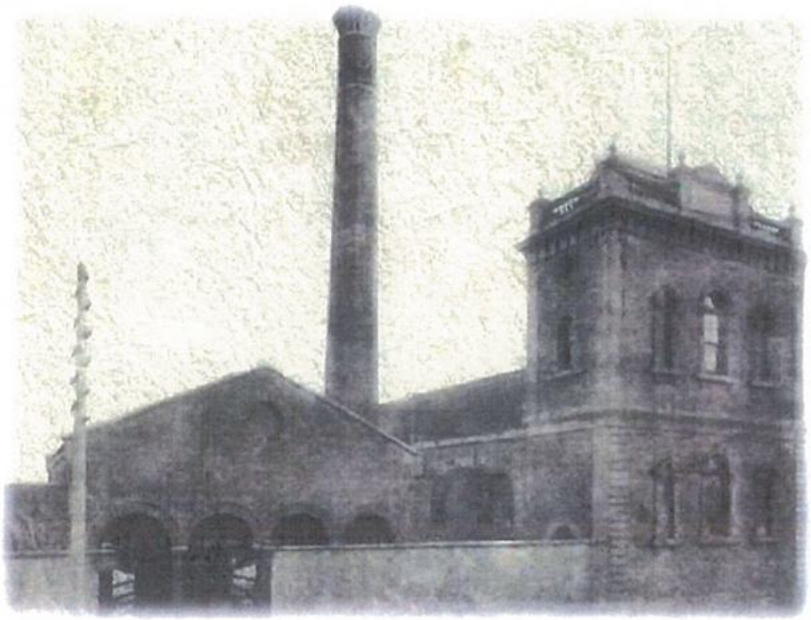


FORMER HYDRAULIC PUMPING STATION NO 1

SHR No 125

17 Little Pier Street

Darling Harbour

CONSERVATION MANAGEMENT PLAN

ENDORSED
CONSERVATION MANAGEMENT PLAN
Heritage Council of New South Wales
Date endorsed 20/06/2018
OEH/HC File EF14/5443

Prepared by Sydney Heritage Consultants

For Place Management NSW, Strategic Planning & Heritage

May 2018

Objective ID A1579172

NSW GOVERNMENT | Property NSW

Frontispiece: - http://pumphousesydney.com.au/images/pumphouse_tavern.jpg

DOCUMENT/ STATUS REGISTER

Issue	Date	Description	Author	Reviewer
1.0	2009	CMP	AHMS	
2.0	Aug 2017	Draft report	Sydney Heritage Consultants	PMNSW
3.0	Sept 2017	Final report	Sydney Heritage Consultants	PMNSW
3.1	Sept 2017	Final report revisions	Place Management	PMNSW
3.2	March 2018	Final Report Heritage Division amendments	Place Management	PMNSW
3.3	May 2018	Final Report Heritage Division amendments	Place Management	PMNSW

Table of Contents

Table of Contents **3**
Executive Summary **9**
Frequently Asked Questions (FAQs) **10**
1.0 Introduction **25**
1.1 Context of the Report 25
1.2 Objectives 25
1.3 Site and Ownership 25
1.4 Cadastral Identification 30
1.5 Building Description 30
1.6 Heritage Listings 37
1.6.1 Statutory Listings 37
1.6.2 Non Statutory Listings 37
1.7 Methodology and Structure 37
1.8 Limitations 39
1.9 Terminology 39
1.10 Documentary and Photographic Sources 41
1.11 Authorship and Copyright 42
1.12 Acknowledgements 42
2.0 Documentary Evidence **43**
2.1 Thematic History 43
2.1.1 Darling Harbour Thematic Framework Indigenous Sydney- The Cadigal 43
2.1.2 Industry 43
2.1.3 Technology - Railways 44
2.1.4 Utilities 44
2.1.5 Post-industrial 44
2.2 Initial Development of the Site 44
2.2.1 Development of Darling Harbour 44
2.3 History of the Site 50
2.3.1 Rationale 50
2.3.2 Construction 50
2.3.3 Water Supply 58
2.3.4 Technology 58
2.3.5 Distribution and Application of Hydraulic Power in Sydney from the former HPS No.1 58
2.3.6 Development and Change 1891-1975 59
2.3.7 Re-use of the former HPS No.1 Site, 1975-2017 62
2.3.8 Redevelopment in the vicinity of Former HPS No. 1 from 1983 to 2015 63
2.4 Development of Building Components 75
2.4.1 Overview 76
2.4.2 Floor and Subfloor 78
2.4.3 Northern Elevation Wall 78
2.4.4 Southern Wall Elevation 79
2.4.5 Western Wall Elevation 79
2.4.6 Eastern Wall Elevation 80
2.4.7 Divider wall between Engine House and Accumulator Room 81
2.4.8 Upper Wall to Rear of Tower (South) 81
2.4.9 Internal Plasterwork 81
2.4.10 Engine House Roof 81
2.4.11 Water Tank 82
2.4.12 Roof of Accumulator Room Tower 83
2.4.13 West Verandah 83
2.4.14 The Accumulator Room and Engine House 83
2.5 Recent changes 84
2.5.1 The Brewery - 1987 85
2.5.2 Demolition of the Brewery - 1997 85
2.5.3 Novotel Rockford Hotel and PumpHOUSE Hotel - 1999 85
2.5.4 Accumulator Conservation 2012-2014 86
2.6 Hydraulic Power Piping Systems 115

3.0 Physical Evidence 118
3.1 Darling Harbour Context and Setting 118
3.1.1 Darling Harbour 118
3.1.2 SICEEP 118
3.1.3 International Convention Centre Sydney (ICC Sydney) 121
3.1.4 The Ribbon Project 123
3.1.5 Darling Square 124
3.1.6 Darling Square Hoarding Design 125
3.1.7 Darling Exchange 126
3.2 Street and Streetscape Description 126
3.2.1 Historical Context 126
3.2.2 Modern Context 127
3.2.3 Views and Vistas 127
Key views to the former Hydraulic Pumping Station No.1 127
Key views from the former Hydraulic Pumping Station No.1 128
3.3 Building Description 136
3.3.1 Generally 136
3.4 External Building Fabric 137
3.4.1 West and East Elevations 137
3.4.2 North Elevation 139
3.4.3 South Elevation 142
3.5 Internal Building Fabric 143
3.5.1 Original Engine House (ER) 143
3.5.2 Original Accumulator Room (AR) 148
3.5.3 East Annex 153
3.5.4 West Annex 155
3.5.5 Roofs 157
Water Tank 157
East Annex 158
Tower Roof 158
3.6 Assessment of Archaeological Potential 163
3.6.1 Below Ground 163
3.6.2 Above Ground 164
3.7 Archaeological potential 169
3.8 Moveable Heritage 171
4.0 Assessment of Cultural Significance 173
4.1 Introduction 173
4.1.1 NSW Heritage Assessment Guidelines 173
4.1.2 Ability to represent historic themes 174
4.2 Comparative Analysis 176
4.2.1 Introduction 176
4.2.2 Overview 176
4.2.3 Hydraulic Power Network System 177
4.2.4 Development of water hydraulic power systems and devices during the nineteenth century 177
4.2.5 Examples of Hydraulic Public Power Stations 180
4.2.6 Summary of operating dates and details of Hydraulic Power Stations globally 192
4.2.7 Extant remains of Hydraulic Power in Sydney 192
4.3 Conclusion 199
4.4 Assessment Criteria 200
4.4.1 Historical significance 202
4.4.2 Historical Association 203
4.4.3 Aesthetic/Technical Significance 203
4.4.4 Social Significance 204
4.4.5 Research Values 204
4.4.6 Rarity Values 205
4.4.7 Representativeness 205
4.5 Statement of Significance 206
4.5.1 Gazetted Statement of Signifi 206
4.5.2 Supplementary Statement of Significance 206
4.6 Curtilage 207
4.6.1 Defining a heritage curtilage 207

4.6.2 A curtilage for the former HPS No. 1 ... 208
4.6.3 Views and Vistas ... 209

5.0 Grading of Significance ... 214

5.1 Basis of Assessment ... 214

5.1.1 Exceptional Significance ... 214
5.1.2 High Significance ... 214
5.1.3 Moderate significance ... 215
5.1.4 Little Significance ... 215
5.1.5 Intrusive ... 216
5.1.6 Fabric condition assessments ... 216

5.2 The former HPS No.1 - Grading of Significant Elements ... 216

5.3 Grading of significant elements ... 227

6.0 Constraints and Opportunities ... 237

6.1 Issues Arising from the Statement of Significance ... 237

6.1.1 Governing principle ... 237
6.1.2 Compatible Use ... 237
6.1.3 Fabric and Moveable Heritage ... 238

6.2 Issues Arising from Physical Condition of the Place ... 238

6.3 Place Management NSW ... 240

6.3.1 Asset Owner's Requirements ... 240
Lessees Responsibilities ... 241
Maintenance ... 241
'Loose Fit' ... 241
Interpretation ... 241
Location ... 242
Reversibility ... 242
6.3.2 Place Management NSW Policies ... 242
6.3.3 Lessees Requirements ... 243
Security ... 243
Signage ... 243
Upgrades ... 243

6.4 Heritage Management Framework ... 243

6.4.1 Environmental Planning and Assessment Act ... 244
6.4.2 New South Wales Heritage Act 1977 ... 244
Architectural Works ... 244
Archaeological Management ... 245
Standard Exemptions for works to State Heritage Register items ... 245
Minimum Standards of Maintenance and Repair ... 246
6.4.3 National Parks & Wildlife Act, 1974 ... 247
6.4.4 NSW government Total Asset Management ... 247

6.5 Environmental Planning Instruments (EPIs) ... 247

6.5.1 State Environmental Planning Policy (SEPP) (State and Regional Development) 2011 and State Environmental Planning Policy (Major Precincts) 2005 ... 247
6.5.2 Sydney Regional Environmental Plan (SREP) (Sydney Harbour Catchment) 2005 ... 248
6.5.3 Darling Harbour Development Plan No.1 ... 248

6.6 Development Control Plans and Guidelines ... 249

6.6.1 Sydney Harbour Foreshore and Waterways Area DCP 2005 ... 249
6.6.2 The City of Sydney Development Control Plan (DCP) 2012 ... 249
6.6.3 NSW Heritage Council – Design in Context ... 250
6.6.4 NSW Heritage Council – New Uses for Heritage Places ... 250

6.7 Approvals ... 250

6.7.1 Landowner's consent ... 250
6.7.2 Consent Authorities ... 250

6.8 Non-statutory listings and Community Groups ... 251

6.8.1 National Trust of Australia (NSW) ... 251
6.8.2 Australian Heritage Commission –Register of the National Estate ... 251

6.9 National Construction Code (NCC) and Building Code of Australia (BCA) ... 252

6.9.1 The Disability Discrimination Act (DDA) ... 252
6.9.2 NSW Work Health & Safety Act 2011 ... 253

6.10 Application of the Burra Charter 253
7.0 Conservation Policies 255
7.1 Best Practice Heritage Management 255
Background 255
Guidelines 256
7.2 Asset Management 256
7.2.1 Place Management NSW management responsibilities 256
Background 256
Guidelines 256
Background 257
7.2.2 Total Asset Management (TAM) Plans. 257
Guidelines 257
7.2.3 Adoption, Endorsement and Review of the CMP 258
Background 258
Guidelines 258
Guidelines 259
7.2.4 Approvals' Process and Landowners Consent Background 259
Guidelines 259
7.3 Documenting Change 260
Background 260
Guidelines 260
7.4 Appropriate Conservation Skills and Experience 261
Background 261
Guidelines 261
7.5 Ownership, Participation and Approvals 262
Background 262
Guidelines 262
Guidelines 264
7.6 Current and Future Use 264
Background 264
Guidelines 265
7.7 Management of Significance 267
7.7.1 Conservation of Significant Fabric 267
Background 267
Guidelines 268
7.7.2 Conservation of Significant Spaces 269
Background 269
Guidelines 270
7.7.3 Element Specific Policies 271
Background 271
Guidelines 271
7.8 New Work Policies 279
7.8.1 Integration of New Work 279
Guidelines 281
7.8.2 Integration of Services 283
Background 283
Guidelines 284
7.9 Building Code Compliance 285
Background 285
Guidelines 286
7.10 Accessibility 287
Background 287

Guidelines....288
7.11 Setting, Views and Adjacent Sites....290
Background....290
Guidelines....290
7.12 Sustainability....291
Guidelines....291
7.12.2 Thermal comfort in heritage buildings....291
Guidelines....292
7.12.3 Passive design solutions....292
Background....292
Guidelines....293
7.12.4 Mechanical solutions to supplement passive design....293
Guidelines....293
7.13 Archaeological Resources....294
7.13.1 Archaeological Monitoring....294
Background....294
Guidelines....294
7.13.2 Prehistoric (Aboriginal) Archaeological Potential....294
Background....294
Guidelines....295
7.13.3 Archaeological Potential (European)....295
Background....295
Guidelines....295
7.14 Painting and Finishes....296
Guidelines....296
7.15 Landscaping/Planting....297
Background....297
Guidelines....297
7.16 External Signage, Seating and Lighting....298
Background....298
Guidelines....299
7.17 Ongoing Maintenance and Repair....300
Background....300
Guidelines....301
7.17.2 Retention of Fixtures, Fittings and Moveable Heritage....302
Background....302
Guidelines....302
7.18 Interpretation....302
Background....302
Guidelines....303
8.0 Implementing the Plan....306
8.1 Minimum Standards of Maintenance and Repair....306
8.2 Schedule of Conservation Works....309
8.2.2 Detailed Requirements for Conservation Works....323
Window Joinery....323
Doors....324
Brickwork and Render....324
Cast Iron Water Tank Panels....325
Accumulator Tower Roof....326
Matters identified in s6.2....326
8.3 On-going Maintenance....327
8.3.1 Exterior Maintenance....327
8.3.2 Interior Maintenance....328

9.0 Bibliography 329
9.1.1 Web Based Articles 329
9.1.2 Web Based Policy Documents 330
9.1.3 PMNSW Files 330
10.0 Appendices 332
10.1 Appendix A 332
10.1.1 Jackson Teece Chesterman Willis & Partners Plans for The Pumphouse Brewery prepared for Centrepac Limited, 1987 332
10.2 Appendix B 333
10.2.1 Trevor Hayter and Esther Hayter Plans for the Pumphouse Brewery and Tavern for Centrepac Limited, 1988 333
10.3 Appendix C 334
10.3.1 Barrelle Partners Architects Plans for Pumphouse Tavern, 1991 334
10.4 Appendix D 335
10.4.1 Barrelle Partners Architects Plans for Redevelopment of Pumphouse Hotel for Mulpha Australia Limited, 1998/1999 335
10.5 Appendix E 336
10.5.1 Dreamtime Australia Design Internal Alterations and refurbishment Pumphouse Restaurant, 2003 336
10.6 Appendix F 337
10.6.1 Original Plans of the Former Hydraulic Pumping Station No. 1, State Archives & Records 337
10.7 Appendix G 338
10.7.1 Inventory of Moveable Heritage Items 338

Executive Summary

The Conservation Management Plan (CMP) for the Former Hydraulic Pumping Station No.1 (HPS No.1), located at 17 Little Pier Street, Darling Harbour, has been updated in 2017 by Sydney Heritage Consultants for Place Management NSW and is based on the CMP prepared by Archaeological & Heritage Management Solutions Pty Ltd for the Sydney Harbour Foreshore Authority, in 2009.

The CMP for the Former Hydraulic Pumping Station No. 1, 17 Little Pier Street, Darling Harbour conforms to the current guidelines of the New South Wales Heritage Council and has been prepared to a standard suitable for endorsement by the Heritage Council.

Conservation can be regarded as the management of change. It seeks to safeguard that which is important in the built environment within a process of change and development. One of the functions of this document is to establish criteria, policies and recommendations for the conservation and on-going use of the building in an appropriate and desirable future direction. In this way, future occupants, managers and owners for the place will be able to formulate proposals within a known framework of acceptable directions, and planning authorities will be able to assess those proposals.

The former Hydraulic Pumping Station No.1 at 17 Little Pier Street, Darling Harbour was the only hydraulic pumping station to operate in Sydney and the first large multi-purpose system constructed in NSW. The station supplied hydraulic power to the city of Sydney from 1891 to 1975.

Today the former HPS No.1 retains a number of its original features including the accumulator tanks, cast iron water tank panels and architectural elements. It is the last major vestige of the industrial structures that once dominated Darling Harbour. The former HPS No.1 made a significant contribution to the urbanisation and industrialisation of Sydney. The building and its components are of State significance.

The former Hydraulic Pumping Station is currently being re-used as a bar and restaurant known as the Pumphouse. Future re-uses should retain the original fabric and the internal and external form of the building as well as providing opportunities for interpretation of its historic use.

The key findings and recommendations of this CMP are:

- The former HPS No 1 is a remarkable example of Victorian era industrial heritage, as the last major vestige of the industrial structures that once dominated Darling Harbour. The former HPS No.1 made a significant contribution to the urbanisation and industrialisation of Sydney and is an important element of the city's heritage that needs to be preserved and promoted.
- Some of the value of the former HPS No 1 has been concealed by later development or lost through demolished fabric. The building would benefit from interpretation to fill in the missing gaps in the story so that the building can fully demonstrate its significance.
- All of the original external and internal features and built form of the building are to be retained and conserved. This plan establishes the relative value of the fabric elements into five categories, and these need to be understood before any work is carried out.
- Some of the exceptional heritage fabric on the site is concealed, such as the cast iron panels at the base of the former water tank. This report should be consulted before any works are considered to ensure significant fabric is not affected.

- Original fabric requires conservation using techniques and materials that are compatible with the heritage fabric, which may vary significantly from modern practice. Experienced heritage advice and skill should be sought before any conservation, repair or maintenance works is undertaken.
- Contemporary materials and design may be used for new work, and designed in a manner in which its location, form, scale, grain, colour and texture respond to the original fabric and spaces. The Heritage Council's publication *Design in Context* should be consulted. It provides guidelines for the design of infill and additions for heritage buildings.
- The current State Heritage Register listing for the former HPS No. 1 should be updated. The Statement of Significance and Assessment of significance should be updated to reflect the research undertaken in this CMP.
- The setting, physical context and views to and from the former HPS No 1 are important, and any future development should seek to retain and not detract from this.
- The ongoing use of the former HPS No. 1 as commercial bar and restaurant is the best use to ensure the building retains its significance and continues to be managed and maintained. The introduction of other commercial or retail uses may be acceptable. Any future uses should be compatible with the nature and significance of the building components and should enable the former HPS No.1 to remain a vital and important component of Darling Harbour.

Frequently Asked Questions (FAQs)

Introduction

This section of the Conservation Management Plan (CMP) is intended as a guide to prospective lessees of the former Hydraulic Pumping Station No.1 known currently as the "Pumphouse" at 17 Little Pier Street, Darling Harbour. It defines the requirements associated with the building as a State significant property in Darling Harbour and sets out what can or cannot be achieved with the property. The FAQs have been prepared to guide people towards the right property choice and to assist in its management and care. The advice given in this section is a summary only and should be read in conjunction with the full CMP and the policies in section 7.0. The most applicable policy section is referenced in the FAQs; however the reader should be aware that more than one policy section and policy may apply in each situation.

Parameters for Change in Darling Harbour Area

Are there any constraints on the way the property can be used? Refer to policy section 7.6, 7.7.3 and 7.11

Yes. The current use as commercial bar and restaurant is among the best uses to ensure the building retains its significance. The most compatible, low impact uses are commercial ones that continue to allow public access and that are consistent with or highlight its previous industrial use and significance. It is important to minimise the impacts of modern servicing, work health and safety, disability access, and fire egress and compartmentation regulations by encouraging uses that require the least change. Contemporary requirement, such as the introduction of equitable access, should be undertaken in areas of low significance or in the annex additions to the east and west of the building.

Future uses should be compatible with the nature and significance of the building components and should enable the former HPS No.1 to remain a vital and important component of Darling Harbour. The introduction of other commercial or retail uses may be acceptable, but will be dependent on the ability to introduce suitable upgrades to meet Building Code Australia and accessible access requirements without damaging impacts on the heritage significance of the building fabric or spaces.

Can adjacent properties be amalgamated for contiguous use? Refer to policy section 7.6

Yes, but with very prescriptive limitations. While it would be ideal for the building to stand alone, the existing configuration involves the contiguous connection between the heritage building and the adjacent hotel. The Conservation Management Plan does not permit the removal of significant fabric for the introduction of new or additional doorways and openings in original walls.

Any connection to the heritage building must be limited to the existing openings. There is opportunity for the third storey party wall to be removed and replaced with glazing to reveal the cast iron panels on the eastern façade of the building and improve the connection between these two spaces.

Exterior

What is the view catchment of this property? Why is this relevant to me as a lessee in The Rocks? Refer to policy section 7.11

The former HPS No.1, is of high significance in terms of broad or distant views to and from the place and its setting within the wider Darling Harbour landscape. There are several primary significant view lines to and from the former HPS No.1 (as discussed in Section 3.2.3) that should be retained so the original form and fabric of the building can be acceptably presented and interpreted.

The high visibility of the former HPS No. 1 means that any changes to the external building form and fabric will be evident and cannot be easily hidden from public view. All proposed external changes are to be considered within this context.

How does the significance of the rear or side elevations of this building affect its potential for changes? Refer to policy section 7.11

The nature of the significance of this building as industrial heritage, and its importance as one of the last elements of Darling Harbour's former industrial past means that it does not have elevations of lesser significance. While it was designed with a primary front and rear elevation with secondary side elevations, this original configuration has been decontextualised and left the building isolated from its original context. Now that the building is a rare surviving element, all of its external fabric is of equal importance.

Reference should be made to the Views and Vistas section 3.2.1 of this CMP, and more importantly section 5.3 Grading of Significance of Elements establishes the hierarchy of significance of individual elements for any proposed external changes. All proposed external changes are to be considered within this context and are subject to approval.

Can this property have additions to the building at ground or upper levels? Refer to policy section 7.8

Yes, but within very prescribed and limited areas. The significant aspects of the architectural character of the former HPS No. 1, graded as Exceptional and High, should be retained and conserved and maintained. Therefore no additions can be built at ground or upper levels to the northern and southern façade, and the western and eastern facades are governed by the views and

curtilage controls.

All new works should adhere to building envelope controls and aspire to design excellence and demonstrate infill principles that respect and complement the form, scale, character and texture of heritage buildings and contribute new work of an exceptional quality to the State significance of the former HPS No. 1 and its location in Darling Harbour landscape.

The high visibility of former HPS No. 1, its water tank, external rear and side elevations particularly from the north, south and west means that any changes to the external building fabric and form will be evident and cannot be easily hidden from public view. All proposed external changes will need to be considered within this context and are subject to approval.

Can changes to the exterior be introduced (e.g. new windows and external doors), and if so, where? Refer to policy section 7.7

Generally, no new windows or doors are permitted. No further penetrations and openings are permitted to be made to the building with the exception of reinstating or reconstructing the original design and form of the building. Maintenance of exterior facades including windows should not negatively impact on fabric of exceptional or high significance. Generally the complete original northern elevation and the upper level east, west and south elevations of the tower are intact and cannot be modified.

Opportunities to change the West and East Annex additions are subject to approval and must not have a negative impact on the significance of the fabric or setting.

Are there any external features of this property that need to be retained and conserved? Refer to policy section 7.7

Yes. All of the original or reconstructed external features, fabric and built form of the former HPS No. 1 identified as exceptional and high significance must be retained and conserved. In particular the northern and southern elevations and all upper level elevations of the tower are largely intact and must be retained and conserved. Refer to Figures 5.1-5.9 in Section 5.3.

The annex addition to the western elevation can be removed and replaced with a new addition complying with the building envelope created by the view and curtilage controls of this CMP, subject to approval. Any replacement structure must be compatible with the industrial aesthetic and historical significance of the building.

The three storey eastern annex conceals the eastern elevation of the original Engine House and water tank. There is opportunity to remove the party wall on the third story between the swimming pool area and water tank roof and replace with glazing to reveal the cast iron water tank panels.

All new works should adhere to building envelope controls and aspire to design excellence and demonstrate infill principles that respect and complement the form, scale, character and texture of heritage building and contribute new work of an exceptional quality to the State significance of the former HPS No. 1 and its location in the Darling Harbour landscape.

Can new balconies, verandahs, decks or roof decks be introduced, and if so, where? Refer to policy section 7.8

Yes, in specific areas. No additions are permitted to the north or south elevations, and the upper levels of the tower must not be blocked from the view corridors.

The verandah addition to the western elevation can be removed and replaced with a new addition constructed to comply with the building envelope controls in this CMP, subject to approval. Any

replacement structure must be compatible with the industrial aesthetic and historical significance of the building.

There is opportunity to explore new uses of the original Engine House roof (original water tank) that are compatible with the protection of the item's significance. Removal of plant equipment would allow the volume of the water tank area and the detail of the cast iron panels to be appreciated. However, there are controls greatly limiting the area that can be covered or enclosed, and there are detailed elements such as the wrought iron straps that must be retained. Any use that increased the need for access and egress, servicing or fire separation would potentially threaten significant fabric and thus would not be a compatible use. Disabled access (see discussion below) would seem to largely prevent any consideration of this.

The parapet and unfinished roof over the eastern annex on the northern façade should be removed as it is an intrusive element and is not compatible with the aesthetic significance of the building. There is opportunity to modify the terrace to the eastern elevation leading out from the swimming pool. This is subject to approval and must not have a negative impact on the significance of the fabric of the eastern elevation of the Accumulator Room tower.

Can new dormer windows or skylights be introduced, and if so where? Refer to policy section 7.8

No. The main roof is the base of the water tank, which has high significance and should not be penetrated. The tower roof is very small and at a high level, and there is little reason to introduce a skylight.

What opportunities exist for alterations to achieve flat /equitable access for this property? Refer to policy section 7.10

GROUND FLOOR: At present there is a graded level to the ground floor from the Darling Harbour walk that complies with AS1428.1. The outer door is a double leaf door that does not comply, and is at present left open during operating hours to enable wheelchair access by patrons. This addresses most of the concerns, but does not provide access for staff or owners in wheelchairs. The doors could be replaced by uneven doors with one 920mm leaf, and this would provide independent access for everyone.

The ground floor provides one accessible toilet accessed via a hallway that appears to comply with AS1428.1. Based on our scaling of the plans, which is not perfect, it would appear the accessible toilet has not been upgraded to meet the changed requirements of AS1428.1-2009 and is undersized. A significant redevelopment would trigger the need to redesign this toilet and resize and potentially relocate it.

MEZZANINE: Accessible access to the mezzanine is provided from the hotel and thus technically complies with AS1428.1. At present there is no reasonable wheelchair accessible means to get from the ground floor bar to the upper mezzanine, which could potentially trigger DDA non-compliance. The only sensible way to address this in any redevelopment would be to install a lift accessible from the bar area. A lift within the confines of the former HPS No 1 is **not permitted** by this CMP as it would have too great an impact on the fabric and spaces. Options would need to be considered in the East Annex. We would suggest the present location of the disabled toilet is easily accessible to the existing passageways on both levels.

The door from the mezzanine to the hotel hallway currently does not comply with the Code, but it appears this is to be redressed in the pending fitout changes by adjusting the partition within the existing opening. The brick openings in the east wall of the former HPS No 1 must not be modified.

ORIGINAL WATER TANK: The roof level does not provide any wheelchair access, and this would appear to be a very significant impediment to any future public use of the water tank. The tank is fully

enclosed by exceptional fabric elements, so no new openings would be permitted. The existing opening could be modified to cater for wheelchairs, but this would involve significant work to the levels of the pool and surrounds. Without a very significant redevelopment of the hotel this area is likely to remain inaccessible to the public.

Can this property have off street parking? If so, where? Refer to policy section 7.6

No. The former HPS No 1 is a relatively small building of high heritage significance. It could not accommodate any internal parking areas. Parking at the adjacent hotel is limited by the design of the hotel and the fact that the site is on reclaimed land. The surrounds of the former HPS No 1 is all part of the public domain of Darling harbour and cannot accommodate any parking areas.

Can external aerials or a satellite dish be added? If so, where? Refer to policy section 7.8

Yes, as long as they are not visible from the surrounding context and can be made to work with existing plant equipment. Some new services and sustainability measures including solar panels, antennas and other technology may be sensitively introduced into the plant area of the original water tank on the roof, subject to approval. Any new roof mounted services should not be visible above the top of the cast iron water tank panels when viewed from ground level to the west and south of the building. Any aerials that need to be well above other elements would not be permitted on the heritage building. No new services should be attached to heritage fabric.

How can the security be upgraded? Refer to policy section 7.8

Security grilles are currently mounted on two of the lower ground level windows on the southern elevation. No grilles or security screens can be attached to the windows in any of the elevations. Where forceful entry may be an issue the windows can have clear security film, subject to approval and appropriate heritage impact assessment.

The building has external security lighting installed. Any additional lighting could be added subject to approval and appropriate heritage impact assessment. It is recommended that security lighting be well designed to work with the architecture of the building (for example, highlighting external features of the building), surrounds and skyline, and is designed to achieve energy efficiency.

If additional security is required, the use of wireless movement detectors is the most acceptable form of security protection that has the least impact on heritage fabric, subject to approval. Wireless features eliminates the need for hiding wires and multiple penetrations through the fabric. As technology is continually changing and is likely to be replaced and upgraded every few years, it is essential that security systems have minimal impact on external and internal fabric and minimal visual intrusion.

Does this property have an important relationship with adjacent buildings which requires consistent presentation across the group? Refer to policy sections 7.1 & 7.14

No. This building is isolated from its original context.

Can exposed masonry or stone be painted? Refer to policy section 7.14

No. Exposed masonry that is already painted may be re-painted, but no exposed stonework or brickwork that is currently not painted can be painted.

Can existing brickwork be rendered? Refer to policy section 7.14

No. Any existing brick work without render should remain so. Adding cement based render to exposed brickwork stops the brickwork from “breathing” and can cause a build-up of moisture and harmful salts which damages the walls and paint finishes. The east face of the original building may benefit from the render being removed for this reason, but this has risks of impacting the brick face and causing greater damage. It is best left alone unless it is found that it is easily removed in a test patch.

Where can rubbish bins be stored on site? Refer to policy section 7.6

There is a dedicated rubbish bin storage area as part of the Novotel Rockford Hotel which should continued to be used. It is recommended that the public rubbish bin located in front of the northern elevation, be removed to a more appropriate location in Darling Harbour Public Domain by PMNSW.

Does landscaping work need approval and what guidelines apply? (E.g. impact of planting trees on the building fabric, archaeology, and views to and from the property, or in relation to the public domain). Refer to policy section 7.15

Yes. The introduction of "green walls" is not recommended as this can introduce moisture or damp problems into the building fabric, along with root penetration and cracking. Existing soft landscaping to the western annex outdoor seating area can be retained or replaced with similar landscaping. There is opportunity if the original water tank is used as a sundeck for soft landscaping such as potted plants to be introduced. These should not visible from ground level above the cast iron water tank panels. Any landscape work will require approval from PMNSW and may also require approval from the Heritage Council of NSW.

Interiors

What interior spaces are significant and should not be changed? Refer to policy section 7.7 & 7.18

The volume, original features and fabric of the original Engine House including the original ceiling framing should not be changed. It is recommended that the kitchen/pizza cooking area be removed from the ground floor of this space to allow the volume of this room to be read fully. The mezzanine floor level in its present form does allow the volume to be appreciated and it can be retained or replaced to the same plan area but any changes must be reversible, and will require approval from PMNSW.

The volume, features and fabric of the original Accumulator Room is of exceptional significance and no new work is permitted unless it is to reconstruct or interpret a demolished original feature. This may include the original maintenance platform, which would have the modern purpose of permitting termite inspections and roof maintenance.

Any adaptation of these two spaces is to ensure that the original fabric or significant architectural and spatial features are retained and interpreted.

The East Annex, which includes the commercial kitchen and public bathrooms to ground floor, conference rooms on the second floor and indoor swimming pool on the third floor can all be modified, subject to approval. Refer to Diagram A, B and C at the end of the FAQs. However, the eastern wall of the original Engine House and the original cast iron water tank panels are of exceptional significance and should not be negatively impacted on. Any new works should seek to reveal and conserve these fabric elements, and where possible make them available to public areas.

The interior space of the West Annex verandah to the ground and mezzanine level can be modified, subject to approval, ensuring there is no negative impact on the western wall of the original Engine House, which is of exceptional significance.

For future flexibility and adaptability any new fit-outs or upgrades should be designed to be 'loose fit' to have the minimal impact, or in heritage terminology – ***reversible***. This means that fit-outs can be easily removed and future fit-outs inserted as needed, while not fixing to, removing or otherwise impacting heritage fabric.

Are there any internal fittings or features that need to be retained, and cannot be modified? Refer to policy sections 7.7 & 7.8

Generally all of the significant heritage fabric both inside and out including fixtures and fittings

associated with the site's historic industrial use must be retained and preserved in their current form. These include, but are not limited to, its external appearance and form, original internal configuration, original fabric and engineering elements which include the accumulators and associated timber guides and framing, cast iron water tank panels (including concealed panels on bottom of tank and wrought iron tie straps), all wrought iron box girders and secondary beams, the external form and appearance of the water tank and any potential archaeological relics. This will also include all original and reconstructed timber double hung windows, the reconstructed internal plaster finish, all face brick walls, and the arched recesses to internal walls of the Engine House.

What are possible locations for new bathrooms or commercial kitchen? Refer to policy section 7.8

New bathrooms or commercial kitchen must not be located within the original Engine or Accumulator Rooms. The East Annex, which includes the current commercial kitchen and public bathrooms, is the only possible location for new service facilities. Refer to Diagram A. Any changes must not negatively impact the eastern wall and cast iron water tank panels which are of exceptional significance.

Can a lift be inserted? Refer to policy section 7.10

No, not within the extents of the heritage building. A lift can only be inserted in the East Annex, and should be setback at a distance of 6m from the eastern wall of the former HPS No 1 due to its exceptional significance.

Can an internal stair lift be inserted? Refer to policy section 7.10

Not within the extents of the heritage building. The existing stairs in the Accumulator Room are new fabric, and thus not significant, but they are lightweight and have an industrial character that is compatible with the industrial aesthetic of the building. They would be too light to support a chair lift. The stair would have to be replaced with a more bulky option, and the chair lift would also add bulk, and the result would not be compatible with the heritage fabric.

It is possible to modify the West Annex verandah stair to accommodate a bulkier stair and chair lift without significant impact on the heritage fabric, subject to assessment and approvals. This would provide a suitably accessible way to obtain access to the mezzanine level.

For maintenance purposes this CMP recommends the introduction of an open mesh ladder in the south east corner of the accumulator room with a mesh walkway inserted at the original level of the former accumulator maintenance platform that can provide access to inspect the ceiling for damp and/or termite damage, and then further connect to a recommended access hatch to the tower roof. This work can be justified because it also interprets original fabric in a modern way.

How can insulation for climate control or noise abatement be added? Refer to policy section 7.12

Yes. There would be little need for insulation to the ceiling of the original Engine House as it has cast iron panels and a concrete slab above, but if further insulation was necessary it can be installed between the secondary iron beams and above the recent ceiling original Engine House but it must not cover the bottom flange, and is subject to approval from PMNSW.

Insulation in the tower roof will depend on the final configuration of the repaired roof. If replacing the roof in its current configuration then insulation can be installed above the flat ceiling. If, as this CMP recommends, the mansard roof is reconstructed with raked ceilings, then insulation can be installed in the rafter zone.

The original brick walls to the former HPS No 1 are thick mass masonry and would not require insulation. Floor insulation can be added in the joist zone with replacement of the existing intrusive timber floor of the original Engine House. The West and East Annex can have climate control or noise

abatement added as their fabric is not significant, subject to approvals.

Can significant walls be removed? Refer to policy sections 7.7 & 7.8

No. Internal or external walls of exceptional or high significance are to be retained and conserved. No new openings or penetrations for servicing or ducting are permitted in walls of exceptional or high significance unless they restore original openings on the east wall, subject to approval. Removing partitions and finishes to uncover the original brickwork to the external face of the east wall could aid in the understanding of the building history. While this includes a commercial kitchen area that is subject to the Food Standards Code, there are design solutions within this context that can expose a flush jointed masonry wall. The other sections are within the toilets and a storage area, and offer some public access to this wall.

Can existing flooring or covers over existing flooring be replaced with new finishes? Refer to policy section 7.14

Yes. The existing pine floor and framing in the original Engine House should be replaced with a new floor that is both termite and damp resistant and slip resistant. A new floor should allow for sub-floor access for regular termite inspections and included hardwired subfloor fans to introduce ventilation and reduce the vapour pressure in the timbers.

The floors underneath the accumulators were potentially the only areas in the building that retained original pipework. This area was filled with mass concrete in 2014 to prevent serious subsidence failure of the foundations and should be left insitu.

The mezzanine floor can be replaced, subject to approval. Floors in the eastern and western annexes can be changed, subject to approval.

There is opportunity to interpret the original floor level of the Engine House by marking it on the walls and introducing a different material or colour below the original floor level as a dado around the original Engine House space. Provide plaques or other means to identify the dado as original floor level.

Do any significant existing floor finishes need to be retained? Refer to policy section 7.14

No.

Do any significant existing wall finishes need to be retained? Refer to policy section 7.14

Yes. The internal plaster to the original Engine House should be retained however the paint scheme should be changed to a more sympathetic scheme. If original openings on the east wall are to be reopened then the plasterwork can be removed in that process – subject to approvals.

Can the internal lighting of the building be changed? Refer to policy section 7.16

Yes. The internal light fittings have been changed previously and can be changed again, subject to approval. Any new light fitting should be installed in locations that do not impact significant fabric. Lighting should emphasise the volumes of the original Engine and Accumulator Room and highlight the original ceiling beams. The red lighting in the Accumulator Room should be changed to a more sympathetic colour. For external illumination of the former HPS No. 1 the controlled and precise use of light by small sources and fine optics is important so that architectural details are accented and light is only used where it is needed. In this way the texture of buildings will be pronounced, giving depth to the form of the City and eliminating unwanted spill light.

Do any of the existing roofs need to be retained? Refer to policy section 7.7 & 7.8

Yes. The original Engine House roof (base of water tank) was constructed of cast iron panels with bitumen sealing on top, now covered by a later concrete slab. This original roof is of exceptional significance and must be retained and conserved. The plant room and slab in this area has obscured the base construction, introduced penetrations, and also occupies a lot of the tank area so it cannot be seen as a water tank. Ideally the plant would be relocated elsewhere in future works and the tank reinstated as a heritage element. It is not recommended to remove of the slab, as it is likely to damage the cast iron base in the process.

It is recommended that the Accumulator Tower roof needs to be rebuilt, and consideration made of reinstating the Mansard roof. It would restore the French character that the building possessed for most of its history. In this case the best options for cladding would be Welsh slates with heavy lead capping, or a completely zinc or copper clad roof. The best material for the box gutter lining would be copper or stainless steel sheeting, but care must be made to separate any zinc roofing from copper guttering. Any metals below a copper gutter cannot be ferrous, but cast iron downpipes are acceptable. The box gutters should be sufficient width to cope with the most intense falls, and to prevent bird carcasses blocking the drains.

If the present pitch was maintained then the best roof claddings would be copper sheet or zinc roofing. The roof should be designed and built well to last more than 100 years without maintenance. The box gutters would be as above. The roof does need to be raised a little as there is not a sufficient step down into the box gutter, and the insufficient falls in the box gutter allow ponding at present. The sumps need to be deep to meet a 1:100 year downpour. The roof framing is likely to need replacement, although if properly sealed this can be done in lightweight modern framing.

Can reverse cycle air conditioning be inserted? If so, what type and where? Refer to policy section 7.12

Yes. Reverse cycle air conditioning is already installed. The current system can be upgraded or replaced as required in the current position as it has been introduced in a sympathetic and unobtrusive manner.

