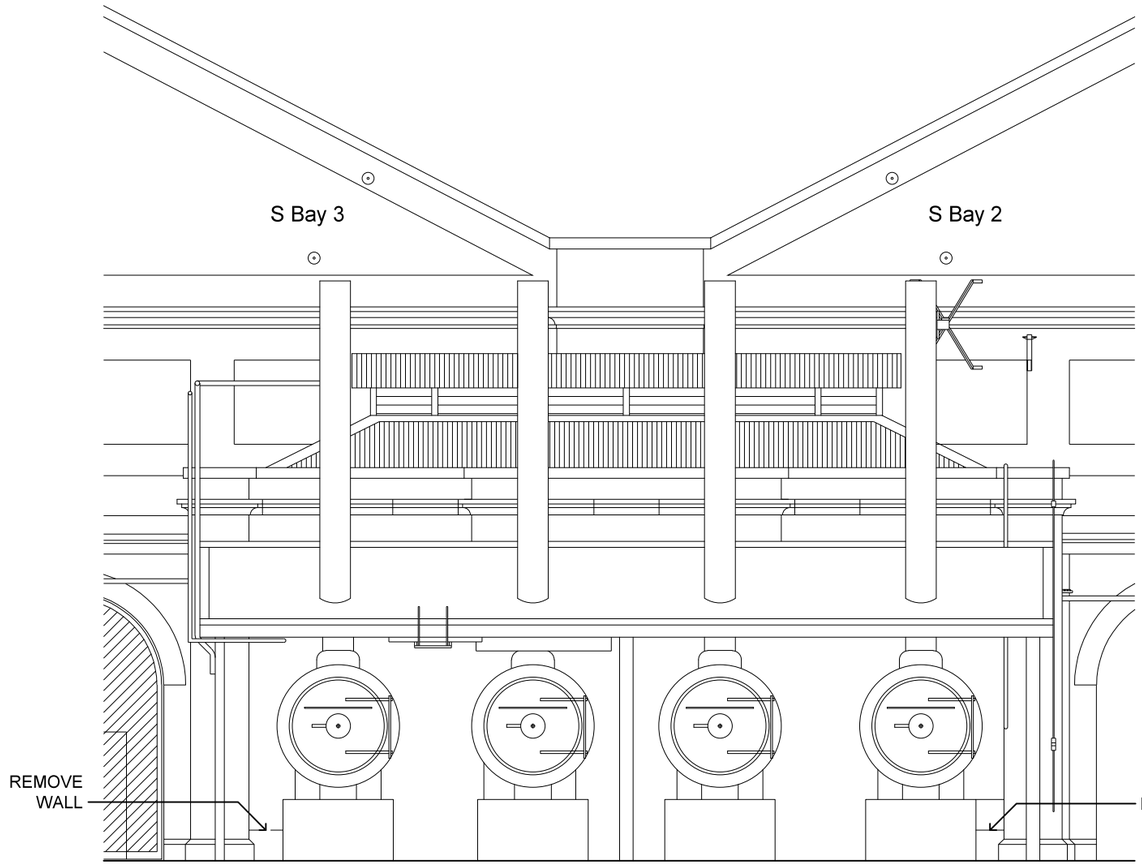
- ALL DIMENSIONS ARE IN MILLIMETRES.
- DIMENSIONS TAKE PREFERENCE TO SCALING.
- VERIFY DIMENSIONS ON SITE

Australian Technology Park
Locomotive Workshops

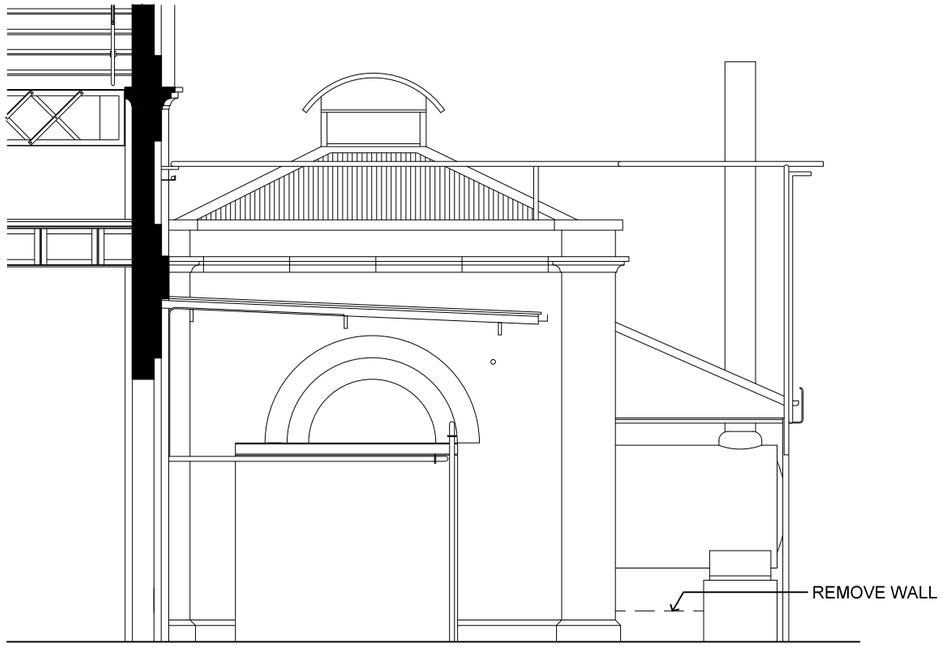
BOILER ANNEXE

Drawing:
Roof Plan

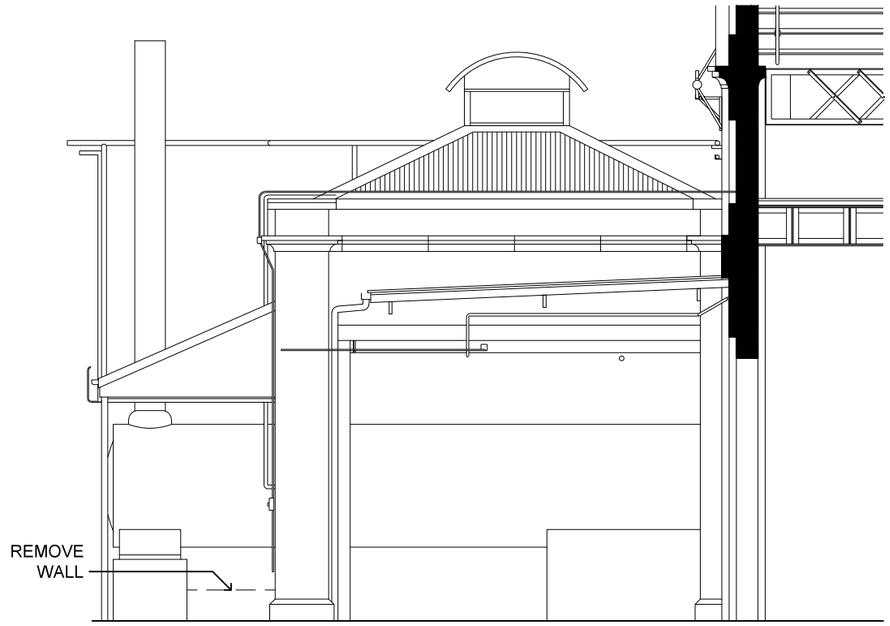
Project No. 081115
Drawn by: AP
Reviewed by: WB
Date: October 2011
Scale: 1:100
Drawing No.: A00
Issue: A