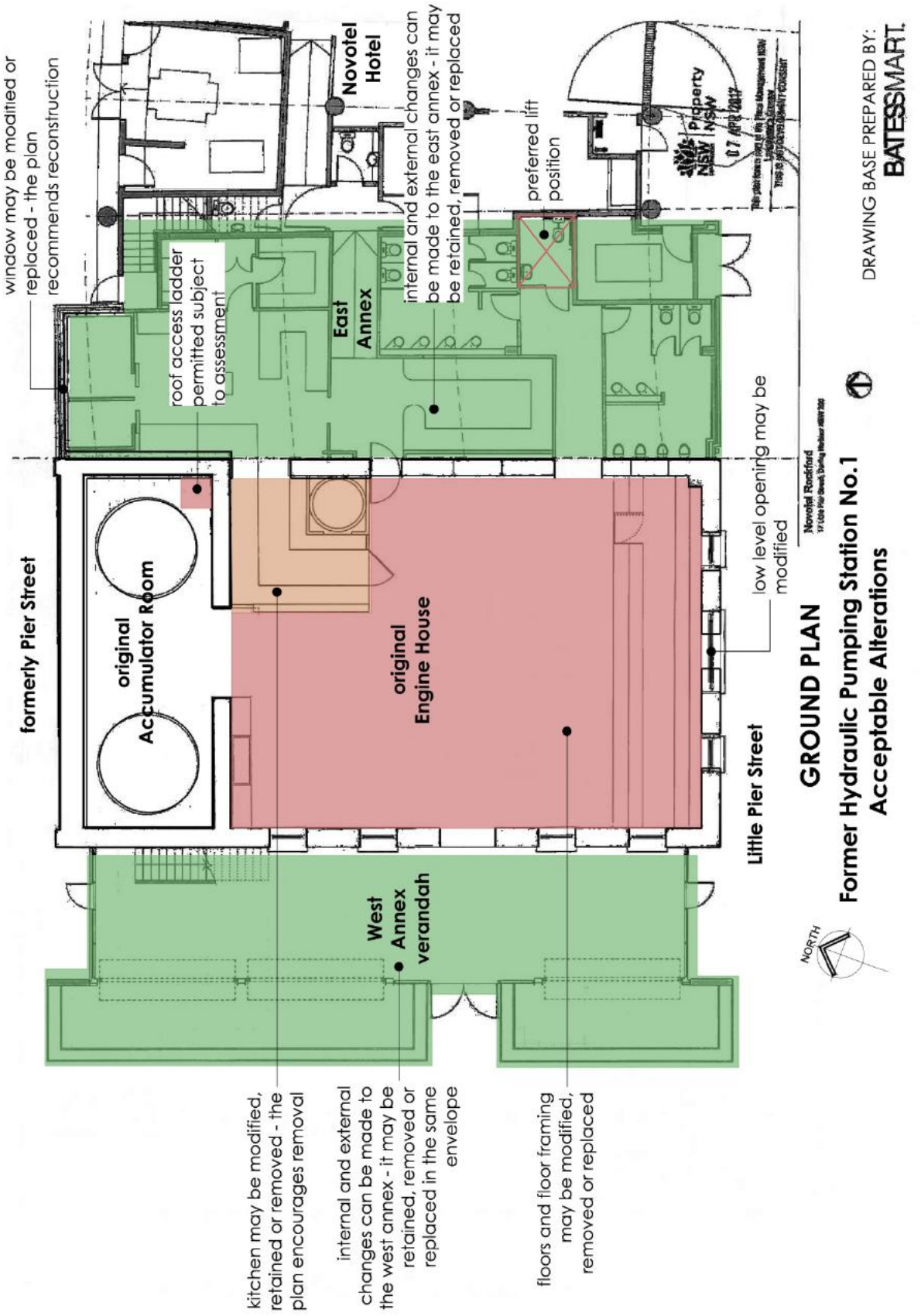


Diagram A Former Hydraulic Pumping Station No.1, 17 Little Pier Street, Darling Harbour, Ground floor plan showing acceptable alterations

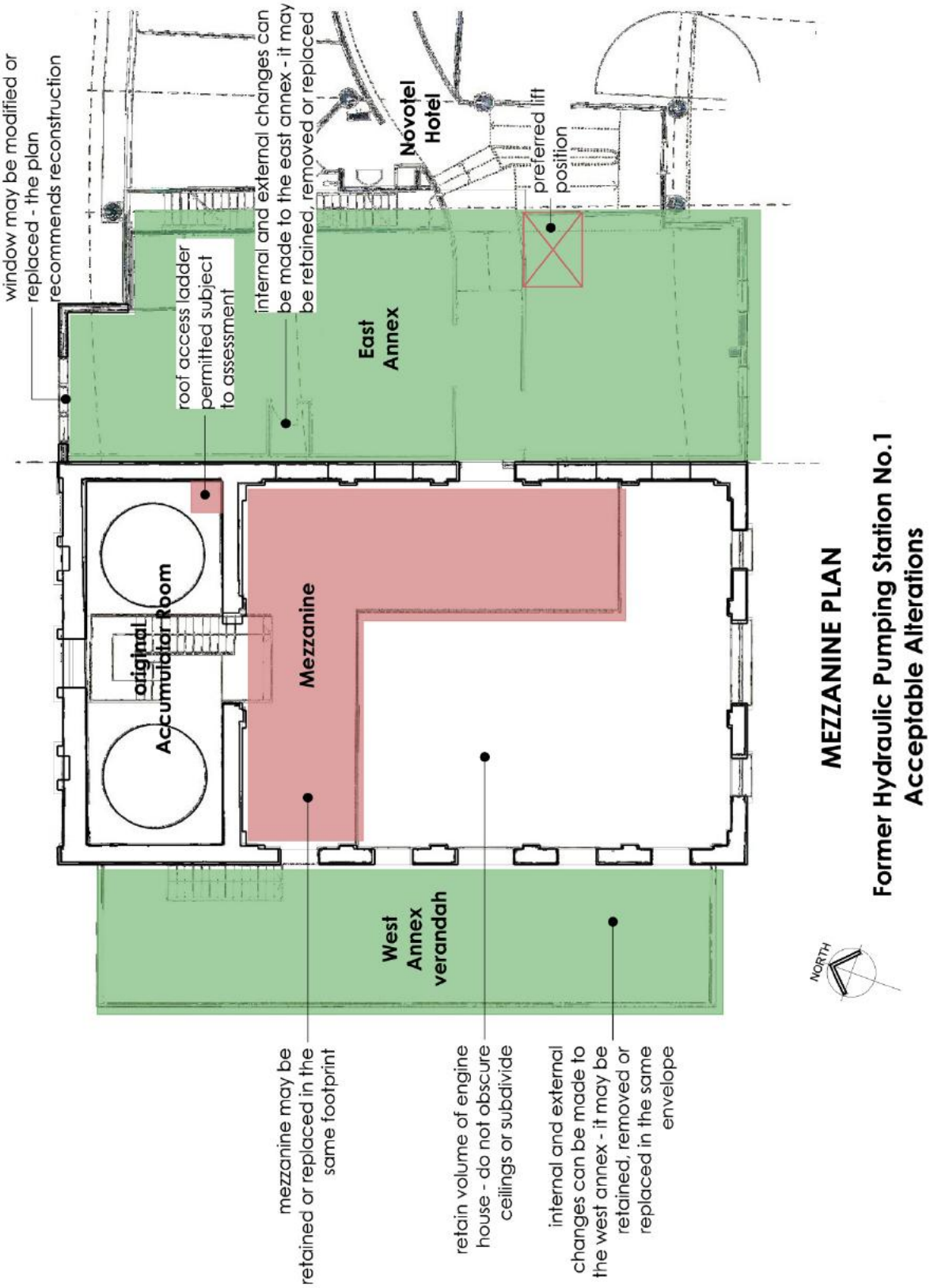


Diagram B Former Hydraulic Pumping Station No.1, 17 Little Pier Street, Darling Harbour, Mezzanine floor plan showing acceptable alterations

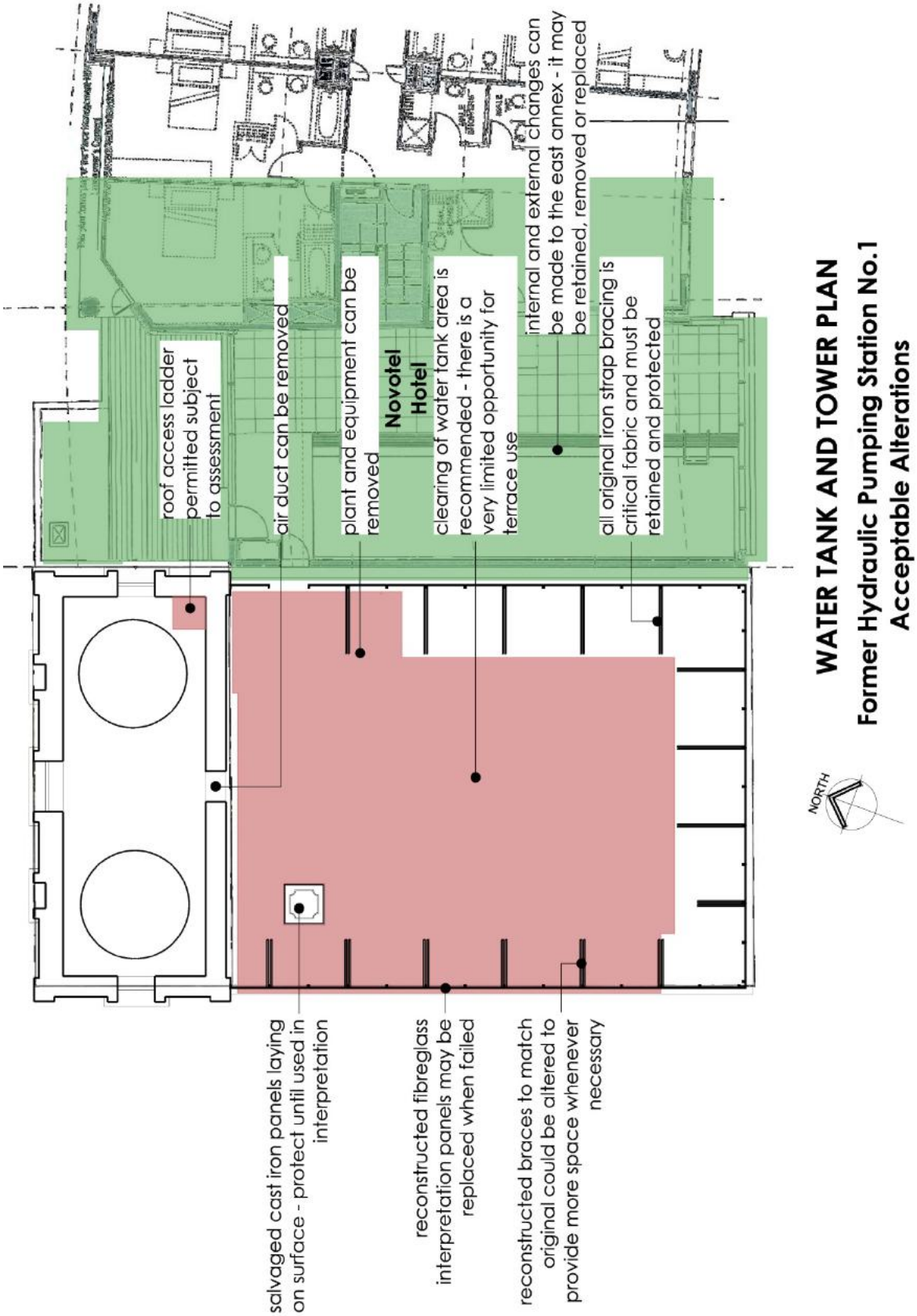


Diagram C Former Hydraulic Pumping Station No.1, 17 Little Pier Street, Darling Harbour, Water tank and tower plan showing acceptable alterations

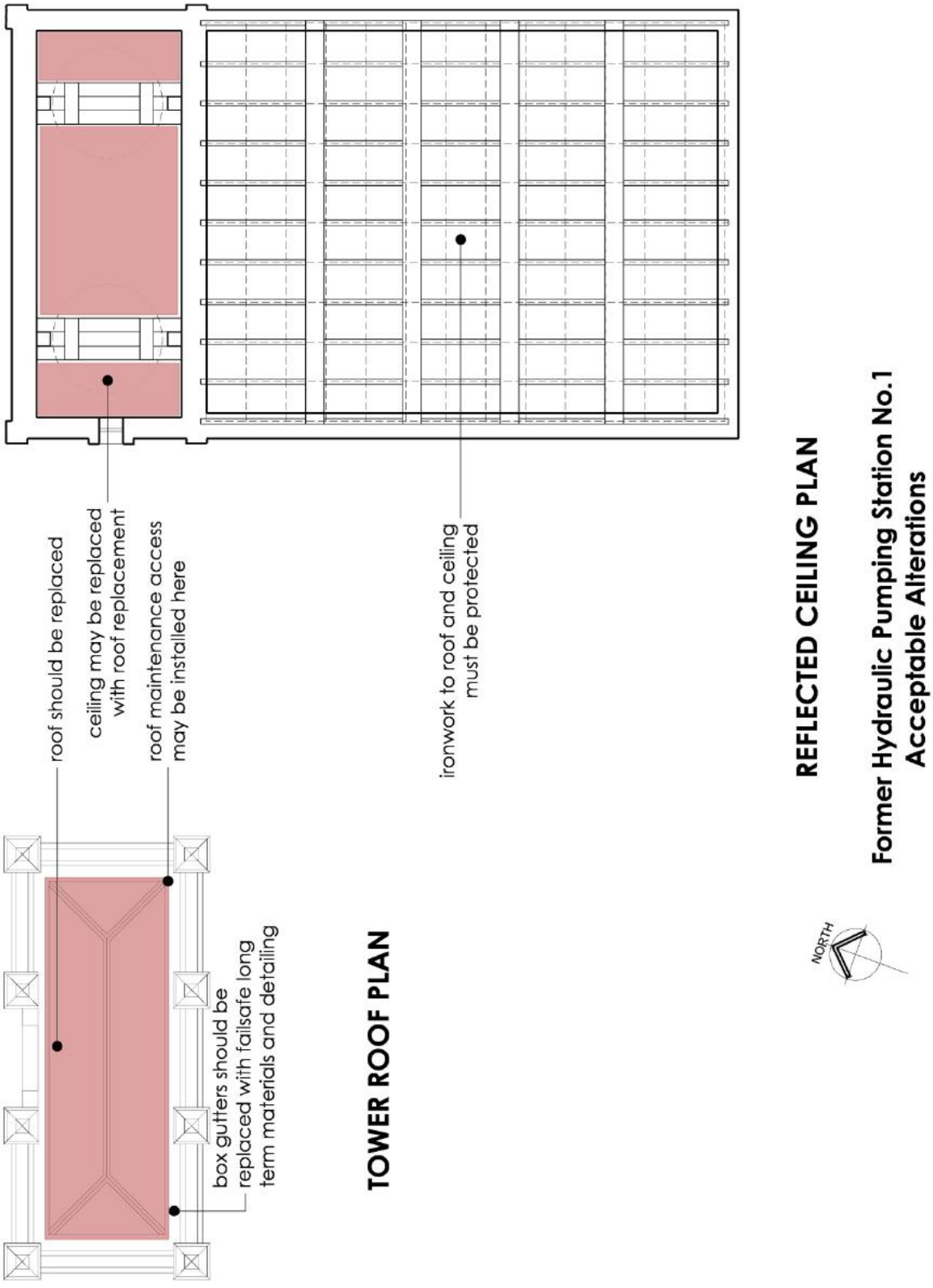


Diagram D Former Hydraulic Pumping Station No.1, 17 Little Pier Street, Darling Harbour, Roof & Reflected Ceiling plan showing acceptable alterations

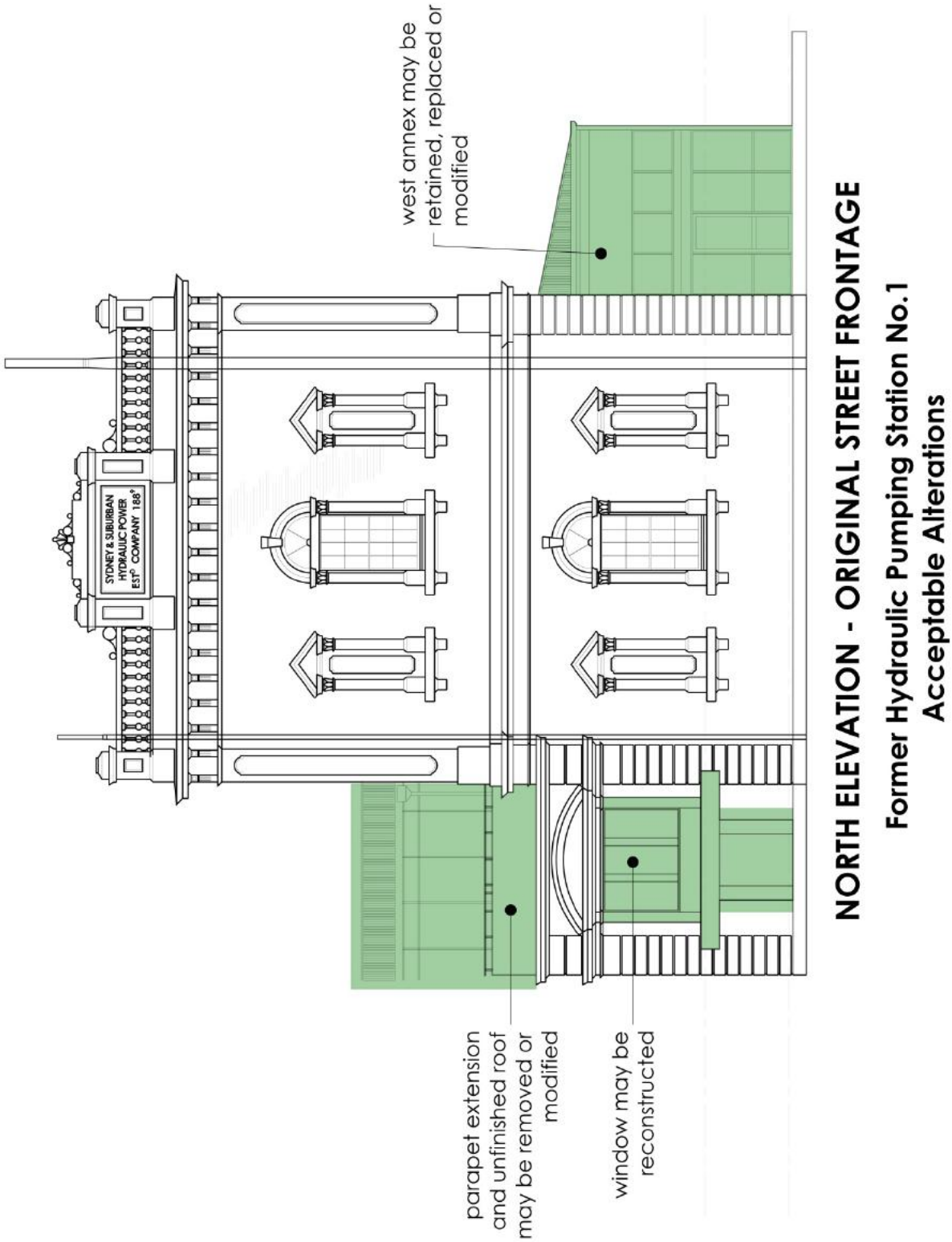


Diagram E Former Hydraulic Pumping Station No.1, 17 Little Pier Street, Darling Harbour, North Elevation showing acceptable alterations

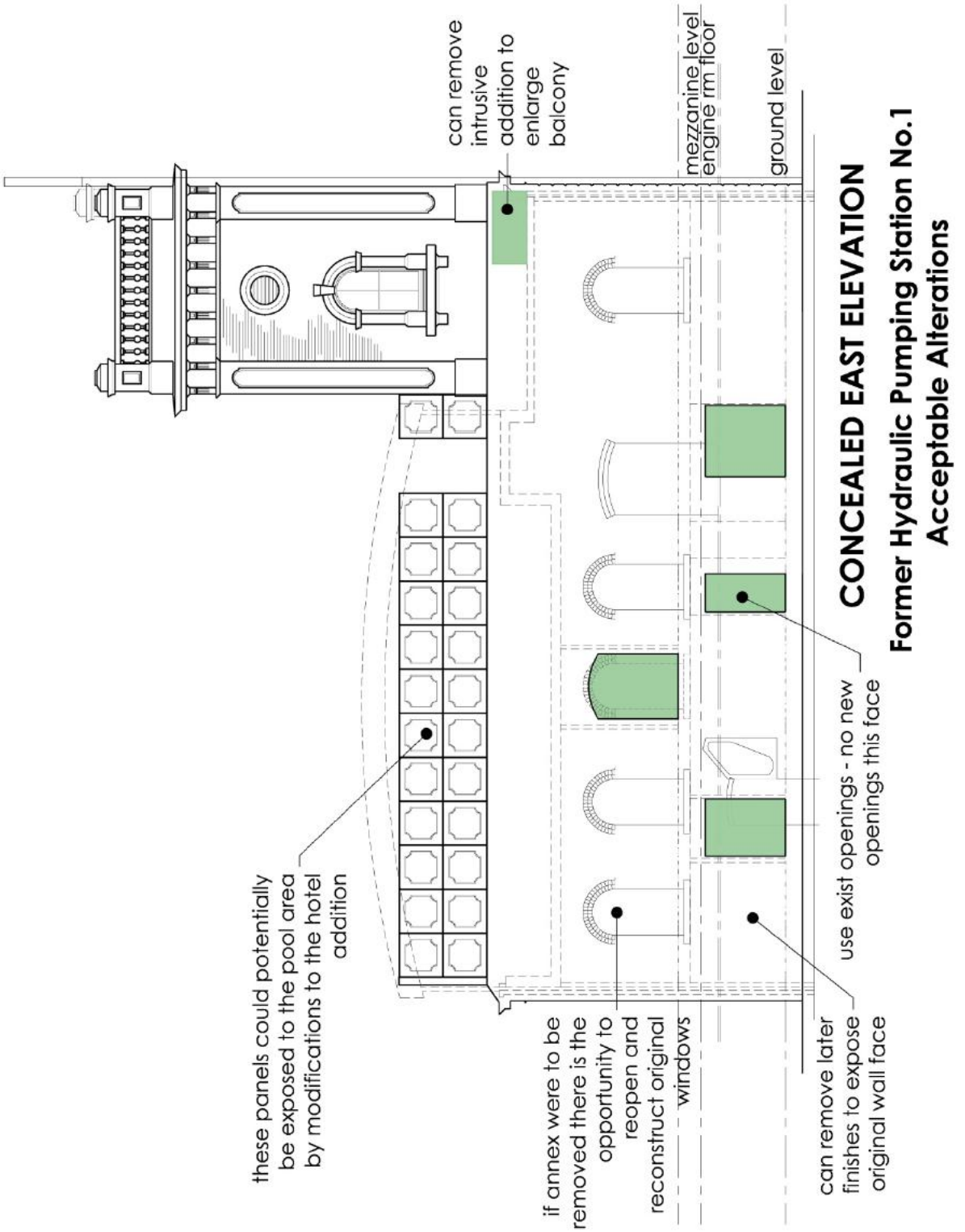


Diagram F Former Hydraulic Pumping Station No.1, 17 Little Pier Street, Darling Harbour, East Elevation showing acceptable alterations

1.0 Introduction

1.1 Context of the Report

The Conservation Management Plan (CMP) for the former Hydraulic Pumping Station No.1 (HPS No.1), in 17 Little Pier Street, Darling Harbour has been prepared to conform to the current guidelines of the New South Wales Heritage Council and has been prepared to a standard suitable for endorsement by the Heritage Council.

This version updates the CMP prepared in late 2009 by Archaeological and Heritage Management Solutions (AHMS) who were commissioned by the then Sydney Harbour Foreshore Authority to develop a Conservation Management Plan (CMP) for the former Hydraulic Pumping Station No. 1 (HPS No.1) at Pier Street Darling Harbour.

1.2 Objectives

This CMP has been commissioned by PMNSW to achieve the following objectives:

- To update the current CMP to address PMNSW's ongoing commitment to best practice heritage conservation management and the future requirements for the long term leasing of the property
- To provide PMNSW with an understanding of the former HPS No. 1 in terms of its historic and streetscape context, research potential and importance to the community;
- To establish the cultural significance of the former HPS No.1 through analysis of documentary and physical evidence to further determine the nature, extent and degree of significance;
- To formulate conservation management policies, strategies, guidelines and actions consistent with the assessed heritage significance that direct the future management and use, conservation, maintenance and any new work for the building including interpretation.
- To guide short, medium and long term capital improvements and maintenance programs that will ensure that the future use and works of the hotel is undertaken in a manner in which it retains its heritage significance and meets the statutory requirements for minimum standards of maintenance and repair.

This CMP aims to be a practical document, to guide decisions that may affect the heritage value of the place. It will form a basis for future planning and provide a standard against which to assess the heritage impact of future developments on the building, site and in the vicinity. The CMP is to be used when planning any works, both temporary and permanent, that involve alteration to the surviving fabric of the place.

1.3 Site and Ownership

The site of the former HPS No. 1 forms part of the territory of the Cadigal Clan of Sydney, represented by the Metropolitan and Local Aboriginal Land Council. It lies within the City of Sydney. The current site of the former HPS No. 1 consists of the original building and later additions to the eastern and western facades and outdoor courtyard made as part of the 1980s adaptive reuse of the building. The study area is the current SHR boundary of the property that aligns with the building edge onto Pier Street, the back laneway, the courtyard boundary wall and the eastern wall that abuts the

Novotel Rockford Hotel.

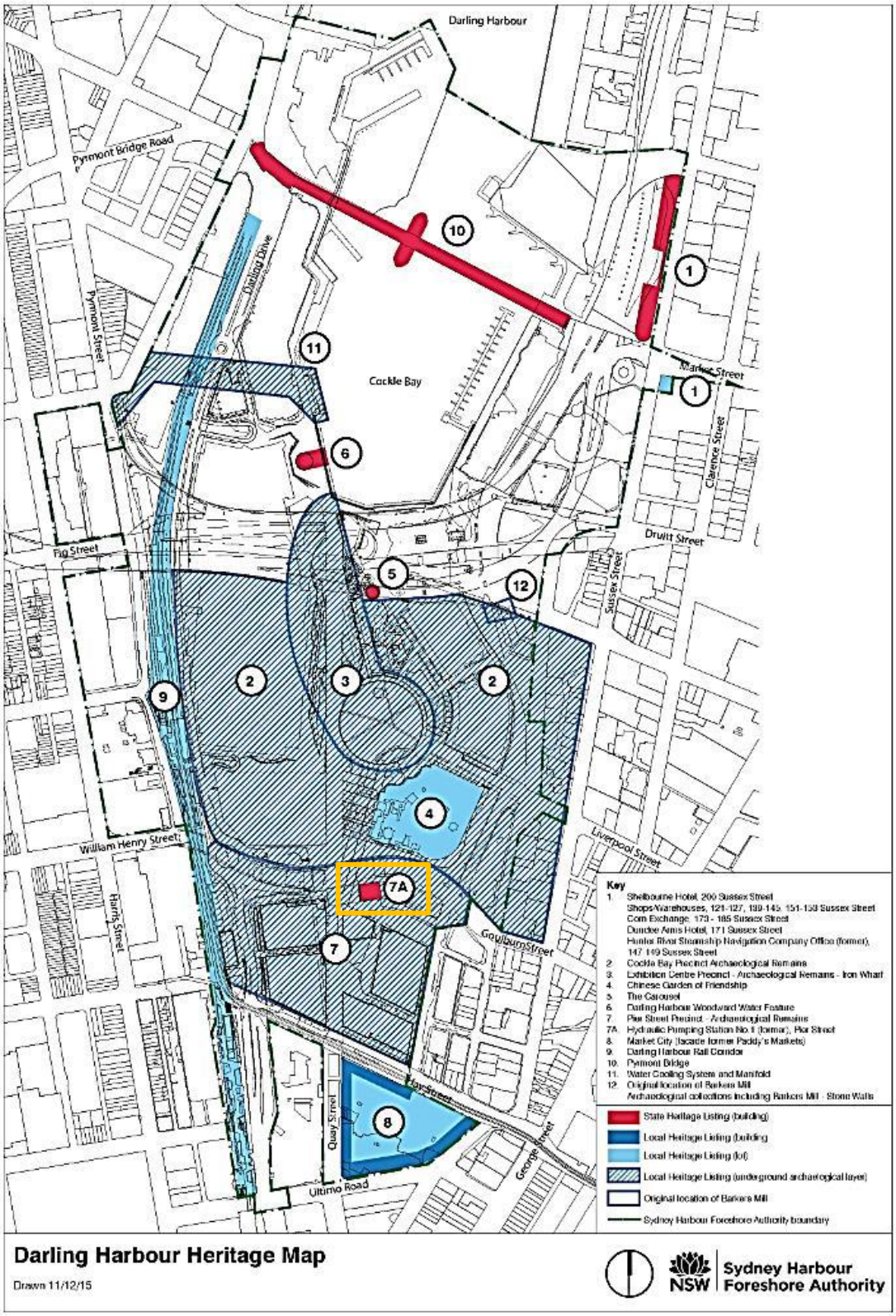


Figure 1.1 Location of the former Hydraulic Pumping Station No.1 (7a- highlighted with yellow box) within the context of Darling Harbour. The Darling Harbour Heritage Map shows the other known heritage places located within the land managed by Place Management NSW. *Source: Place Management NSW (former Sydney Harbour Foreshore Authority)*

The site is located on the southern side of the Pier Street flyovers at Darling Harbour. The site is owned by the Crown and vested in Place Management NSW (formerly Sydney Harbour Foreshore Authority). The property is currently on a 99 year ground lease to Novotel Rockford as a licensed hotel and restaurant venue.

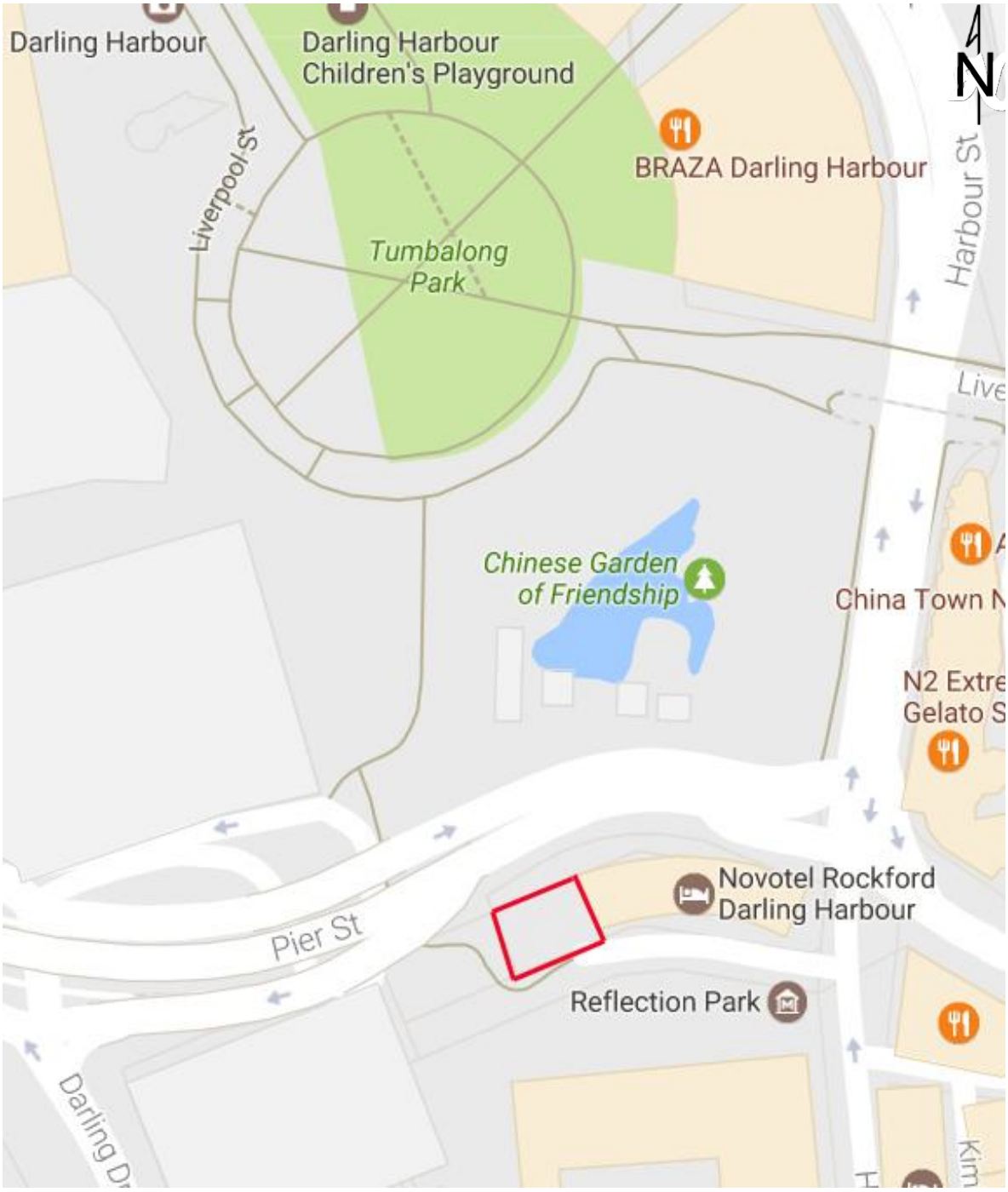


Figure 1.2 Site plan showing the location of the Novotel Rockford Hotel, including the former Hydraulic Pumping Station No.1 (property outlined in red) adjacent to the Pier Street flyover, Darling Harbour. Source: Google maps accessed April 2017.

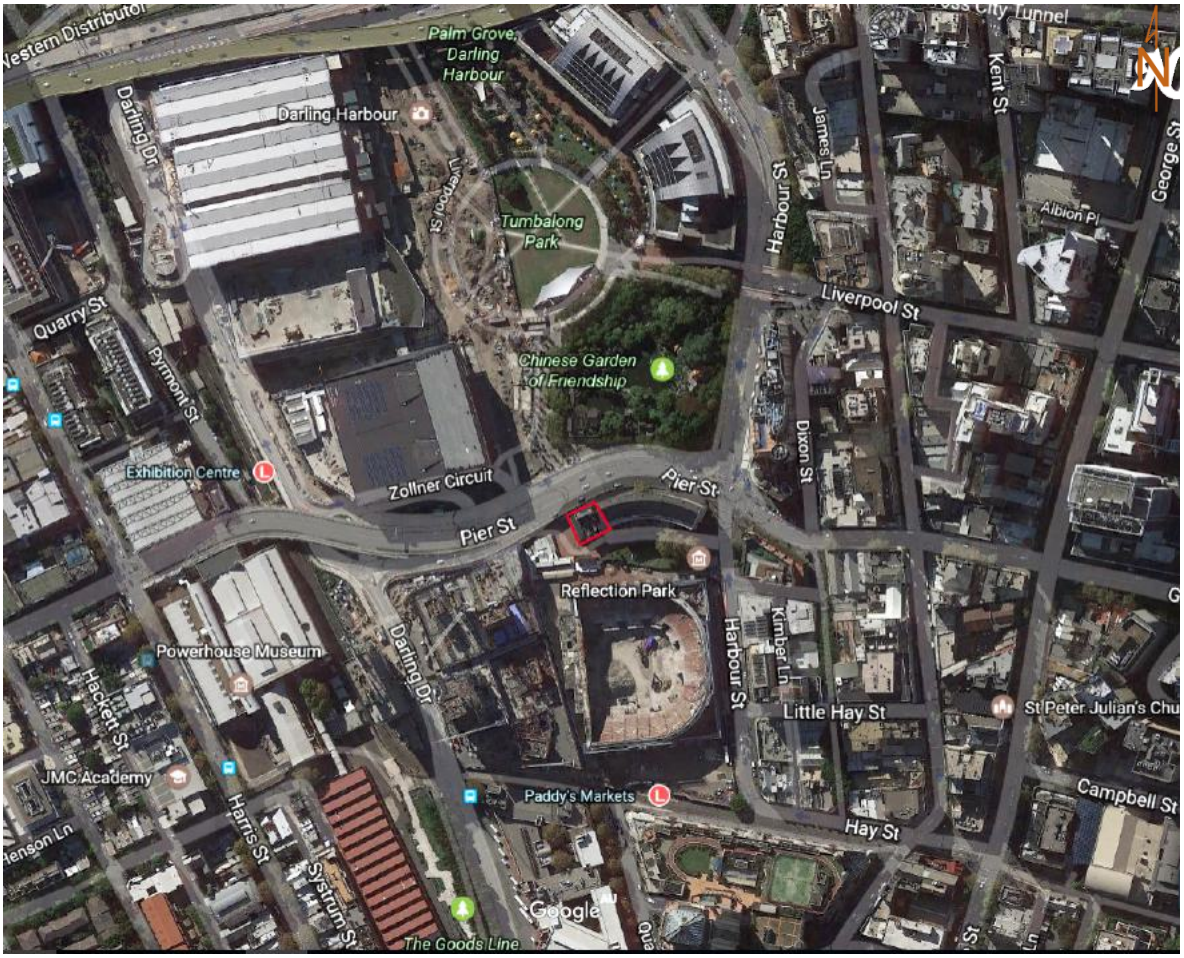


Figure 1.3 Aerial Photo of the former Hydraulic Pumping Station No.1 at 17 Little Pier Street outlined in red, within the context of Darling Harbour. *Source: Google Earth https://earth.google.com/web/@33.87750109,151.20243384,6.20761822a,222.81870902d,35y,0h,0t,0r accessed 08.06.2017*

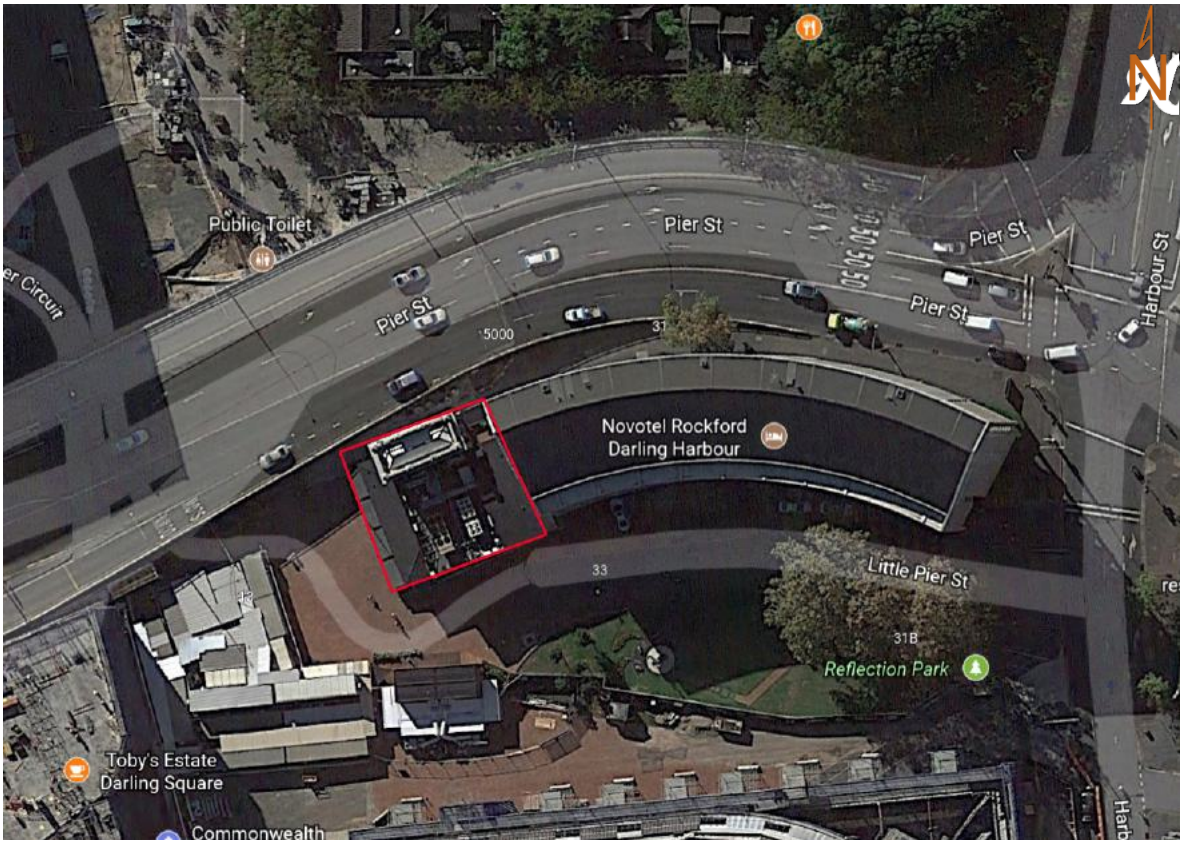


Figure 1.4 Aerial Photo of the former Hydraulic Pumping Station No.1 at 17 Little Pier Street outlined in red, within the context of Darling Harbour. *Source: Google Earth* *https://earth.google.com/web/@-33.87744738,151.20242629,6.13433665a,213.25373096d,35y,-0h,0t,0 accessed 08.06.2017*

1.4 Cadastral Identification

The former Hydraulic Pumping Station No.1 is located at 17 Little Pier Street, Darling Harbour, and the land description is part Lot 301 of Deposited Plan Number 1021761, located within the County of Cumberland, Parish of St. Phillip.

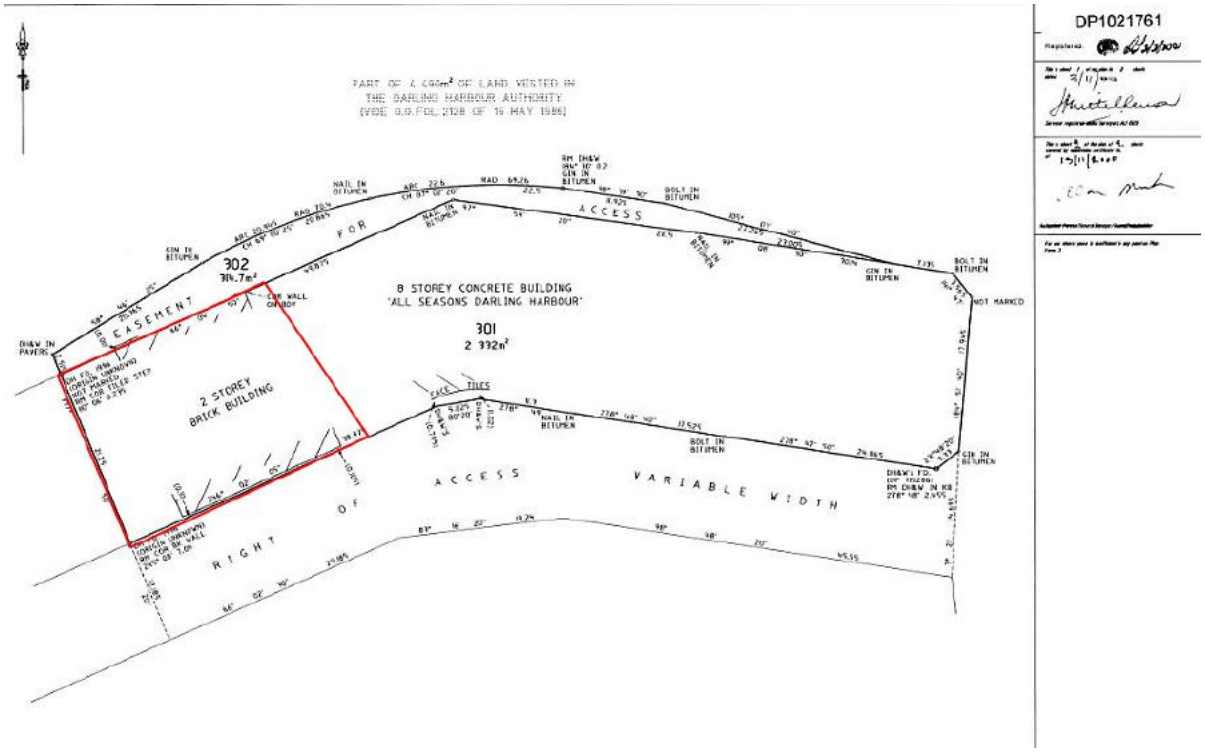


Figure 1.5 Cadastral Plan of the former Hydraulic Pumping Station No.1 site at Pier Street, Darling Harbour (shown outlined in red), consisting of part of Lot 301 of DP 1021761. *Source: Land and Property Information*

1.5 Building Description

The former Hydraulic Pump Station No. 1 is a two storey late Victorian Italianate industrial building with three storey tower constructed in 1891 in Darling Harbour. The building was originally designed to house the machinery and works that generated the hydraulic power that operated goods and passenger lifts in various warehouses and commercial buildings throughout Sydney.

The former HPS No.1 complex once extended further east and included a boiler room, chimney stack, a yard, several outbuildings, a manager's cottage and coal stores. It has been partially demolished over time and now only the former Accumulator Room and original Engine House survive.

In conjunction with the redevelopment of Darling Harbour in the late 1970s and 1980s into a recreational area, the surviving buildings of the former HPS No.1 have been refitted and used for commercial, retail and recreational purposes. By the late 1980s it was a microbrewery and tavern, a public recreational and commercial function that continues in the building today as a restaurant and bar, known as the Pumphouse.

The present site comprises the original Engine House (ER) (now bar and restaurant) which has a southern frontage to Little Pier Street (Figure 1.10) and former Accumulator Room (AR) which has a northern frontage to Pier Street (Figure 1.8). Both rooms have a western frontage to the Darling Harbour Redevelopment Walk. The building has a West Annex (verandah), and East Annex with

Novotel Rockford hotel beyond.

The two storey steel and glass West Annex (c1999) has obscured most of the external façade of the ER (Figure 1.6 and 1.7), while to the east the two storey face brick addition (added c.1982 and modified c1999) with steel and glass third storey (c.1999), has obscured the eastern façade of the ER.

External walls of the former HPS No.1 are of load bearing face brick (English Bond) with timber windows and decorative rendered quoins, cornices, pilasters and window surrounds. The majority of the panels for the former water tank remain as a screen at the perimeter of the roof over the ER.

Internally the principal room is the large open volume of the ER. The room has a bar at the southern end and a mezzanine floor extending across the north and eastern sides of the space. The mezzanine level is accessed via a new steel staircase located in the AR. The ER walls are rendered with an applied antique style wash and the large iron girders supporting the roof are original. It has a new suspended timber floor that is raised more than one metre above the original ground surface, whilst the AR has a concrete slab constructed approximately one metre above original ground level as part of the c1983 works following the decommissioning of the site.

The AR retains the two original accumulator tanks. The walls are original face brick with evidence of joists for flooring and stairs associated with the access requirements for the accumulator tanks (removed c1980).



Figure 1.6 SW corner of the former Hydraulic Pumping Station No.1 with east annex (added in c.1982 and modified in c.1999) and two storey steel and glass western annex in the foreground (added in 1999), and the Novotel Rockford Hotel and Little Pier Street in background. *Source: Adaptive Architects - 2017*



Figure 1.7 Northern Elevation of the former Hydraulic Pumping Station No.1 assembled from a number of photos - with eastern annex (left) (c1920s) with changes 1952, 1979, 1989 & 1999) and steel and glass west annex (right) (1999). *Source: Adaptive Architects - 2017*

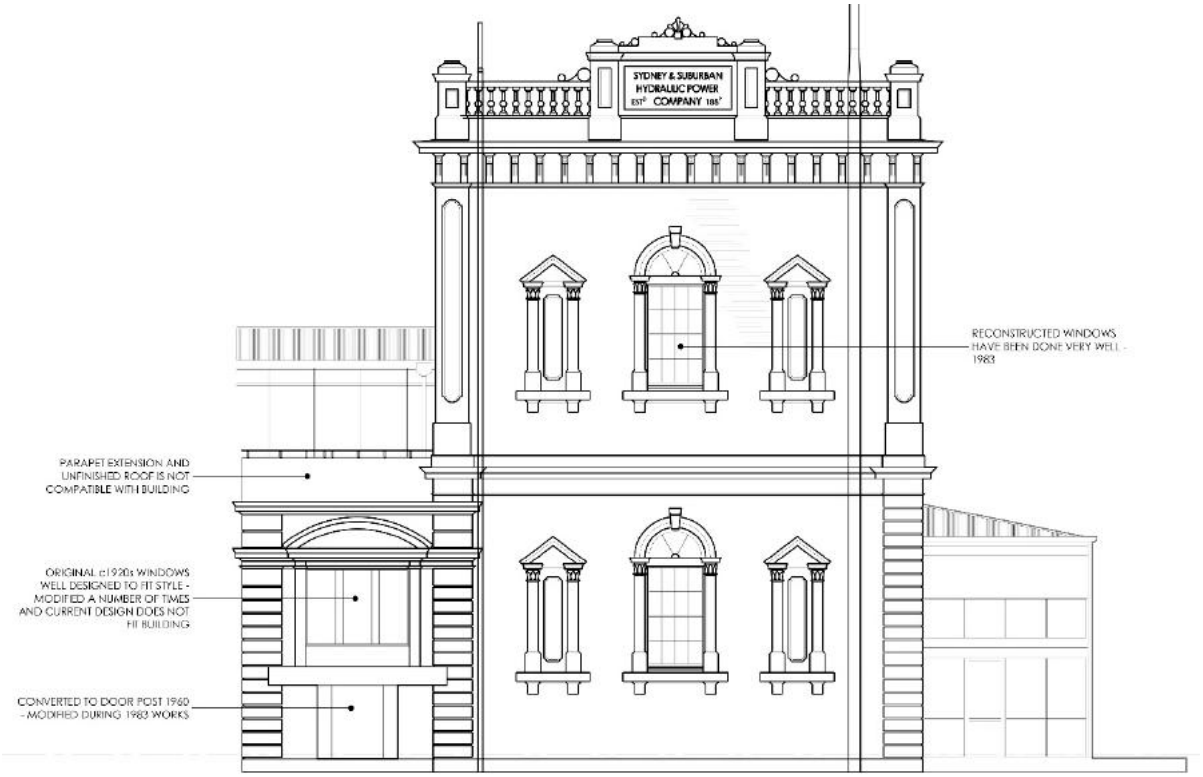


Figure 1.8 North elevation – drawn from photographs and plans – *Adaptive Architects – 2017*

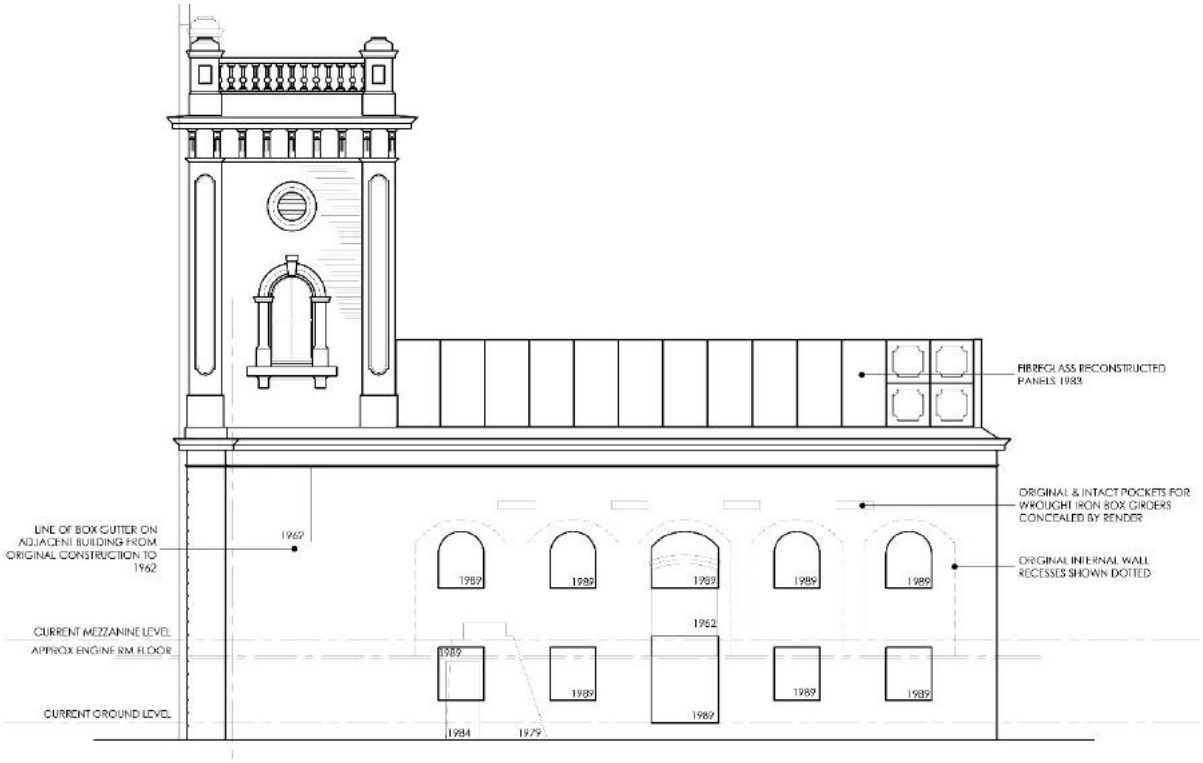


Figure 1.9 West Elevation – drawn from photographs and plans – *Adaptive Architects June 2017*

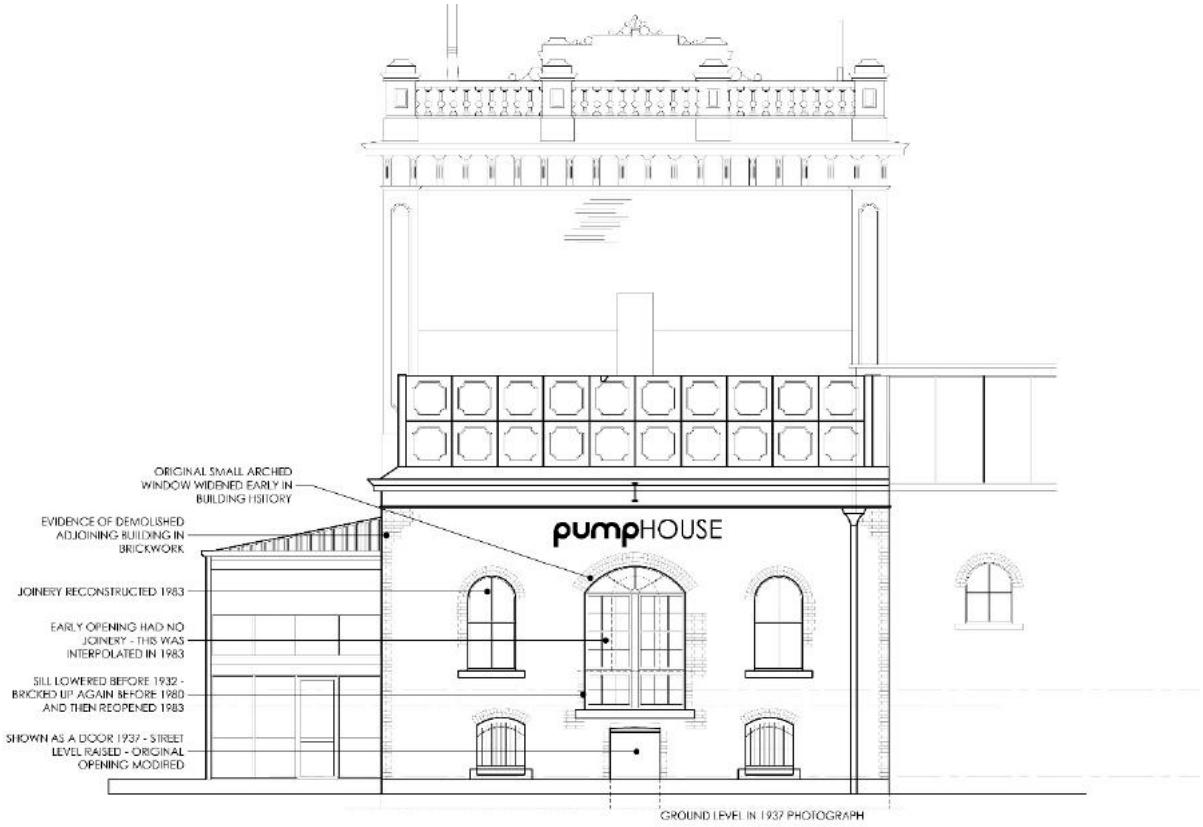


Figure 1.10 South Elevation – drawn from photographs and plans – *Adaptive Architects June 2017*

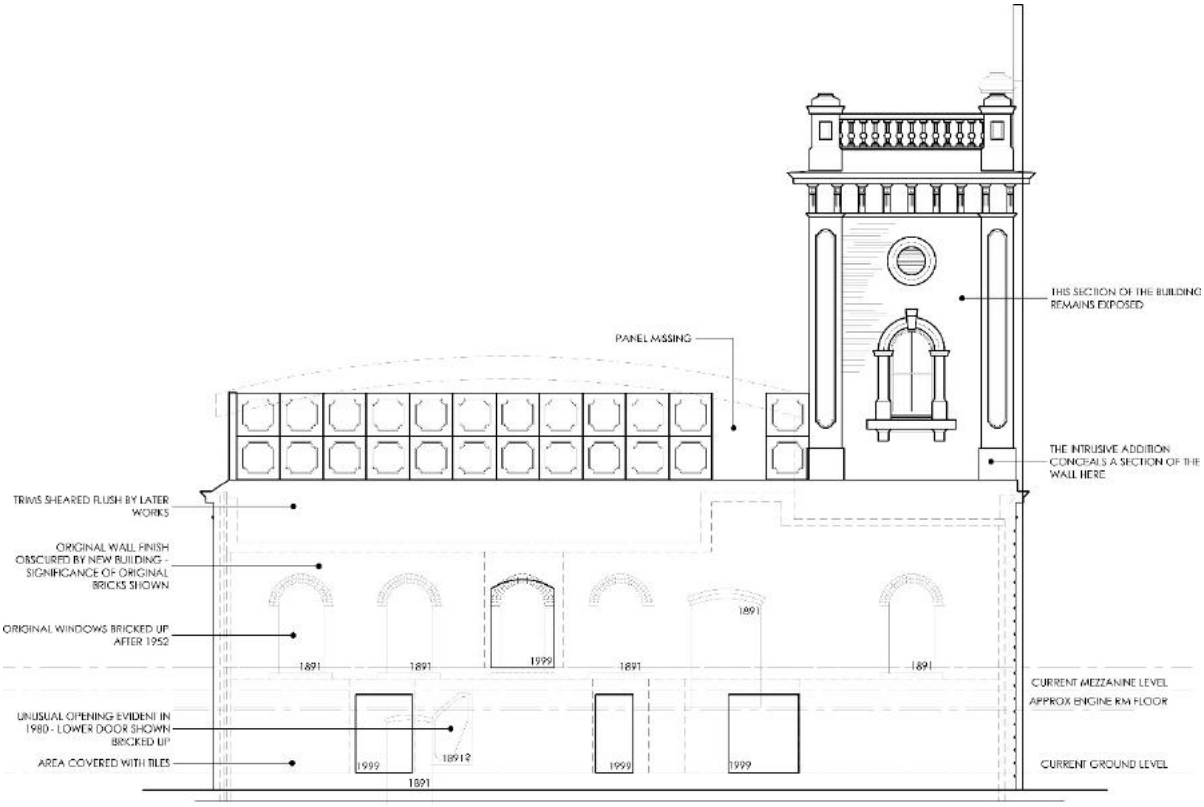


Figure 1.11 East Elevation – drawn from photographs and plans – *Adaptive Architects June 2017*

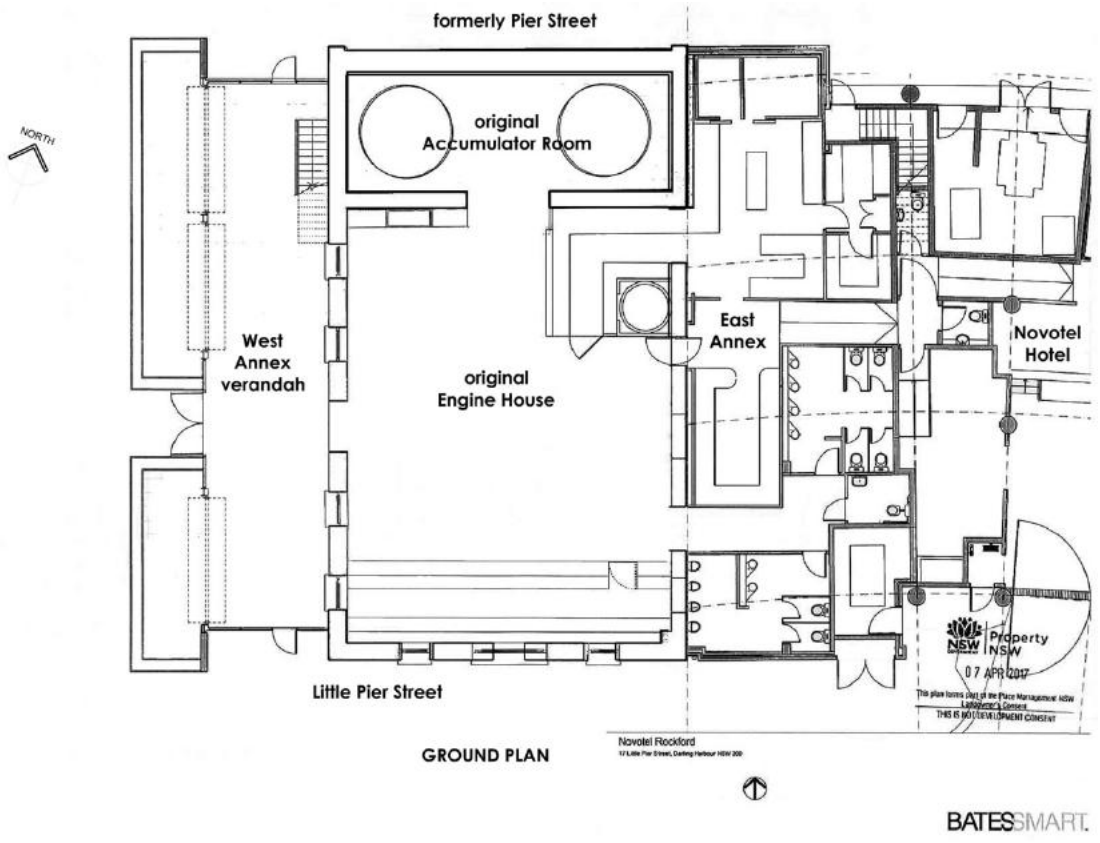


Figure 1.12 Ground Floor Plan – overlaid onto Bates Smart plans – *Adaptive Architects June 2017*

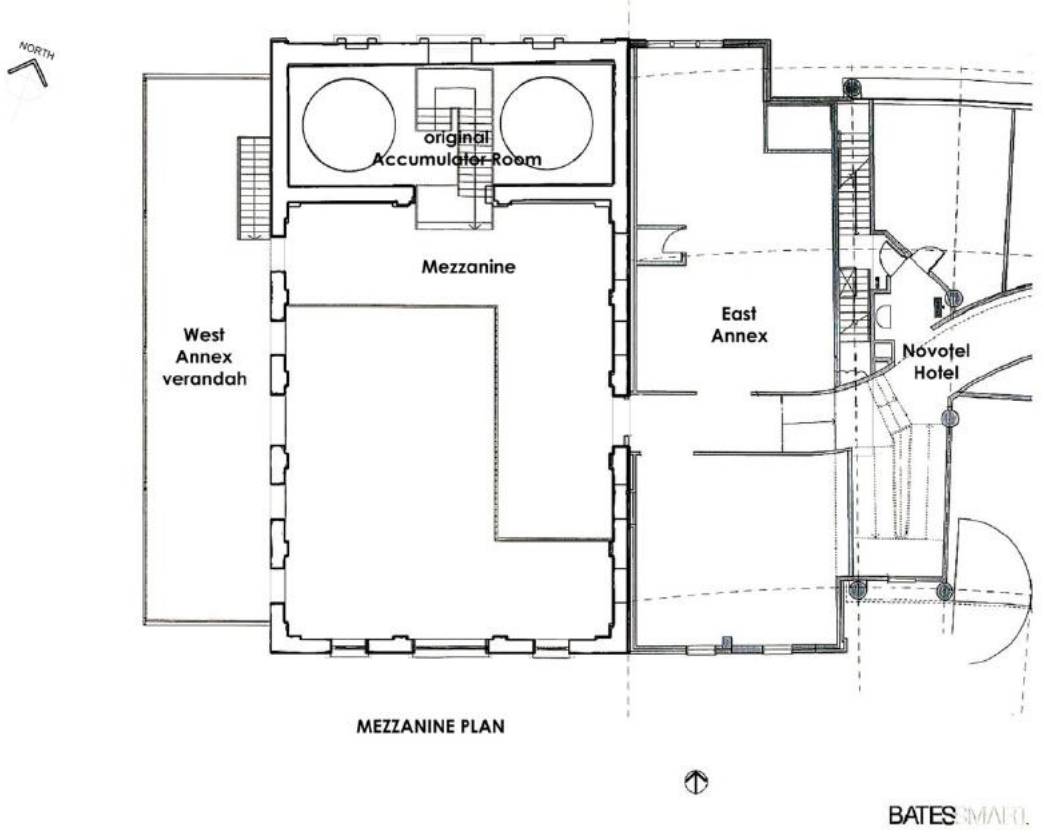


Figure 1.13 Mezzanine Floor Plan – overlaid onto Bates Smart plans – *Adaptive Architects June 2017*

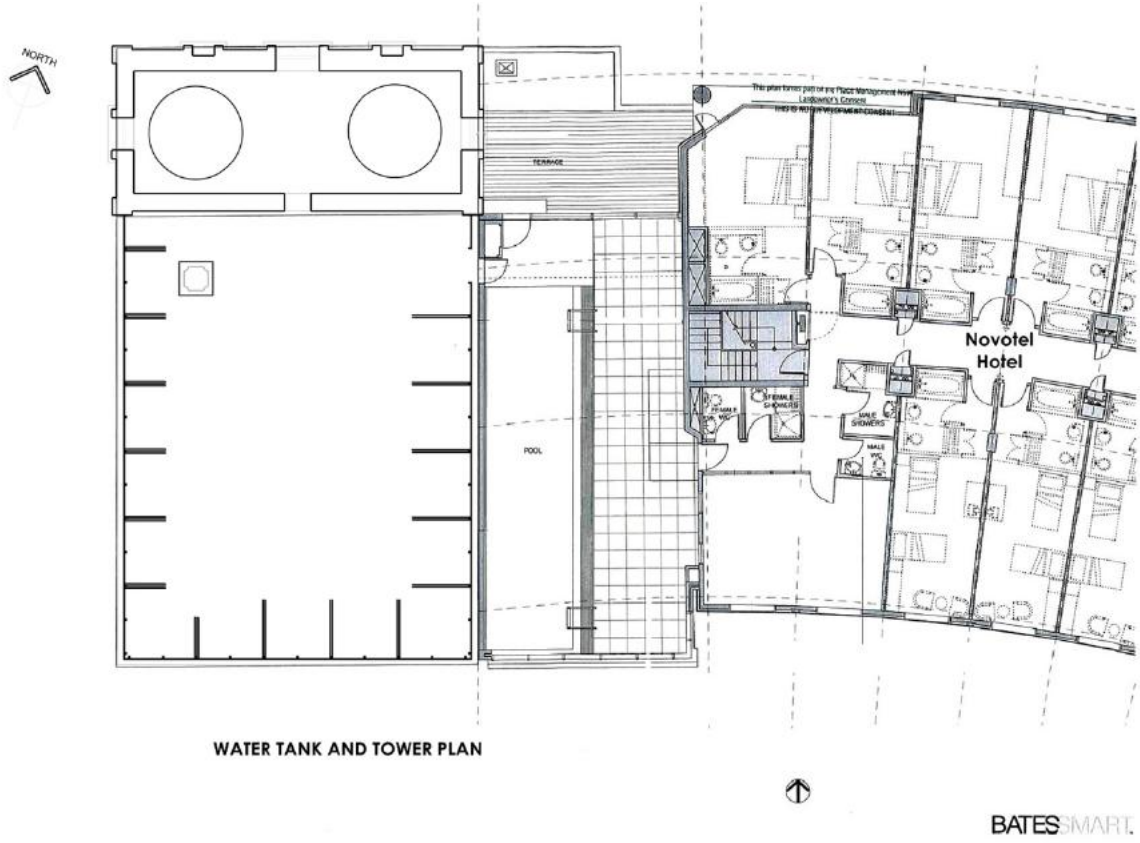
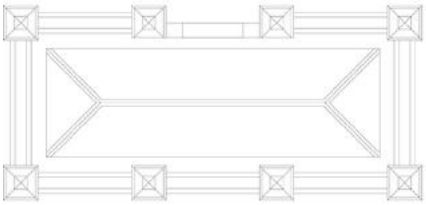


Figure 1.14 Tank Level Plan – overlaid onto Bates Smart plans – Adaptive Architects June 2017



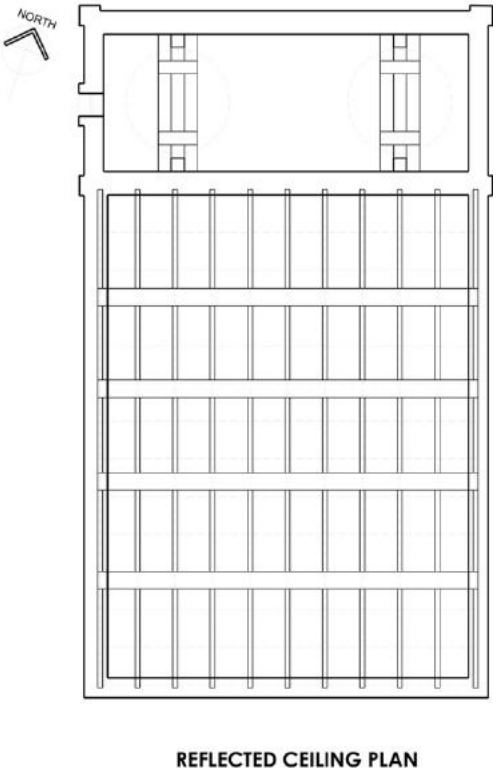


Figure 1.15 Roof and Reflected Ceiling Plan – Adaptive Architects June 2017

1.6 Heritage Listings

1.6.1 Statutory Listings

The former HPS No. 1 is included in the **Section 170 Heritage Register** of Place Management NSW as an item of State significance. http://www.shfa.nsw.gov.au/sydney-About_us-Heritage_role-Heritage_and_Conservation_Register.htm&objectid=161

The former HPS No.1 in Pier Street, Haymarket is included on the **State Heritage Register**, Listing Number 00125, Gazette No. 27, on 2 April 1999. (Prior to this SHR listing, it was protected under the Heritage Act with a PCO from 1981).

http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045579

The current SHR listing boundary plan shown on Plan 382 for HPS No.1, includes the current property boundary shown as part of Lot 301 DP 1021761 (Figure 1.18).

1.6.2 Non Statutory Listings

The building has no individual or group listing on the Register of the National Estate and is not included on the National or Commonwealth Heritage Lists pursuant to the Environment Protection Biodiversity and Conservation Act 1999.

The former HPS No.1 was listed by the National Trust of Australia (NSW) on the 20 August 1979. Listing on the Register of the National Trust carries no statutory implications. The Trust's opinions however, are usually sought when major proposals are being formulated in heritage precincts or in relation to heritage buildings. In this case it would appear the National Trust listing was instrumental in the retention and conservation of the building.

1.7 Methodology and Structure

This Conservation Management Plan has been prepared in accordance with guidelines outlined in The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 1999, known as The Burra Charter; the NSW Heritage Divisions' Guidelines on Conservation Management Documents, and James Semple Kerr's, The Conservation Plan (sixth edition) 2004.

This Conservation Management Plan is the second CMP prepared for the place, and updates the 2009 CMP prepared by Archaeological & Heritage Management Solutions Pty Ltd, prepared for the former Sydney Harbour Foreshore Authority (now Place Management NSW).

The Burra Charter provides definitions for terms used in heritage conservation and proposes conservation processes and principles for the conservation of an item. The NSW Heritage Manual explains and promotes the standardisation of heritage investigation, assessment and management practices in NSW. The key methodology of both documents is to identify the nature of any heritage significance as a basis for making decisions which will affect the future of the place. The Conservation Plan provides guidance on substance, structure and methodology for the writing of effective, site-specific conservation plans.

The initial sections of the CMP provide an analysis of the site and buildings, based on documentary and physical evidence. This analysis includes a historical summary, developing an understanding of the history of the site and place, together with a descriptive analysis of building components and elements.

A grading of significant elements and spaces has been provided to identify their differing levels of

contribution to the significance of the former HPS No. 1.

The constraints and opportunities and policy formulation address relevant management issues, and the role and objectives of the relevant heritage authorities. The policies and guidelines draw upon the work and input of all consultants and their investigations – documentary and physical.



Figure 1.16 The State Heritage Register list boundary plan 382 for SHR item 00125 – Hydraulic Pump Station. The SHR boundary is shown in red and is the current boundary for part Lot 301 DP 1021761) *Source: State Heritage Register Database, Office of Environment and Heritage, Heritage Division.*

1.8 Limitations

The inspection of the building relied on non-intrusive observation to assess its condition and did not involve any physical intervention or removal of fabric. The condition of the sub-floor area and the potential of any remaining footings from the Engine House supports have not been inspected. The potential archaeological deposits relating to the demolished office, boiler house, coal store, stack and the fitting and work-shops is not within the scope of this CMP, as they are outside the study area and the SHR listing boundary. The condition of the interior of the accumulators has not been assessed. Some assumptions about the building have been made on the basis of early documents and plans, and no independent verification of these items has been possible. The upper levels of the accumulator timberwork were unable to be inspected. The tower roof assessment was based on telescopic photos rather than access to the roof directly.

This CMP does not address in great detail pre-contact Aboriginal history, Aboriginal cultural associations or Aboriginal significance of the place. In preparation of this CMP, consultation was not undertaken with stakeholders, key knowledge holders, or the Local Aboriginal Land Council.

1.9 Terminology

The terminology used in this report, where referring to conservation processes and practices, follows the definitions as presented in the Article 1 of The Burra Charter. For terminology used in identification of historic architectural styles and building elements, refer to terminology in the Pictorial Guide to Identifying Australian Architecture (various editions) prepared by Irving, Apperly and Reynolds.

In order to achieve a consistency in approach and understanding of the meaning of conservation, a standardised terminology for conservation processes and related actions should be adopted. The terminology in the Burra Charter is a suitable basis for this. Article 1 of the Burra Charter gives the following definitions.[1]

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

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 fabric 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.

[1] *Australia ICOMOS Burra Charter 1999, p. 2.*

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 which 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.

Curtilage: means the area of land surrounding an item or area of heritage significance which is essential for retaining and interpreting its heritage significance. The four types of curtilage are lot boundary, reduced, expanded and composite (Heritage Curtilages, NSW Heritage Office, 1996).

Replacement detail: means elements of joinery, masonry or other material, internal or external, that replaces in a similar style missing parts of fabric, and which is materially compatible and in scale with the missing fabric, but which is not consistent with Burra Charter definitions of restoration or reconstruction.

Site: consists of former Hydraulic Pumping Station No.1 and associated courtyard at Pier Street, Darling Harbour.

Study Area: means the current SHR boundary of the property that aligns with the building edge onto Little Pier Street, the back laneway, the courtyard boundary wall and the eastern wall that abuts the Novotel Rockford Hotel. The site is located on the southern side of the Pier Street flyovers at Darling Harbour.

Place Management NSW: means the property-holding entity for The Rocks within Property NSW, and legislative successor to the Sydney Harbour Foreshore Authority, occasionally abbreviated as PMNSW.

Property NSW: means the brand name encompassing a number of entities within the Department of Finance, Services and Innovation (DFSI), such as Place Management NSW. Property NSW's functions include place making and heritage conservation, as well as leading property reform, active portfolio and asset management, delivering projects and major projects, and valuation services**.**[2]

Sydney Harbour Foreshore Authority: means the predecessor entity to Place Management NSW

A series of abbreviations are used throughout the document:

AHC	Australian Heritage Commission
AR	Former Accumulator Room
BS	British Standard (Paint Colour)
CMP	Conservation Management Plan
COS	City of Sydney (Council)

[2] For more information, see 'About Us', https://www.property.nsw.gov.au/about-us , information current at 15 May 2017

DCP Development Control Plan

DHA Darling Harbour Authority

EIS Environmental Impact Statement

ER Former Engine House (now bar and restaurant)

HIS Heritage Impact Statement

HPS No.1 Hydraulic Pumping Station No. 1

ICOMOS International Committee in Monuments and Sites

LEP Local Environmental Plan

MDS Metropolitan Detail Series survey plan

ML Mitchell Library

PMNSW Place Management NSW

RNE Register of the National Estate

SCRA Sydney Cove Redevelopment Authority

SCA Sydney Cove Authority

SLNSW State Library of NSW

SHFA Sydney Harbour Foreshore Authority

SHC Sydney Heritage Consultants

SHI State Heritage Inventory

SHR State Heritage Register

SICEEP Sydney International Convention, Exhibition and Entertainment Precinct

SRNSW State Records of New South Wales

1.10 Documentary and Photographic Sources

For the 2017 CMP update, photos were taken by *Sydney Heritage Consultants*, by Chantal Danieli and James Nicholson, *Adaptive Architects Pty Ltd*.

The majority of the background documentary material summarised and used in this report is from the *Place Management NSW (Sydney Harbour Foreshore Authority* archives), the *City of Sydney* archives, *State Archives and Records* and the *Mitchell Library*. Other relevant material is from the *NSW State Reference Library* and the Rare Books section of the *Fisher Library* at the University of Sydney.

2009 photographs were taken during site inspections by Graeme Heine (Heine Architects Pty Ltd) and Laura Matarese (Consultant, AHMS Pty Ltd) on the 16th March 2009 and 30th March 2009.

1.11 Authorship and Copyright

This 2017 CMP update was prepared using a standard template provided by Place Management NSW. Authors of the report are Chantal Danieli, Director, Sydney Heritage Consultants; James Nicholson, Director, Adaptive Architects Pty Ltd; Sally Charalambides, SVC Heritage & Design; Miriam Stacy, Senior Manager, Heritage, Dr Wayne Johnson, Archaeologist, Bruce Baskerville, Historian and Natalie Gedeon, Archivist Research Officer, for Place Management NSW, Strategic Planning and Heritage (formerly the Sydney Harbour Foreshore Authority), for Place Management NSW. The Statement of Significance and Conservation Policies have been updated with input from all authors of the CMP.

The 2009 CMP was prepared using a standard template provided by the former Sydney Harbour Foreshore Authority. Authors of the report were Laura Matarese (Consultant, AHMS) and Lisa Newell (Associate Director, AHMS). Historical research and preparation of the history was undertaken by Roger Parris (consultant historian and industrial history specialist). Grahame Heine (of Heine Architects Pty Limited) provided condition and fabric assessments and associated conservation policies.

The copyright of this CMP is owned by the Crown and vested in Place Management NSW.

1.12 Acknowledgements

This Conservation Management Plan (CMP) updates the original CMP written in 2009. The 2009 Conservation Management Plan for the former Hydraulic Pumping Station No.1, to which this current 2017 Plan makes reference, was prepared by the Archaeological & Heritage Management Solutions Pty Ltd.

We acknowledge and appreciate the assistance of Tony Brassil, Industrial Heritage Specialist and Julie Blyth, Archives/Library manager from the National Trust of Australia (NSW) in assisting with research of the history of the site.

We appreciate the assistance of Sarah Gregory, Archivist, Public Access and Norm Ricaud, Reprographics Officer at State Archives and Records Authority of New South Wales for locating the original plans of the Former HPS No. 1 and assisting with historical research. We appreciate the assistance of Ben Arnfield, Archivist at City of Sydney.

2.0 Documentary Evidence

2.1 Thematic History

In order to better understand how the former Hydraulic Pumping Station No.1 in Pier Street Darling Harbour, developed, this history has been approached thematically. This method can provide contextual patterns and associations, especially in relation to human activities in the environment, which would not be immediately obvious were a strictly descriptive or chronological approach taken.

The Heritage Division of the Office of Environment and Heritage (formerly the NSW Heritage Office) has developed a thematic framework for use in heritage assessment and management. The Thematic Framework identifies thirty-eight principal themes. [1] The organising principle for the thematic framework is the dynamism of human activity. The historical development of an area or item can be understood as occurring in a thematic way. A physical illustration of this can be seen when we think about a landscape or building or arrangement of artefacts as a series of layers, each one representing a progressively earlier or later theme, or historical influence. Thinking about a place in terms of themes can help us understand its significance.[2]

The State historical themes of New South Wales were used in this history to guide research questions, interpret the history, and structure the narrative of the development of the site within the context of the development of Darling Harbour.

2.1.1 Darling Harbour Thematic Framework Indigenous Sydney- The Cadigal

The Aboriginal people who lived along the coastal area of Sydney were called (erroneously by the Europeans) the Eora, or coastal Darug. The Sydney area, including The Rocks, Darling Harbour and Pyrmont/ Ultimo formed the territory of a “clan” (subgroup) known as the Cadigal, and further to the west, the Wangal. Physical evidence of the occupation of the Cadigal people in Darling Harbour area is largely demonstrated by an abundance of extensive shell middens in the area, many of which were destroyed by lime burners in the early years of the nineteenth century. Intact middens have been found during recent excavations on the eastern side of Cockle Bay. The area of Darling Harbour was known as Tumbalong, the name is still used in current naming conventions in the vicinity.

2.1.2 Industry

The first European visitors to the area now known as Darling Harbour were convicts and soldiers, who, like the Cadigal and Wangal before them, were in search of shellfish. Shipbuilders and mill owners soon supplanted them in the early 19th century. When Australia’s first steam engine started work on the shore of the harbour in 1815, it initiated nearly two hundred years of industrial development in the general area. Early growth centred on the wharves and businesses that serviced the ships using the harbour. By the end of the nineteenth century Darling Harbour was handling much of Australia’s wool, wheat and coal, and myriad of mills, foundries and factories were belching smoke around its shores. The area was also home to an army of workers whose houses lined the streets and alleyways leading down to the harbour.

[1] Both the Australian Heritage Commission (National) and the Heritage Division, formerly NSW Heritage Office (State) identified themes for research relating to places of heritage significance.

2 Heritage Division, formerly the NSW Heritage Office, Heritage Information Series, Historical Research for Heritage, Baskerville, Bruce (2002).

2.1.3 Technology - Railways

In 1855 a branch of the first New South Wales railway linked Darling Harbour to the first central station near Redfern. In the last decades of the 19th century and for the majority of the 20th century, the harbour side was increasingly dominated by the giant marshalling yards. Trains from all over NSW and beyond delivered supplies for the Darling Harbour industries or products for transhipment to vessels bound for ports around the world.

2.1.4 Utilities

Darling Harbour was the natural home of public utilities which developed to meet the needs of Sydney's residents and industries. The most important of these were the gas works, which opened in 1841 on the eastern shore of the harbour, the Hydraulic Pumping Station (HPS) No.1, which opened in 1891, and the Ultimo and Pyrmont power stations that were commissioned between 1899 and 1904. The Ultimo and Pyrmont power stations provided power for the city's trams and fed the first reticulated electricity grid for domestic use. Electricity was ultimately to prove a cheaper and more easily distributed source of power; however, the hydraulic system remained viable until its closure in 1975.

2.1.5 Post-industrial

By the 1960s industrial decline was evident around Darling Harbour. The coastal shipping trade had dwindled to nothing and the giant wool stores were moving west in search of more space and better road access. The late 1950s had also seen the closure of Ultimo Power station when buses superseded the last trams. The hydraulic pumping station closed in 1975 and in 1984 the last goods train trundled out of Darling Harbour as the working port relocated to Botany Bay, serviced by container ships and road access. The eighties saw the rebirth of the area when Sydney's premier entertainment precinct was established. In 1982 the Entertainment Centre was constructed directly to the south (demolished 2016), with further construction for the Darling Harbour Redevelopment from 1984-88 in the surrounding precinct, including the realignment of the Pier Street overpass from Harbour Street to Harris Street.

2.2 Initial Development of the Site

2.2.1 Development of Darling Harbour

In the early to mid-19th century, the shoreline of Darling Harbour was further south towards Hay Street. The future site of the former HPS No.1 (near the southern end of the millpond dam established by John Dickon in 1813 for his steam-driven mill), at that time was underwater, in land yet to be reclaimed for industrial and port related activities.

The south western end of Darling Harbour, adjacent to Ultimo, was originally granted to the Harris family by Governor Macquarie in 1818 (Figure 2.1). By the 1840s, the Harris estate was sparsely populated by brick makers and other tradesmen who rented out small parcels of land.[3] The quiet estate contrasted with development of the wharves and their associated activities along the eastern shoreline of the harbour.

In 1853, seven acres of the Harris estate adjacent to the shoreline and mill pond was purchased by the Sydney Railway Company.[4] The purchase was intended as part of the development of the railway

[3] *Shirley Fitzgerald & Hilary Golder, Pyrmont and Ultimo Under Siege Hale & Iremonger Pty Ltd, 1994 p.40*
[4] *ibid*

in Darling Harbour as an alternate hub for shipping trade for the city. Wharves and warehouses were to be built and the rail would enable access in and out of their goods sheds. The railway was constructed and opened in 1855, however, due to a dispute between the Harris family and the railway company, its use for transportation of goods and associated developments was put on hold. Over the next decade, the railway line was under-utilised and contributed to the silting of the harbour and degradation of the shoreline, due to soil erosion and the lack of drainage for culverts.[5]

In the 1860s the Railway Commissioners reclaimed the land between Hay Street and the railway line to resolve the outstanding environmental issues and provide land for expanding commercial and port needs. By the 1870s, the shoreline in the south and west of Darling Harbour was dominated by the Iron Wharf and the area behind the shoreline was occupied by rail yards, goods sheds and small workshops.

The former HPS No.1 is located on land reclaimed in the 1860s. An 1882 plan indicates that the land was at that time still vacant [6] (Figure 2.2) and bound by Pier Street to the north and Little Pier Street to the south. Pier Street took its name from John Dickson's 1813 pier which jutted out from his works to deep water. The adjoining block to the east of the former HPS No. 1 was also vacant at this time while the block to the west was occupied by the Railway Pier Hotel with its yard and shed.

The 1882 plan indicates that opposite the rear boundary of the former HPS No.1 (Little Pier Street) were two timber yards and a confectionery factory. Land north of Pier Street was occupied by rail lines and goods sheds. Neighbouring streets featured major industrial enterprises such as Zollner's Galvanising Works and the New South Wales Fresh Food and Ice Company.

Council Rates Assessment books record no development in the blocks along Pier Street prior to 1877, however, by 1882 Samuel Napper's wood yard is recorded at 1 Pier Street and Gilchrist and Watt's turners' shop is at 41 Pier Street.

By the time the Sydney Hydraulic Power Company had constructed the former HPS No.1 at 19 Pier Street in 1891, the Bales Store (15-19 Pier Street), the Railway Pier Hotel goods shed and yard, and a building owned by Gilchrist and Watt (which was vacant - 20 Pier Street) had been constructed nearby.[7]

Assessment record books indicate that from the early 1890s to 1948 the Pier Street vicinity consisted primarily of goods stores which apparently had little impact on the company's operations. Few developments of note are recorded for the rest of Pier Street, although the Post Master General's store was established by 1921 and a car service station in the 1930s.