1 SOUTH ELEVATION
SCALE 1:100



2 EAST ELEVATION
SCALE 1:100



3 WEST ELEVATION
SCALE 1:100

Futurepast
HERITAGE CONSULTING PTY LTD

ISSUE	DATE	AMENDMENT	ISSUED BY
A	18.8.11	Issued for review	AP

70 60 50 40 30 20 10 0 10mm

- ALL DIMENSIONS ARE IN MILLIMETRES.
- DIMENSIONS TAKE PREFERENCE TO SCALING.
- VERIFY DIMENSIONS ON SITE

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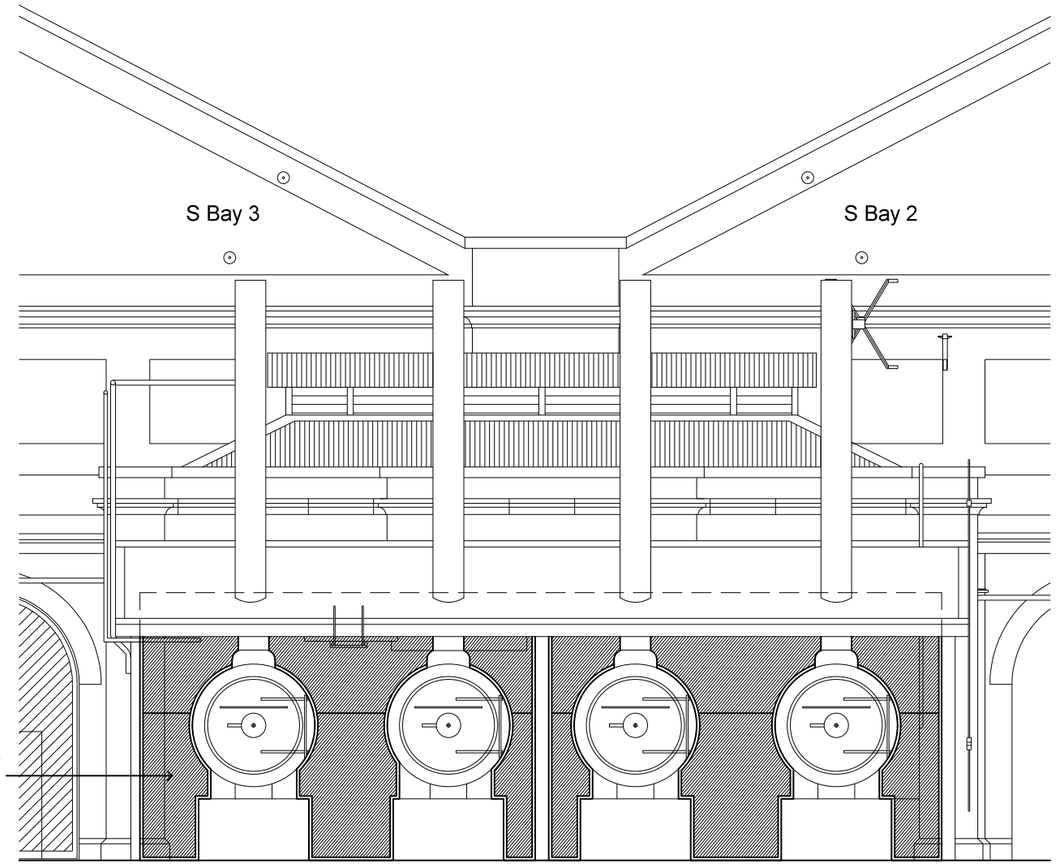
Locomotive Workshops

BOILER ANNEXE

Drawing:
Existing elevations

Project No. 081115
Drawn by: AP
Reviewed by: WB
Date: October 2011
Scale: 1:100
Drawing No.: A01
Issue: A



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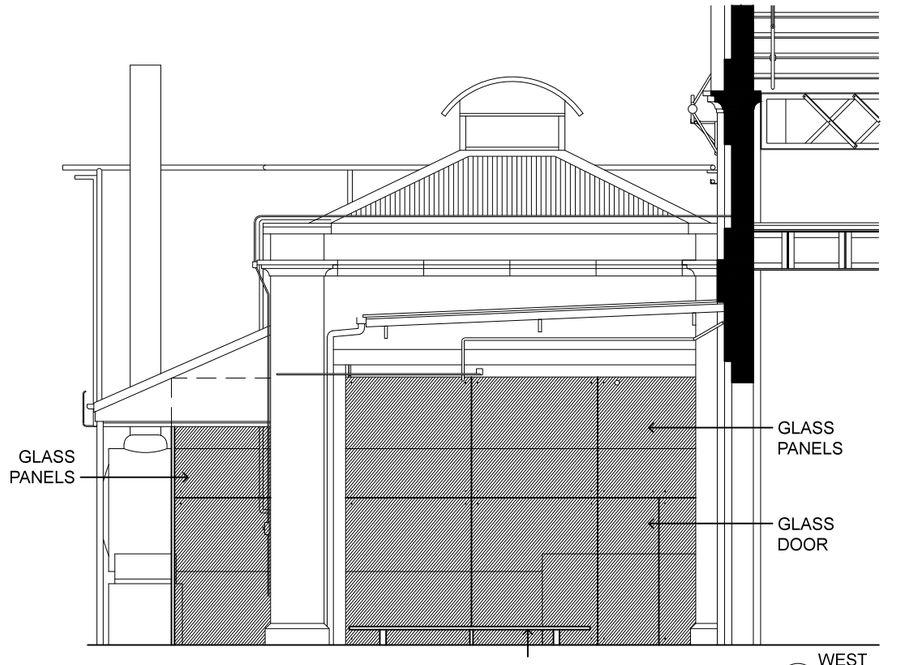
SCALE 1:100

2 EAST ELEVATION
SCALE 1:100



3 WEST ELEVATION
SCALE 1:100

Futurepast
HERITAGE CONSULTING PTY LTD

ISSUE	DATE	AMENDMENT	ISSUED BY
A	18.8.11	Issued for review	AP

70 60 50 40 30 20 10 0 10mm

- ALL DIMENSIONS ARE IN MILLIMETRES.
- DIMENSIONS TAKE PREFERENCE TO SCALING.
- VERIFY DIMENSIONS ON SITE

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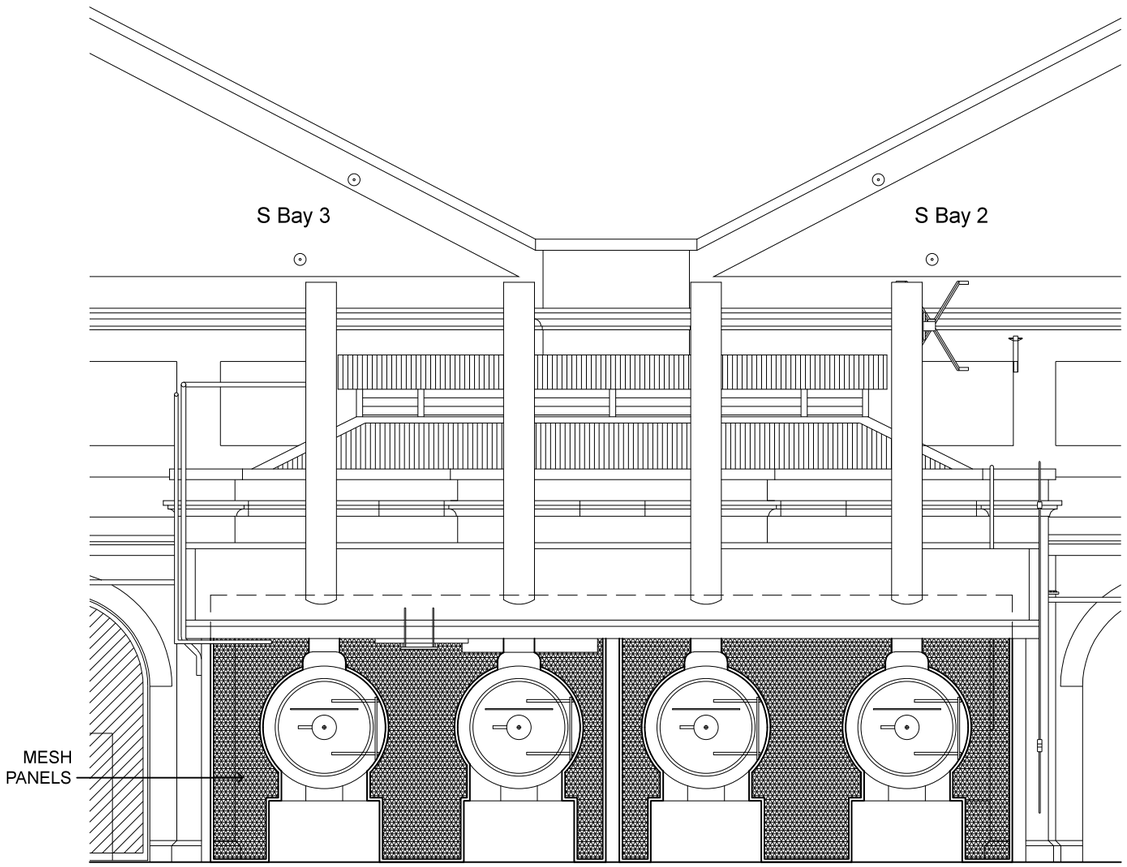
Locomotive Workshops

BOILER ANNEXE
Drawing: OPTION ONE
Proposed elevations

Project No. 081115
Drawn by: AP
Reviewed by: WB
Date: October 2011
Scale: 1:100
Drawing No.: A02
Issue: A