[5] Ibid p.41

[6] Block 104 of Percy Dove's Fire Insurance Map 1880, City of Sydney Archives

[7] Anon. Sydney and Suburban Hydraulic Power Company: The Official Opening, Australasian Building and Contractors News, September 5, 1891

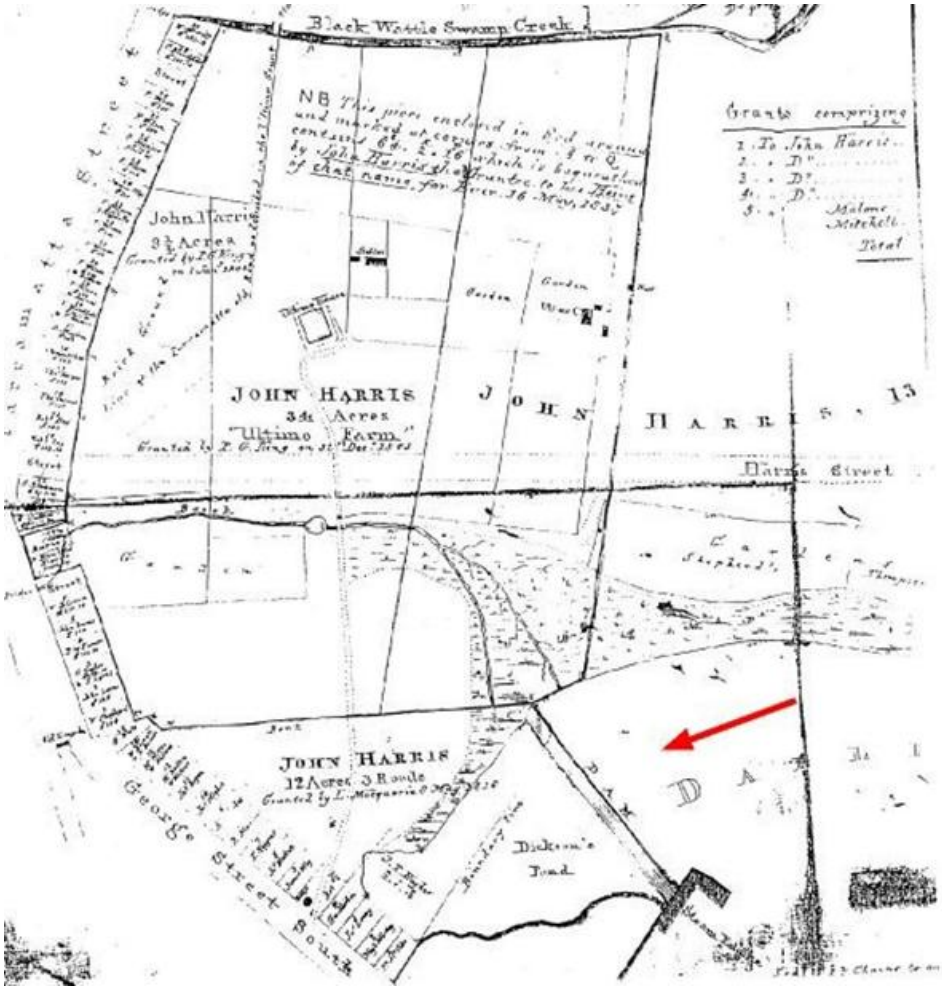


Figure 2.2.1 South Western extent of Darling Harbour in 1837 showing the Harris Estate and Dickson's Dam wall is also visible. A red arrow indicates the approximate location of the future site of the former HPS No.1. In 1837 the area has not yet been reclaimed. *Original Source: Harris Estate Map 1837, State Library NSW Source: CMP 2009*

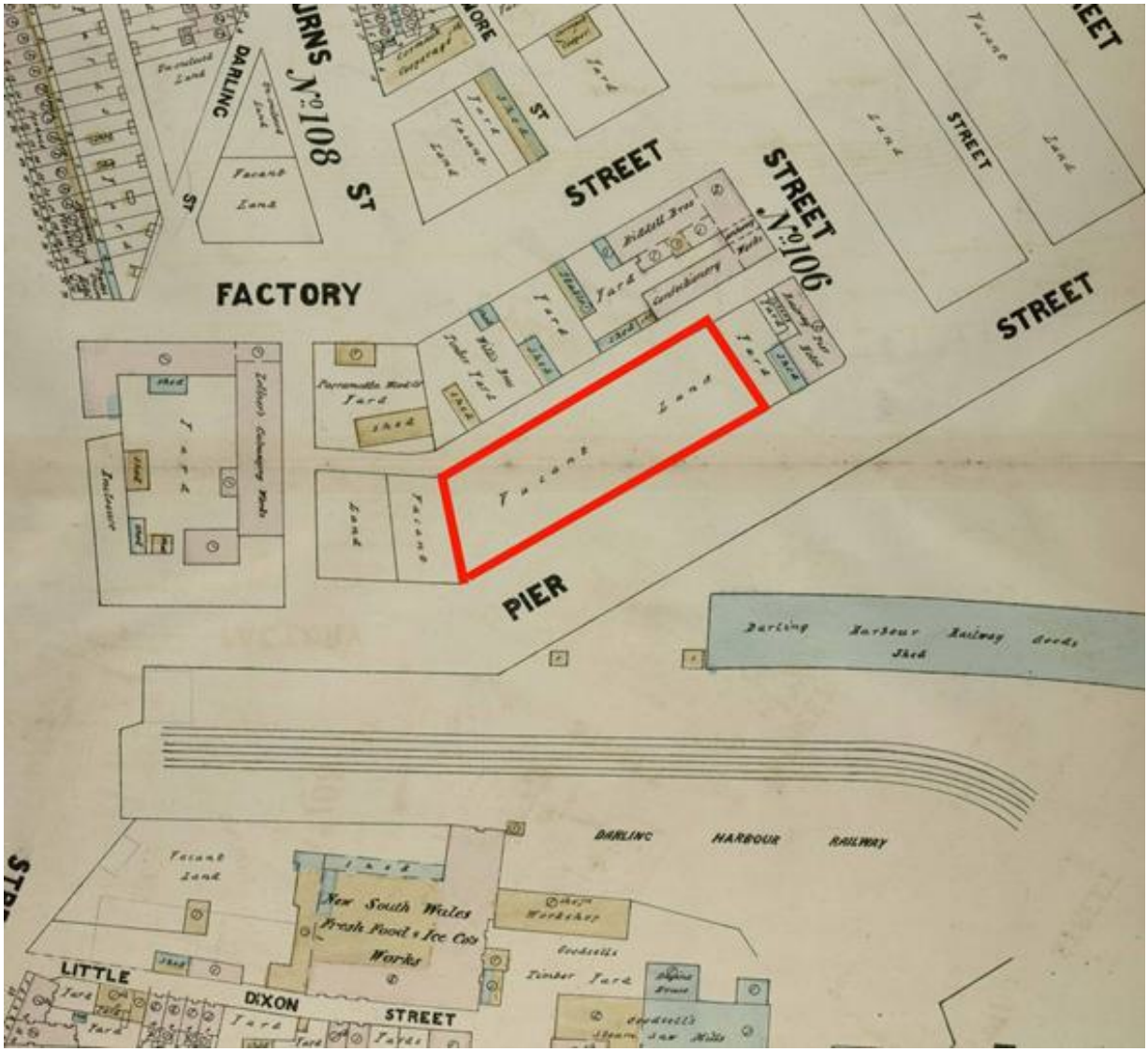


Figure 2.2 1882 plan of part of the precinct with the location of the site of the future Hydraulic Pumping Station No.1. Shoreline of Darling Harbour is located off the image in the bottom right hand corner. *Original Source: Percy Dove's Fire Underwriter Insurance Plan of the City of Sydney 1880, City of Sydney Archives, in CMP 2009*



Figure 2.3 1903 Map of City of Sydney showing site of Pier Street at Darling Harbour *Source: http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-1903/city-of-sydney-1903-single-sheet/*

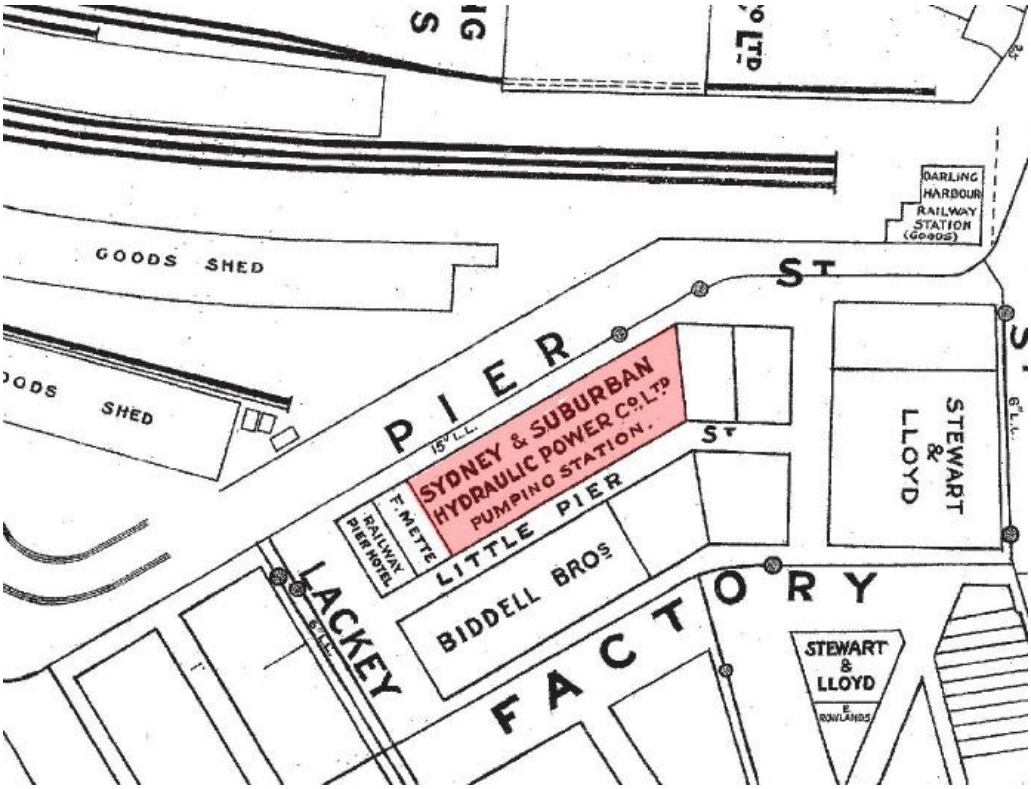


Figure 2.4 Plan of site in 1910. *Source: City of Sydney Archives*

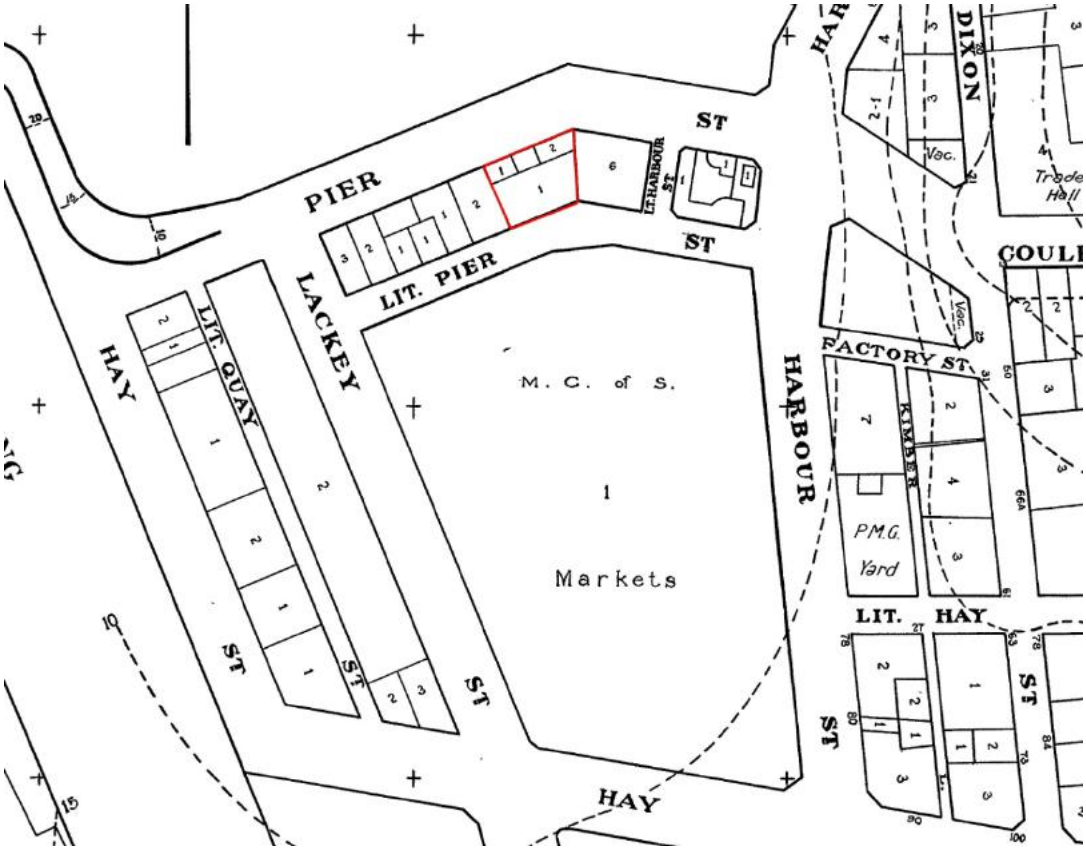


Figure 2.5 1938-1950 - Source:http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-civic-survey-1938-1950/city-of-sydney-civic-survey-1938-1950-map-22-ultimo-haymarket/

2.3 History of the Site

2.3.1 Rationale

The intense urbanisation of Sydney in the second half of the 19th century inevitably put pressure on land values, which in turn led to a demand for taller buildings. Steam powered lifts to service taller buildings were in use during the second half of the 19th century; however, an individual steam engine was required for each building. Individual steam engines were able to power lifts in buildings of three to four storeys, however, there were disadvantages including cost and they caused major smoke pollution problems for the city.

The introduction of a centralised hydraulic system, using water pumped under high pressure, promised a relatively clean and cheap source of power that would have the ability to drive lifts for buildings of seven or eight storeys. Other commercial imperatives included the provision of a centralised source of power for cranes and wool presses around the harbour.

2.3.2 Construction

The foundation of the Sydney and Suburban Hydraulic Power Company was enabled by Act of Parliament in 1888. The original site comprised of three sites originally auctioned in 1871 which the company purchased 1889.

The construction of Hydraulic Power Station No. 1 at 19 Pier Street commenced in 1889, the company approaching the Water Board to supply water from the Crown Street Reservoir in late 1889:

A communication was received from the Sydney and Suburban Hydraulic Power Company,

making two offers to the board-To pay 6d. per 1000 gal. to the board for water, and connect their works with the Crown-street reservoir by laying a Cm. main; or to pay the board 9d. per 1000 gal., the board to make all necessary connections and supply the water at the company's works, Pier-street. (SMH 13 Nov 1889, p5)

By January 1891, power was supplied to the first customers. An article appeared in the Illustrated Sydney News in March 1891 describing the works:

The Sydney and Suburban Hydraulic Power Company Limited, illustrations of whose magnificent enterprise are given on this page, was formed in December, 1888, the company's authorised capital being fixed at £150,000, in shares of £1 each. After the various delays inevitable at the inception of a great undertaking, operations were commenced in October, 1889, when the first steps were taken towards the laying down of the company's plant at Pier-street, Darling Harbour.

About fifteen months were occupied in erecting the buildings, and plant, and when our representative visited the works the other day, he found the machinery going and the work proceeding with as much systematic regularity as if the Company had been established for some years.

The buildings are of the substantial' kind which has become characteristic of the industrial architecture of today; a tall, octagonal chimney-stack, and the well-proportioned accumulator tower being the first outward features which arrest the eye of the visitor. The power-producing plant consists of three pairs of high pressure pumping engines, four Lancashire steel boilers, fitted with automatic stokers, two accumulators, with twenty inch ram and twenty-two feet stroke; and water storage tanks, with capacity of 150,000 gallons. This plant is capable of delivering to the mains 1200 gallons per minute at a pressure of 700lb to the square inch. There are two pairs of engines, with 24inch cylinders and 30inch stroke; and one pair with 16inch cylinders and 24inch stroke (Figure 2.3). The boilers are each 25 ft by 7 ft with flues of 2ft. 10in. Four and a half miles of pressure mains have already been laid in the leading streets of the city; these are now under pressure and numerous contracts for the supply of power have already been made.

Up to the present the company's power has been chiefly applied to the working of warehouse and passenger lifts; and a good example of the former may be seen at Mr. John Bridge's wool stores at Darling Harbour or, of the latter, at Messrs, Abby and Weisner's new building in George-street.

The unique advantages of the company's system of power supply are: - (1). No steam engines, boilers (with their chimneys), steam pumps, gas engines, or tanks on the roof of buildings, are required for purposes for which the hydraulic power is applicable. (2). Much valuable space occupied by machinery required in other systems is saved. (3). Skilled engineers are not required to look after the Sydney and Suburban Hydraulic Power Company's Works, Pier-street, Darling Harbour, machinery. (4). The cost of repairs is greatly reduced, and the first outlay is much less. (5). The power is always ready, when wanted, either day or night, by simply turning a tap. There is no getting up of steam, starting of gas engines, filling of tanks, or other trouble-some matters requiring attention. (6). The cleanliness, safety, and general convenience of the Hydraulic Power Company's system, would recommend its adoption, even at some additional cost; but there is superadded to all these advantages a direct saving in working expenses generally of from 15 per cent, to 75 per cent., the amount varying according to local circumstances. (7). It is the only absolutely safe power that can be employed. There is no possibility of fire or explosion.

Up to the present a very important outlet for hydraulic power appears to have been overlooked by the wharf-owners of Sydney. This is the utilisation of the power for the working of cranes, and other lifting apparati. Hydraulic power is universally recognised as the power at the docks of

London, Liverpool, Hull, and, indeed, at all the largest shipping centres of the world; while in Sydney, until recently, the only hydraulic cranes were those in use by the Gas Company. Yet the Sydney and Suburban Hydraulic Power Company is in a position to supply all the wharves in Sydney with hydraulic power. The adoption of these cranes would effect economy, both in the matter of cost and the saving of time. The, advantage has been recognised by the Melbourne Harbour Trust, and in the southern city Messrs Coates, and Co. have supplied many hydraulic cranes; while, after the closest investigation, the New South Wales railway commissioners have adopted the company's power for working the hydraulic cranes in their "new sheds at Darling Harbour.

WOOL DUMPING.

Hydraulic power is also generally recognised as being the power for wool dumping. In Melbourne, the New Zealand Loan and Mercantile Agency Company has adopted the Power Company's supply at their Flemington warehouses, by a special main from the Company's works, three miles distant. Here the power is used for lifting, for wool dumping, and for working capstans for hauling trucks. Thus, in this establishment, we have the obvious fact of some twenty machines being worked, at three miles' distance from the Hydraulic Company's plant, at a less cost than would have been incurred by a private installation.

Everything, points to the conclusion that, for many purposes, hydraulic power is the power of the age, and it stands to reason that it should be so, possessing as it does the self-evident economy of supreme concentration. For example, at the Sydney works six men can produce hydraulic power sufficient to supply the whole of Sydney. Those who are likely to use hydraulic power, or who desire to improve existing plants, will do well to approach the Company direct, and thus prevent the possibility of being misled by prejudiced information.

In Brussels, Antwerp, Paris, and other continental towns, hydraulic power is now being successfully used for the purpose of driving dynamos for electric lighting; and this system, we understand, will shortly be tested in Sydney.

As it is, the Company has made a splendid beginning, and has contracts to supply several arcades and many leading warehouses, even at this early period in its career. Doubtless, during the next decade, it is destined to effect a great reform, by supplementing gas and steam as motive powers.

The capital invested by the Sydney and Suburban Hydraulic Power Company is about £70,000, inclusive of £9000 invested in freehold properties. The present directors are Mr. John Coates, M.Inst.CE., who originated and carried out the Sydney and Melbourne schemes- and the Hon. Bruce Smith, M.P., Alfred Meeks, W. T. Poole, Frederick Thoreman, E. J. Hartley, and Henry Andrew. A large proportion of the interest in this company is held in Victoria, the shareholders in which colony very keenly recognise the value of their investment. The works were designed by Messrs. J. Coates and Co., of London, Sydney and Melbourne, who have acted as consulting engineers to the company up to the time of starting the works, and are regarded as specialists in this line; having brought the Melbourne hydraulic installation to its present very successful issue. Even in Queensland Messrs. Coates and Co. are looked upon as the progenitors of great enterprises, having established gas works in several leading towns of the northern colony. Up to the present, the business of the company has been conducted by the directors, with Mr. John Friele as secretary, and Mr. T. Dickinson as resident engineer, who has acted in that capacity since the works were first started. The latter-mentioned gentleman, who was for many years with Sir W. G. Armstrong and Co., Newcastle-on-Tyne, has, in consultation with Mr. John Coates and Mr. George Swinburne (Messrs. J. Coates and Co.), superintended the construction of the works, the erection of the machinery, and the laying of the pressure mains throughout; and all concerned are to be congratulated upon the manner in which the work has been carried out, and upon the present satisfactory position of the company.

THE ADVANTAGES TO CONSUMERS which the power offers, briefly are:

1. The comparatively small outlay in the erection of lifts worked by the company's power.

2. A saving of from 15 percent, to 50 percent, in working as compared with private plants worked by gas or otherwise.

3. The undisturbed use of all the space occupied by such private plant.

4. A thoroughly reliable supply day and night by merely turning a tap.

5. The cost of this power is in direct proportion to the work done.

6. There is no other absolutely safe power.

7. Protection from fire by special hydrants connected with the company's pressure mains.

Commercially speaking, these advantages must commend the power to all who take the trouble to make comparisons. The economy and safety of the system have been established beyond dispute in every city in which the power has been installed.

EXTINCTION OF FIRES.

Insurance Companies and City Property owners will be consulting important interests by giving this fact more than passing attention. The company is prepared to supply and fix high-pressure hydrants, at a very moderate cost, in any building where the power is being used, and, as one of these hydrants will do the work of a fire engine, particularly in lofty buildings where the utility of fire engines is greatly discounted, their value can scarcely be overestimated.

THE POWER WILL BE SUPPLIED BY METER AS IN THE CASE OF GAS, so that small consumers who have hitherto been prevented from using hydraulic power for lifting, pressing, or other purposes, on the ground of expense, will now have it within their reach at a nominal outlay, and as they can, by the company's scale of charges, readily calculate the cost of working, they should be enabled to generally adopt the use of the power.

The company takes this opportunity to strongly advise the public who may require to use hydraulic power to make themselves acquainted with the different systems of working, and the costs attached thereto. It is a well-known fact that great dissatisfaction prevails respecting the working of lifts in the city generally and those who are not satisfied with present arrangements can easily have the appliances altered to suit the high-pressure supply, thereby saving largely in work expenses; and at cost very small in comparison to the convenience and comfort experienced, and satisfactory working attained, they may avail themselves of motive power which under suitable application has absolutely no rival, while those who have not determined upon what system to adopt have now an opportunity of obviating unnecessary expenditure in plant, and of securing a thoroughly efficient service at a reasonable cost.

INTENDING CONSUMERS are reminded that they can effect a substantial reduction in the cost of connection by arranging with the company to have service pipes put down, or the positions for the connections fixed while the mains are being laid; early application for the power is therefore recommended. (Illustrated Sydney News 28 March 1891, p24)

The official opening did not take place until 26 August 1891. The pumping station supplied high pressure (700 - 800 psi) water to power a variety of businesses throughout the city, the most common applications being lifts, hoists, wool presses and cranes.

In 1891 the trapezoidal shaped HPS No.1 site consisted of an accumulator room, engine house with gangway to the boiler room, chimney stack, coal store, a yard, office and manager's cottage (Figures

2.7 - 2.10, 2.13).

Machinery on site included two accumulators, three engines, boilers and valves. The machinery was designed by the Melbourne engineer J. Coates, founder of today's international company, Coates Hire.[8] Coates and his nephew, George Swinburne, were instrumental in construction of the Melbourne Hydraulic Power Station which opened in 1889 and both contributed their expertise to the Sydney venture. Coates was the designer and Swinburne the consulting engineer.

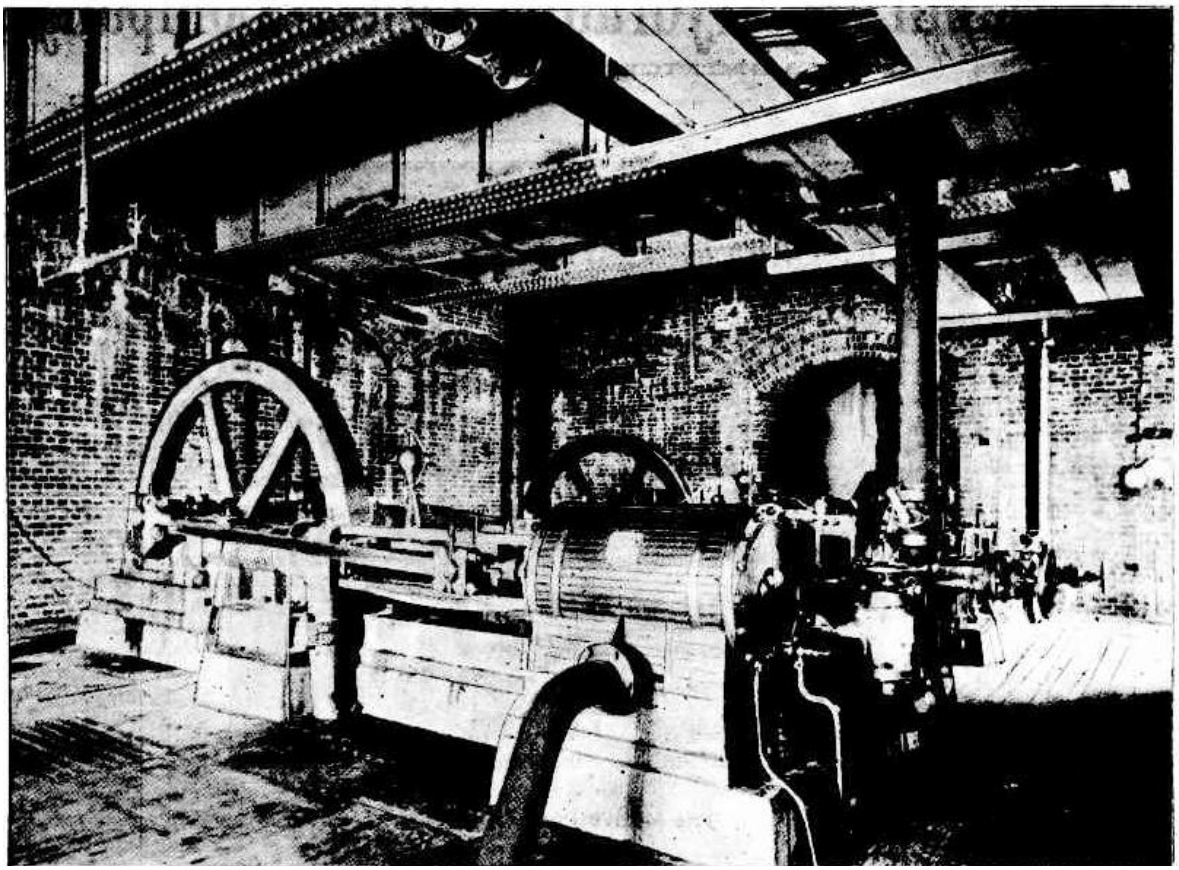


Figure 2.6 View of the engine house (currently the bar) looking north towards the accumulators, and showing the timber floor, three horizontal pumping engines and details of the then un-rendered walls. The west wall is shown with no openings and the floorboards appear to have gaps between them - *Illustrated Sydney News, 28 March 1891, p24*

[8] Coates, CW. Coates: The First One Hundred Years, Sydney, 1985

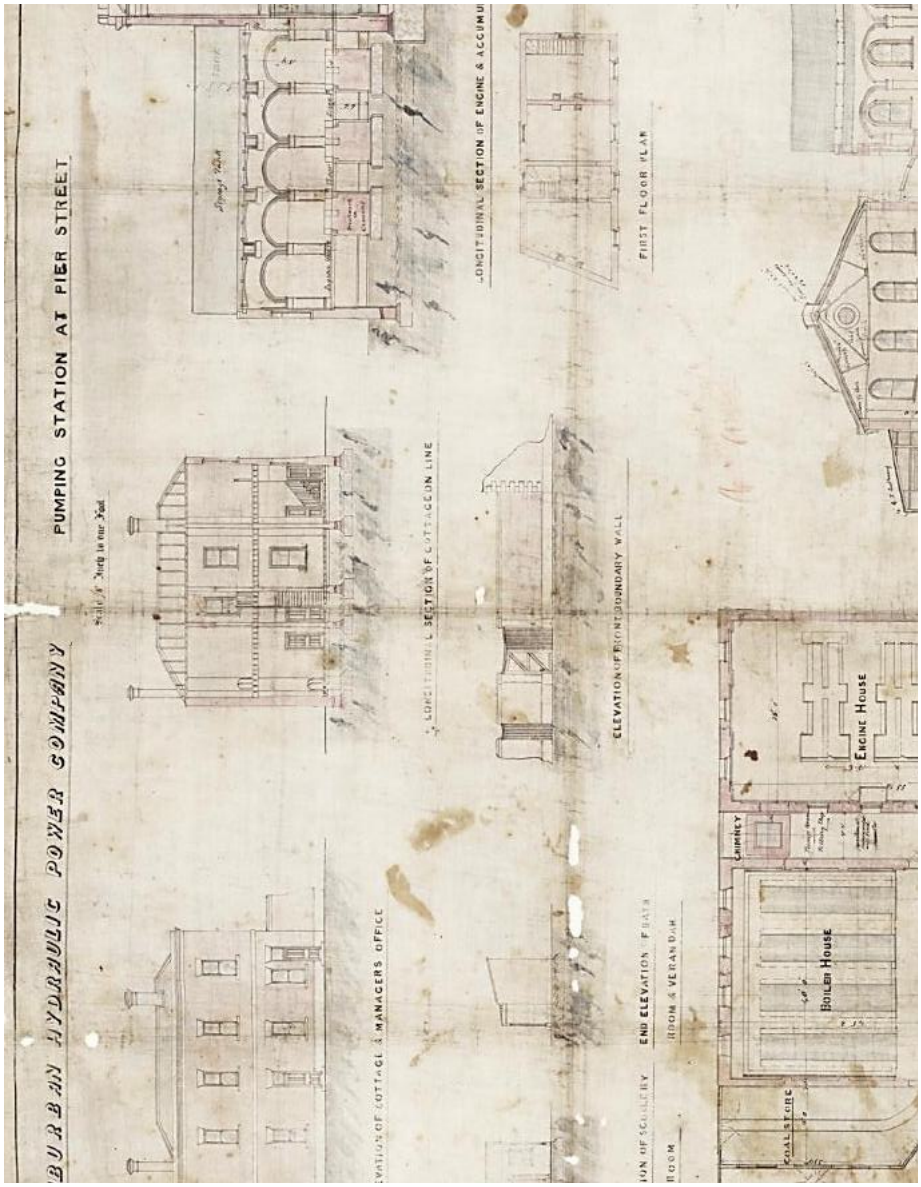


Figure 2.7 1889 Plan of Hydraulic Pump Station, Pier St Sydney, Source: State Archive & Records, SR Plans 2938, NRS 5171, Plans of the Hydraulic Pump Station, Pier Street, Sydney

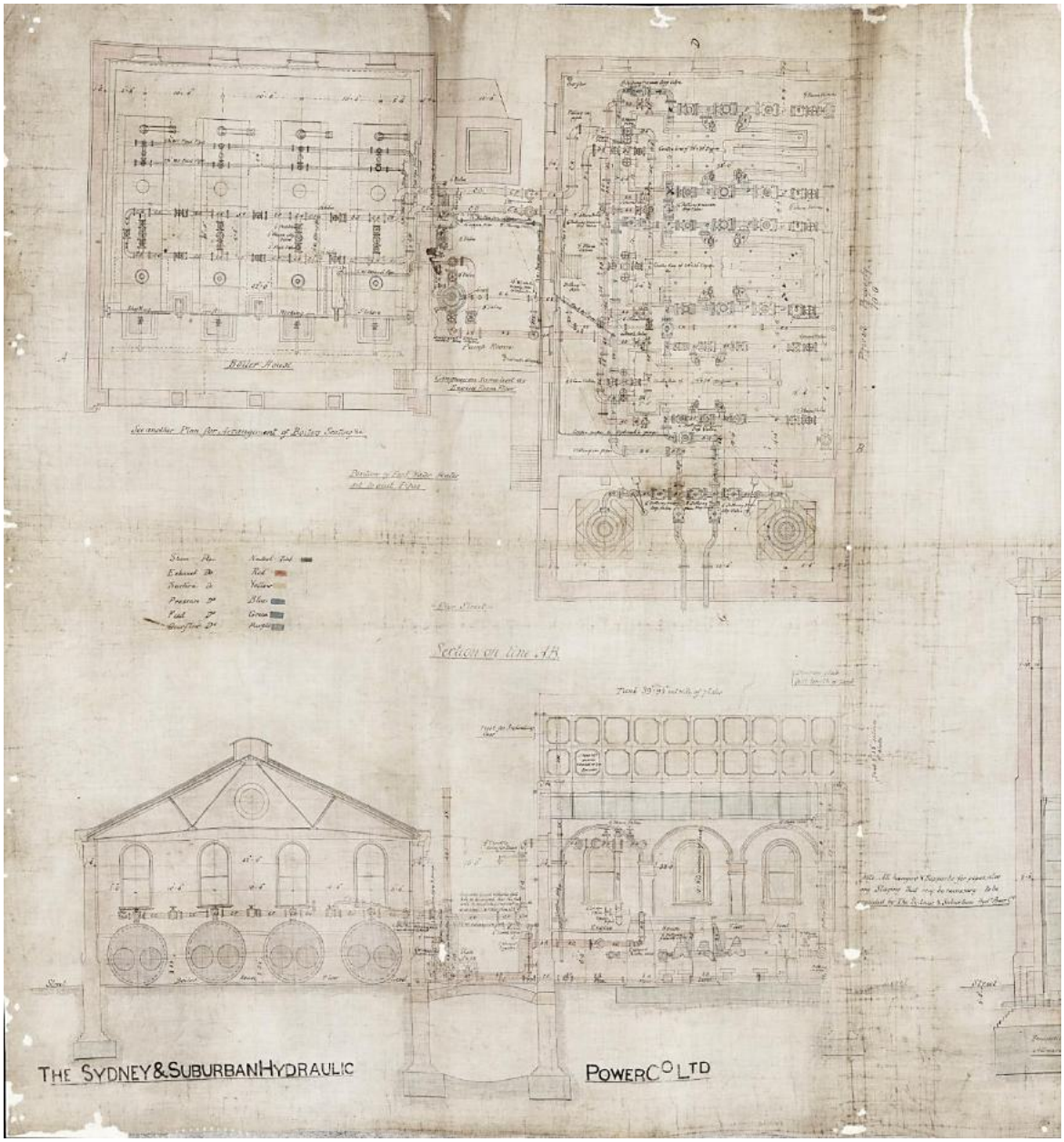


Figure 2.8 1889 Plan of Hydraulic Pump Station, Pier St Sydney. Detailed Plans and Sections of Engine House and Boiler Room *Source*: *State Archive & Records, SR X2820 pt2, NRS 5171 Plans of the Hydraulic Pump Station, Pier Street, Sydney*

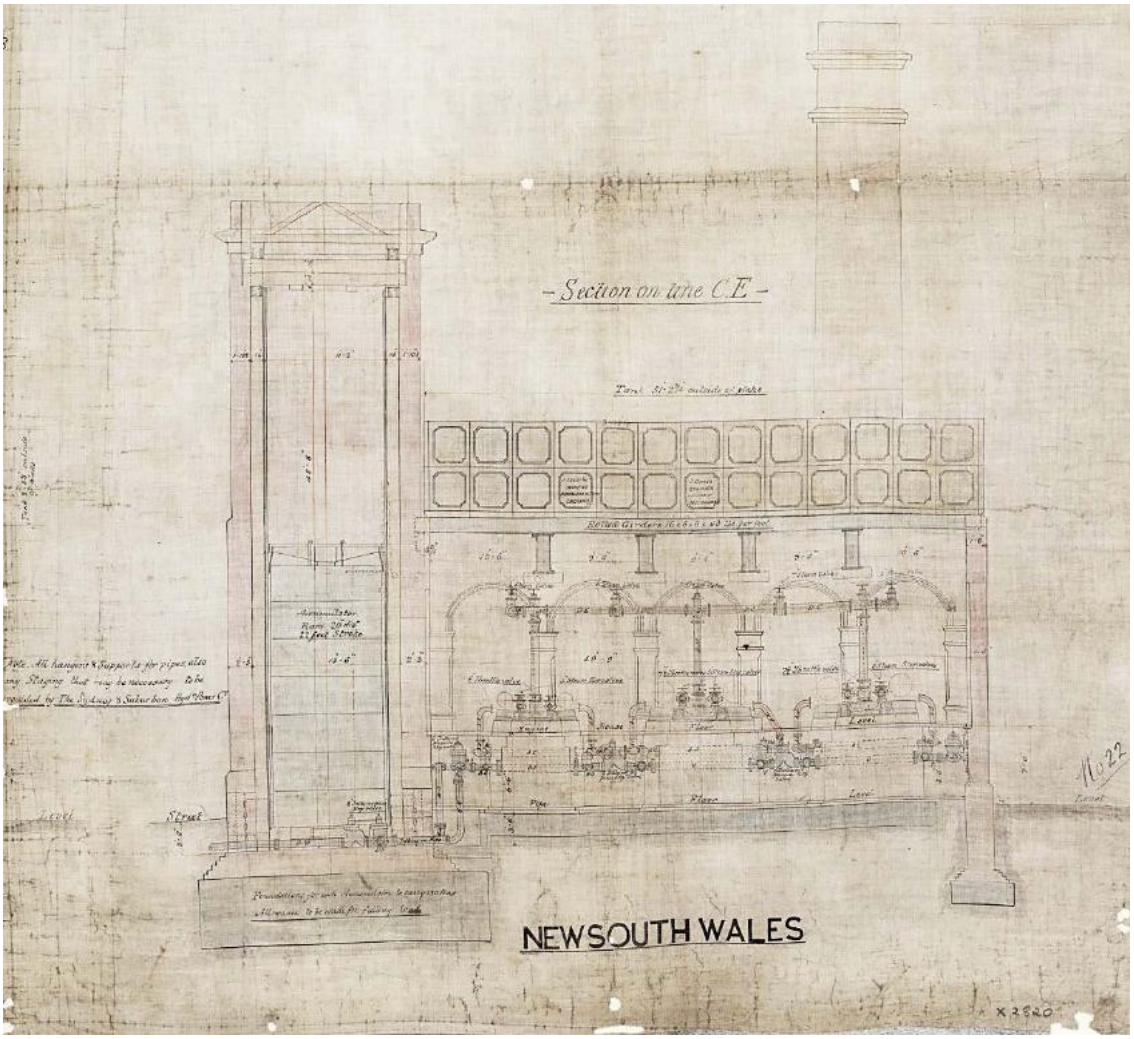


Figure 2.9 1889 Plan of Hydraulic Pump Station, Pier St Sydney. Detailed Section of Engine House and Accumulator Room *Source*: *State Archive & Records, SR X2820 pt1, NRS 5171 Plans of the Hydraulic Pump Station, Pier Street, Sydney*

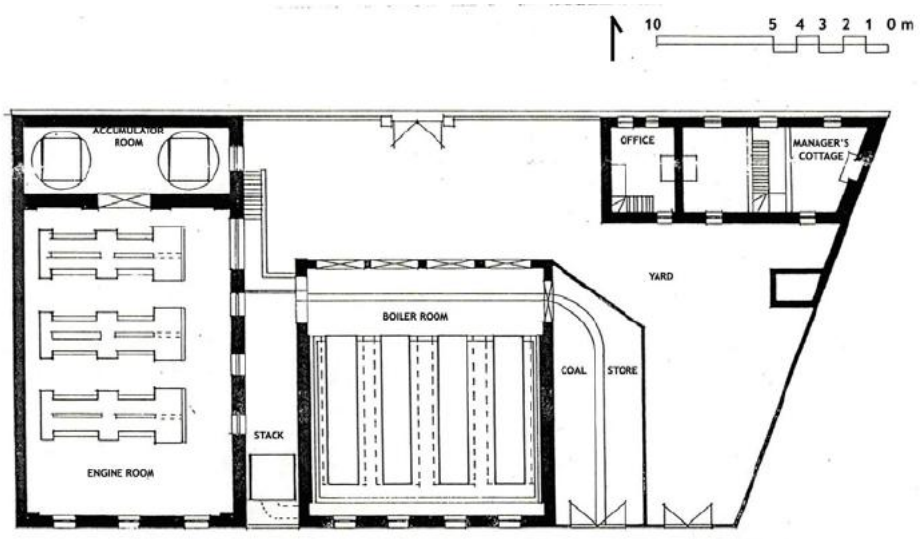


Figure 2.10 Floor plan of the original the HPS No. 1 buildings and complex in 1891. *Source: Don Godden & Associates, Heritage Significance of the Sydney and Suburban Hydraulic Power Company Building, after the original by J. Coates & Co.*

2.3.3 Water Supply

A reliable water supply was an essential element of the system. It was drawn initially from the city supply but this soon proved prohibitively expensive and a dam was constructed on 10 acres (4 hectares) of land where the Moore Park Golf Course is located. The Moore Park dam originally held 2.8 million litres but soon had to be increased to 4.5 million litres and from this location water was pumped at low pressure via the Waterloo pumping station to the former HPS No.1 in Pier Street.

Water was stored at the former HPS No.1 on the roof of the engine house in a two part cast iron tank made by J. Abbot and Company of Gateshead in England.

2.3.4 Technology

The technology of the power station was fully described by Tom Dickinson, the power station's first resident engineer, in his 1894 paper "Notes on hydraulic power supply in Sydney".

In summary, the plant consisted of three, twin cylinder, high pressure, steam engines (Figures 2.6 - 2.10, 2.12) each driving two force pumps. Steam supply was supplied from a bank of Lancashire boilers that were fired by Vicar's mechanical stokers. The stokers were highly innovative at the time and proved to be very successful. Pumps forced water into two accumulators (Figure 2.9 & 2.14) which in turn provided high pressure water at 700-800 psi (4,800-5,400 kPa) to customers around Sydney through a network of cast iron pipes.

The principle of the accumulator was independently invented by two British engineers, Joseph Bramah and Sir William Armstrong. It consisted essentially of a vertical cylinder and a weighted piston. In the case of the former HPS No1, the pistons were weighted with approximately 100 tons of Nepean gravel. As water was pumped into the cylinder the weighted piston rose. When it reached the top of the cylinder, stroke valves were opened to allow the water to be forced through the system of pipes at uniformly high pressure to the end users. The use of two accumulators not only doubled the capacity but helped to equalize the pressure at the end of the piston stroke. One of the main features of the steam and pumping system was that all the pipe work and valves were duplicated to avoid catastrophic failures.

2.3.5 Distribution and Application of Hydraulic Power in Sydney from the former HPS No.1

Figure 2.12 is a flow and process diagram of the system that fed, and was generated by, the former HPS No.1. Water was sourced and piped to the Waterloo Pumping Station. The water was then distributed to the former HPS No. 1 by low pressure pipes. The water was stored in the water tanks at the former HPS No.1, where the water was pressurised and ultimately distributed to the end users through four and six inch (10 and 15 cm) cast iron pipes. These pipes were joined with bolted flanges sealed with triangular gutta percha or rubber seals. Smaller 2 and 3 inch (5 and 7.5 cm) pipes supplied individual consumers. Initially about 12 miles (19 km) of pipes were laid to distribute pressurised water throughout the city but by 1919 this had risen to 50 miles (80 km).

The station distributed water at 800 psi in an area bounded by Broadway, Pyrmont wharves, Circular Quay and the eastern end of Cowper's Wharf Road.

Although the system principally powered lifts, cranes, wool presses and hoists, it found various other uses. By 1894 it powered 149 lifts, 22 whips (small hoists), 7 wool presses, 20 dock cranes and two hydraulic motors.

By 1919 there were more than 2000 lifts in Sydney and the majority of them were hydraulically powered. Other applications were railway traversers, firefighting pumps and fans. Small scale applications of hydraulic power for items such as sewing machines and lathes do not seem to have been generally popular. The station serviced buildings such as the Hotel Australia, Government Lands and Works Offices, the Mutual Life Assurance building and the Australian Gaslight Co. at Darling Harbour and the wool presses of Goldsborough & Co., and F.L Barker & Co.

2.3.6 Development and Change 1891-1975

The Sydney and Suburban Hydraulic Power Company went on to purchase the whole row of sites from 1901-1957. They then extended their holding to the whole row in Pier Street in 1901. In 1957 they sold part of the site to Shell. This resulted in the layout and use of the former HPS No.1 site to change through the 20th century, although it continued to operate and supply power to parts of Sydney until 1975.

The development and application of a reticulated electricity grid in the early 20th century in Sydney was a principal factor in how and why that change occurred. Electricity was to prove a cheaper and an infinitely more flexible form of power and by the 1920s, the focus shifted from hydraulic power to electric power to power lifts in new buildings. With electric power dominating the new lift market, the the former HPS No.1 continued to supply pressurised water to its already established customers, but hydraulic power was destined to become an interim technology.

In fact, one of the old steam pumps was dismantled and replaced in 1924 by a centrifugal pump capable of greater output. The last time the remaining steam pumps operated was during an emergency in 1943. Under wartime regulations the company was classified as a public utility and arrangements made so that an electricity supply should always be available. One morning the supply was unexpectedly cut off before there had been time to raise the accumulators to the appropriate height to give adequate pressure. With only a few hours in which to provide sufficient head for pressure, the old boiler was stoked to full pressure, and despite its age, worked immediately. It prevented a disastrous shutdown.

In 1926 the Sydney and Suburban Hydraulic Power Company Pty Ltd changed its name to the Hydraulic Power Electric and Hydraulic Lifts Company.

A demand for hydraulic power remained however, as electricity gradually came into use. New hydraulic substations in Cowper Wharf Road, Woolloomooloo and at No. 19 Wharf, Pyrmont, were constructed by the 1920s and connected to the former HPS No.1 main station due to an increasing demand for hydraulic power to operate wool presses in the city. There was also a steady increase in demand to supply hydraulic lifts already in place up until the end of the 1950s.

From the 1950s onwards, the demand for hydraulic power declined. The commercial building boom in Sydney had begun and electricity was the preferred form of power. By this time, the former HPS No.1 had been in operation for over 60 years and required an upgrade. The original steam engines were replaced by three Electric motors driving centrifugal pumps incorporated into the station from 1952. The electrically operated equipment was now capable of meeting the then requirements of approximately 234 million litres a year.

In 1954-5 the Sydney Suburban Hydraulic Company, who by that time owned and operated the the former HPS No.1, was split into Elevators Pty Ltd (EPL) and Hydraulic Power Pty Ltd in in an endeavour to avoid a take-over by the council of City of Sydney, as under the private Act of

Parliament governing the company, the Council of the City of Sydney had the right at the expiration of specified ten year periods to take over the company. It was decided that since the electric lift section was producing at greater return than the hydraulic power side, it was decided to form a holding company (Hydelec Holdings Limited) with the subsidiaries Elevators Pty. Ltd. and Hydraulic Power Pty. Ltd. The registration of these new companies was finalised in January 1955, and, in 1960 both companies were taken over by Lend Lease and EPL merged with Kone to form EPL-Kone.

The dam at Waterloo remained the prime source of supply until 1968 when it was filled and the area used for bulk storage, as well as for car parking facilities for Elevators Pty. Ltd. By this time the demand for hydraulic power had decreased significantly due mainly to high rise development within the city. A bore was then sunk adjacent to the Elevators Pty. Ltd. test tower that was capable of delivering some 45 000 litres per hour. Its capacity had, by the end of June 1975, diminished to such an extent that under certain circumstances water again had to be purchased from the city supply to maintain adequate pressure, even for the few remaining units still in use.

By the 1950s with the steady decline in the demand for hydraulic power it became apparent that the plant required substantial upgrading in the 1970s and the decision was made to end operations by 1975, prompted by a rupture in the main supply pipeline to Pyrmont by drilling machinery constructing the western distributor (pers. comm. Max Underhill, Supervising Engineer for the roadworks).

The closure of the hydraulic system in Sydney was carried out in three stages; stage 1 being the area bounded by Millers Point, Martin Place and Macquarie Street, closed down on 30 June 1974; stage 2 (closed down on 31st December 1974) included that area lying between Martin Place and Druitt Street. The final stage was all customers south of Druitt Street and terminated on 30th June 1975.The last companies to be disconnected from the hydraulic system were:

- A.M.L & F.
- Bradley Brothers
- City Manufacturers
- Commercial Bank
- Forster House
- Fresh Food and Ice Co
- Jacoby Kempthorne
- J.R.Lawsons
- Macy's
- Mercantile Free Stores
- Metro
- Sheards Transport
- Sydney Morning Herald
- Sydney Pincombe

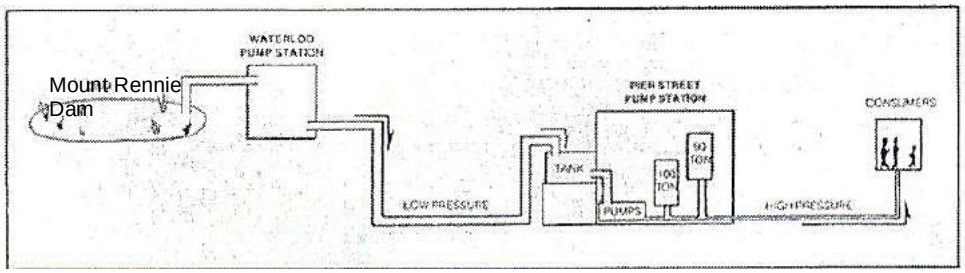


Figure 2.11 Flow chart of the hydraulic power system, Sydney. Source: Charles Sturt University, Hydraulic Power, NSW HSC Online, www.hsc.csu.edu/engineering_studies/lifting/3377/hydraulics.htm

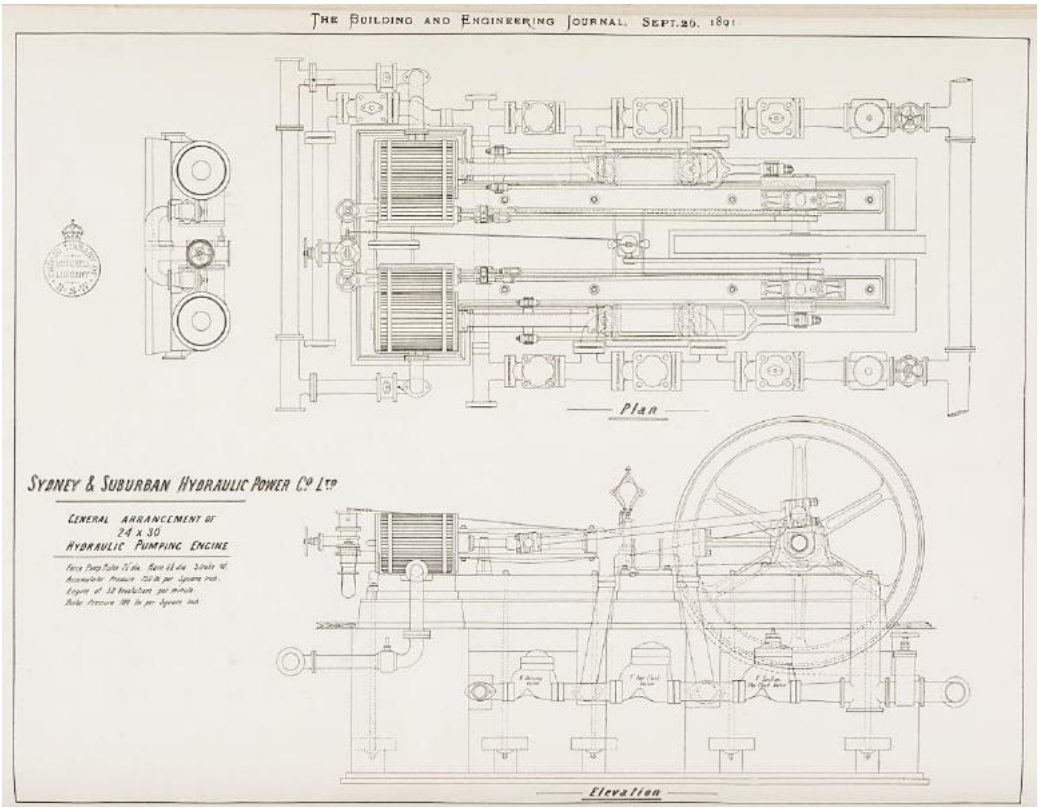


Figure 2.12 Engineering drawing of Hydraulic Pumping Engine published in the Australasian Building and Contractors' News in 26 September 1891. Cross Section Elevation of Engine. Source: DHBHR112b Pumphouse- Building and Engineering Journal of Aust SLNSW ML_MDG690_5_1A

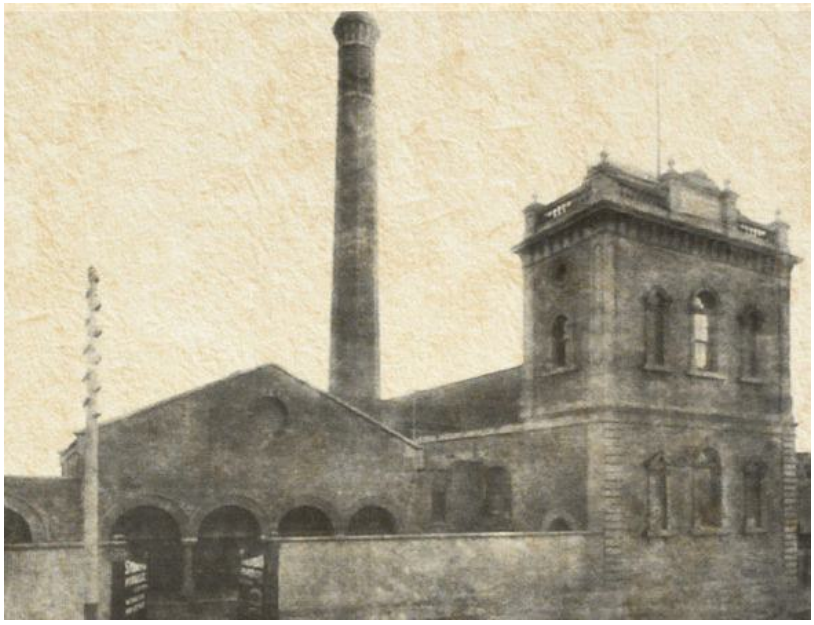


Figure 2.13 Photograph c1920s of Northern elevation of former HPS No. 1 prior to the construction of the eastern brick annex. View is from looking south from Pier Street towards the accumulator room and boiler rook with Chimney Stack in the rear. Office and mangers cottage are intact as well as the front boundary wall and gate. *Source: http://pumphousesydney.com.au/history-of-the-pumphouse.html (original source unknown)*

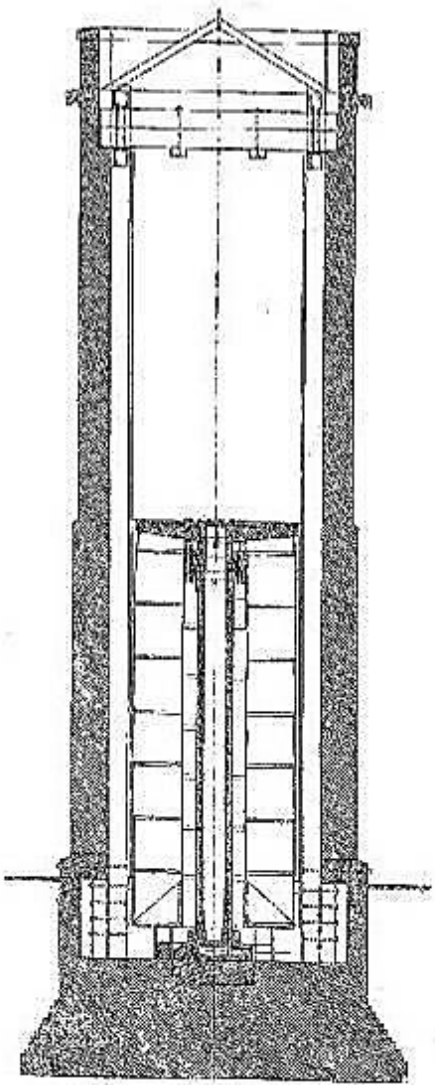


Figure 2.14 Reproduction showing section of the accumulator room and accumulator *Source: Tom Dickinson, Notes on Hydraulic Power Supply in Sydney, Proceedings of the Engineering Association of NSW Vol 9,1893-94*

2.3.7 Re-use of the former HPS No.1 Site, 1975-2017

After closure of the former HPS No.1 in 1975, the accumulator cylinders and the cast iron panels for the water tanks were left *in situ*, however the pumps, boiler and some other internal workings were removed.

The office, boiler house, coal store, stack and the fitting and workshops were previously demolished, likely between 1953 and 1962, and were replaced by small business enterprises including a tyre service and yard. By 1979 only the accumulator room and engine house were left substantially intact, as well as the façade of the eastern brick annexe and part of its eastern return wall.

The site was unoccupied until a microbrewery and hotel opened in the former building in 1988. Plans were drawn up by Jackson Teece Chesterman Willis and Partners in 1987 for the 5 megalitre/pa Brewery (Appendix A). The building was known as the Pumphouse Brewery and Tavern which was owned and operated by the Tank Stream Brewing Company Pty Ltd originally called Centrepac Limited prior to 1989. In 1989/1990 the Tank Stream (Darling Harbour) Pty Ltd proposed to undertake alterations and additions to the courtyard and internal and external alterations and additions to the

Pumphouse Tavern and Brewery which were designed by Trevor and Esther Hayter Architects but these were never approved by Darling Harbour Authority nor were they ever undertaken (Appendix B). In 1990 external building works, including signage and lighting, were undertaken. In June and August 1991 plans were drawn for proposed new gates to the external courtyard, and a temporary floor infill in the upper tavern by Barrelle Partners Architects (Appendix C). In June 1992 further upgrade refurbishment works were undertaken to the Pumphouse Tavern by Barrelle Partners Architects. At the same time archaeological excavations were undertaken at the adjacent Darling Harbour Authority work depot (bounded by Pier Street, Little Pier Street and Harbour Street) which revealed extensive remains relating to Dickson's Mill and later industrial buildings.

The brewery was decommissioned on Monday 25th November 1996 and the Pumphouse Tavern was vacated and unoccupied from 4th May 1997 until 1998/9. Mulpha Australia Limited subsidiary, Tank Stream Darling Harbour Pty Ltd, as leasee of the site, had examined various uses for the brewery buildings. Approval was given in March 1997 by Darling Harbour Authority (DHA) for Demolition of the Darling Harbour Authority work depot and the former Pumphouse Brewery building & Western Annexe. Consent was given for construction of a hotel, with renovation to the Pumphouse Tavern as a bar and restaurant area with access from Darling Harbour West Plaza.

In 1999-2000 the above noted renovations of the former HPS No.1 were undertaken in conjunction with the development of the adjacent Novotel Rockford Hotel, at the time referred to as the All Seasons/Pumphouse Hotel. The works were documented by Barelle Partners Architects (Appendix D). The archaeological remains of Dickson's Mill, identified in 1992, were conserved and sealed beneath the ground floor slab of the hotel's east end.

The rehabilitated Pumphouse opened in October 1999 along with the hotel. In 2003, Mulpha further enhanced the Pumphouse to ensure it remained a prominent part of the Sydney and Darling Harbour landscapes as a destination in its own right. Internal works including a complete re-design was undertaken including incorporating a single 11m iron bar (Appendix E).

The hotel was sold in late 2004 to Rockford Hotels and then to TCC in 2008. In 2012 an upgrade to furniture and seating was undertaken. In 2012 and 2013 Mott MacDonald recommended structural remedial works be undertaken to address the bulging and tilting of both accumulator tanks. In 2014 the hotel undertook work to unload the accumulator tanks of their ballast as there was some noticeable movement over time and internal rusting was beginning to appear from the iron tanks. The works took 7 months to complete and was overseen by Clive, Lucas Stapleton & Partners Pty Ltd. The former HPS No.1 continues to operate as the Novotel Hotel's bar and restaurant with soft additions introduced in 2017 to create a more intimate environment.

2.3.8 Redevelopment in the vicinity of Former HPS No. 1 from 1983 to 2015

Originally the Little Pier Street precinct was an area bounded by the Entertainment Centre to the south, the Pumphouse Tavern and Brewery to the north, Harbour Street and Chinatown to the east and the Entertainment Carpark to the west.

Entertainment Centre and Pier Street Overpass

The Pumphouse and Novotel Rockford Hotel (former All Seasons) (1999) was originally located adjacent to Sydney Entertainment Centre (later known as Qantas Credit Union Arena) which was a multi-purpose arena located in Haymarket, Sydney, Australia. It opened in May 1983, to replace the former venue, Sydney Stadium, which had been demolished in 1970 to make way for the Eastern

Suburbs railway line. The centre was owned by the Darling Harbour Authority, which administered the neighbouring Darling Harbour area, and managed under a lease (Figure 2.21).

In 1986 Pier Street was raised to allow pedestrian access from Little Pier Street to Darling Harbour from the Entertainment centre. The overpass rises from Harbour Street to the east, to a height of six metres to the west outside the existing the former HPS No. 1. This creates a visual barrier to the northern elevation of the former HPS No.1 and effectively changes the relationship it once had with the original Pier Street.

The overpass was first proposed in 1985 in a design brief prepared by the MSJ Group for Darling Harbour Authority. The aim of the project was to extend William Henry Street Bridge, constructed in 1968 (Figure 2.19 & 2.24) eastwards, raising Pier Street so as to provide pedestrian access under Pier Street at grade between the Chinatown/Entertainment Centre precinct and Darling Harbour Redevelopment site providing a major pedestrian access route to an entry plaza adjacent to the Exhibition Centre and Chinese Garden. The report mentions the constraint imposed by the existing former HPS No.1 building on the southern side of Pier Street with the recommendation that the approach ramp to the bridge should be brought to grade as far west as is practicable so as to reduce the visual impact on the building. To enable the construction of the William Henry Street overpass all the buildings in the Little Pier Street precinct were demolished apart from the former HPS No. 1. At the time the William Henry Street bridge extension was not within the DHA Development Area, only the access ramp and associated roadway lay within the development area. Pier Street and the William Henry Street bridge was under the control of the Sydney City Council.

The Entertainment Centre was originally planned for demolition in 2013, along with the surrounding buildings. This was finally carried out from January 2016 (Figure 2.30), with Darling Square residential development to be built in its place. The Entertainment Centre was replaced as an inner city venue by the nearby 9,000-seat International Convention Centre Sydney Theatre, as part of a $3 billion redevelopment of Darling Harbour. The opening of these new facilities occurred in December 2016.

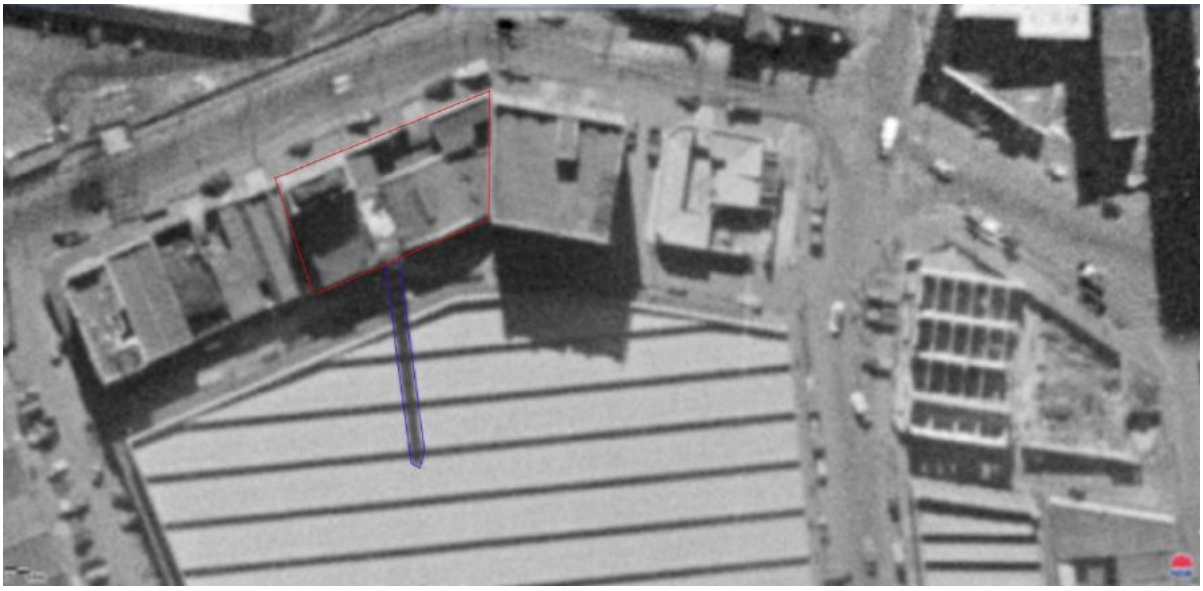


Figure 2.15 1943 Aerial of Little Pier Street, Lackey Street, Pier Street and Harbour Street showing site of Former HPS No. 1 including the Engine House, Accumulator Room, Chimney Stack, Boiler Room, Coal Store, Manager Cottage and Office and gates to Pier Street in situ outlined in red. With the shadow of the chimnye stack outlined in blue. To the south of the site is the City Markets building. *Source:* https://maps.six.nsw.gov.au/



Figure 2.16 Aerial 1949 of Little Pier Street, Lackey Street, Pier Street and Harbour Street showing site of Former HPS No. 1 including the Engine House, Accumulator Room, Chimney Stack, Boiler Room, Coal Store, Manager Cottage and Office and gates to Pier Street in situ outlined in red. With the shadow of the chimnye stack outlined in blue. To the south of the site is the City Markets building *Source: http://atlas.cityofsydney.nsw.gov.au/maps/city-of-sydney-aerial-photographic-survey-1949/city-of-sydney-aerial-photographic-survey1949-image-36/ http://cdn.cityofsydney.nsw.gov.au/history/maps/1132/1132_032.pdf*

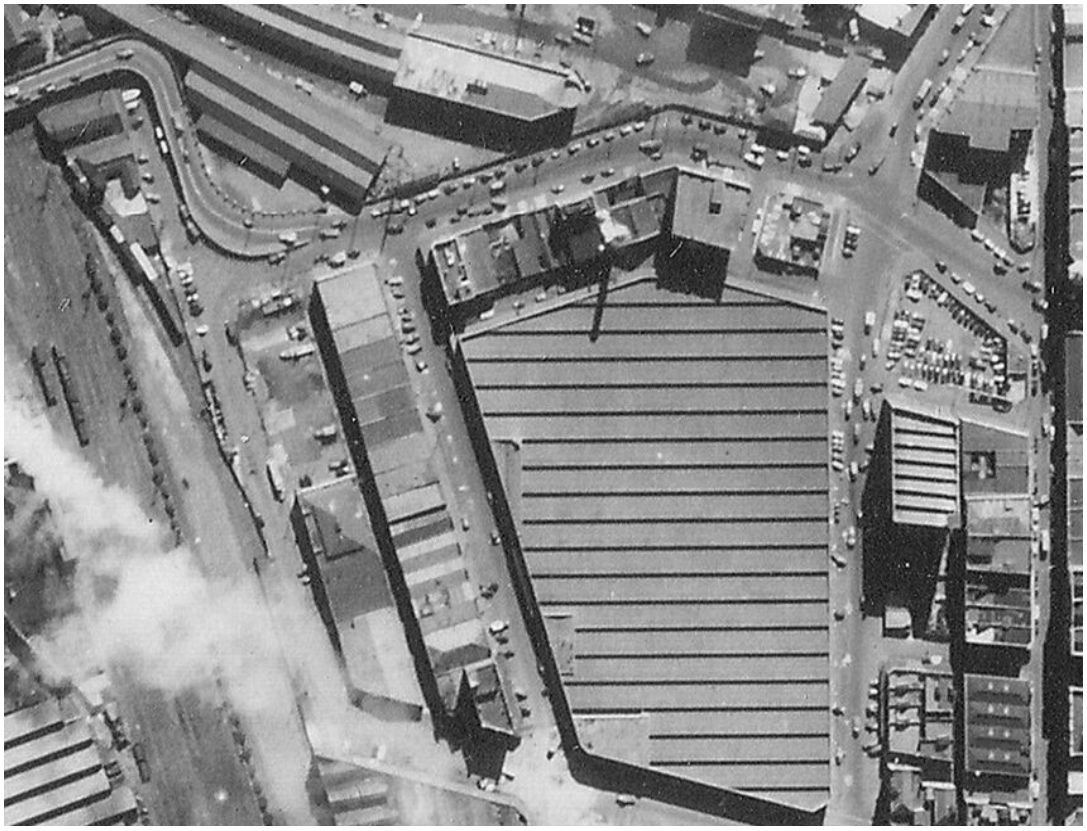
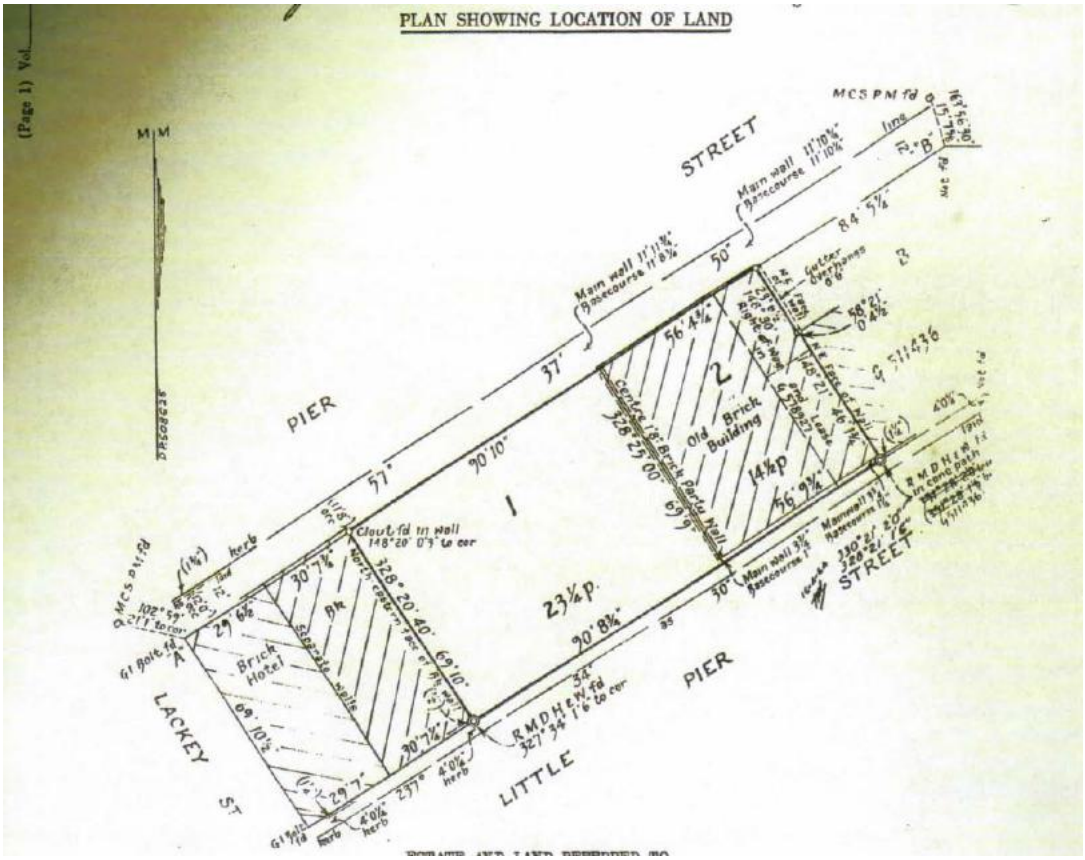


Figure 2.17 1951 Aerial view of Darling Harbour showing all the building in Little Pier Street and Lackey Street are still in situ. *Source: https://www.flickr.com/photos/angeljim46/8573846196*



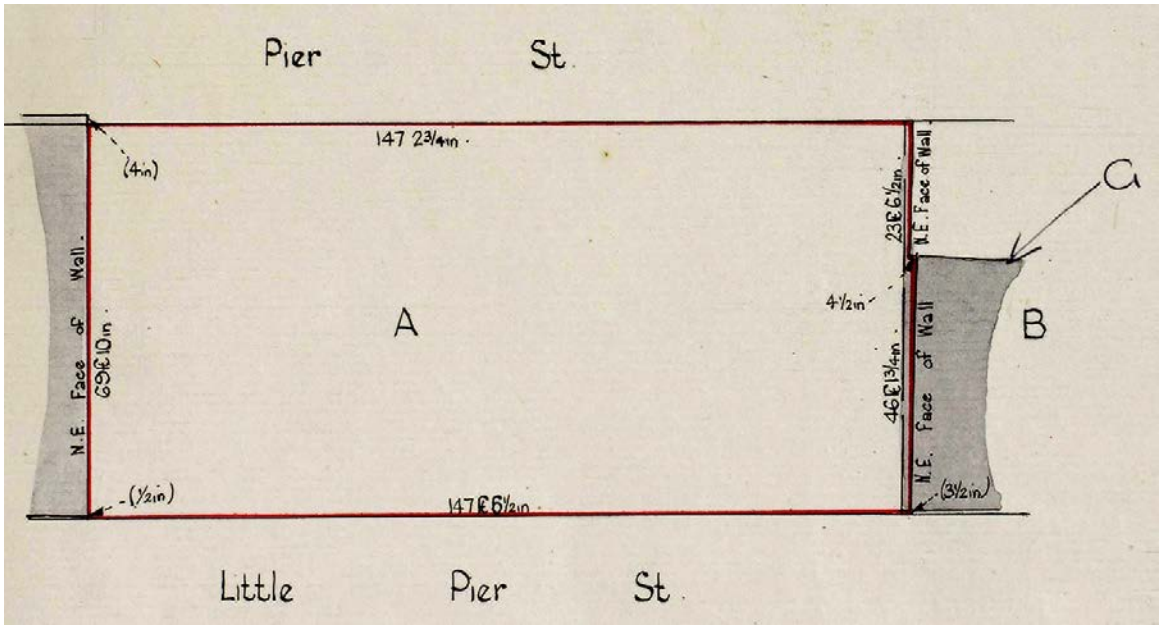


Figure 2.18 *Top* - Certificate of Title 1964, Vol 9701-Fol 236, *Bottom* - Prior title 1957, Vol 7374-Fol 83, *Not shown* - Crown Grants Vol 122-Fols 213 and 214. *Source: DHA P/165/60 Property Acquisition and Negotitation, 17 Pier Street-Pumphouse Restaurant, Wynmart P/L*



Figure 2.19 1968 View from Eastern section at Pier Street- Stage 1 construction of William Henry Bridge. The mansard roof and three levels of the tank remain intact. The Central Markets Hotel (13 Pier St) is at centre & Pardy Providores (41 Lackey St) at R in the background. Also showing signs for Goodyear and Shell. 15 November 1968. *Source: City of Sydney Archives 040/040490*



Figure 2.20 Plan of site c1979 indicating Wynmart Development Pty Ltd as owners of the Former HPS No.1 prior to it being vested in DHA. *Source: DHA P/165/60 Property Acquisition and Negotitation, 17 Pier Street-Pumphouse Restaurant, Wynmart P/L*



Figure 2.21 Photograph 1983 when the Entertainment Centre had opened but prior to construction of Pier Street overpass in 1985 or the Brewery in 1987. Given the condition of the roof and the openings at windows, this would indicate the 1983 conservation works are underway. Former HPS No. 1 identified with red arrow. *Source: SMH NEWS 12 December 2012. Sydney Entertainment Centre aerial of the centre 830325 Fairfax Archive*[9]

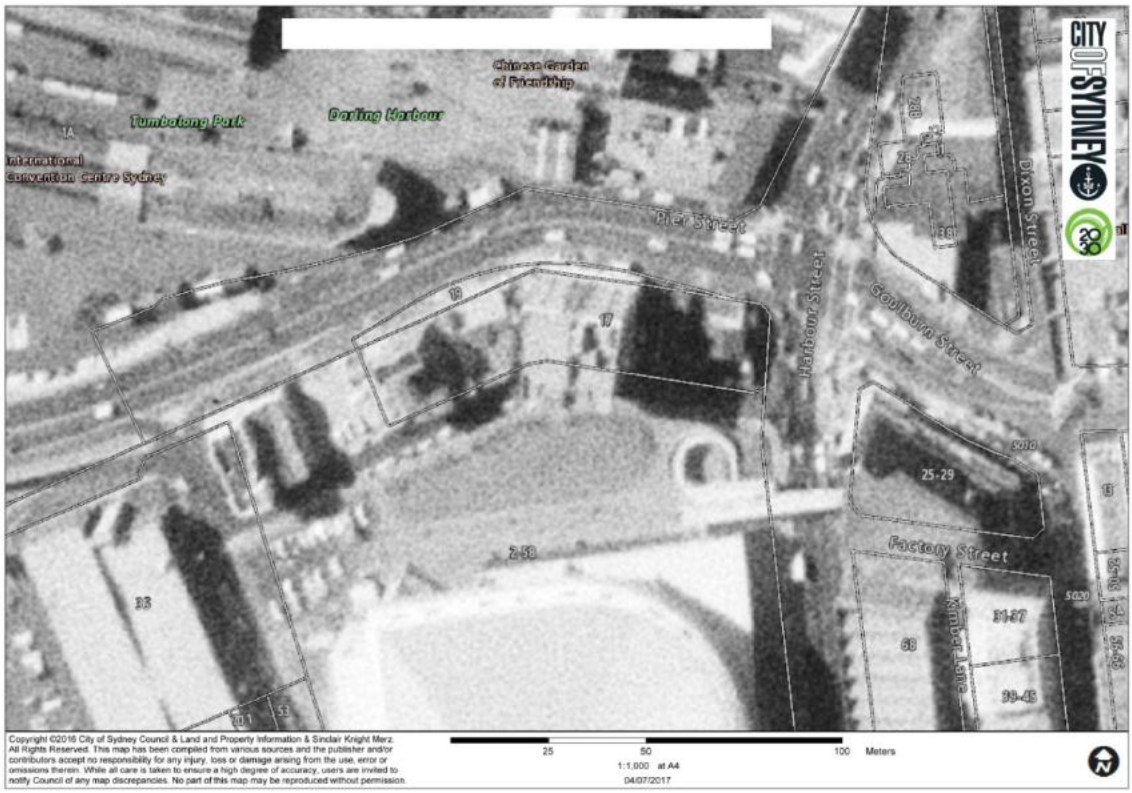


Figure 2.22 1984 Aerial of Site

9

http://professional.fairfaxsyndication.com/Collection/SydneyEntertainmentCentre1980sFXT138687#/SearchResult&AlbumIdentifier

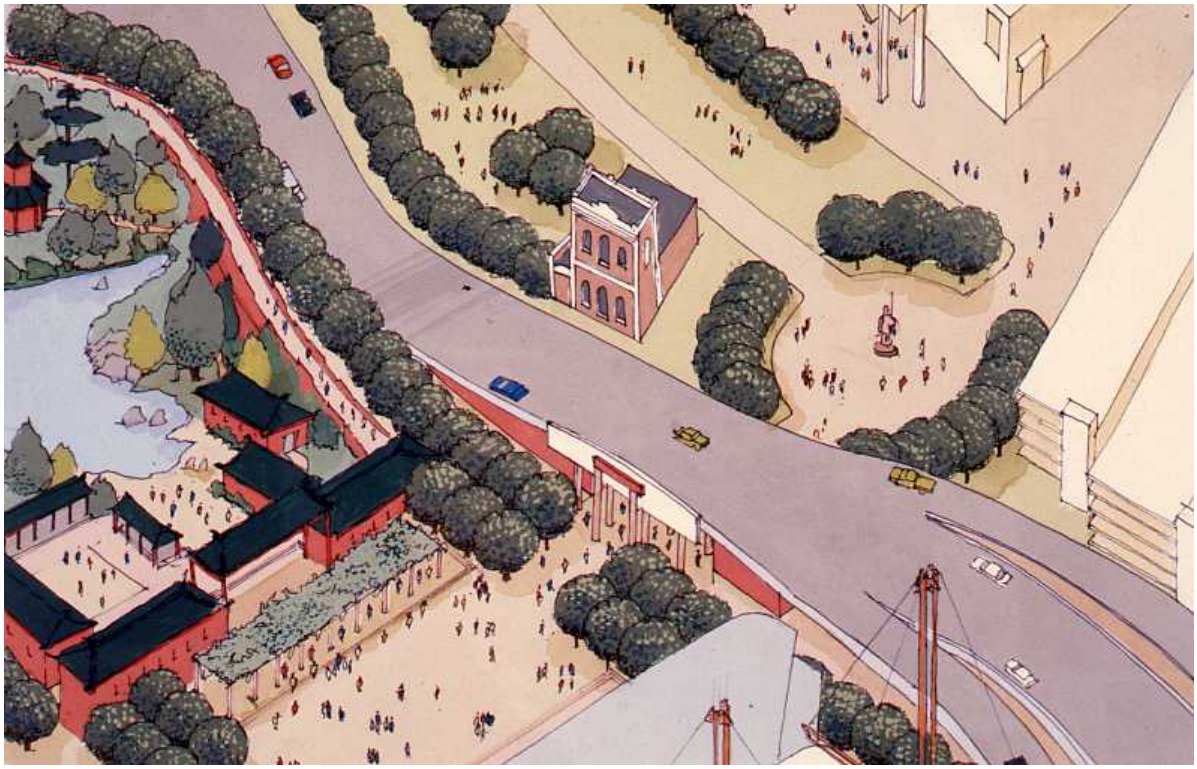


Figure 2.23 1985 Proposal Perspective of Darling Harbour showing the Former HPS No.1 building, the Pier Street Overpass and The Chinese Gardens. *Source: PMNSW Files*

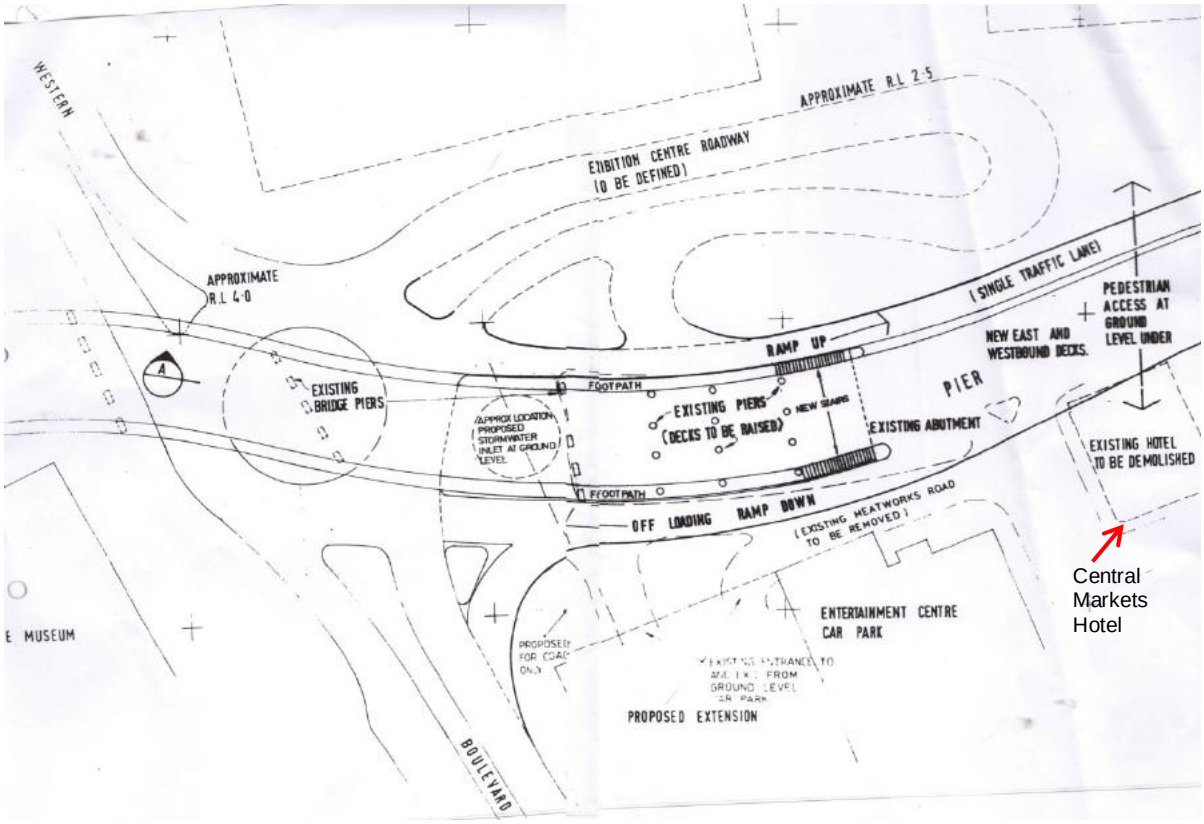


Figure 2.24 1985 Plan of Pier Street Overpass-Extension of William Henry Street Bridge, imediately to the west of the former HPS No. 1, prepared by the MSJ Group Project Desing Directorate for Darling Harbour Authority. *Source DHA File M/330/612, Little Pier Street Urban Design*



Figure 2.25 c1987 aerial view of Darling Harbour Construction Site showing how remarkable it was that the Former HPS No. 1 survived - the Central Markets Hotel has been demolished as well as all the buildings to the east – the 1983 conservation works are evident in the newly presented building *Source: PMNSW Files*



Figure 2.26 Photograph 1987 showing the construction of the Chinese Gardens with view of the former HPS No.1 - *Source: PMNSW HTR_DH2 1987-049*

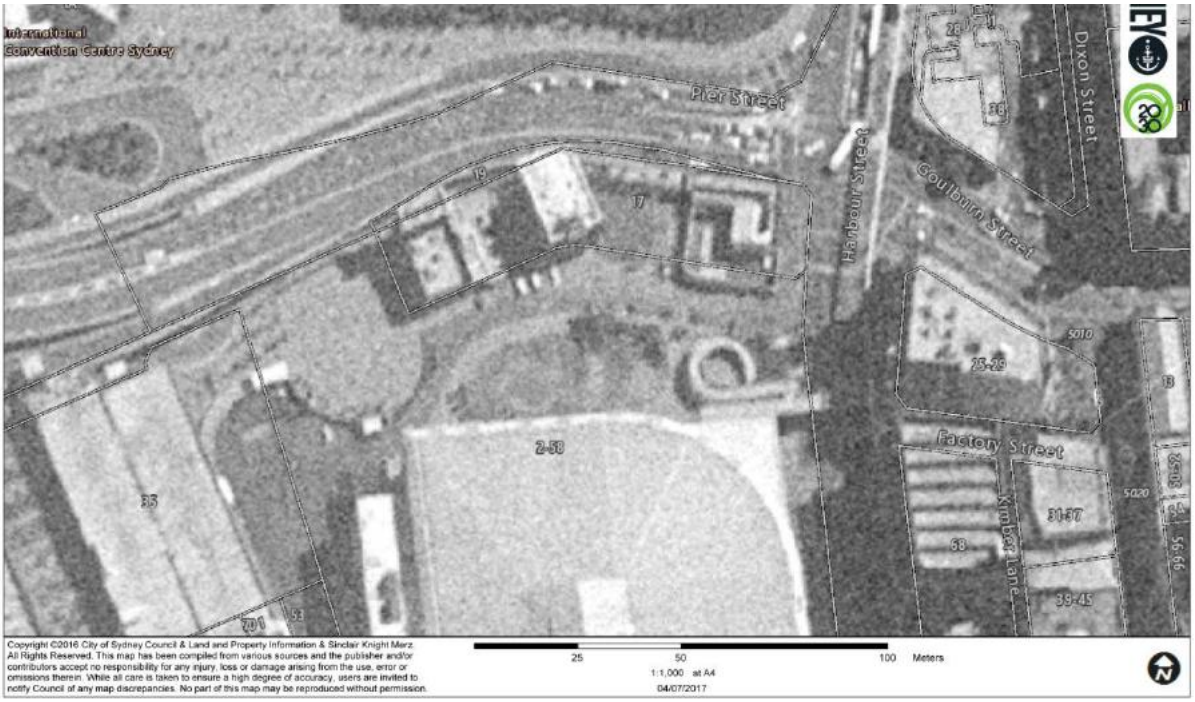


Figure 2.27 Aerial view of site 1989 – the brewery buildings are in place – *Source: City of Sydney*



Figure 2.28 Aerial view of site 1994, prior to construction of the Novotel Rockford Hotel, showing the Former HPS No.1 Building and Pumphouse brewery and courtyard insitu. Source: City of Sydney



Figure 2.29 Aerial view of site 1998, showing the construction of the Novotel Rockford Hotel in relation to the former HPS No. 1 building. Source: City of Sydney



Figure 2.30 Aerial view of site 2016, showing the demolition of the Entertainment Centre in relation to the former HPS No. 1 building. Source: Instagram 2016

Reflection Park

Archaeological excavation was conducted in the open space immediately to the south of the Pumphouse in 1992 as part of the Little Pier Street (Dickson's Mill) works, revealing a substantial amount of fill from the 1860s reclamation works. On this open space is a Worker's Memorial Sculpture "Memory Lines" by artist Ingrid Skirka that commemorates NSW workers who lost their lives in the workplace, erected by the Labour Council of NSW in 2004.