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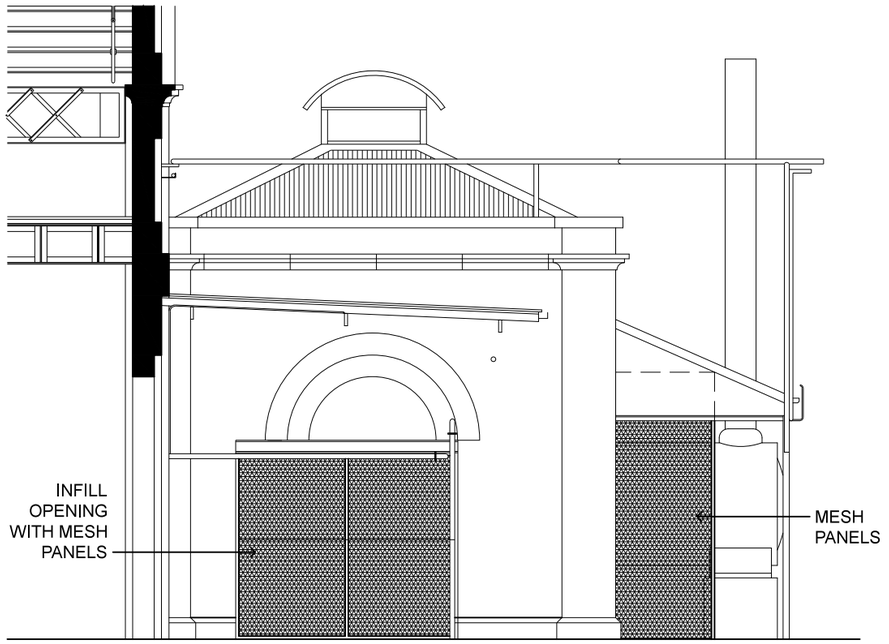
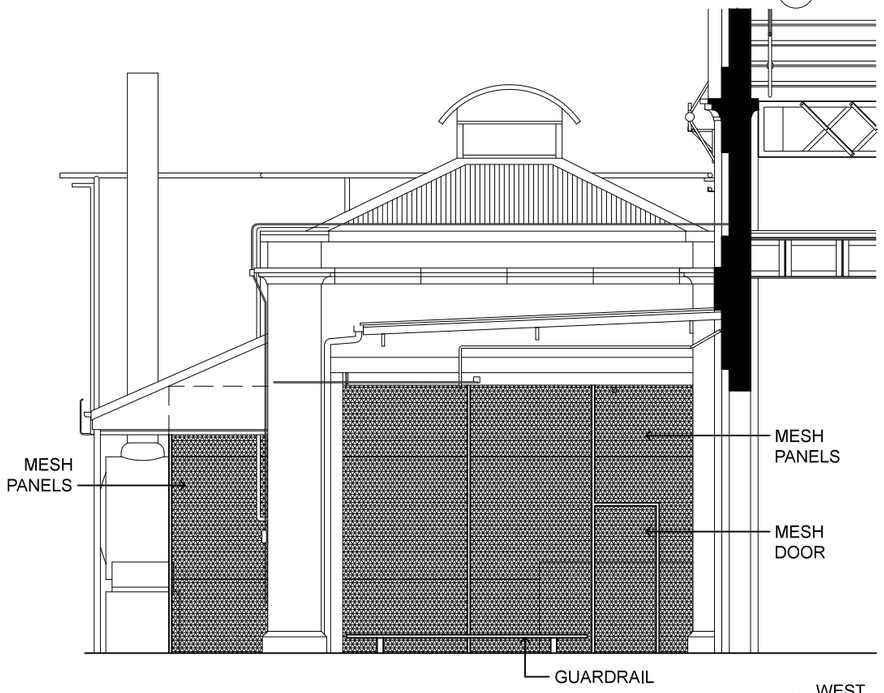
SCALE 1:100



2 EAST ELEVATION
SCALE 1:100



3 WEST ELEVATION
SCALE 1:100

Futurepast
HERITAGE CONSULTING PTY LTD

ISSUE	DATE	AMENDMENT	ISSUED BY
A	18.8.11	Issued for review	AP

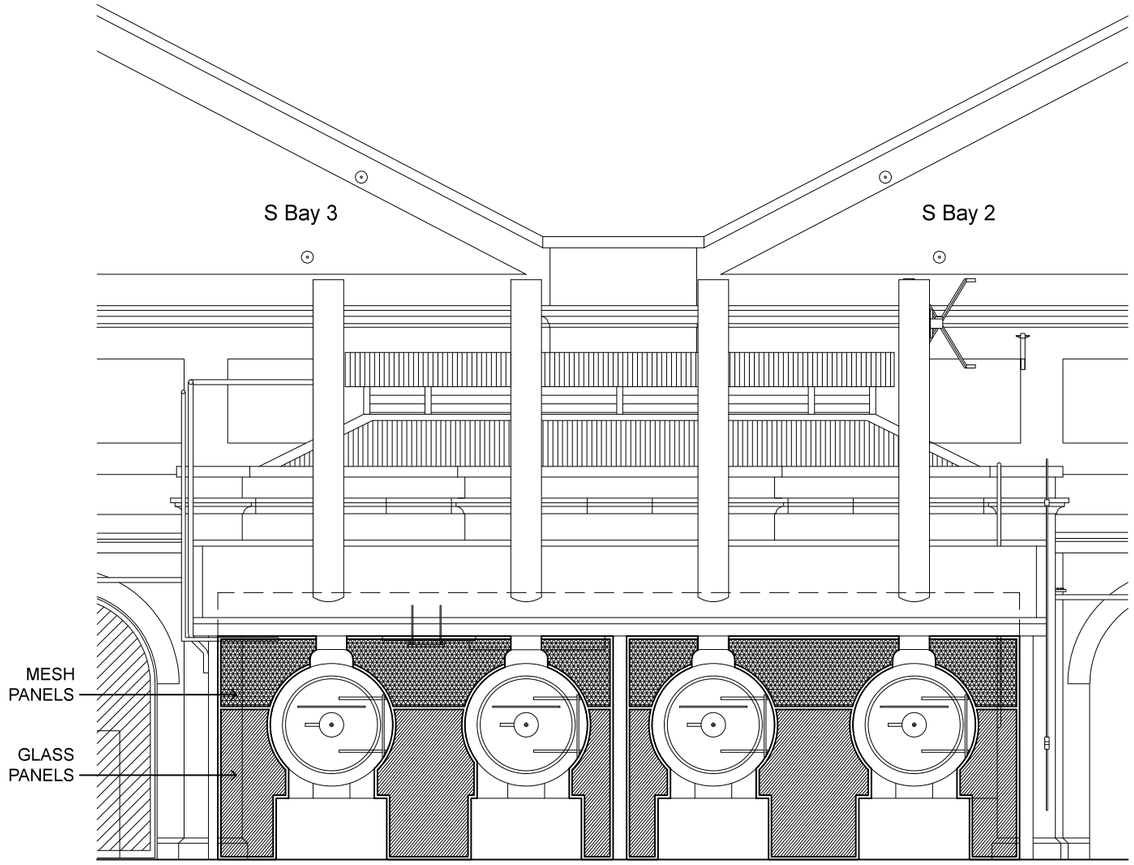
70 60 50 40 30 20 10 0 10mm

- ALL DIMENSIONS ARE IN MILLIMETRES.
- DIMENSIONS TAKE PREFERENCE TO SCALING.
- VERIFY DIMENSIONS ON SITE

Australian Technology Park
Locomotive Workshops

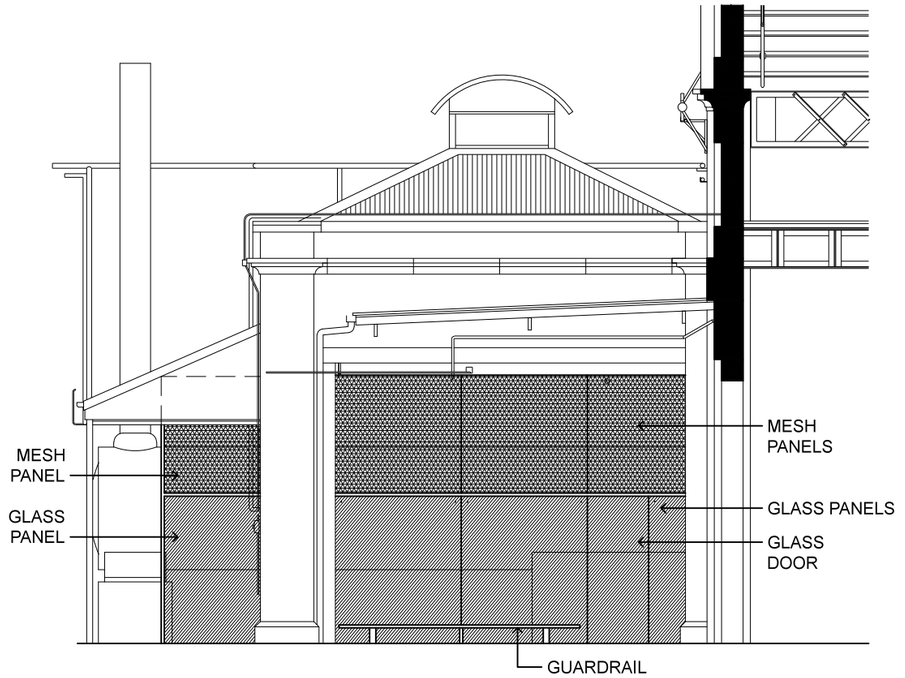
BOILER ANNEXE
Drawing: OPTION TWO
Proposed elevations