To further the connection with workers' history, and acknowledging the proximity to Dickson's Mill (Australia's first "factory"), Unions NSW sought approval from SHFA for the erection of a minor sandstone and stainless steel memorial sculpture which was unveiled by Bob Carr, Premier of NSW, on 28th April 2005, the International Day of Mourning. At this time space was named "Reflection Park".

The stone plinth on which the plaque is fixed was originally part of the decorative carved architrave from the Sydney Trades Hall in Goulburn Street.

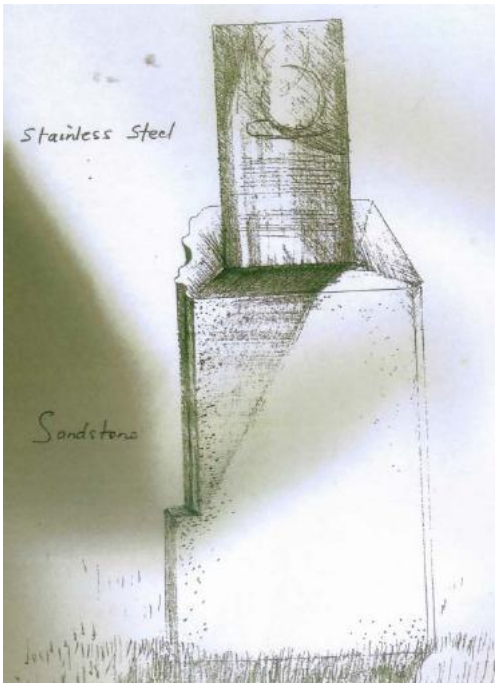


Figure 2.31 Original concept drawing for Reflection Park Sign by Unions NSW 2005. *Source: SHFA Fule 05/00661 Pt 1 Da 92-04-05 Erection of 'Reflection Park' sign Public Domain , Little Pier Street Darling Harbour*



Figure 2.32 Photograph of Stone Plinth and Plaque in Reflection Park. *Source: Chantal Danieli - 2017*



Figure 2.33 Memorial Sculpture in Reflection Park, *Source: Chantal Danieli 2017*

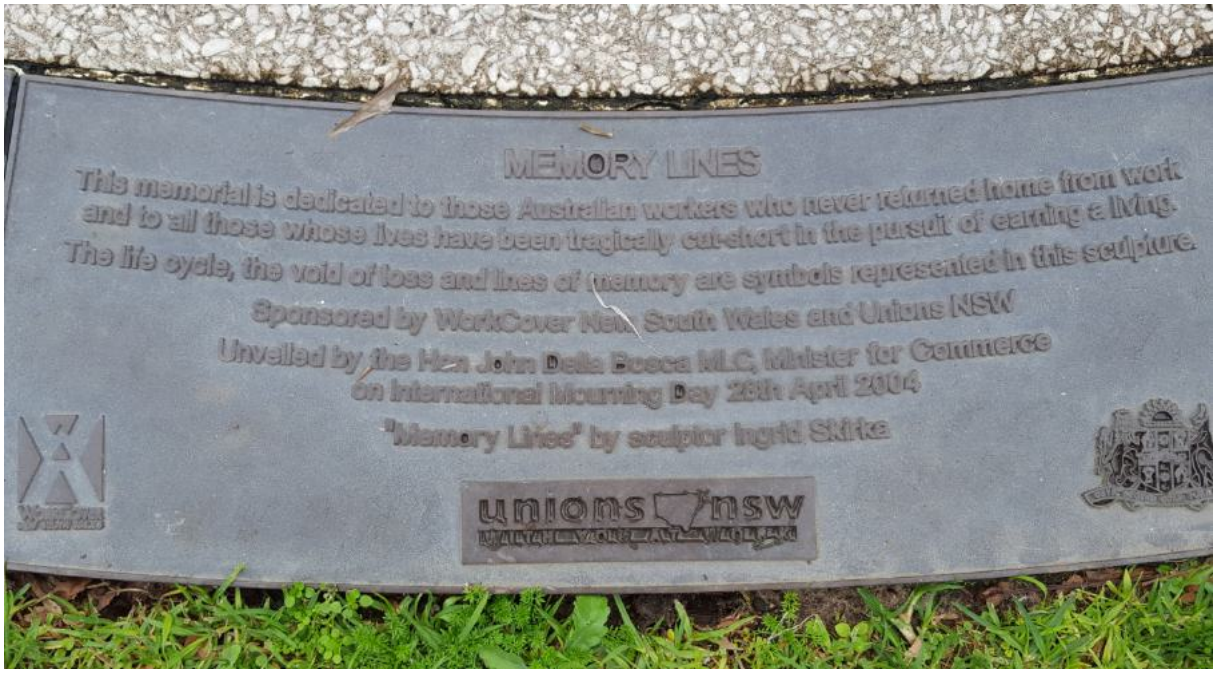


Figure 2.34 Memorial Sculpture in Reflection Park, *Source: Chantal Danieli 2017*

2.4 Development of Building Components

An understanding of the development of, and changes to, the former HPS No.1 building and its components can be gained by contrasting and comparing the plans over subsequent years with the original plans of the former HPS No.1 site at it was in 1889 (Figure 2.7-2.9) (Appendix F), observations made during the site inspections and historical photographs of the building.

2.4.1 Overview

The building is an exemplar of Victorian Italianate design. The nature of a pumphouse, with its towers, chimneys and large engine house lends itself to the Italianate style. However, throughout the world in the 1890s designers of similar utility buildings were experimenting with Arts and Crafts in England, and HH Richardson's Romanesque in America. Industrial buildings were the focus of change at this time, a shift that embraced their utility and would eventually lead to a functionalist style. The former HPS No. 1 thus represents a very conservative architecture for the 1890s that still sought to dress utility buildings in Classical design.

The 1891 floor plan of the site indicates that at that time, it consisted of an accumulator room, engine house with gangway to the boiler room, chimney stack, coal store, a yard, office and manager's cottage (Figures 2.7-2.10, Appendix F).

At some time in the late 1920s a workshop was constructed on the western elevation of the building (Figure 2.37-2.39). The new building directly abutted the western wall of the former HPS No.1 and windows, arches or openings filled to accommodate the separate space needed for the structure. A workshop or annex was also constructed at an unknown date, but likely in the 1920/30s (Figure 2.37 - 2.38) on the buildings eastern elevation. Elements of this building exist in the façade of the brick annex today. The construction of this building would have meant blocking up windows and openings of the eastern elevation of the accumulator and engine house and the removal of the external stair case.

By the 1930s, the eastern brick annex or workshop's Pier Street facade had been altered, seemingly for access purposes (Figure 2.41-2.46). Historical photographs from the 1930s also indicate a third tier of panels on the water tank by that time (Figure 2.47 and 2.48). With the third tier of panels the cast iron tank that formed the roof of the pumping station measured fifteen by twelve by three metres deep, and was capable of holding some 675 000 litres of water that was pumped from the Mount Rennie dam (now Moore Park Golf Course).

A 1951 aerial of the site shows all elements of the complex still in place indicating that the boiler room was not demolished when an electrical plant was incorporated into the station since Hydraulic power was still being utilized (Figure 2.17). The c1953 conversion to electric pumps meant the demolition of the boiler room and chimney shortly thereafter.

Historical photographs indicate that by 1962, several alterations had been made to the building components of the former HPS No. 1 (Figure 2.49). The western workshop had been partly demolished and more alterations had been made to the eastern brick annex. Alterations had also been made to the roof of the accumulator tower as its roof pitch had been lowered and the balustrade removed. By this time the boiler room and chimney had also been demolished

By 1967 the western façade of the building had been rendered and painted to be used as advertising space. Photographs indicate the Goodyear Tyre Service (Figure 2.50) and Chalmers Tyre Service (Figure 2.51) advertised in the space in 1967 and 1979 respectively, possibly operating in the vacant space to the west of the building..

By 1979, Wymark Developments Pty Ltd owned the site. Tony Brassil and David Sheedy, on behalf of the NSW National Trust, noted that although much of the internal workings had been removed, the building that remained (the accumulator room and engine house) was still in near original condition although arcades of arched windows along both sides (eastern and western) and a rear loading dock

doorway had been bricked up. At this time, the eastern brick annex (a former workshop) remained however the cast iron panels to the western elevation had been removed along with the 3rd tier of panels to the southern and eastern elevation (Figure 2.51, 2.61 & 2.62).

In 1982, the accumulator room, engine house and eastern brick annex were still present.[10] In this same year, a number of alterations to the site were reported. These alterations were likely to have taken place between 1979 and 1982. A concrete mezzanine level had been installed by 1982 and it was noted that the accumulator room had been significantly altered as the original staircase which allowed access from the head of the accumulators to the roof had been demolished.[11] At this time no original glass appears to have remained in the windows of the former HPS No.1 due to vandalism.

In 1990 the Tavern was described as comprising of three main functional areas: the original Pumphouse, which had been converted to public areas on both ground and first floors; the annexe building which is a later construction, contained the kitchen and toilets, and the link building (constructed in 1987) which connected the Tavern and brewery and contained cool rooms, storage and office facilities. Externally at ground level an enclosed courtyard fronted on to the western pedestrian concourse to Darling Harbour and central courtyard was located between the Tavern and the brewery. Balconies overlooked both these area at first floor level. The ground floor was described as carpeted timber floor with painted rendered brick walls and an acoustic timber slatted ceiling. There was a central bar, and a raised dining area situated on the southern side of the building. A staircase within the Accumulator room provided access to a Bar on the first floor which overlooked the ground floor bar via a central void area. The ceiling was a ribbed acoustic aluminium finish. Doors led out to the two tiled balcony areas externally overlooking brick-paved courtyards.

Some of the alterations that occurred between 1979 and 1982 may have been associated with the conversion of the building to a hotel and micro-brewery in 1987, functioning between 1988 and 1996.

In 1986 the Pump House (17b Pier Street) and adjacent vacant land (17a Pier Street) was purchased by Darling Harbour Authority from Wynmart Developments Pty Ltd as a result of the passing of a bill by the NSW Government for the Darling Harbour Authority to acquire this and other land in the area for the Darling Harbour Redevelopment project. The property was then leased by the Tank Stream Brewing Company c1987, who invested $9,000,000 in the redevelopment of the Pumphouse site into a Tavern and microbrewery as part of the Darling Harbour Redevelopment project. As a result they requested, in a letter dated 8th November 1989, to Darling Harbour Authority that they wished to purchase the Pumphouse Tavern Site with a 99 year lease for the sum of $2,500,000.

From 1997 the former HPS No.1 was vacant as discussions regarding the lease took place between DHA and Tank Stream (Darling Harbour) Pty Ltd in tandem with proposed plans by the Darling Harbour Authority for a hotel to be built over the three sites on the corner of Harbour and Pier Street, incorporating the subject site.

In 1999-2000, renovations to the former HPS No.1 were undertaken in conjunction with the development of the adjacent Novotel Rockford Hotel. The micro-brewery was demolished and the former HPS No.1 was converted into a bar and restaurant with a balcony and verandah constructed on

[10] Don Godden and Associates, Heritage Significance of the Sydney and Suburban Power Company Building Pier Street, Sydney: Preliminary Draft

[11] The demolition of the staircase may have occurred shortly after 1979 and was not recorded as it appears in the National Trust photograph of c1979 (see Figure 2.54).

the western elevation of the building.

2.4.2 Floor and Subfloor

The original floor of the engine house was more approximately two metres (6'6") above the current floor level of the Pumphouse bar (Figure 2.36). An early photo (Figure 2.6) shows it as floor boards with wide gaps between the boards. Small sections of this floor remained in 1979 photos, but have been completely demolished since (Figure 2.54).

A photo from 1979 (Figure 2.55) shows the engines, associated pipework and the floor of the engine hall removed to reveal the sub-floor service area for the engines. The floor of this area (corresponding with the current floor level) is shown to be compacted soil or bitumen, but clearly not a highly trafficked surface. The sub-floor space was deep enough to permit comfortable access for pipe maintenance, but not sufficient as a permanent working space.

The site is situated on reclaimed land which may account for the current sub-floor area as being reportedly damp, although a contributing factor may be the result of poor general drainage that directs water into the sub-floor area.

The current floor is constructed of treated pine framing and softwood floor boards, possibly associated with the brewery development (1989) or the tavern development (1999). The treated pine is not good at surviving for lengthy periods in a damp environment, and is reportedly suffering from some rot and termites.

2.4.3 Northern Elevation Wall

The north wall is the original front façade of a building, designed in the Victorian Italianate style. It is constructed using an early example of dry-pressed face brick construction in English bond and remains remarkably intact. The changes in the surrounding context have now set this face towards the nearby Pier Street overpass, resulting in the current entrance façade being shifted to the west face of the building.

The north wall features two main central arched windows on two levels that relate to the original higher floor level in Classical rendered surrounds, flanked by smaller blind openings with small Classical open pediments to the head. It is almost certain that these window sashes have been replaced at some point, but it has been done very convincingly – possibly in the conservation works in the early 1980s. The window sashes don't have horns, which is an earlier (ie pre-c1870s) feature. Deep relief rendered quoins frame the building at ground floor, transforming into elegant pilasters that use part of a Classical bracketed frieze as their capital, with a Classical balustrade to the top of the wall.

To the east side of this elevation is a 1930s addition. It has English bond face brickwork and matching rendered quoins, and adds a segmental pediment to a flat parapet over the wider window. Much of the wall below the pediment was rebuilt before the 1960s. Originally there were two multi-pane twin lights with a tilting upper sash (Figure 2.37). The wall was rebuilt with two vertical rendered elements below the sill (Figures 2.43-44). The original sill is lost and has been replaced with flat render. The modification looks odd because it then has more brickwork above the sill and the pilasters are unconvincing. The window has been replaced with fixed triple lights. The proportions in the features of this addition are now jarring against the regular Classicism of the original building. There is also an extension of the parapet above the corbel of the original building that is capped by an unfinished low skillion roof, which is quite intrusive.

The solid external wall shown on early plans is drawn as 840mm thick (7 skins), but is more likely to be 600mm thick (5 skins), which was the standard way of building a high wall in 1890. This permits deep reveals on the inner and outer face. The mortar would have been lime mortar, and this is sacrificing itself over the bricks, which is how it is intended. The external vent pipes are shown on the early plans and must be regarded as early elements.

2.4.4 Southern Wall Elevation

The south wall to Little Pier Street was the original back face of the building that opened onto a narrow laneway. This role is largely lost with the significant context changes around the building. Built in matching English bond face brickwork, this face does not feature the rendered Classical detailing of the north face, with the exception of a narrow corbelled detail to the top of the parapet.

Originally this face had three matching arched windows to the rear, which were complemented by four matching arched windows on the original boiler room to the east, now demolished. Like the front of the building these were set with sills that matched the original higher floor level, and so are very high sills in the present context. Three smaller openings were set below these windows, offset a full brick, which have bars and provided light to the maintenance and pipework area underneath the original engines.

The centre window has undergone two modifications. The first has been expertly done and is almost invisible in the fabric. The documents show this as a small arched window, and it is now a wide segmental arch window with matching bricks in the arch and no obvious change in the mortar. However, the quarter brick detail at the opening edges that was used in 1891 to set up the English bond courses is missing on the larger opening, showing that it was a modification and not original. The work is done so well it must have occurred early in the building's history and certainly before 1914. The widening and the installation of a support bar above may indicate that this window was used to move the large steam engine components in and out of the building for repairs.

Contrasting with this is the 2nd modification that saw the sill dropped 1.0m to enlarge the opening. Here the mortar clearly shows the change; the bricks don't match, the sill doesn't match the courses, and the poorly modified small window under the enlarged window will forever look like it has been squashed by it. It was done so poorly and early photos show this change in place by 1937 (Figure 2.47). The second enlargement of the window can only be related to the introduction of a centrifugal pump in 1924 that must have been larger than the steam engines.

The west edge of the south elevation has a new brickwork corner that indicates where the adjacent demolished building along Little Pier Street was once attached. The sense of the laneway and the run of buildings has been lost in the new context. The south wall was also built as a 600mm thick wall.

2.4.5 Western Wall Elevation

The west wall has confused previous assessments into thinking the openings in this wall are original. In its original configuration this wall was a common party wall to the adjacent building and had no openings. Without the historical background their significance would be misinterpreted.

It is counter intuitive that the internal face of this wall, and in fact all of the walls to the engine house, were built with segmental arched recesses, originally in face brick only, that wrapped around the engine house. It continues the worldview of the exterior that despite the building's utilitarian function it should still have a formal presentation. In fact the interior arcuated recesses was possibly inspired by a Classical precedent such as the Roman baths in Bath, UK, which also has four internal faces with

arched recesses.

The west wall was first exposed externally when the neighbouring building was demolished in 1962 (Figure 2.49). In the 1970s the wall had a very large and unfinished opening broken through the centre so that cars could be driven through it (Figure 2.51-2). By the early 1980s the building had undergone some form of conservation works and the wall had been repaired to have a single door opening with the remainder rendered and painted (Figure 2.63). The openings as seen today were punched through during the brewery period in 1989 (Figure 2.74). They have taken their reference point from the existing arched windows, and also the later segmental arched opening, and have maintained the existing symmetry of the 5 bays. The lower floor openings have opted for rectangular openings aligned to the upper openings. Only sections of the original wall would now survive under the render.

The internal face has been plastered and painted with corbelled moulds to the arches, and Classical detailing to the pilasters. The recesses were only at the engine house level, and the wall steps flush for the area under the original floor level. The paint scheme does not acknowledge this. An original 1891 image shows the interior as face brick and unfinished as would be expected for an industrial building (Figure 2.6). However, the 1979 National Trust photos show the interior plastered and finished, and even evidence of a tiled dado around the walls of the engine house (Figure 2.54-55).

The west wall also includes the west wall of the tower, which continues the Victorian Italianate character of the north face, and was also designed as a feature elevation. Because the original neighbouring buildings were single storey, the upper sides of the tower were visible from Pier Street, and their narrow proportion contributes much to the building's charm and aesthetic character. The original Classical detailing, returns across this face with a lower arched window and a round ocular louvred opening above. These openings are largely for decorative purposes in the external composition, but also provide daylight to the top of the accumulators.

2.4.6 Eastern Wall Elevation

This was the original wall that faced the boiler room and chimney stack. It is a 600mm solid brick wall in English bond with internal segmental arch recesses; it originally featured a number of arched windows to match the rear face, and one much larger opening of unknown character (Figure 2.7-10, 2.13). This face of the building has suffered more modifications than any other. The 1930s east annex was built on the north side, replacing an early stair, and appears to have maintained the large opening at this point. When the boiler and chimney were demolished in 1952 it was exposed to the inner courtyard for a period, but the replacement building seems to have made it a party wall soon after. The 1979 National Trust photos show the arched openings bricked up (Figure 2.55). The 1989 brewery, and then subsequently the 1999 hotel development, made further changes to this wall. The current wall has the original openings infilled and the current openings are recent. The ground floor (old sub-floor) has openings for the toilets and kitchen that do not relate to any earlier openings.

The mezzanine floor approximates the level of the original windows, but now only features a door to the main hotel corridor.

The east wall also features a side of the tower that is a mirror image of the west wall. The tower features and detailing are intact above the east annex. The projected parapet does cut into the elevation but not significantly.

2.4.7 Divider wall between Engine House and Accumulator Room

This wall is also a 600mm solid brick wall in English bond (although this wall supports the tank and the tower, and so should be the thickest wall). It is plastered on the engine house side, see notes on the internal finishes. Within the accumulator room the wall is face brickwork and has the same evidence of removed floor levels as the inside of the north wall. The wall has a large archway to the stairs, which appears as original in 1891 photos as unplastered. The same uncertainty on finishes applies to this arch as the engine house interior's finishes. The lower section of this wall was under the original floor level and formed a zone occupied by pipework and maintenance workers. This wall continues above the lower roof as the rear wall to the tower.

2.4.8 Upper Wall to Rear of Tower (South)

This wall is also in English bond face brickwork. The lower sections form the northern boundary of the water tank. The initial 2 panel height of the water tank coincides with a low waterproofed section of the tower wall that is painted brick. The extension of the tank to a third level coincides with an extension of the waterproofing of the tower wall, this time with some form of cladding or sheeting. The sheet has been removed but the over flashing and Damp Proof Course remains in the wall, and the bricks under this sheeting are clean while those above are soot covered from the chimney. This indicates that the water tank was expanded relatively early in the building's history. This lower section of wall has a relatively large number of recent penetrations related to the air conditioning plant on the roof. These penetrations are all through exceptionally significant heritage fabric.

Above the line of the water tank the wall is in good condition, and the Italianate bracketed frieze and balustrade continues around the tower. This was not as shown on the original drawings. An opening in this wall with its threshold at the level of the lower extent of the water tank appears to be original, even though not shown on the drawings. It may have been the maintenance access door the tank. When the tank was extended it would no longer have been usable, and would have needed some significant reinforcement and waterproofing. Now that the tank is redundant it has been used as a return air duct for the air-conditioning system. On the inside face there are pockets in the wall where timber framing has been removed, indicating a platform was associated with the door.

2.4.9 Internal Plasterwork

In the basement below the original floor there was no evidence of plasterwork, so the plasterwork in this area is from the early 1980s. The plasterwork above the original engine house floor was in very poor condition in the 1979 photos, and so it is very likely it was stripped off and redone in the early 1980s. This may have been part of the c1983 conservation works program but requires further research.

2.4.10 Engine House Roof

The engine house roof is a 1890s structure that was required to hold the weight of the water tank above. Some examples survive in the UK, however following the demolition of the similar building in Melbourne, this situation may be truly unique[12] and therefore be the oldest and largest surviving example in Australia. The opportunity to see an exposed riveted wrought iron structure of this magnitude exposed in a public building is also extraordinary. The engine house roof is of exceptional significance. It is from an era where large scale iron was just commencing and engineering and art

[12] *In the* one-off *sense not* special *sense.*

crossed over.

The major beams are 600mm deep running east-west and are made up of gusseted plates bent at 90° and riveted together into box beams. On top of this are smaller wrought iron beams running north-south that support the original base to the water tank. The 1890s structure of the water tank base would have been of high historical interest, simply because it remains a difficult thing to do with modern materials, so the way the Victorians solved it is of great interest. Unfortunately this finish has been covered with a later concrete slab that conceals all the evidence. It has also covered the base of the cast iron panels.

The original design for the ceiling of the engine house was east-west joists supported under the beams with a convex ceiling curved between box beams, most likely in corrugated galvanised iron or ripple iron. This would have given a very industrial feel to the space. The current ceiling has some connection in that it is corrugated steel, but it is flat, coloured and perforated and doesn't quite have the same industrial character. It sits flush with the secondary beams instead of curving between box beams in a perpendicular direction.

2.4.11 Water Tank

The roof of the engine house held the water tank, which was constructed of cast iron panels, bearing the name of the manufacturer *J. Abbott & Co, Gateshead* (England), and the engineer *J. Coates, Collins Street, Melbourne*. John Coates was also one of the original Directors of the Sydney and Suburban Hydraulic Power Company.

The base of the water tank is a relatively recent concrete slab, probably added post-c1930s, with modern waterproofing. The water tank is currently two panels high, but had been extended with a third tier (possibly made of compressed fibrous cement rather than iron) before 1932 (see Figure 2.49, 2.53, 2.61, 2.62); associated with a large increase in buildings depending on the hydraulic service. The cast iron panels have a wall thickness of approximately 12mm (½ inch), whereas the extension panels were only approximately 6mm (¼ inch).

The panels were joined and a bitumen soaked fabric was placed between the panels and then bolted together to be water tight under significant water pressure. The bolts sealed the bitumen junction and the bitumen was allowed to harden. The joints now have a black coal composition. The bolts indicate the panels were removable, although they have now become fixed with age.

In 1979 many of the panels of the water tank were removed, when the building was threatened with demolition; an action that sparked the move to save the building. The entire western face of the tank was removed and some of the southern face. The third stage of panels was able to be smashed down. One errant blow has struck one of the thick cast iron panels on the south face and, being a brittle material it has cracked. During the possible reassembly the placement of the panels was rearranged as illustrated by the different locations of the cast iron panels with writing, the proposed indicated in the 1889 elevation, Figures 2.8- 2.9, compared with the current arrangement (Figure 2.62 and 2.75-76). This is in evidence internally, with some of the T and B's mixed up (we assume *Top* and *Bottom*).

Four of the panels remain on the floor of the water tank. The remaining sections were infilled with fiberglass panels for the 1989 brewery. In terms of fabric evidence there is a clear delineation between the original thin wrought iron twin strip bracing, the panel reinstatement steel angled bracing, and the later fiberglass panel steel angled bracing.

The cast iron panels had to be coated internally to ensure water purity, and the remains of this paint is

still evident on the panels. The panels may have been rust coated in the renovation works post-1980.

Maintaining the cast iron panels *in situ* is important to understand their role in the building. The reason the large tank is placed on top of the building is that the water supply was from a natural source, and the water needed to settle to allow the silt to drop to the bottom. The clean water could then be drawn off for the hydraulic pipes. The tank may also have serviced the steam boilers, but this is unclear from the documents. The hydraulic system required a large resource of fresh water to supply its large network, and the mains supply could not service this at the time. The water tank has since been used as a plant room for the hotel. The plant room has obscured the base construction, introduced penetrations in the walls, and also fills up the tank so it cannot be seen as a tank.

The cast iron panels that form the walls of the water tank are rare but not unique. A small cast iron panel water tank by the same manufacturer survives as the only relic of the Melbourne Hydraulic Power Station and has been relocated to another site. There are similar cast iron panel water tanks in Sydney at Garden Island and other early industrial sites. That said, they are an extremely important element in the heritage value of the site (comparative).

2.4.12 Roof of Accumulator Room Tower

The aesthetic behind most of the design of the Pumping Station is a fairly restrained Italianate style. It does not have any lush enrichment of the wall detailing, but the deep set bracketed corbelling is the first (and only surviving) hint of a French influence. Originally a steep Mansard roof with cast iron cresting topped the Accumulator Room, giving it a Victorian Second Empire character (Figures 2.38, 2.49). This seems to have been a flourish that did not extend elsewhere on the building. The original plans show a normal Italianate pitch of about 30°, so this was a late change to the original design.

The Mansard roof survived until 1979 after which we have no evidence for it. It was replaced with a low pitch roof with wide box gutters and was clad with coated fibre cement *synthetic slates*, which were popular in the 1980-90s as a low cost alternative to slates (Figures 2.67, 2.77). While these products claimed longevity based on Northern Hemisphere data, they tended to not survive well under the harsh Australian sun and became brittle within a decade. In 2014, in a bid to repair leaks from this roof, works were done to waterproof the roof.

2.4.13 West Verandah

The west façade adjoined another building until 1962. A small verandah was introduced for the brewery in 1989, and a larger double-storey verandah was introduced for the hotel in 1999. While the verandah does obscure the original west wall, this wall was originally obscured and so there is no heritage impact. The verandah is a modern design with steel posts, timber framing and modern finishes. It sits well enough with the building, although it does contribute somewhat to readdressing the building's entry to the west and away from the original northern address. The context has changed so dramatically that this is unlikely to be reversed.

2.4.14 The Accumulator Room and Engine House

The accumulator room has remained almost intact up to the present day. The accumulator room still houses two accumulator tanks and associated timbers, pipes and valves. However, it's original floor, at the same level as that originally in the engine house, and where the base of the accumulators and water pressure pipes could be accessed, no longer remains. A photo from 1979 (Figure 2.54) shows the floor prior to removal. Joist marks are visible in the internal northern and eastern walls. The windows on the north, east and west elevations of the accumulator room are still present today. The

roof of the accumulator room was raised pitch (see 2.67) with Italianate balustrades in cement render. The engine house originally had a timber floor (Figure 2.6) that was raised approximately 1.8-2m above the ground surface where the engine bases (probably massed concrete) sat.

The engine house had five evenly spaced arches on the eastern and western internal walls on the upper level, of which only the arches of the eastern wall remain. Plans indicate the spaces within the arches would have had arched windows, however their size and details regarding their design are unknown. The sketch plan (Figure 2.8) indicates a gangway was used to access the boiler room from the second opening from the north on the upper level of the eastern wall. It is unlikely that there would have been an opening in the southern end of the eastern wall as the chimney stack was located adjacent to the building at this location. Today, the original windows and/or openings that were located on the eastern wall have been filled due to subsequent developments. A penetration was made in the middle arch of the eastern wall for access to the Novotel Rockford hotel. The openings on the western wall of the engine house were filled in from the time the western workshop was constructed (c.1920s). The current openings and windows on the upper and lower level of the engine house are part of the later development and reuse of the site.

The southern wall of the engine house has several arched windows and a loading dock opening. These openings, with some modification, are still present today. In particular, the central upper window was lowered at an unknown date. An original staircase (now removed) was present on the exterior of the eastern wall, possibly to access the water tank and engine house roof. It was likely to have been removed due to the construction of the eastern brick annex (c.1920s- 1930s).

2.5 Recent changes

The site was unoccupied until a microbrewery and hotel opened in the former building in 1988. The following applications were received by the Darling Harbour Authority between 1987 and 1997 for the Pumphouse site:

Date	Description of Proposal	Applicant	APVD
30/07/1987	Pumphouse Tavern & Brewery	Brewpac Trading	Condition
04/01/1988	Pumphouse external signage	Centrepac Limited	Condition
12/09/1988	Amended AP. Add to courtyard area	Centrepac Limited	Condition
12/09/1988	Alterations & Add. Courtyard area	Tank Stream P/L	Amend
27/06/1990	External signage & lighting	Tank Steam Group LTD	Uncondition
11/07/1991	New gates at courtyard	Ron Barelle Architects	Condition
03/08/1991	Temporary upper floor infill	Ron Barelle Architects	Condition
03/07/1992	Refurbishment of Pumphouse	Barelle Partners Architects	Condition
19/05/1997	Hotel Redevelopment for the Pumphouse	Neil Fimeri	Condition

2.5.1 The Brewery - 1987

Plans were drawn up by Jackson Teece Chesterman Willis and Partners (JTCWP) in 1987 for Brewpac Trading for the 5 megalitre/pa Brewery (Figure 2.68-2.71) (Appendix A). The building was known as the Pumphouse Brewery and Tavern which was owned and operated by the Tank Stream Brewing Company Pty Ltd originally called Centrepac Limited prior to 1989.

In 1989/1990 the Tank Stream (Darling Harbour) Pty Ltd submitted plans for alterations and additions to the courtyard and internal and external alterations and additions to the Pumphouse Tavern and Brewery which were designed by Trevor and Esther Hayter Architects but these were never approved or carried out (Appendix B). In 1990 works to the external building which included signage and lighting were undertaken. In June and August 1991 plans were drawn for proposed new gates to the external courtyard and upper tavern temporary floor infill by Barrelle Partners Architects (Figures 2.73-2.74 (Appendix C). In June 1992 the following works were undertaken to the Pumphouse Tavern by Barrelle Partners Architects:

- All Toilets- General refurbishment, replacing damaged tiles, fittings and fitments, regrouting walls and painting.
- Upstairs Bar- Minor reconfiguration of bar, refrigeration and specialty plumbing. New carpet.
- Upper Level West Balcony- Removal of existing tiled surface. General waterproofing.New hardwood surface decking. Replacing existing door and frame.
- Ground Floor Kettle Bar- Reconfiguration of bar to a straight bar against existing eastern wall. Associated adjustments to refrigeration and specialty plumbing. Remove raised floor zone and reinstate floor level with existing. New carpet and painting. Upgrade lighting.
- Painting- Repaint both internal and external.
- New gates to Pumphouse Tavern
- Removal of railing to void in Mezzanine level and removed of copper kettle and infill void with floor boards to create a Dance Floor.

2.5.2 Demolition of the Brewery - 1997

Shortly after these renovations The Tavern was vacated and unoccupied until 1998/9. In 1997 Mulpha Australia Limited subsidiary, Tank Stream Darling Harbour Pty Ltd as leasee of the site examined various uses for the brewery buildings. Consent was given in March 1997 by Darling Harbour Authority for:

- Demolition of Darling Harbour Authority work depot;
- Demolition of Pumphouse Brewery and Annexe;
- Consolidation of land by way of new plan of subdivision;
- Construction of a 31/2 star, 235 room hotel;
- Renovation of Tavern as bar & restaurant, with access from Darling Harbour West Plaza
- Preservation of archaeological remains.

2.5.3 Novotel Rockford Hotel and PumpHOUSE Hotel - 1999

In 1999-2000 renovations of the former HPS No.1 were undertaken in conjunction with the development of the adjacent Novotel Rockford Hotel, at the time referred to as the Pumphouse Hotel. The works documented by Barelle Partners Architects (Appendix D) to convert the former HPS No.1 into the Hotel's bar and restaurant included:

- Ramp linking hotel to Pumphouse
- Stair to Pumphouse replaced
- Enclosure added to western side of Pumphouse

- Display kitchen added to Pumphouse
- Roofed verandah added to west of Pumphouse
- Stair in Pumphouse rebuilt
- Pumphouse floor removed and replaced with mezzanine style floor
- Enclosed pool added to link roof

The rehabilitated Pumphouse opened in October 1999 along with the hotel. In 2003, Mulpha wanted to further enhance the Pumphouse to ensure it remained a prominent part of the Sydney and Darling Harbour landscapes as a destination in its own right. Internal works including a complete re-design was undertaken including incorporating a single 11m iron bar. Dreamtime Australia Design designed alterations to the interior to give the premises a more "industrial" image with a HIS prepared by Paul Davies Pty Ltd submitted to SHFA for the following works (Appendix E):

Internal

- Demolition of existing bar and eatery facilities;
- Bar and eatery facilities on the ground floor with verandah on western elevation-not approved
- New pivot doors to mezzanine level on eastern elevation –not approved
- Installation of two new gas fired fire places
- New perimeter and window balustrades
- Remove windows between original building and front verandahs (Ground and First Floors);
- New stainless steel mesh balustrades;
- Re-painting walls

External/within Glass Enclosure on Western Elevation

- Replacement of existing fixed steel framed glass wall on the south return side with frameless glass "stack-back" doors;
- Alteration of ceilings to the underside of the verandah;
- Replace existing free-standing planters with new planters with built-in bench seating

In June 2004 an application was approved by SHFA for the erection of the Pumphouse Sign, 4200mm length) by 415-575mm (height) forming the word 'pumpHOUSE' to the southern external wall of the building. The dark grey sign is mounted as individual letters that are fixed into the brick masonry by pins inserted into the mortar joints and extends from the brick masonry wall by 10mm. The hotel was sold in late 2004 to Rockford Hotels and then to TCC in 2008. In 2012 an upgrade to furniture and seating was undertaken. In 2012 and 2013 Mott MacDonald recommended structural remedial works be undertaken to address the bulging and tilting of both accumulator tanks.

2.5.4 Accumulator Conservation 2012-2014

In 2014 the hotel undertook work to unload the accumulator tanks of their ballast as there was some noticeable movement over time and internal rusting, settling and splitting of the iron tank walls. As part of that work, further investigation was carried out to the timber support structure which was found to have been badly damaged by termite attack. This resulted in a need to support the tanks and the buffer weights above the north-eastern tank. The works made safe the tank structure, beams and buffer weights with the whole project taking 7 months to complete and was overseen by Clive, Lucas Stapleton & Partners Pty Ltd. It included the following works (Figures 2.79- 2.91):

- Both accumulator tanks were progressively emptied of their ballast down to within approximately one meter of the base. Approximately 140 tonnes of ballast were removed, consisting mainly of broken stone and sand. A large chain and some iron weights were also found in the mix. The interior surface of both tanks were noted as somewhat corroded and the

western tank was in a slightly worse state with sound metal thinned to around 3mm in places where splits have occurred.

- Insertion of a steel beam above the north-east tank and above the contemporary plasterboard ceiling to support the buffer weights independently from the timber beams.
- Additional support to the timber beams with two 16mm diameter hanger rods which were installed from the new steel beam, drilled through the timber beams to the cross ties beneath.
- Beam ends were packed with non-shrink grout. The beams extend into the walls 100mm but do not actually bear on them and are instead supported by the timber posts. The posts themselves are only supported by existing angle brackets. The posts do not sit on the ground because they were cut short due to past termite damage.
- Contemporary slab was made good and the tiling below the tanks, which had been disturbed to confirm the structural bearing of the tanks which rest upon timber blocks and therefore have no restraint against rotation at base level.
- Removal of black plywood covers that had been added to the beam ends to cover gaps between the beams and brickwork and the rectification of any gaps in the brickwork with bricks to match.
- Provision of a flat bar where the piston head had disengaged from the guide channel.
- New angles fixed to the wall and into sound timber to retrain the tanks at the top of the piston
- Scaffolding was erected on the outdoor deck of the Novotel Swimming Pool to access the Roof of the accumulator room in order to re-seal the membranes of the gutters.

The former HPS No.1 continues to operate as the Novotel Hotel's bar and restaurant specialising in Australian and international beers, with soft additions introduced by Novotel management in 2017 in order to try to create a more intimate environment.