Project No. 081115
Drawn by: AP
Reviewed by: WB
Date: October 2011
Scale: 1:100
Drawing No.: A03
Issue: A



1 SOUTH ELEVATION
SCALE 1:100

2 EAST ELEVATION
SCALE 1:100



3 WEST ELEVATION
SCALE 1:100

Futurepast
HERITAGE CONSULTING PTY LTD

ISSUE	DATE	AMENDMENT	ISSUED BY
A	18.8.11	Issued for review	AP

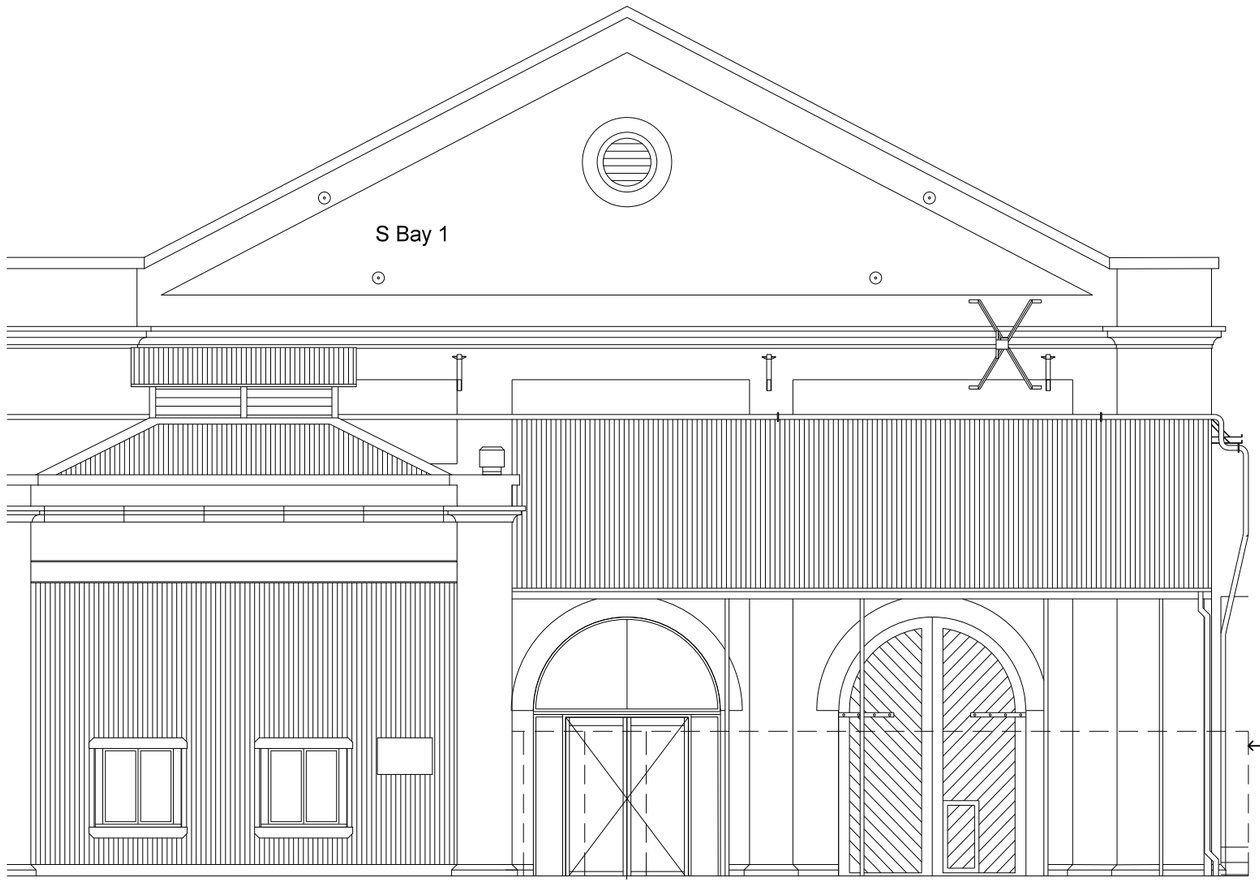
70 60 50 40 30 20 10 0 10mm

- ALL DIMENSIONS ARE IN MILLIMETRES.
- DIMENSIONS TAKE PREFERENCE TO SCALING.
- VERIFY DIMENSIONS ON SITE

Australian Technology Park
Locomotive Workshops

BOILER ANNEXE
Drawing: OPTION THREE
Proposed elevations

Project No. 081115
Drawn by: AP
Reviewed by: WB
Date: October 2011
Scale: 1:100
Drawing No.: A04
Issue: A



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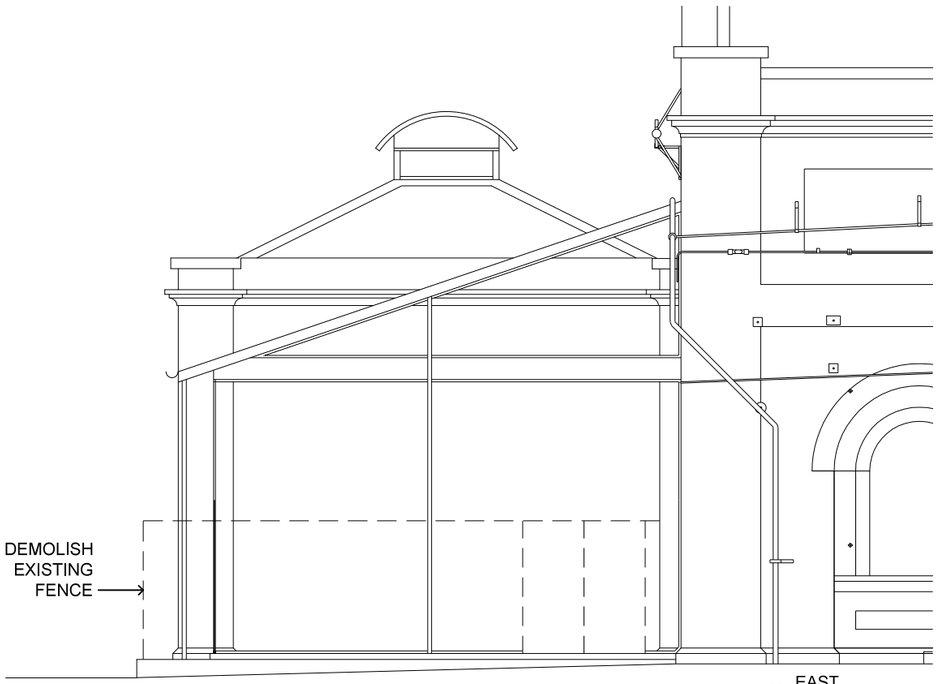
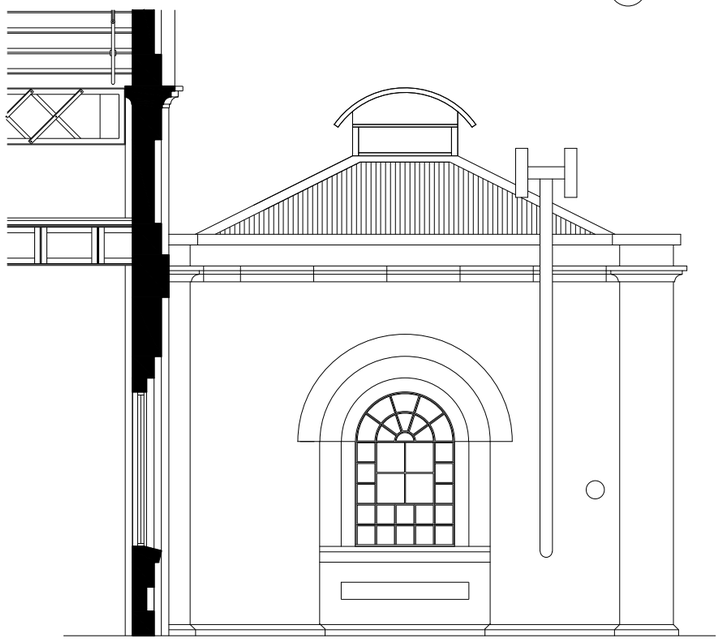
SCALE 1:100