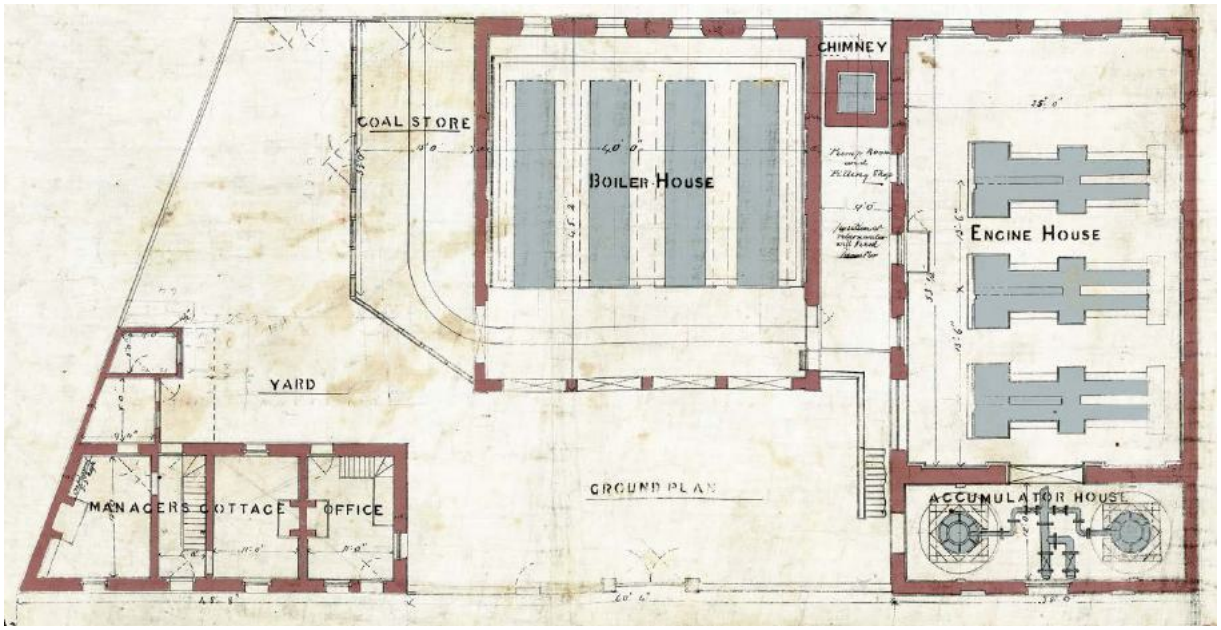


Figure 2.35 Original Floor Plan of Hydraulic Pumping Station (1889), Pier Street Sydney. *Source: State Archives & Records, SR Plans 2938, NRS 5171, Plans of the Hydraulic Pump Station, Pier Street Sydney*

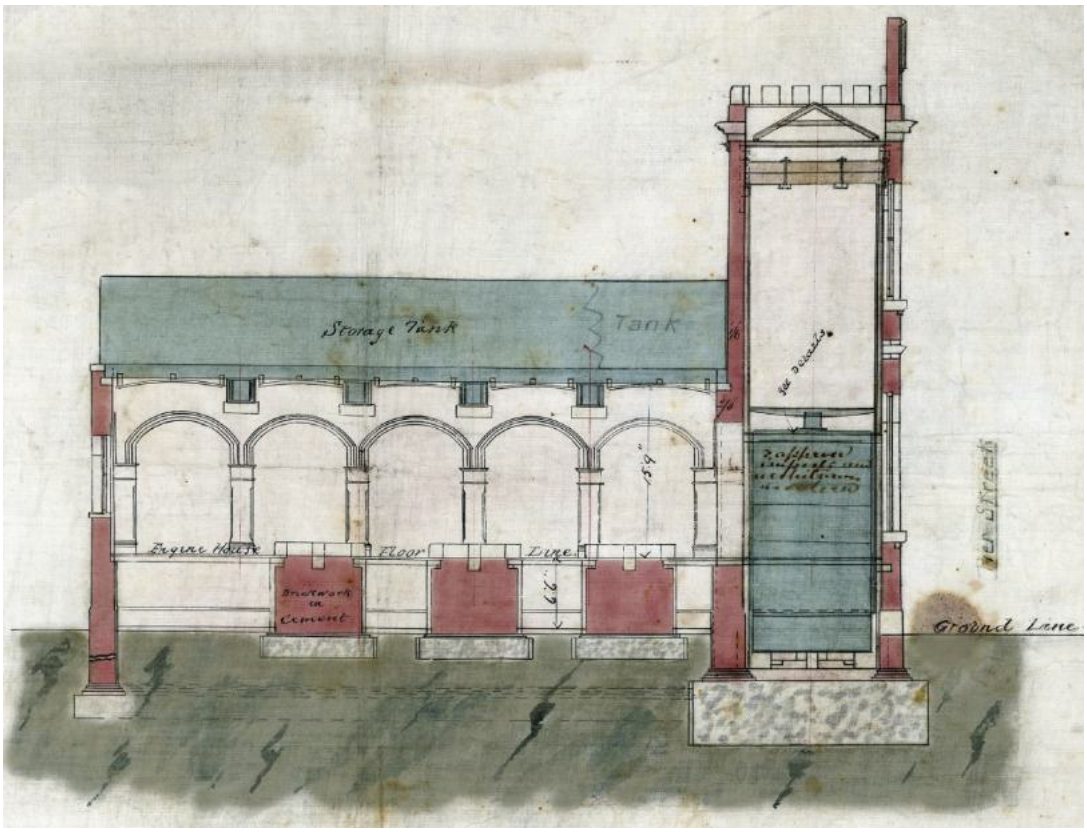


Figure 2.36 Original Section of Hydraulic Pumping Station (1889) - Engine and Accumulator Room, Pier Street Sydney. *Source: State Archives & Records, SR Plans 2938, NRS 5171, Plans of the Hydraulic Pump Station, Pier Street Sydney*



Figure 2.37 Photograph of Pier Street road reconstruction looking west towards Lackey Street and Ultimo Power Station (c. November 1932). Photograph shows **a)** Eastern brick annex, **b)** Northern Elevation of the former HPS No.1 and **c)** western workshop (dem 1962). *Source: City of Sydney Archives 036\036372*



Figure 2.38 Pier Street reconstruction c1932. A view taken before road reconstruction and excavation showing iron water tower (left side) and the former HPS No.1 (right side) *Source: City of Sydney Archives 036\036401*

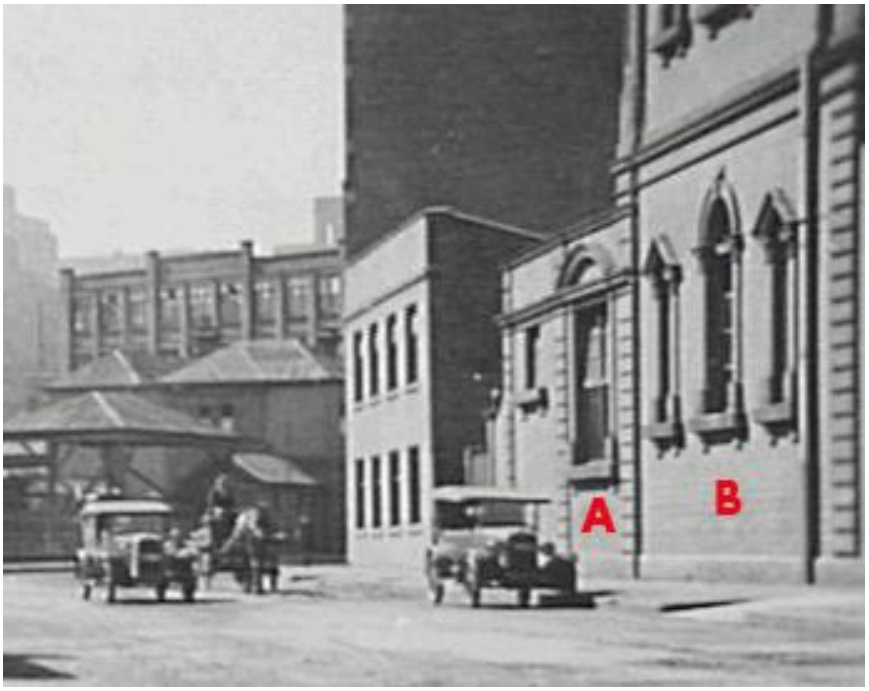


Figure 2.39 Photograph of Pier Street road reconstruction looking east (c. August 1932). Photograph shows a) Eastern brick annex and b) Northern Elevation of the former HPS No.1. *Source: City of Sydney Archives 036\036398*

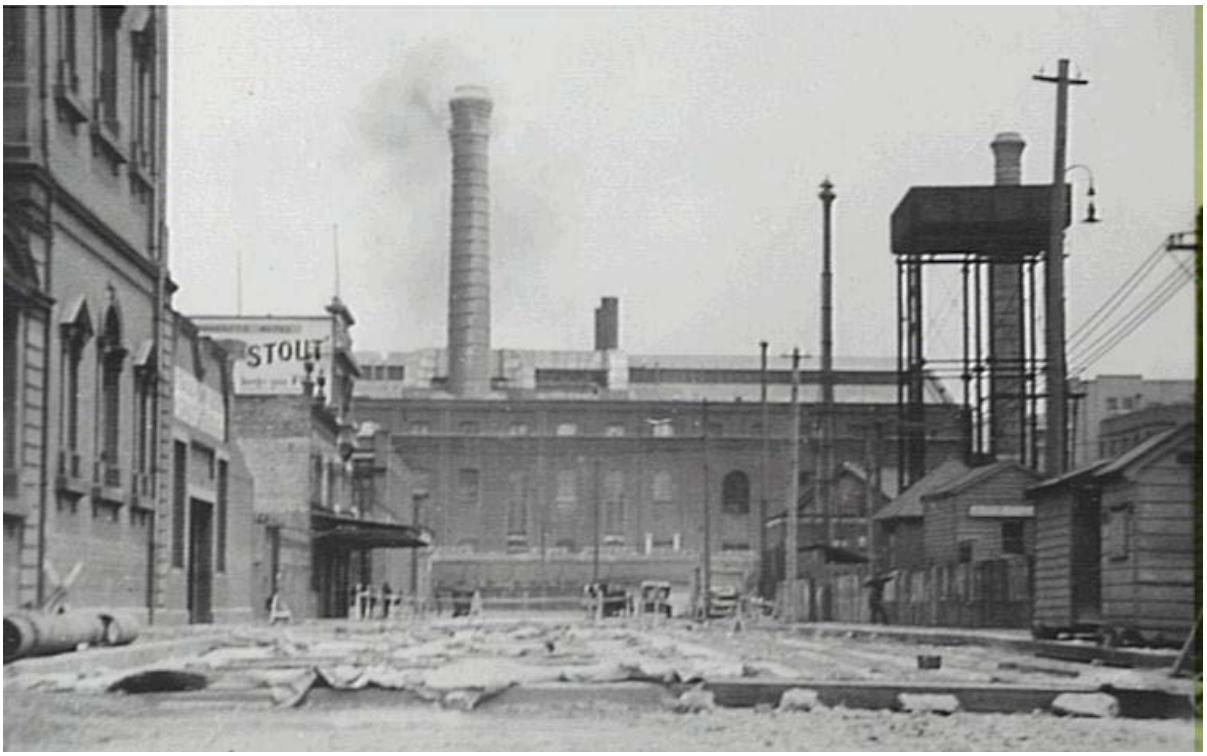


Figure 2.40 Looking west along Pier Street towards William Henry Street and Iron Bridge to Ultimo Power Station, 7th November 1932. *Source: City of Sydney Archives 036\036385*



Figure 2.41 Eastern brick annexe c. August 1932 *Source: City of Sydney Archives 036\036398*



Figure 2.42 Eastern brick annexe c November 1932. *Source: City of Sydney Archives 036\036372*



Figure 2.43 Eastern brick annexe c.1967. *Source: City of Sydney Archives 036\036394*



Figure 2.44 Eastern brick annexe and north elevation of the former HPS No. 1, 1985. *Source: FL3064668 north elevation State Library NSW 1985 Government Printing Office 4 - 37867*



Figure 2.45 Eastern brick annexe 30th March 2009. *Source: AHMS Pty Ltd CMP 2009*



Figure 2.46 Eastern brick annexe 6th June 2017. *Source: Sydney Heritage Consultants*



Figure 2.47 Photograph of southern elevation of the former HPS No.1 (1937). Looking westerly along Little Pier Street. City Markets to the south of the former HPS No. 1 is under construction. The photo shows the centre window to the southern elevation has both been widened and the sill dropped by 1937. This may be related with the replacement of one of the old steam pumps being dismantled and replaced in 1924 by a centrifugal pump capable of greater output. It is clear the centre opening does not have a window. The steel beam projection has a chain tied to it. *Source: City of Sydney Archives 026\026132*

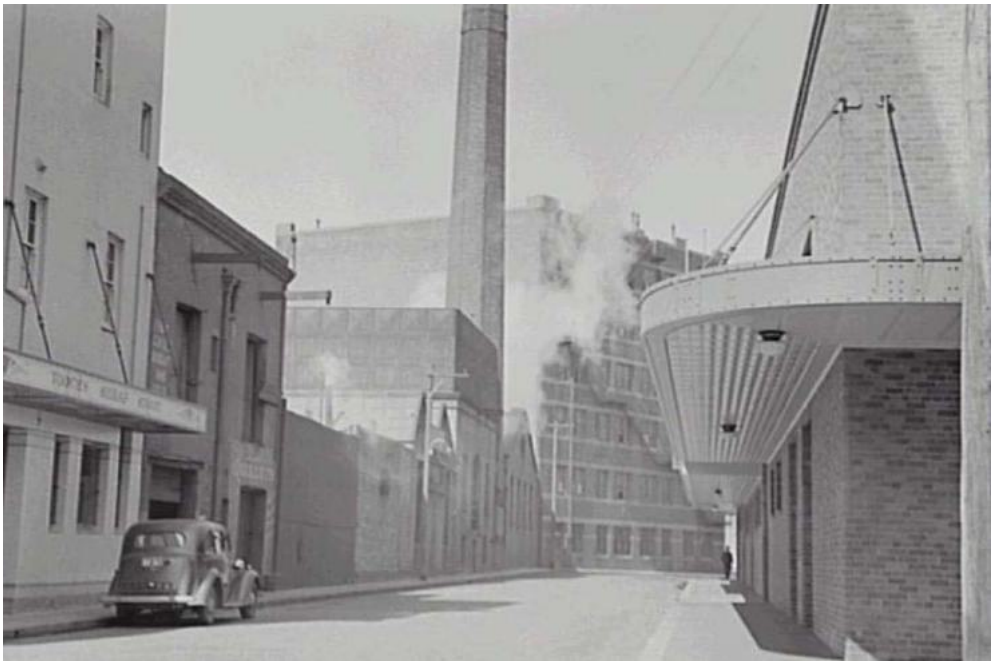


Figure 2.48 Photograph of southern elevation of former HPS No.1 (c1938). Looking easterly along Little Pier Street from the corner of Lackey Street towards Harbour Street. City Markets to the south of the former HPS No. 1 appears recently completed. The steam in the street shows the boilers are still firing and the Boiler Room and Chimney Stack are insitu. *City of Sydney Archives 026\026131*

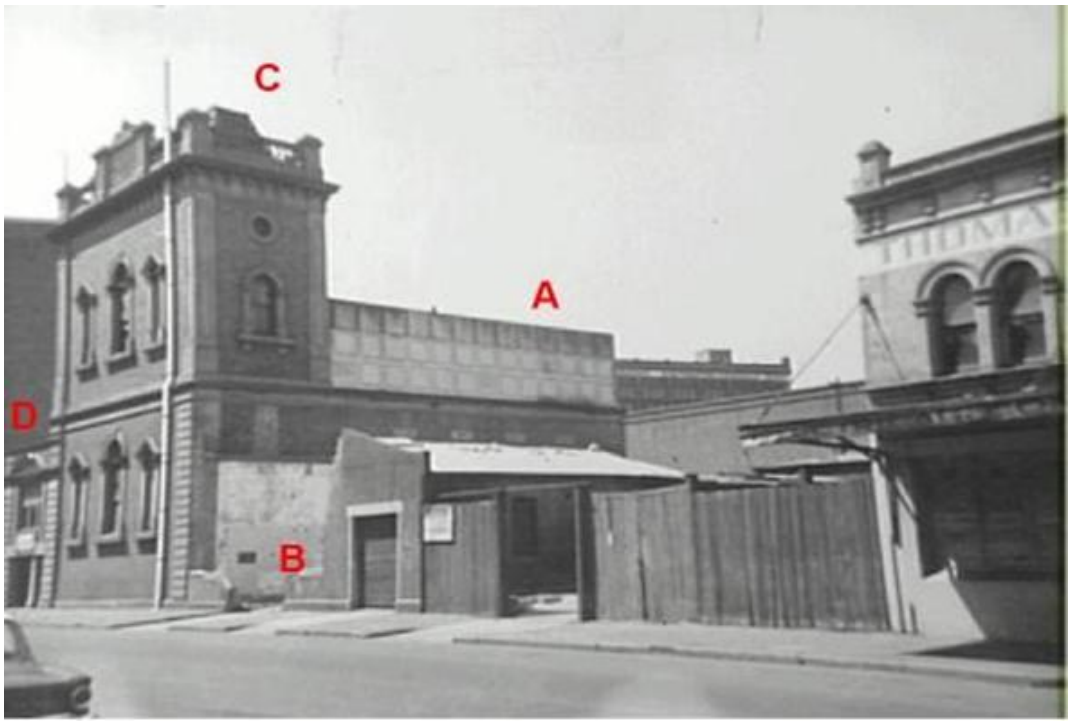


Figure 2.49 Photograph of HPS No.1 (1962). Photograph shows **a)** three tiers of water tank panelling, **b)** the demolition of the western workshop exposing the engine house beam fittings, **c)** original mansard roof and removal of iron finial from the accumulator room roof, **d)** alterations to the eastern brick annex, and **e)** a high level opening bricked up and a connecting door through the west wall. The high patches on the west wall are the pockets supporting the iron box beams. *Source: City of Sydney Archives 036\036394*



Figure 2.50 Photograph of HPS No.1 (c. 1968) showing the western exterior of the former HPS No.1 used as advertising space with “Goodyear” advertisement. *Source: City of Sydney Archives 040/040485*



Figure 2.51 Photograph of HPS No.1 (early 1979) showing the western exterior of the former HPS No.1 used as advertising space with “Chalmers Tyre Service” advertisement, along with a large hole punched through the wall. Right of photo is a view of Central Markets Hotel originally called Railway Pier Hotel on the corner of Pier and Lackey Street, which was demolished c1987 when Pier Street Overpass was created. The Mansard roof to the Accumulator Room is insitu at this date. *Source: City of Sydney Archives 021\021805*

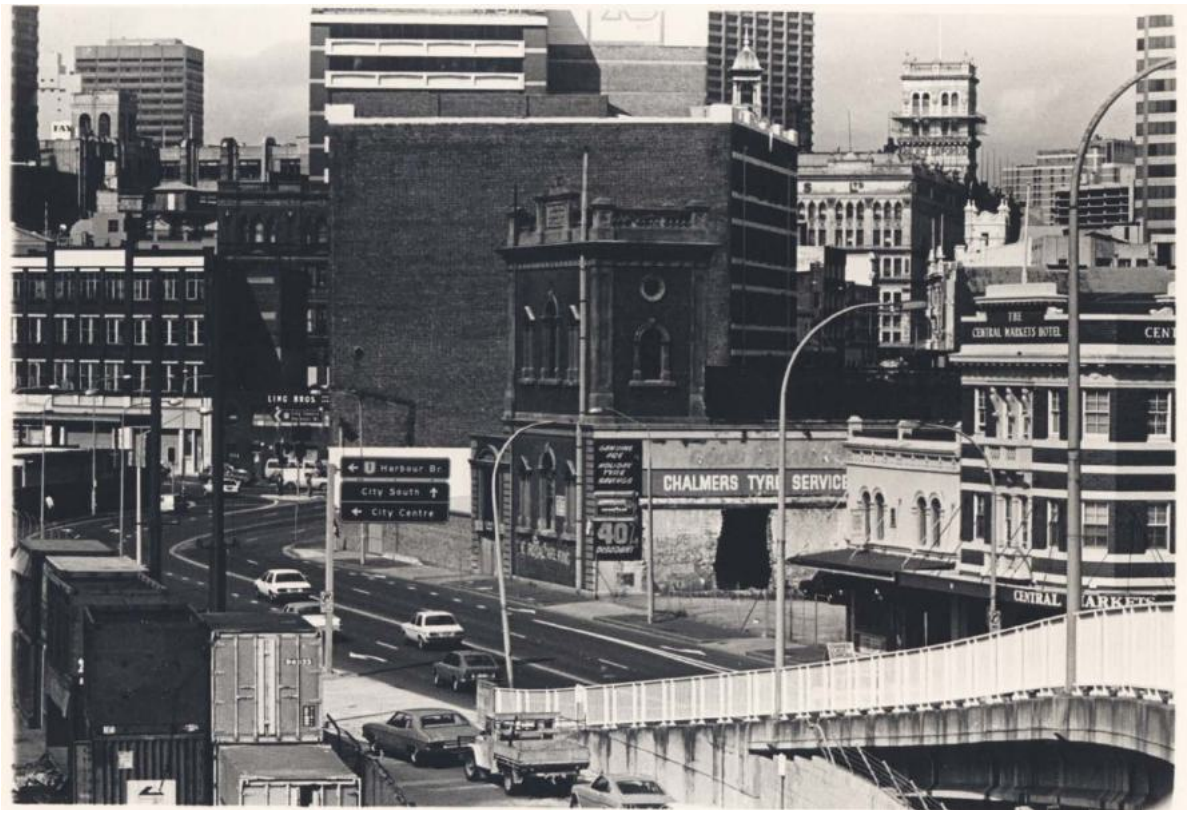


Figure 2.52 Photograph of former HPS No.1 (c. late 1979) showing the western exterior of the former HPS No.1 used as advertising space with "Chalmers Tyre Service" advertisement with a large opening smashed through the western wall. The mansard roof to the accumulator room has been demolished. It appears that the third level of water tank panels has been removed and is unclear if the lower western panels have also been removed. This photo may represent the condition of the building when the *Interim Heritage Order* stopped the demolition. Right of photo is a view of Central Markets Hotel originally called Railway Pier Hotel on the corner of Pier and Lackey Street, which was demolished c1987 when Pier Street Overpass was created. *Source: National Trust Files*

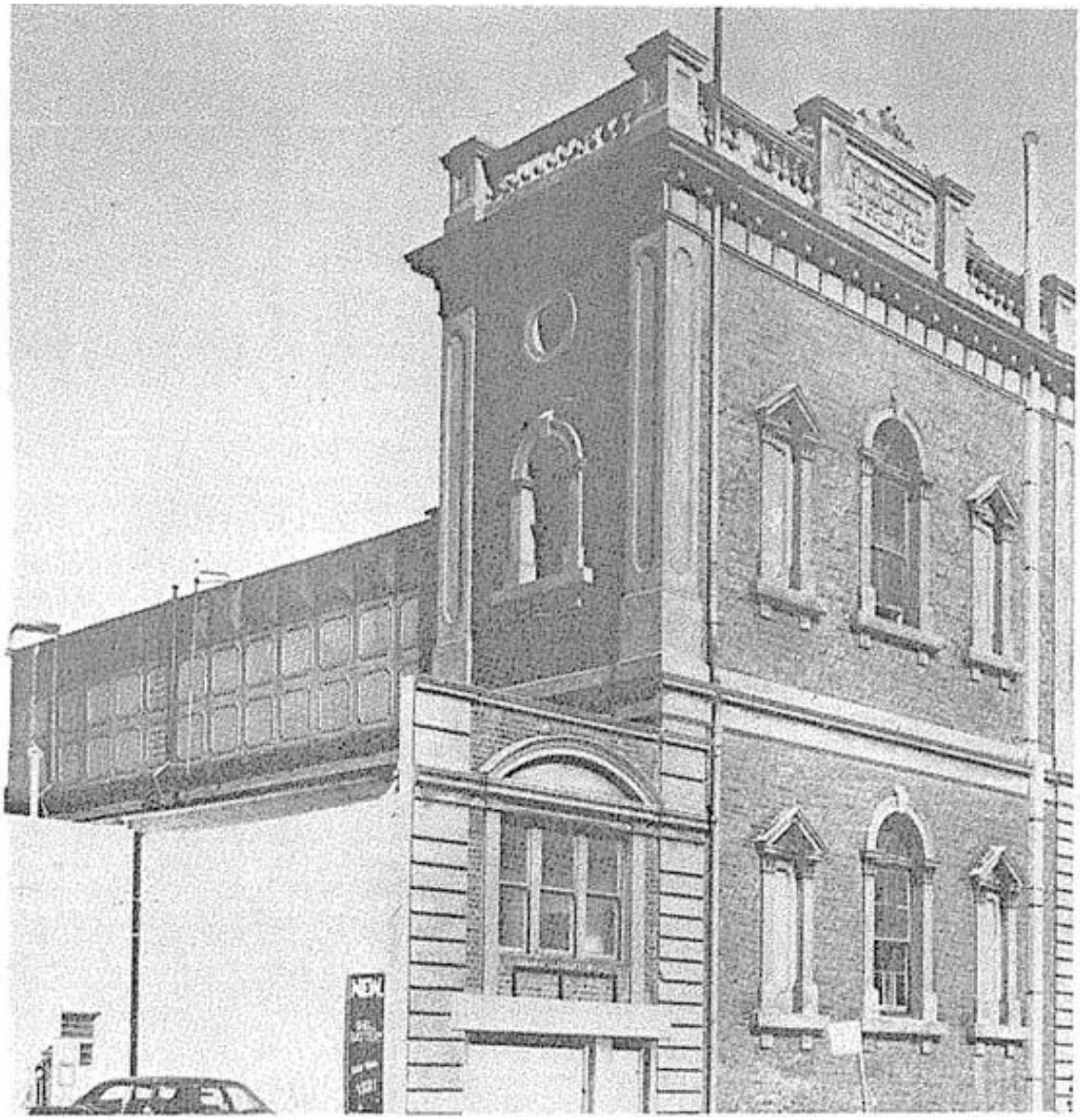


Figure 2.53 c1970 photos of the former HPS No. 1 showing the northern and eastern elevation of the building with the 3 levels of cast iron panels still intact. *Source: http://www.sydneyarchitecture.com/SUB/SUB-04.htm*

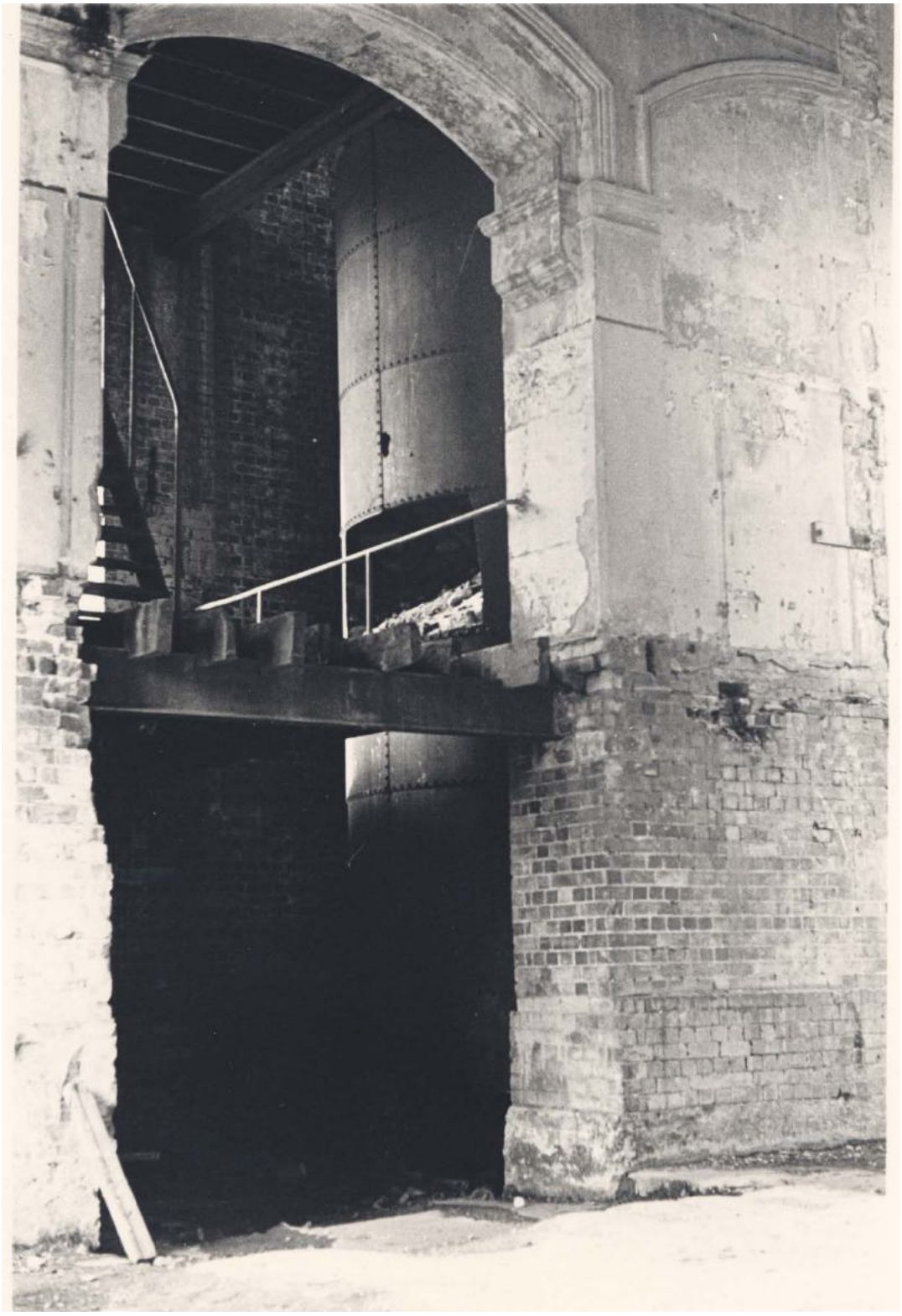


Figure 2.54 Photograph c1979 taken from Engine House, showing one accumulator with one of the cast iron panels missing from the eastern accumulator showing the ballast inside, and part of the wooden joists and a beam for the former floor and the originial stairs to access the next level floor. Walls to upper level of engine house are rendered but ground floor engine house are face brick. *Source: National Trust File*



Figure 2.55 Photograph c1979 of south eastern corner of Engine House showing iron roof girders to ceiling, bricked up windows to eastern elevation, raised engine house floor no longer in situ and missing window joinery and glass to southern elevation. From this angle it appears the engine house hobs have been removed, but it is unclear. *Source: National Trust File*

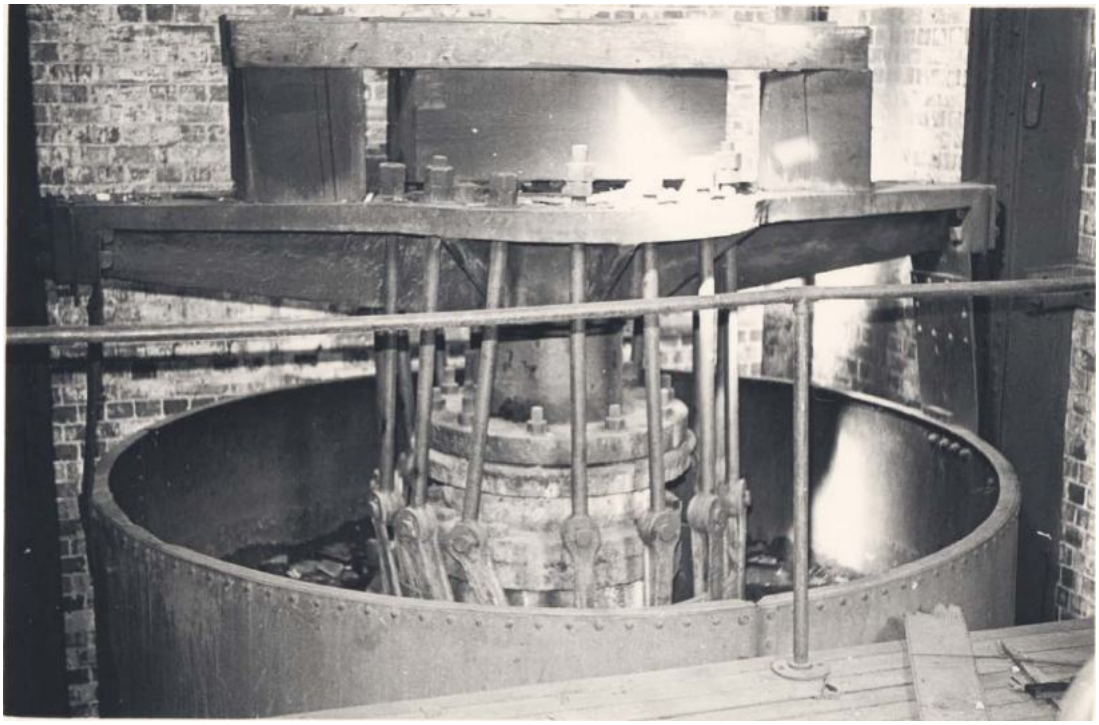


Figure 2.56 Photograph 1979 Top of Accumulator Cylinder viewd from timber floor with balustrade located at second level stair. *Source: National Trust File*



Figure 2.57 Photograph (1979) of shut-off valve on water feed pipe to accumulator. *Source: National Trust File*

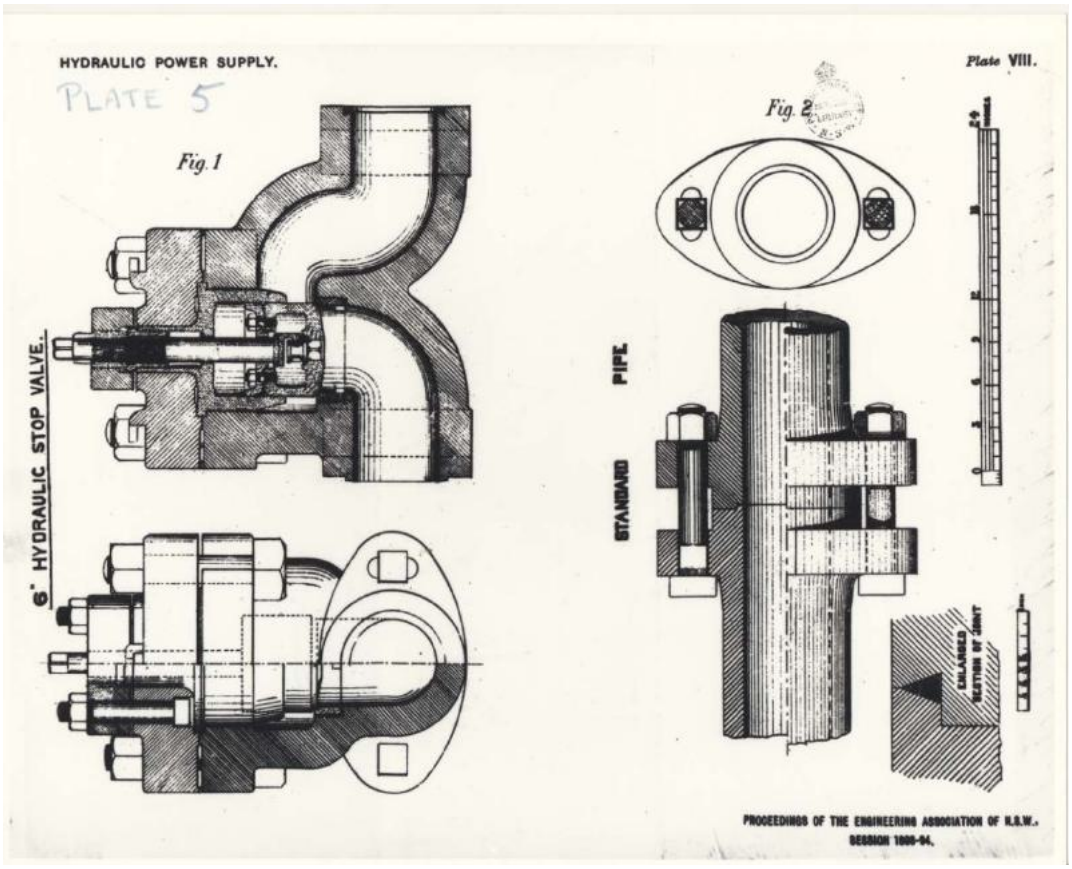


Figure 2.58 Drawing of stop valve of standing pipe to accumulator. *Source: National Trust File (Proceedings of the Engineering Associaton of NSW Session 1893-94*

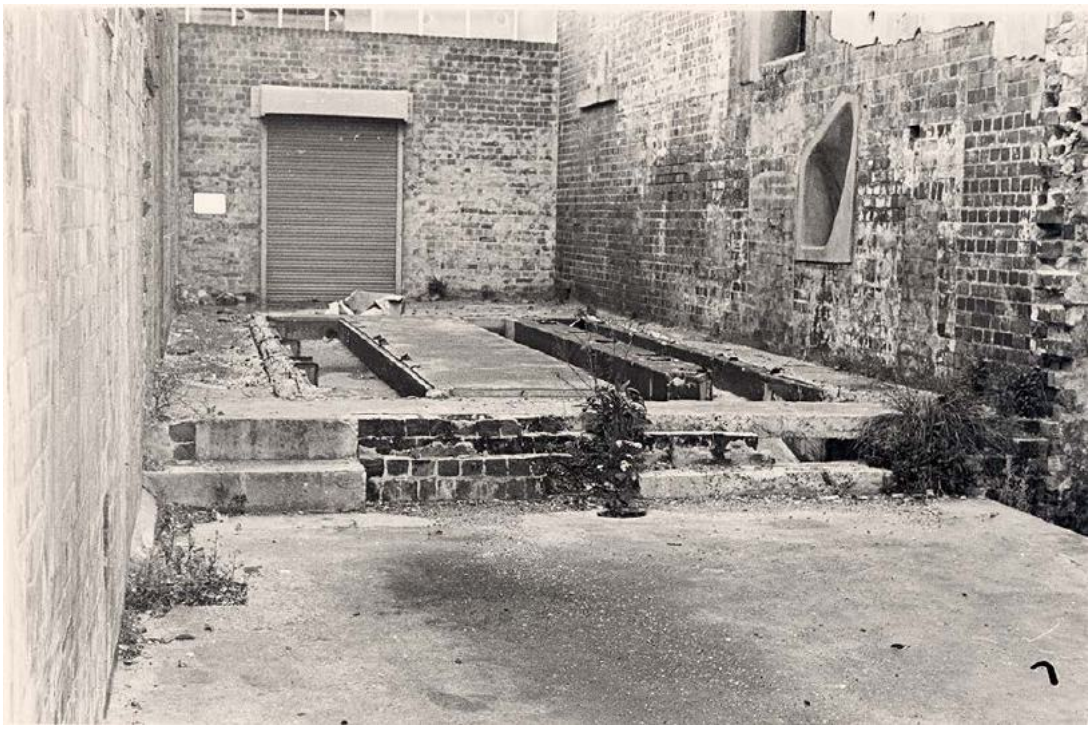


Figure 2.59 Photograph (1979) of yard space on eastern side of the Former HPS No. 1, which was the former pump room and filling shop. View is looking south where former chimney stack was located. The return water tank was located under this floor. *Source: National Trust File*



Figure 2.60 Former HPS No. 1 signage identifying the establishment of the company and building. *Source: National Trust File*

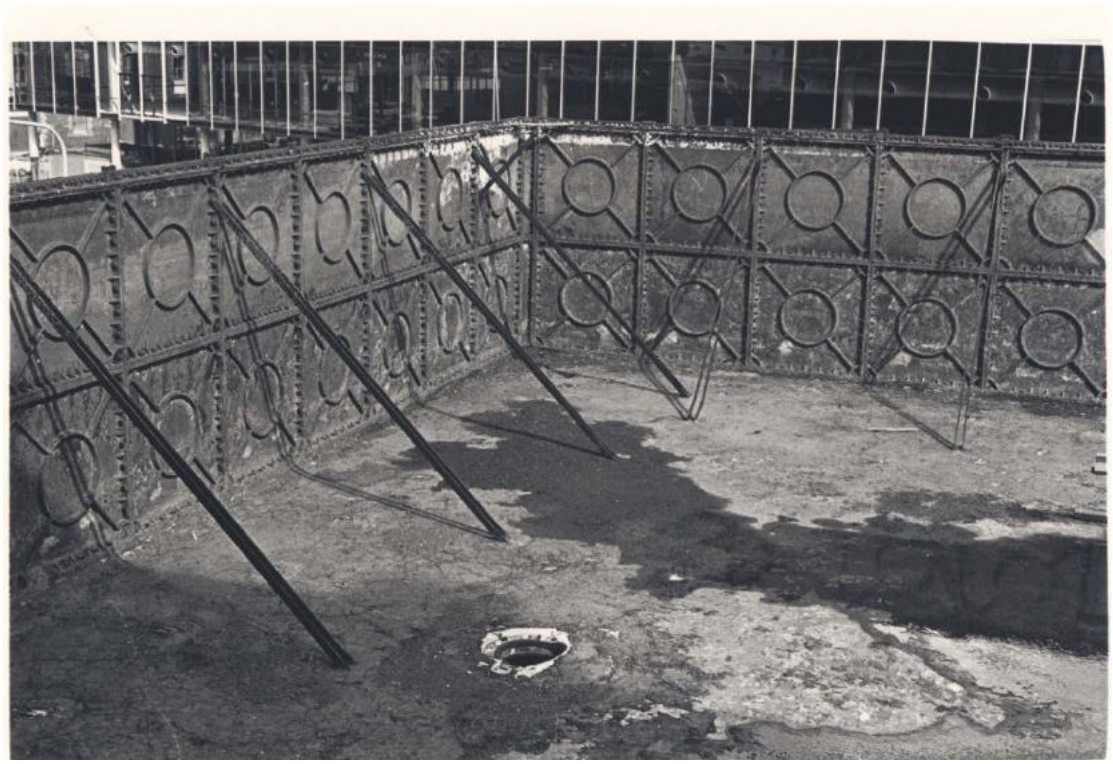


Figure 2.61 Photograph (1979) looking south east towards Entertainment Centre from roof of engine house showing cast iron water tank panel insitu with original wrought iron strap bracing. *Source: National Trust File*



Figure 2.62 Photograph of the former HPS No. 1 c1982 from Little Pier Street and the SE. The central arch on the southern elevation is partially bricked up with a small rectangular window. The arches on the first floor of the eastern elevation are also bricked up. The water tank panels have not yet been restored, and the last panel is clearly the one with a hammer blow crack to the top edge. The building does not have a new paint scheme. This photo must date from between the c1979 stopwork order of the ICO and the c1984 completion of conservation works photo below – *Source: National Trust File*



Figure 2.63 Photograph of the former HPS No. 1 (c1984) from NW. Newly painted, this would appear to be the photo marking the completion of the conservation works making the building ready to be leased. The large hole in the western wall has been repaired and is no longer associated with any advertising. To the south of the building is the newly built Sydney Entertainment Centre.
Source: State Library NSW FL2958220

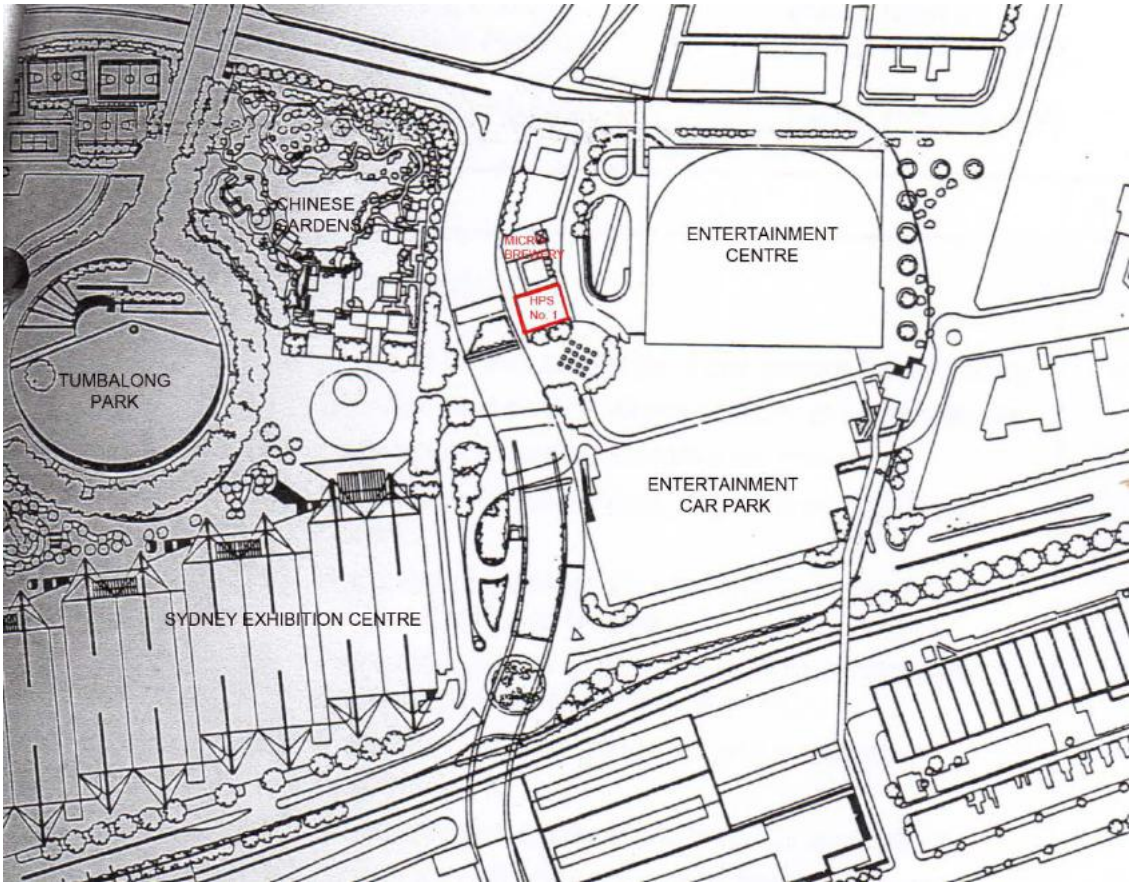


Figure 2.64 c1985/6 Plans for Little Pier Street Precinct and Darling Harbour Redevelopment *Source: PMNSW Files*



Figure 2.65 Photograph 1986 showing Darling Harbour Construction Site and the Former HPS No. 1 in the background with the Entertainment Centre behind it. *Source PMNSW Files*