2 EAST ELEVATION
SCALE 1:100



3 WEST ELEVATION
SCALE 1:100

Futurepast
HERITAGE CONSULTING PTY LTD

ISSUE	DATE	AMENDMENT	ISSUED BY
A	18.8.11	Issued for review	AP

70 60 50 40 30 20 10 0 10mm

- ALL DIMENSIONS ARE IN MILLIMETRES.
- DIMENSIONS TAKE PREFERENCE TO SCALING.
- VERIFY DIMENSIONS ON SITE

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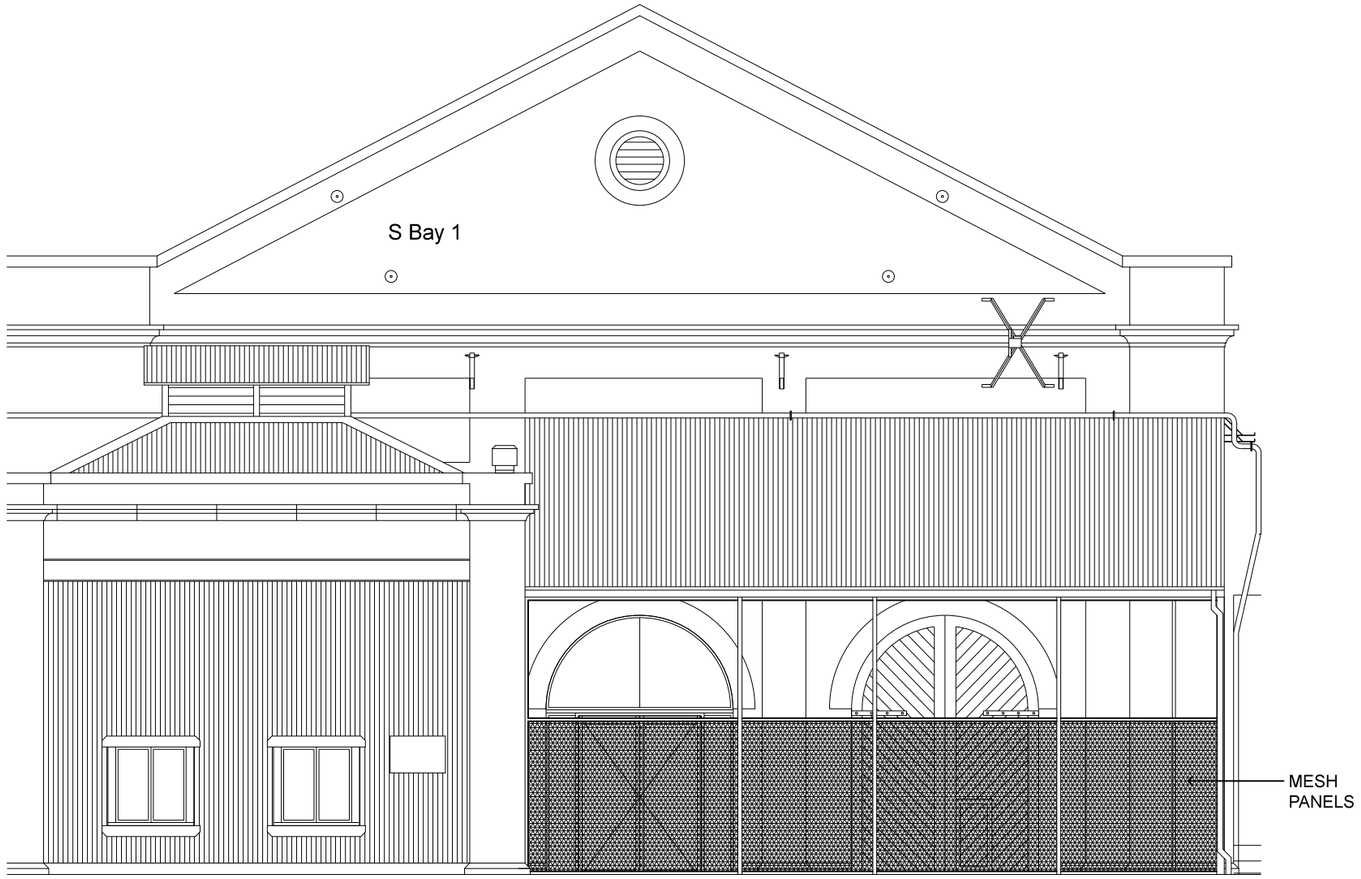
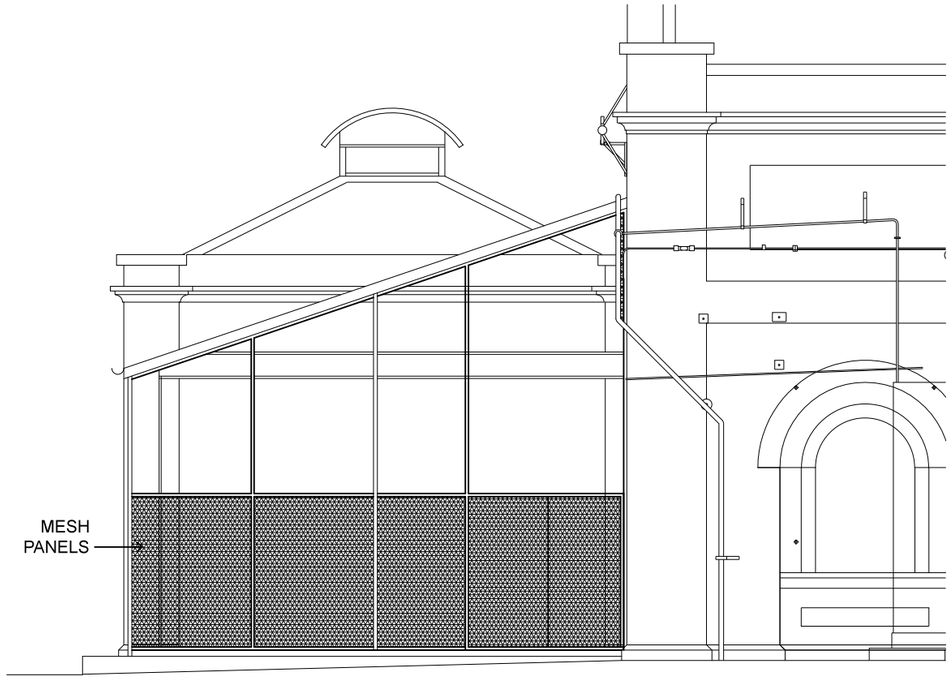
Locomotive Workshops

BAY ONE ANNEXE
Drawing: OPTION ONE
Existing elevations

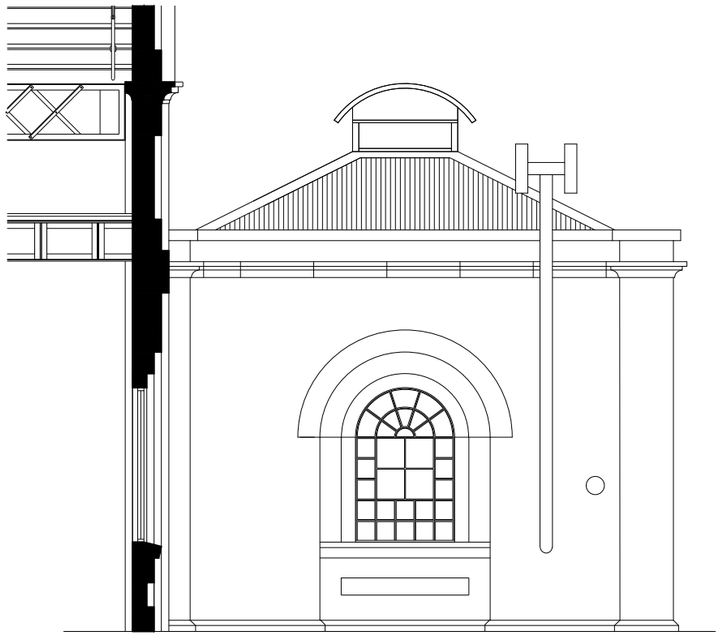
Project No. 081115
Drawn by: AP
Reviewed by: WB
Date: October 2011
Scale: 1:100
Drawing No.: A05
Issue: A



1 SOUTH ELEVATION
SCALE 1:100



2 EAST ELEVATION
SCALE 1:100



3 WEST ELEVATION
SCALE 1:100

Futurepast
HERITAGE CONSULTING PTY LTD

ISSUE	DATE	AMENDMENT	ISSUED BY
B	06.6.12	Amended mesh panels	SC
A	18.8.11	Issued for review	AP

70 60 50 40 30 20 10 0 10mm

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- DIMENSIONS TAKE PREFERENCE TO SCALING.
- VERIFY DIMENSIONS ON SITE

Australian Technology Park
Locomotive Workshops

BAY ONE ANNEXE
Drawing: OPTION ONE
Proposed elevations

Project No. 081115
Drawn by: AP
Reviewed by: WB
Date: October 2011
Scale: 1:100
Drawing No.: A06
Issue: B

Appendix I – Davy Press Billet Holder Scope of Work and Design Options

Long Blackledge
Architects

ATP Locomotive Workshop.
Bay 1 North Billet Holder Frames

Issue	Reason for Issue	Date
B	Tender	9 October 2012

Schedule of Work

1 Protection:

1.1 Protect all adjacent surfaces and finishes, fences and the like

2 Plant and Method Statement:

2.1 Provide all plant necessary to move and set frames (including box beams) and billet holders

2.2 Provide necessary SWMS for approval by ATP and all protective equipment

3 Site Preparation

3.1 Level earth to allow wrought iron box beams to sit level with the concrete slab once loaded up.

4 Frames

4.1 Set 4 existing wrought iron box beams level and as shown on drawing 1226.1.1. The box beams will be set central about the structural bays within the northern end of the western enclosure.

4.2 Provide 4 frames as detailed on drawing 1226.1.1 fixed to box beams.

77 Holden Street Ashfield NSW 2131
Tel: 0410 401 390
Nominated Architect: Elisha Long NSW Architects' Registration No.6938
ABN 57 867 648 159

5 Finishes

5.1 Prepare and paint box beams and frames. Prime and coat with Ferridor MIO paint (Natural Steel colour)

6 Loading Up

6.1 Set Billet Holders into frame or set on ground as scheduled. Adjust or refix billet holder handles as necessary.

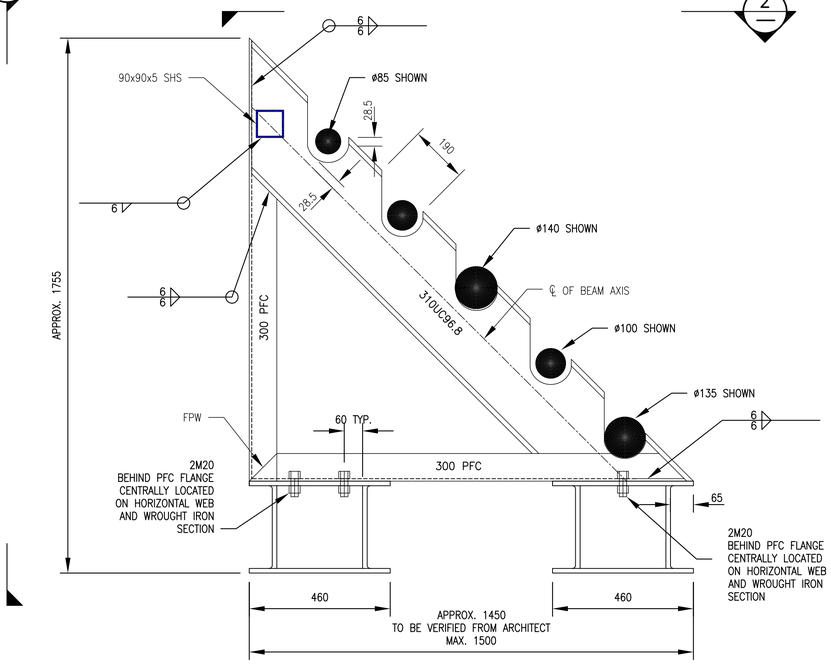
7 Completion

7.1 Remove all temporary protection and waste materials from site.

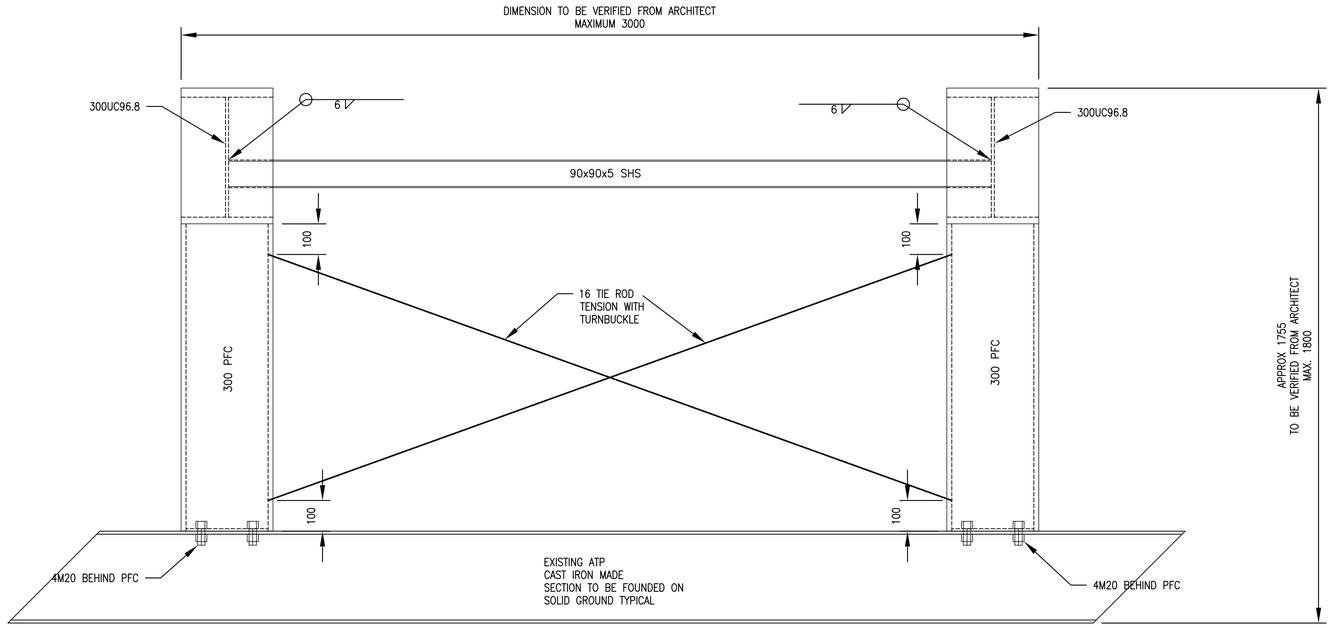
7.2 Rake earth to smooth finish.

ATP BILLET HOLDER RACKS. PROPOSED DISPOSITION OF BILLET HOLDERS

	TYPE	APPROX LENGTH	APPROX DIA mm	POSTION	
A	SOCKET	4900		On ground	335mm Square socket, fit billet
B	SOCKET	5500		On ground	
C	SOCKET	7000		On ground	
D	JAW	4700	85	BHR N_5 Head to S	
E	JAW	4540	110 SQ and 90	BHR S_5 Head to S	
F	JAW	5300	85	BHR N_2 Head to S	
G	JAW	4800	75 -85	BHR S_2 Head to S	
H	JAW	4200	100 SQ and 75	BHR S_3 Head to S	
I	JAW	4500	85	BHR N_1 Head to S	
J	PADDLE	4700	105-65 taper	BHR S_4 Head to N	
K	SANDWICH	5500	140	BHR N 3 Head to S	
L	SANDWICH	5000	135-90SQ and 95	BHR S_1 Head to N	
M	FORK		65	On ground	
N	PADDLE	5100	45 SQ	BHR N_4 Head to N	
0					not found
P					incomplete
Q	ROD	5700	Varies 75-140-105	On ground	
R	GIMBOL	6400		On ground	
Extension pieces					

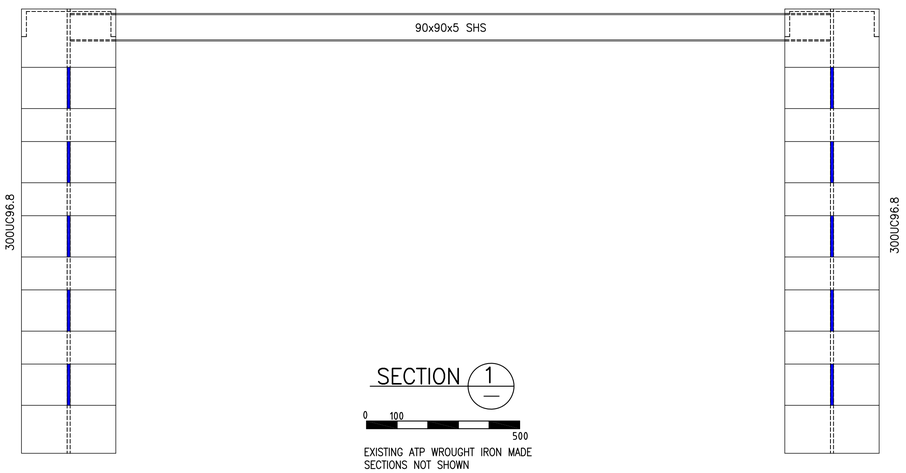


SIDE ELEVATION OF BILLET STAND



SECTION 1

0 100 500



SECTION 1

0 100 500

EXISTING ATP WROUGHT IRON MADE
SECTIONS NOT SHOWN

STRUCTURAL STEEL

S1 ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH AS4100 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS. FABRICATION SHALL BE CARRIED OUT IN ACCORDANCE WITH SECTION 14 OF AS4100. ERECTION SHALL BE CARRIED OUT IN ACCORDANCE WITH SECTION 15 OF AS4100.

S2 UNLESS NOTED OTHERWISE, ALL STEEL SHALL BE OF THE FOLLOWING GRADE IN ACCORDANCE WITH THE FOLLOWING AUSTRALIAN STANDARDS

TYPE OF STEEL	GRADE
UNIVERSAL BEAMS AND COLUMNS, PARALLEL FLANGE CHANNELS, LARGE ANGLES TO AS/NZS 3679.1	300
WELDED SECTIONS TO AS/NZS 3679.2	300
HOT ROLLED PLATES, FLOOR PLATES AND SLABS TO AS/NZS 3678	250
HOLLOW SECTIONS TO AS 1163	C350
COLD FORMED PURLINS AND GIRTS TO AS1397	G450 Z350

S3 THREE (3) COPIES OF WORKSHOP FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AT LEAST 7 DAYS PRIOR TO COMMENCEMENT OF FABRICATION. FABRICATION SHALL NOT COMMENCE WITHOUT THE STRUCTURAL ENGINEER'S APPROVAL OF THE WORKSHOP DRAWINGS. ALL DIMENSIONS AND SETOUTS TO BE OBTAINED FROM ARCHITECTURAL DRAWINGS WHERE NOT INDICATED ON STRUCTURAL DRAWINGS.

S4 THE FABRICATOR SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING OTHER ELEMENTS TO THE STEEL WHETHER OR NOT DETAILED ON THE STRUCTURAL DRAWINGS.

S5 THE FABRICATION AND ERECTION OF THE STRUCTURAL STEELWORK SHALL BE SUPERVISED BY A QUALIFIED PERSON EXPERIENCED IN SUCH SUPERVISION, IN ORDER TO ENSURE THAT ALL REQUIREMENTS OF THE DESIGN ARE MET.

S6 ALL BEAMS AND RAFTERS SHALL BE FABRICATED AND ERECTED WITH NATURAL CAMBER UP.

S7 ALL MEMBERS SHALL BE SUPPLIED IN SINGLE LENGTHS. SPLICES SHALL ONLY BE PERMITTED IN LOCATIONS SHOWN ON THE STRUCTURAL DRAWINGS.

S8 ALL STEELWORK SHALL BE SECURELY TEMPORARILY BRACED BY THE ERECTOR AS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.

S9 BOLTING
BOLTING CATEGORIES ARE IDENTIFIED ON THE STRUCTURAL DRAWINGS IN THE FOLLOWING MANNER.
BOLT CATEGORY: COMMENTS:
4.6/S COMMERCIAL BOLTS OF GRADE 4.6 TO AS 1111 SNUG TIGHTENED

8.8/S HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252 SNUG TIGHTENED

8.8/TB HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252
FULLY TENSIONED TO AS4100 AS A BEARING TYPE JOINT

8.8/TF HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS1252
FULLY TENSIONED TO AS4100 AS A FRICTION TYPE JOINT WITH FAYING SURFACES LEFT UNCOATED

S10 UNLESS NOTED OTHERWISE ALL BOLTS SHALL BE M16 CATEGORY 8.8/S. NO CONNECTION SHALL HAVE LESS THAN 2 BOLTS. ALL BOLTS AND WASHERS SHALL BE GALVANISED. ALL HOLES SHALL BE 2MM LARGER THAN THE BOLT DIAMETER UNLESS NOTED OTHERWISE.

S11 /TB AND /TF BOLT CATEGORIES SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 15 OF AS4100, USING EITHER THE PART-TURN METHOD OR THE DIRECT-TENSION INDICATOR METHOD.

S12 WELDING
ALL WELDING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS1554.1.
ELECTRODES SHALL BE TO EITHER AS1553, AS1858, AS2203 OR AS2717, AS APPROPRIATE.

UNLESS NOTED OTHERWISE, ALL FILLET WELDS SHALL BE 6MM CONTINUOUS CATEGORY SP USING E48XX ELECTRODES OR EQUIVALENT. ALL BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS CATEGORY SP TO AS1554.1.

THE EXTENT OF NON-DESTRUCTIVE WELD EXAMINATION SHALL BE AS NOTED BELOW.
RADIOGRAPHIC OR ULTRASONIC EXAMINATION SHALL BE TO AS1554.1, AS2177.1 AND AS2207 AS APPROPRIATE.

TYPE OF WELD AND CATEGORY	EXAMINATION METHOD	EXTENT (% OF TOTAL LENGTH OF WELD TYPE)
FILLET WELDS, GP + SP	VISUAL INSPECTION	100
BUTT WELDS, GP	VISUAL INSPECTION	100
BUTT WELDS, SP	VISUAL INSPECTION	100
RADIOGRAPHIC OR ULTRASONIC INSPECTION	10	

S13 CORROSION PROTECTION
STRUCTURAL STEELWORK NOT ENCASED IN CONCRETE SHALL HAVE THE FOLLOWING CORROSION PROTECTION.

ELEMENT	SURFACE PREPARATION	PRIME COAT	SECOND COAT	THIRD COAT
ALL	SAND BLAST	PRIMER	OXIDE	

ALL GALVANISING OF STRUCTURAL STEELWORK SHALL BE TO AS4680. THE CONTINUOUS AVERAGE ZINC COATING MASS SHALL BE 600G/M2 (550G/M2 MINIMUM).

PROVIDE SEAL PLATES TO THE ENDS OF ALL HOLLOW SECTIONS, WITH 'BREATHER' HOLES IF MEMBERS ARE TO BE HOT DIP GALVANIZED.

NO.	DATE	AMENDMENTS
0	10.09.12	ISSUED FOR FINAL REVIEW
0	04.09.12	ISSUED FOR COMMENT

ATP
BILLET HOLDER RACK

DRAWING SYMBOLS PAPER SPACE

AJK DESIGN
STRUCTURAL/CIVIL ENGINEERS
11 BIBBY STREET
CARLTON, N.S.W. 2218
Ph/Fax: (02) 9547 3757
Mob: 0438 007 990

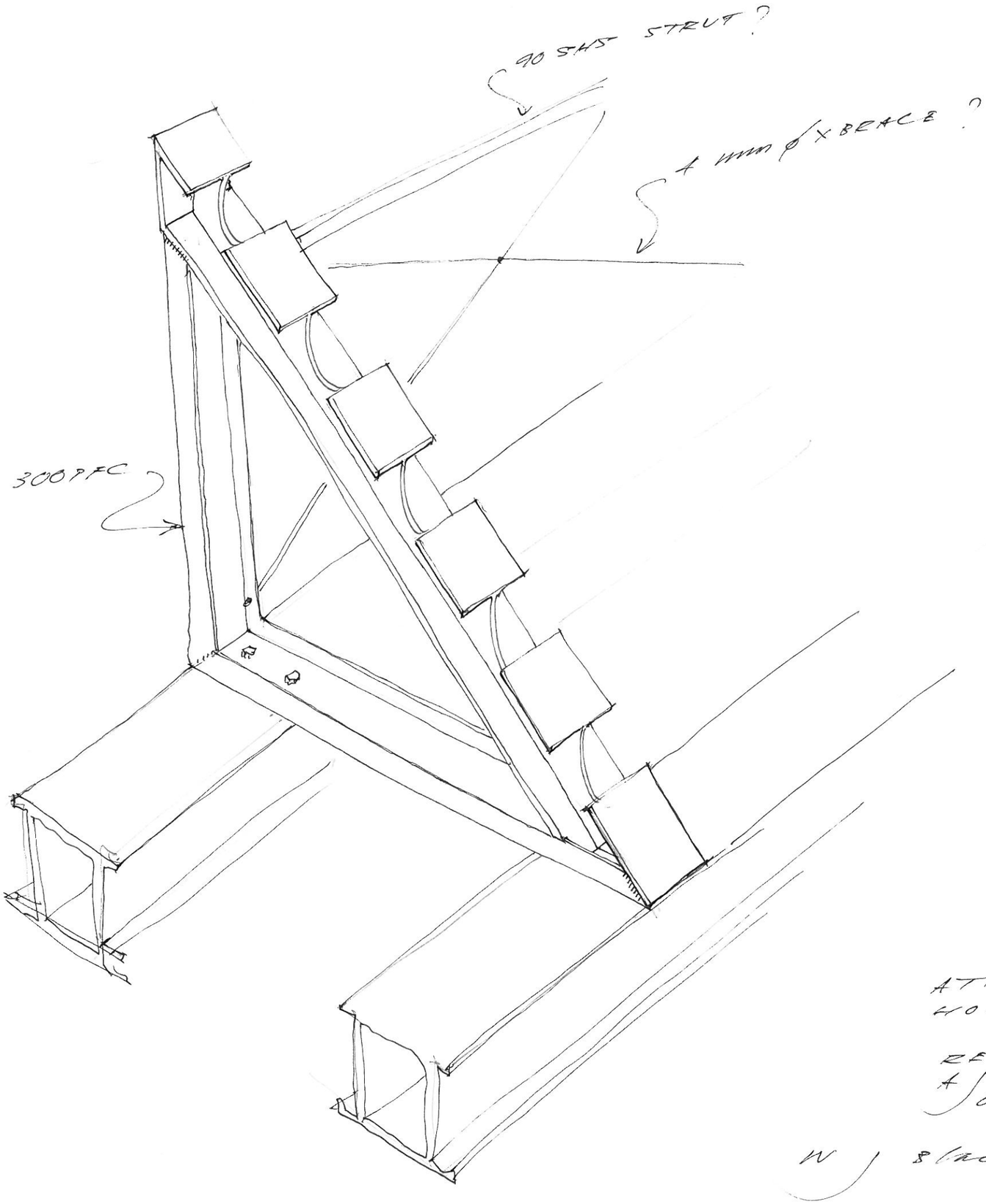
CLIENT
AUSTRALIAN TECHNOLOGY PARK
C/O-LONG BLACKLEDGE
ARCHITECTS
ENSTATE PTY LTD

PREPARED	CHECKED
DESIGN AJK	
DRAWING AJK	WB

MANAGER AJK DESIGN

REGISTRATION No. OF PLANS
1226/1.1-1

SHEET No. X | No OF SHEETS X



ATP. BILLET HOLDER RACK

RESPONSE TO J.K DESIGN OPTION 1.

W J Blackley. 29 Aug 2012

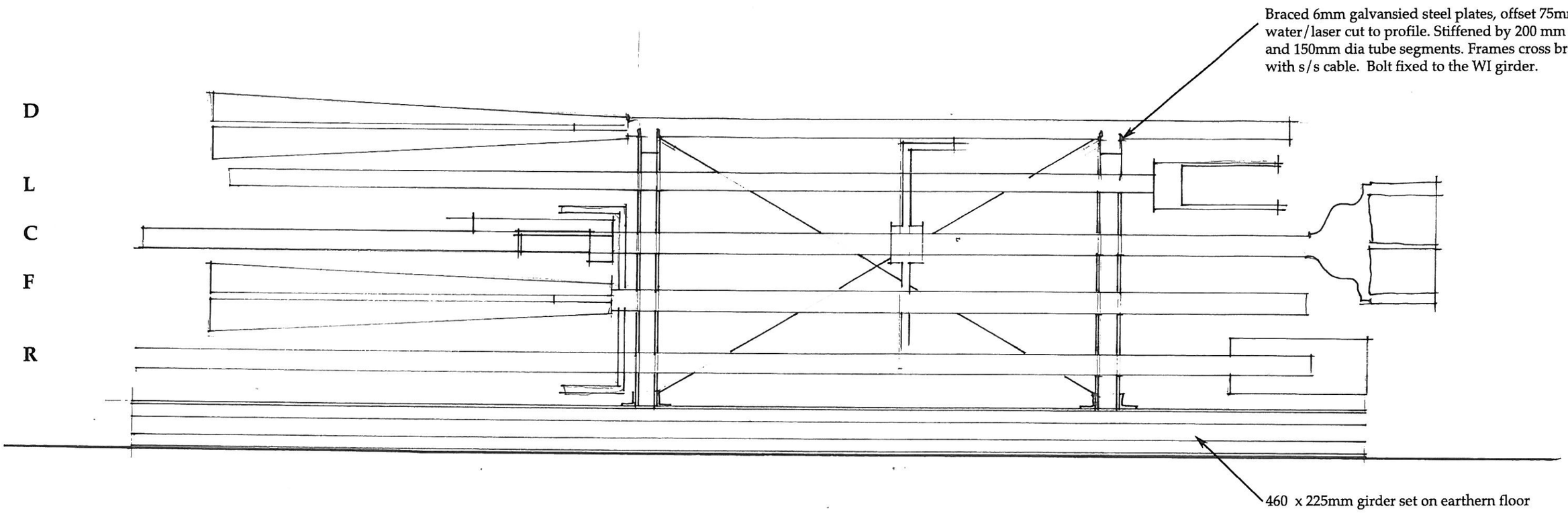
D

L

C

F

R



FRONT ELEVATION

Project:

ATP LOCOMOTIVE WORKSHOP
BILLET HOLDER RACK

for

Australian Technology Park

Prepared by:

Long Blackledge Architects

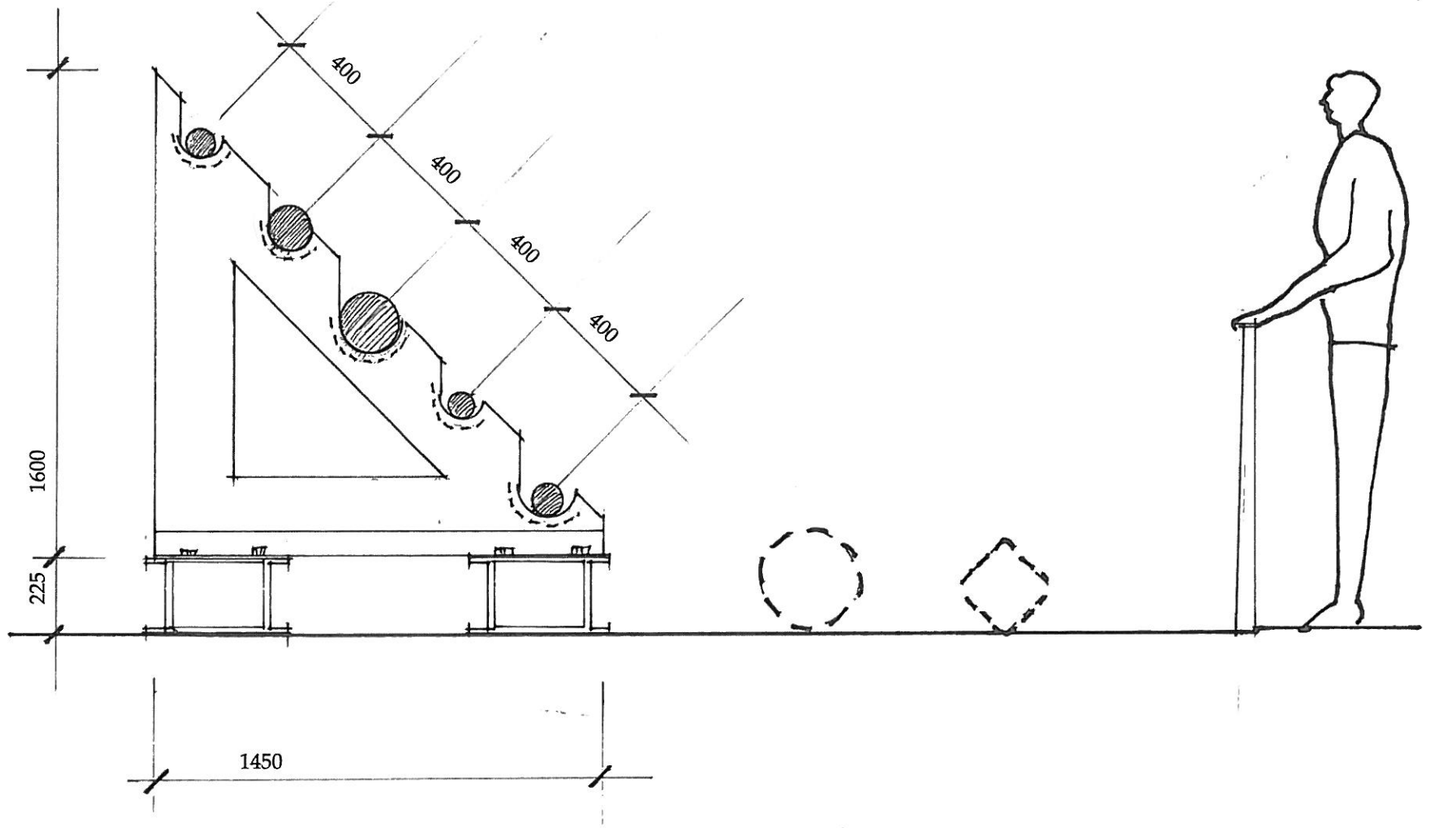
tel 0410 401 390
nominated architect: Elisha Long Reg No 6938

Drawing:

Proposed Elevations (1 of 2)

Date: July 2012 Scale: 1:20

Drawing Number: ATP BH /SK 01 Issue A



SIDE ELEVATION

Project:
ATP LOCOMOTIVE WORKSHOP
BILLET HOLDER RACK

for
Australian Technology Park

Prepared by:
Long Blackledge Architects
tel 0410 401 390
nominated architect: Elisha Long Reg No 6938

Drawing:
Proposed Elevations (2 of 2)
Date: July 2012 Scale: 1:20
Drawing Number: ATP BH /SK 02 Issue A