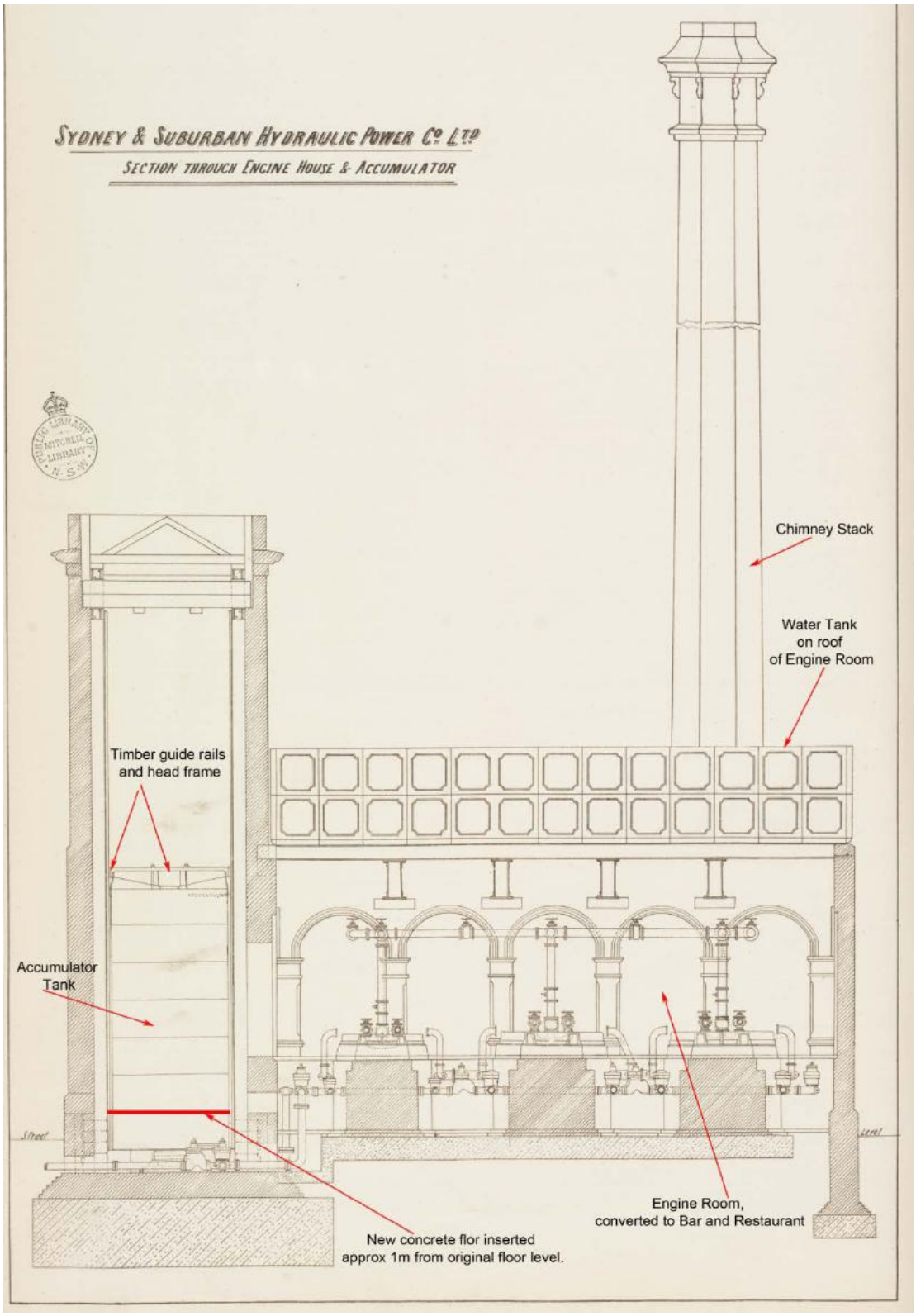


Figure 2.66 Engineering drawing of Hydraulic Pumping Station engine house published in the *Australasian Building and Contractors' News* in 1891 - Cross Section Elevation of Engine and Accumulator Room. Source: *DHBHR112a Pumphouse- Building and Engineering Journal of Aust 1891 SLNSW ML_MDG690_5_1A*



Figure 2.67 View taken in 1986 of the roof of the Accumulator Building of the Former HPS No. 1. *Source: PMNSW File*



Figure 2.68 View taken in 1987 of construction extending the Pier Street Overpass and the construction of the Exhibition Centre – *Source: PMNSW Files*



Figure 2.69 Photograph (1988) showing the construction of the Pumphouse Brewery Tavern adjacent to the Former HPS No. 1 building. *Source: PMNSW Files*



Figure 2.70 c1989 view of the south western elevation of the former HPS No. 1 with sculptural rows of columns referred to as "Glass Henge" located in the western forecourt area of the building with the brickwall of the carpark for the Entertainment Centre in the Foreground



Figure 2.71 View taken in August 1989 through sculptural columns called "Glass Henge" located in forecourt revealing the western elevation of the Former HPS No. 1 named at the time Pier St Pumphouse Brewery and Tavern – *Source: PMNSW Files*



Figure 2.72 Interior view of Former HPS No. 1 c1990 showing the Mezzanine level of the Pumphouse Brewery designed by Jackson Teece Chesterman Willis & Partners in 1987. *Source: Darling Harbour Authority A/R 1989/90*



Figure 2.73 Photograph c1994-96 of southern elevation of the Former HPS No. 1 with earlier version of eastern annex. The gates to the courtyard were designed by Barelle Partners Architects in 1991. The adjacent Pumphouse Brewery Tavern was built in 1988, designed by Jackson Teece Chesterman Willis & Partners. *Source: Darling Harbour Authority Action Record P/70/2 Part 3, Development Sites Little Pier Street*



Figure 2.74 Photograph c1994-96 from Entertainment Centre of southern elevation of the Former HPS No. 1 with an earlier version of the eastern annex. The reinstated cast iron panels in the SW corner were done in the 1983 conservation works, as was the reconstruction and infill of the central window. *Source: Darling Harbour Authority Action Record P/70/2 Part 3, Development Sites Little Pier Street*



Figure 2.75 Photograph Sept 1998 of paving works – A rare photo of the western face of the Former HPS No. 1 before the 1999 verandah was built obscuring this face. It shows the openings introduced for the brewery project in 1988 and the small verandah, which reorientated the building from its original northern address to a western address. It also shows the fibreglass panels that infilled the missing cast iron water tank panels that were part of the brewery project. The Novotel is well under construction, and would include the new west verandah. *Source: Darling Harbour Authority Action Record P/225/21-Masterplan Little Pier Street Intergration Works*

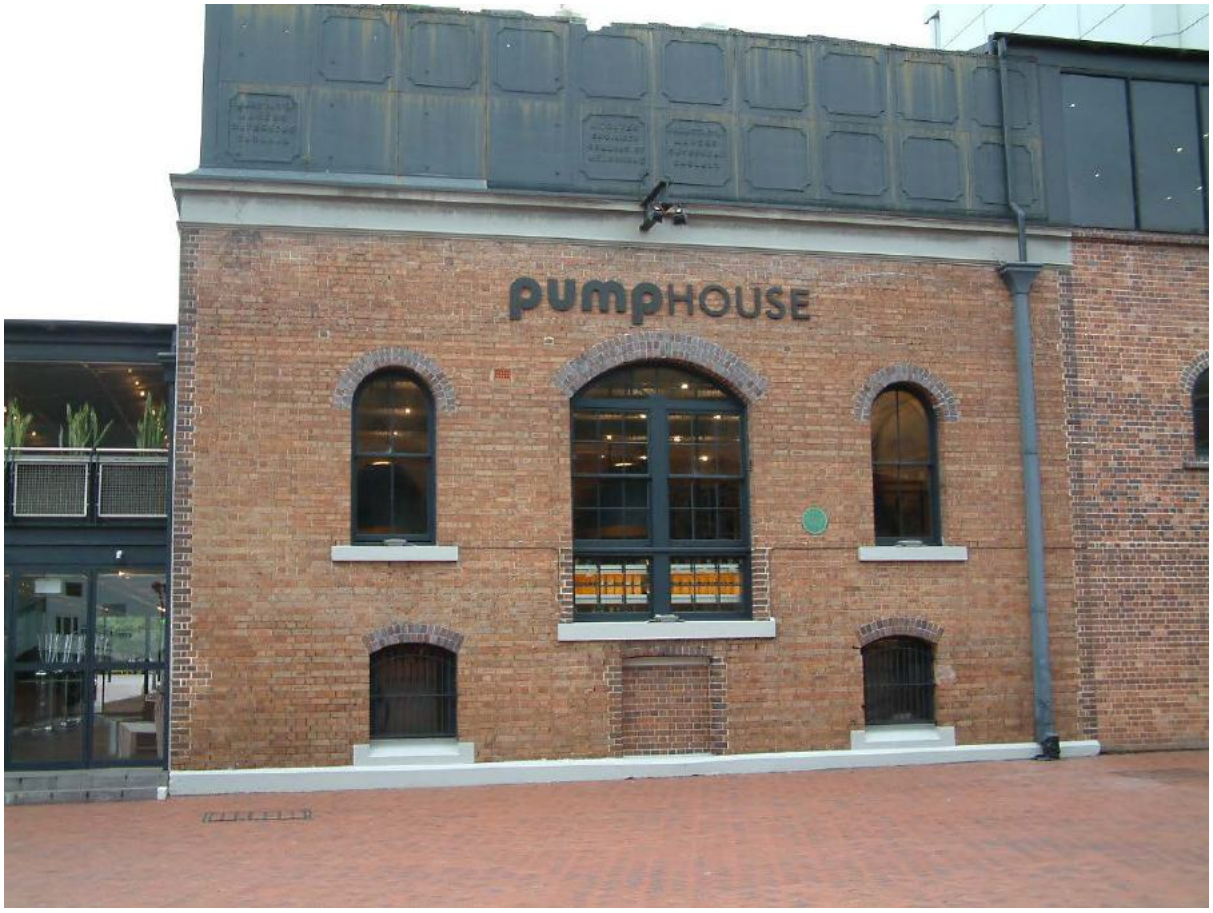


Figure 2.76 Photograph of the south elevation in 2009 (from Conservation Management Plan Former Hydraulic Pumping Station No. 1, Pier Street Darling Harbour, 2009)



Figure 2.77 Photograph of the west elevation in 2009 (from Conservation Management Plan Former Hydraulic Pumping Station No. 1, Pier Street Darling Harbour, 2009)



Figure 2.78 2014 photo of tower roof of accumulator room showing works to seal the box gutters. This shallower roof with wider box gutters replaced the original mansard roof and was built in the 1983 conservation works. It utilised a popular coated FC sheet marketed as *synthetic slates* with what appears to be copper cappings and either stainless or galvanised box gutters. The cappings appear to be fixed with ferrous nails, which have rusted significantly in contact with the copper. The roof may have failed due to the accumulators pushing the walls apart, which would have opened up joints, and this was rectified in 2014. It also appears there is a problem of incompatible metals, and insufficient step down into the box gutter. *Source: Peter Emery, Novotel General Manager, March 2014*



Figure 2.79 Accumulator full of ballast and embedded chain. *Source: Clive Lucas, Stapleton & Partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.80 Typical sand and stone ballast. *Source: Clive Lucas, Stapleton & Partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.81 Chain removed from Tank. *Source: Clive Lucas, Stapleton & Partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.82 Skips full of Ballast. *Source: Clive Lucas, Stapleton & Partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.83 Eastern Tank following emptying. *Source: Clive Lucas, Stapleton & Partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.84 Western Tank following emptying. *Source: Clive Lucas, Stapleton & Partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.85 Weights removed from fill. *Source: Clive Lucas, Stapleton & Partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.86 Eastern piston head-note disengagement from channel. *Source: Clive Lucas, Stapleton & Partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.87 Beams and Weights over North-Eastern Tank. *Source: Peter Emery, Novotel General Manager, March 2014*



Figure 2.88 Anchor Detail. *Source: Peter Emery, Novotel General Manager, March 2014*



Figure 2.89 Beams and Weights over North-Eastern Tank. *Source: Peter Emery, Novotel General Manager, March 2014*



Figure 2.90 Damage at riveted seam of the western accumulator tank. *Source: Clive Lucas, Stapleton & partners Pty Ltd, Progress Report, 12th March 2014*



Figure 2.91 Eastern accumulator tank. *Source: Clive Lucas, Stapleton & partners Pty Ltd, Progress Report, 12th March 2014*

2.6 Hydraulic Power Piping Systems

"The Sydney public hydraulic power system had an extensive network of high-pressure pipes, about 80 km of piping at its peak, buried under CBD roads and footpaths, a majority of which remain, albeit out-of-sight (Figures 2.94-2.95). The mains were typically 6 inch (150 mm) and 4 inch (100 mm) thick-walled cast iron pipes with two-bolt oval flange joints incorporating a resilient gutta-percha seal ring. Smaller pipes including those for individual customer services were commonly of thick steel tubing. High-pressure valves for isolating mains sections and for customer take-offs were identified by cast-metal valve pit covers set flush into footpath and roadway pavements (Figures 2.92 & 2.93*). Fortunately, many of these remain in both Melbourne and Sydney streets. The former bear the identification 'Hydraulic Power Co.' or (post 1925) 'Hydraulic Power Dept.', and the latter 'SHPC' or 'HPCo.' About 150 remain in Sydney's streets. Some exposed 4" (100mm) main exists in Hickson Rd, Sydney (near High St.). Oval flange joints for each section of this pipe have 'SHPCo.' cast into the side of the flange. High-pressure hydraulic piping, valves and other fittings are also in evidence to a greater or lesser extent at most of the other places that have already been mentioned in relation to extant hydraulic power system remnants"* - (J. W Gibson, Remnants of Early Hydraulic Power Systems, 3rd Australasian Engineering Heritage Conference 2009).



Figure 2.92 Valve cover, Sydney associated with the former HPS No. 1. Source: J. W Gibson, Remnants of Early Hydraulic Power Systems, 3rd Australasian Engineering Heritage Conference 2009



Figure 2.93 HP Joint on Remnant 4" Main, Hickson Road, Sydney associated with the former HPS No. 1. *Source: J. W Gibson, Remnants of Early Hydraulic Power Systems, 3rd Australasian Engineering Heritage Conference 2009*

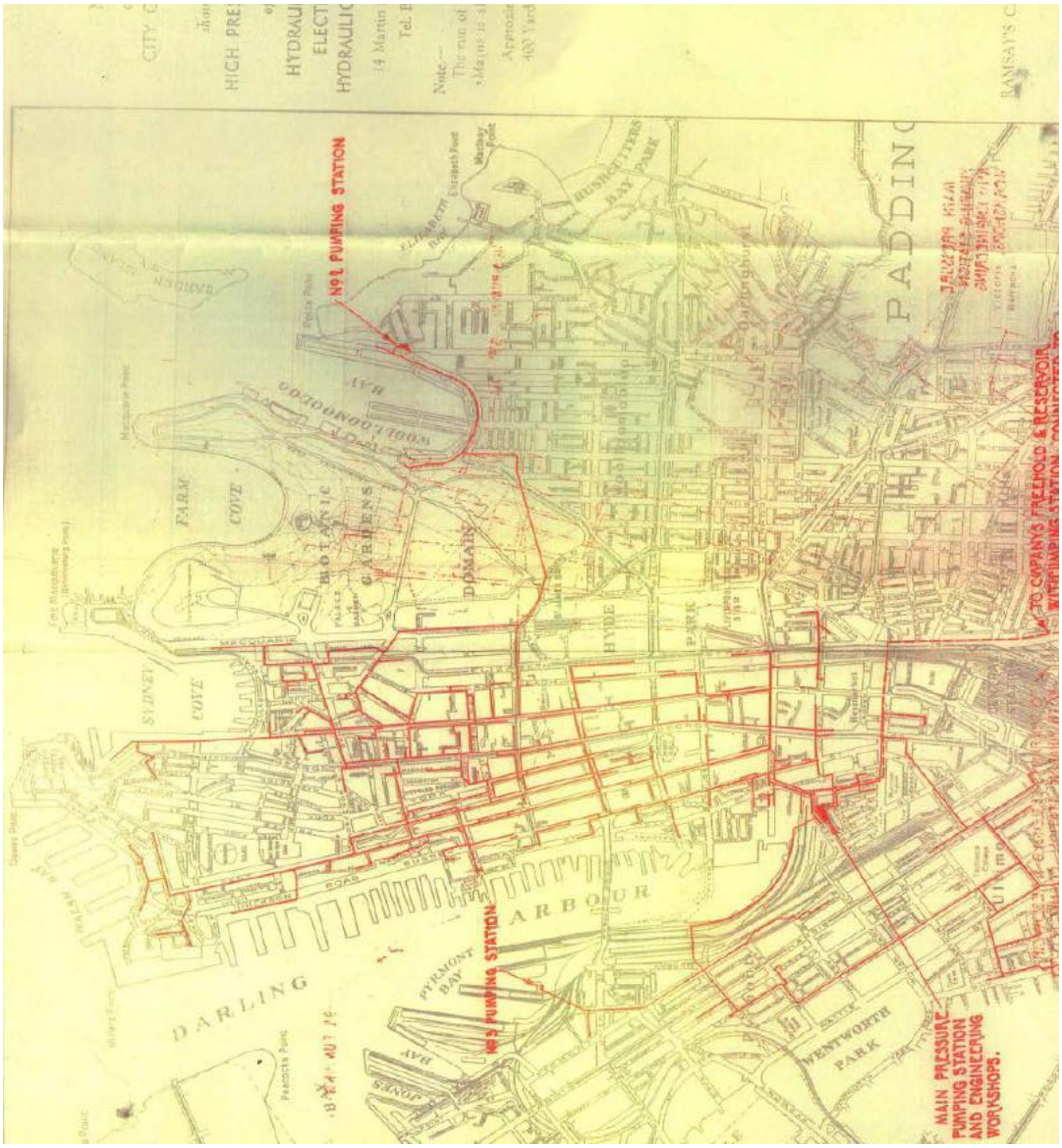


Figure 2.94 Plan c1926 of High Pressure Mains of the Hydraulic Power Electric and Hydraulic Lifts Ltd – *Source: National Trust Files*

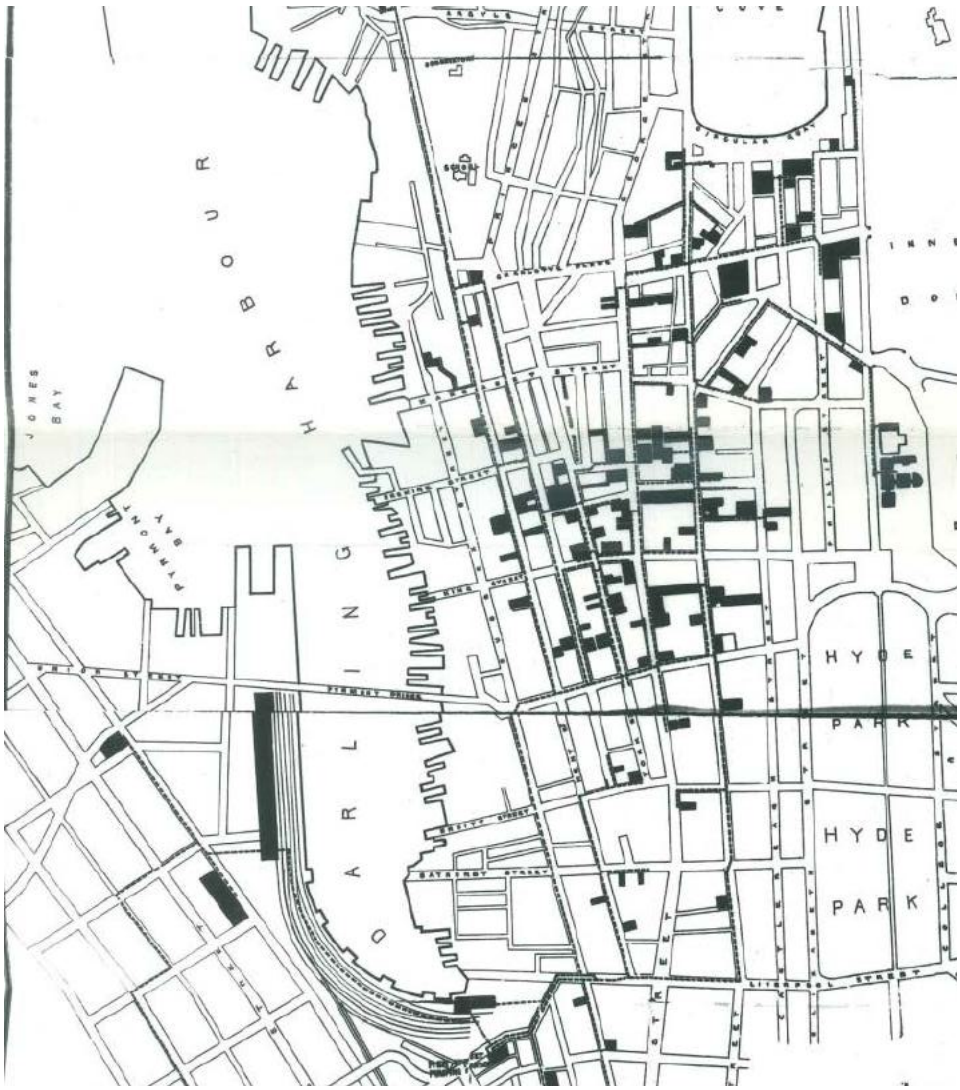


Figure 2.95 Plan of distribution of Mains related to the Hydraulic Pumping Station at Darling Harbour – *Source: National Trust Files*

3.0 Physical Evidence

The aim of this chapter is to describe the former Hydraulic Pumping Station No.1 as it is now in detail in order to facilitate the understanding of the existing place. The place itself is a good source of information about the number of changes to its fabric that have been carried out during its lifetime.

This chapter builds on the evidence outlined in the previous section about the physical changes that have taken place over time.

3.1 Darling Harbour Context and Setting

The context and setting for the former HPS No. 1 has changed radically over its history during the 19th, 20th and 21st centuries.

As outlined in Section 2.0, this area of Darling Harbour was originally underwater and was reclaimed as part of the earlier industrial shipbuilding and maritime uses in Cockle Bay, and later railway storage and goods yards.

The former HPS No. 1 is located to the north of the Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP). The SICEEP Site is located within the Darling Harbour Development Area within the City of Sydney Local Government Area (LGA).

The former HPS No. 1 was originally built as a freestanding structure that could be viewed in the round.

During the 1980s Pier Street was upgraded as a major access road into the city and converted into an overpass in the immediate vicinity of the building. At the same time, Darling Harbour was redeveloped by the state government as a state significant recreational, entertainment and tourist precinct.

The former HPS No.1 is located in the vicinity of the Chinese Gardens of Friendship (to the north), and the SICEEP site which includes Darling Square (formerly 'The Haymarket') (north) and the International Convention Centre (ICC) (northwest).

3.1.1 Darling Harbour

Darling Harbour is a 60 hectare waterfront precinct, managed by Property NSW, located on the south-western edge of the Sydney Central Business District, and to the east of the Pyrmont Peninsula. The Precinct is unique in terms of its function, location, land ownership and physical characteristics, and accommodates a wide range of land uses. These predominantly relate to education, recreation, tourism, entertainment and business.

Historically, Darling Harbour (and more specifically Cockle Bay) has been subject to a significant amount of land reclamation and infilling in order to create an artificial valley and shoreline. The central valley is open and flat, and runs in a north-south direction from the Cockle Bay Shoreline towards Darling Square (The Haymarket). The topography gently rises to the east and west from the valley floor towards ridgelines located proximate to Harris Street in the west and Hyde Park in the east.

3.1.2 SICEEP

The NSW Government partnered with Darling Harbour Live (comprising Lendlease, Hostplus, Capella Capital, AEG Ogden and Spotless) to create the SICEEP precinct, a 20-hectare, $3.4 billion transformation of Darling Harbour. The goal being to create Australia's premier convention, exhibition

and events destination, ICC Sydney, along with reinvigorated and expanded public spaces, a luxury hotel and a new city neighbourhood Darling Square[1].

The SICEEP Site is located within the western portion of the Darling Harbour Precinct. The location of the SICEEP Site is shown in Figures 3.1 and 3.2.



Figure 3.1 SICEEP Site location plan with the former former HPS No. 1 site indicated with green arrow Source: SICEEP Darling Square, Mixed Use Residential Building (SSDA 9), Environmental Impact Statement. March 2016, JBA Urban Planning Consultants. https://majorprojects.accelo.com/public/8855b5c3111bf1a3bd3d41c728caf874/2016-03-15%2015122%20Darling%20Square%20SE%20Plot%20SSD%2015March2016.pdf

[1] *http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6633*

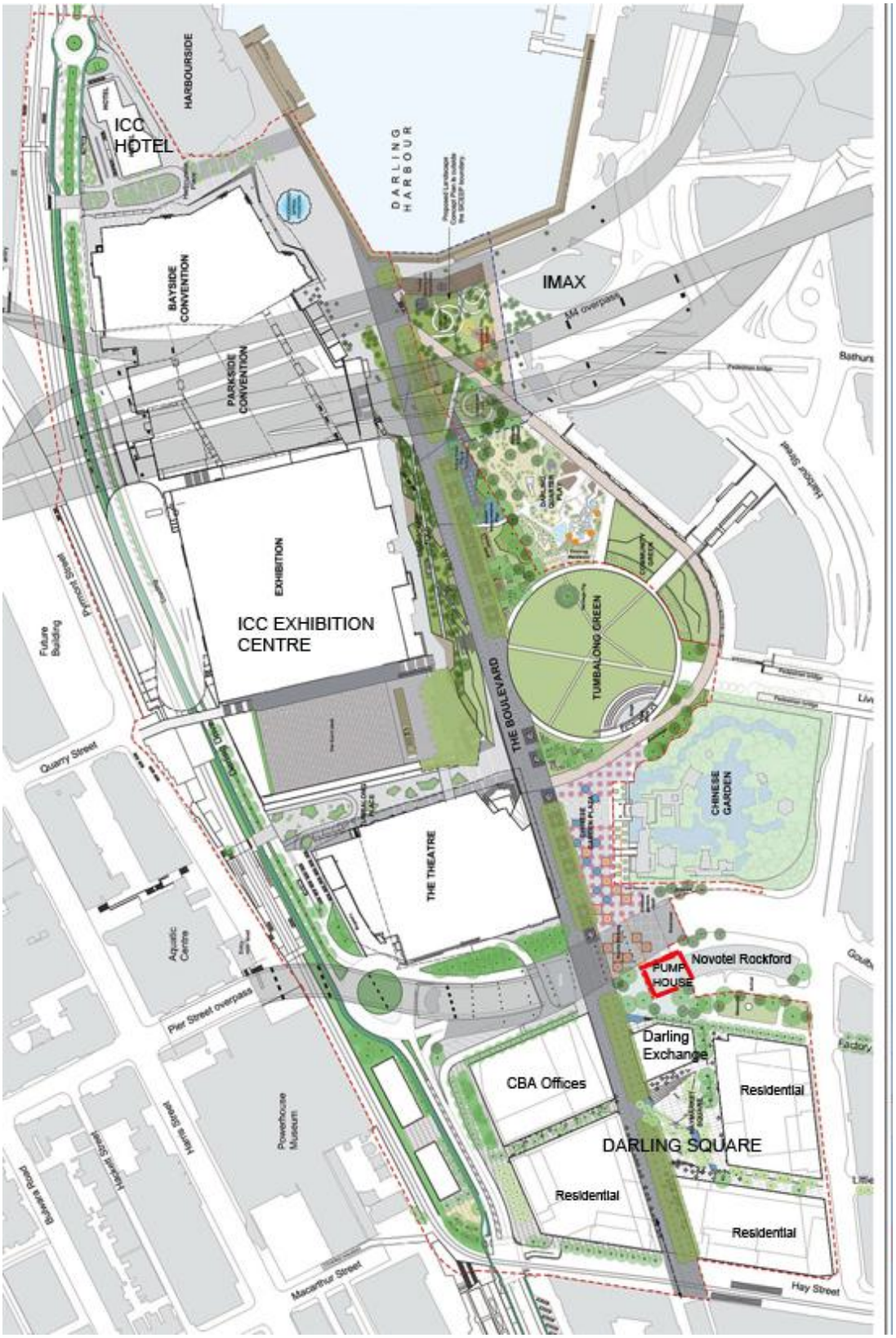


Figure 3.2 SICEEP Masterplan showing the location of the former HPS No. 1 (in red solid outline) in relation to Darling Square and ICC Theatre, Exhibition and Convention Centre (Base source SSD 5878, http://www.designbuild-network.com/projects/sydney-international-convention-exhibition-entertainment-precinct/sydney-international-convention-exhibition-entertainment-precinct1.html

3.1.3 International Convention Centre Sydney (ICC Sydney)

ICC Sydney is Australia's first and largest fully integrated convention, exhibition and entertainment centre that replaces the former Sydney Convention & Exhibition Centre that was demolished in December 2013. Construction of ICC began in early 2014 and it was opened in December 2016.

ICC Sydney ICC Sydney consists of three conjoined key structures: ICC Sydney Theatre (Figures 3.5 and 3.6), ICC Sydney Exhibition Centre (Figure 3.4) and ICC Sydney Convention Centre (Figure 3.3). ICC Sydney has over 70 meeting rooms, three theatres and two formal ballrooms. It is capable of holding three entirely separate, self-sufficient, concurrent events. It includes convention spaces, flexible space of 2,500 square metres and the largest ballroom in Sydney, able to accommodate 2,000 people.

ICC Sydney adjoins a new 590 room luxury hotel tower (under the Sofitel brand), a residential and commercial development (Darling Square), pedestrian boulevard and improved public domain that are all being created as part of the Darling Harbour development. The development also includes a reconfiguration of Tumbalong Park, providing an additional 3,000sqm of green space acting as well as a new adaptable event space capable of hosting up to 11,000 people

The first stage of the new Tumbalong Boulevard allowing pedestrian access from Cockle Bay through to Hay Street has been completed. While the construction of Tumbalong Boulevard continues right through to The Goods Line, two further large-scale developments are now taking shape including the Ribbon Project and Darling Square.

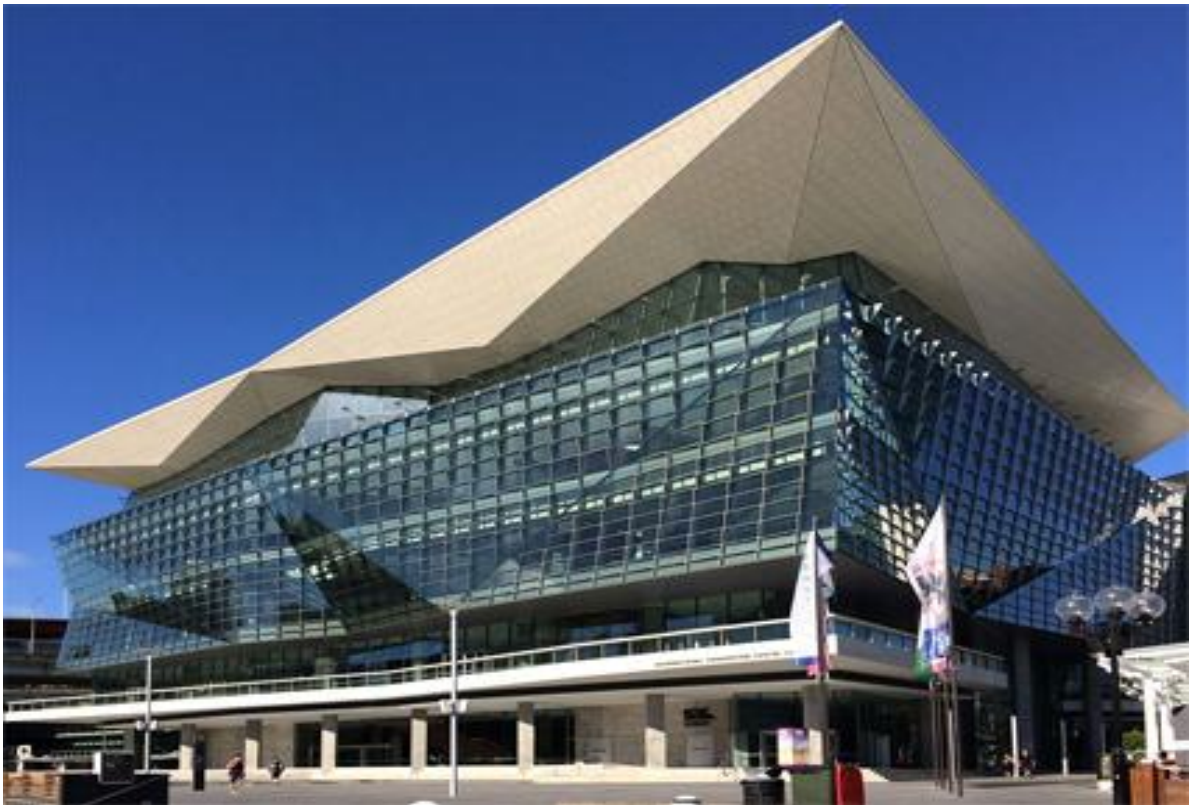


Figure 3.3 ICC Sydney Convention Centre. Source: Philip Terry Graham - Own work, originally published as "International Convention Center Sydney, Convention Block, March 2017 " on Flickr. https://commons.wikimedia.org/w/index.php?curid=57685694



Figure 3.4 ICC Sydney Exhibition Centre.
Source:http://www.iccsydney.com.au/~/media/ICC/Images/Images%20from%20design/download/New%20Hero%20Images/ICC%20Sydney_Exhibition%20Centre.ashx



Figure 3.5 ICC Sydney Theatre.
Source:https://earth.google.com/web/search/sydney+theate+darling+harbour/



Figure 3.6 Photograph looking west from Pier Street overpass showing the newly built ICC Sydney Theatre to the north of the former HPS No. 1 (right) and newly built Office building (left) to the west of the former HPS No. 1 with the Novotel Rockford in the foreground (left) and the Powerhouse



Figure 3.7 Aerial view of the newly built ICC Sydney Theatre (right) and Office building (left) part of the SICEEP masterplan to the north and west of the former HPS No. 1 building (left indicated with green arrow) with the Novotel Rockford in the foreground (left) and the Powerhouse Museum in the background (middle) Source: Flickr

3.1.4 The Ribbon Project

'The Ribbon' is a 25-storey hotel and serviced apartment development that will provide a modern setting for the IMAX Theatre, plus retail and entertainment spaces. Improvements planned for the surrounding public spaces include an extension to the current children's playground, a casual seating area, and a large outdoor screen for viewing big events at Darling Harbour. This project is due for completion in 2020 (Figure 3.8).



Figure 3.8 View looking North towards the Ribbon Project, current site of IMAX. Source: Financial Review 12th October 2016 http://www.afr.com/real-estate/commercial/hotels-and-leisure/chinese-lift-appetite-for-australian-hotels-but-sales-fall-20161012-gs0cs9

3.1.5 Darling Square

The Darling Square Site is located in the southern portion of the SICEEP Site, within the northern portion of the suburb of Haymarket. The Site is bounded by the Powerhouse Museum to the west, the Pier Street overpass and Little Pier Street to the north, Harbour Street to the east, and Hay Street to the south. The Darling Square Site is irregular in shape and occupies an area of just under 4 hectares (Figures 3.9 and 3.10).

The development includes:

- Three stages of residential apartments and commercial office space.
- One of the largest public squares with a wide pedestrian corridor to connect Central Station to Darling Harbour's waterfront in the vicinity of Sydney's CBD.
- A community and lifestyle hub with more than 60 new retail stores.

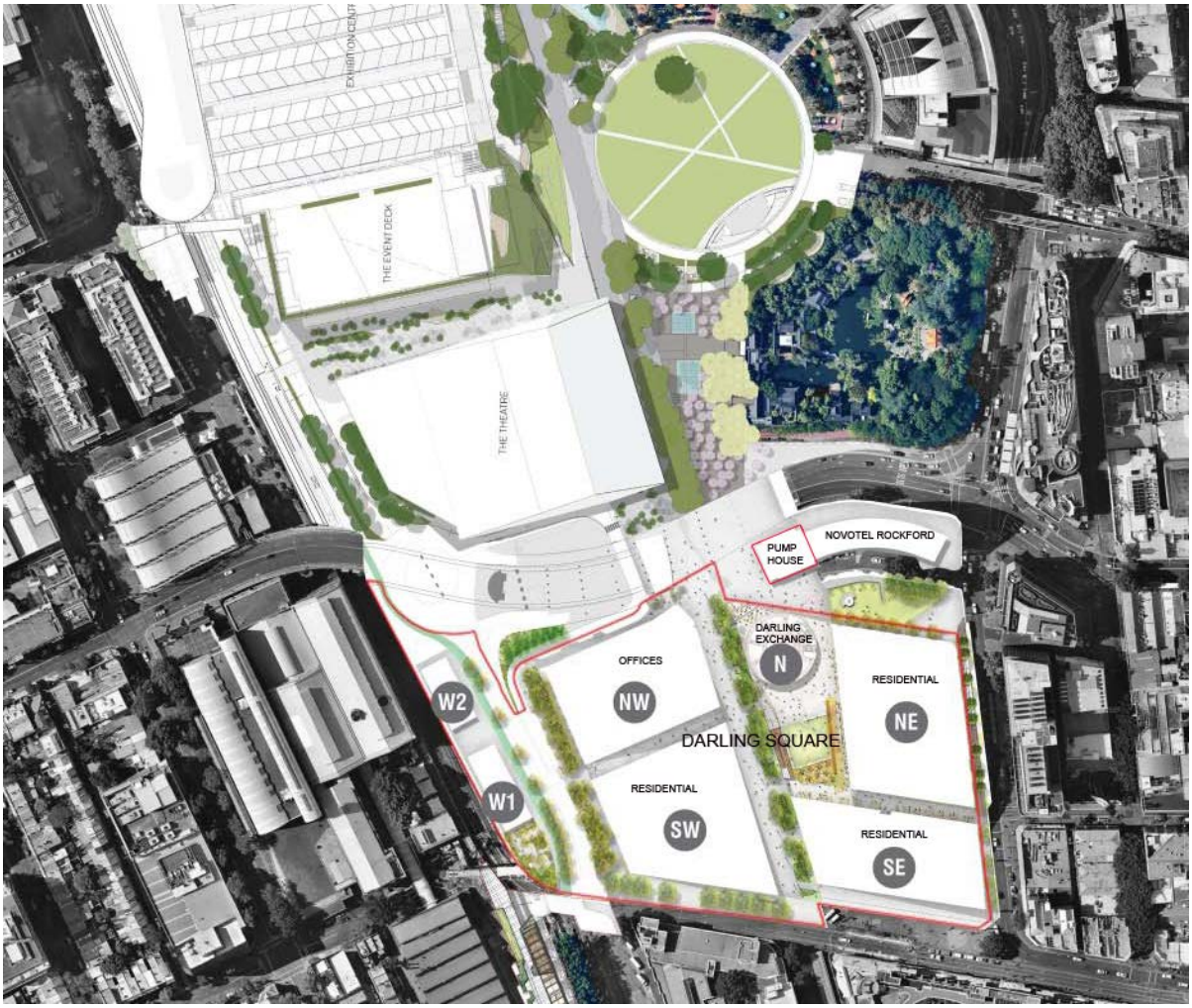


Figure 3.9 SICEEP Precinct Plan showing the former HPS No.1 in relation to Darling Square. Source: SICEEP Darling Square, Mixed Use Residential Building (SSDA 9), EIS. March 2016, JBA Urban Planning Consultants. Source: https://majorprojects.accelo.com/public/8855b5c3111bf1a3bd3d41c728caf874/2016-03-15%2015122%20Darling%20Square%20SE%20Plot%20SSD%2015March2016.pdf



Figure 3.10 Darling Square with location of HPS No.1 indicated by the red arrow. Source: http://www.darlingsq.com/discover/explore-the-masterplan/darling-square

3.1.6 Darling Square Hoarding Design

In 2016 major developer Lend Lease sponsored Darling Square Hoarding Design competition as a way to invigorate the precinct as it currently undergoes major redevelopment construction works. An artwork, entitled 'FLUX Sydney' which examines the implications of our relationship to waste as a harbour city; was selected as the winner of this major public art competition (Figure 3.11). The 12-metre long installation, made of thousands of re-used plastic bottle tops moulded to create a large-scale mural, designed by final year UTS Interior and Spatial Design students Eleanor Gibson and Leanne Noh is displayed at The Pumphouse. They explain that:

"Our interpretation of the competition brief was find a creative way to connect the iconic Pumphouse building at Darling Harbour - Sydney's first large scale hydraulic power supply – to our city's history and heritage by using materials traditionally seen as rubbish. We wanted to show how The Pumphouse played an important role in the industrial development of the Darling Harbour precinct and its significance to the original and continued vitality of the area."

The artwork installation was created with the help of fellow UTS Interior and Spatial Design classmates and is on display at The Pumphouse Sydney until 2018.



Figure 3.11 FLUX Sydney mural in situ at Daring Harbour. Source: https://www.uts.edu.au/about/faculty-design-architecture-and-building/news/uts-students-create-large-mural-iconic-sydney

3.1.7 Darling Exchange

Darling Exchange circular building will be located to the west of the former HPS No. 1 building, in the Northern Plot of Darling Square, and will replace the City's current Haymarket Library. The building will house a new City of Sydney library for the area's existing and incoming residents. This six storey community and retail centre, designed by Japanese architect Kengo Kuma, is currently being built by developer Lendlease. The building will include two levels of contemporary library space, including a 'makerspace' and an 'Innovation Exchange Program' for creative start-ups, and two levels for a commercially-run childcare centre, open air retail at ground level and the bar on level 6. The library is expected to open in 2018.



Figure 3.12 Photomontage of Darling Exchange Building Source: http://www.sydneymedia.com.au/community-library-marks-new-chapter-for-darling-harbour/

3.2 Street and Streetscape Description

3.2.1 Historical Context

The former HPS No 1 was originally designed to address Pier Street to the north of the building. Its tower was raised above its neighbours, and so the sides of the tower could also originally be seen from Pier Street. The north elevation and side elevations of the tower are thus the most ornate parts of the building. The north address was decontextualised by the major reworking of Darling Harbour, and then largely obscured by the very close overpass. The south elevation originally addressed the narrow laneway of Little Pier Street, and was similar to its neighbours in being a less ornate, more industrial face brick elevation. The south elevation was also decontextualised by the removal of the majority of the buildings along the laneway, and the three major redevelopments of the site across the laneway. The west elevation was originally a common party wall to a neighbouring building under common ownership and completely obscured. This changed after 1962 when the neighbouring building was demolished, opening the wall to public view. This outdoor space has since been extended with the demolition of all the neighbouring buildings in the row, and is now the largest space adjacent the building. The introduction of openings and a later verandah have made this face the front entrance to the building. The east elevation originally addressed an internal courtyard that led onto the boiler room. This face has seen the most change and has been repeatedly enclosed and reopened. It is presently fully obscured by the east annex of the hotel development.

3.2.2 Modern Context

The former HPS No.1 is located at 17 Little Pier Street, Darling Harbour. During the Darling Harbour redevelopment in the 1980s, Pier Street was raised above ground level to allow pedestrian access for the Darling Walk Redevelopment. The former HPS No.1 is bound by Pier Street overpass and Darling Walk to the north and Little Pier Street, A 'Place for Reflection' Park and Darling Square redevelopment to the south. To the west is the Darling Exchange building site and newly built office buildings (Figures 3.9 and 3.10). To the east it abuts and connects through to the Novotel Rockford Hotel via the eastern annexe built in 1999.

The northern front elevation of the former HPS No.1 is now only visible in its immediate streetscape, it is obscured by the Pier Street overpass to the immediate north which detracts from the setting of the building. Views of the eastern and southern elevation have currently been reduced due to the hoarding put up in close proximity to the site as a result of the redevelopment to the west and south as part of creating Darling Square, in particular with the construction of the Darling Exchange building (south east) and the residential units (south). Views of the building will change again post 2018 when Darling Exchange is built and post 2021 when Darling Square is expected to be completed. This will provide the former HPS No. 1 with a larger public domain context to the west and south. It will also create a prominent physical and visual connection to the rest of Darling Harbour via The Boulevard, a 20 metre-wide central spine. The Boulevarde is intended to create an active north-south pedestrian route, drawing people through the SICEEP precinct from Central Station past the former HPS No. 1 site to the Harbour (Figure 3.2).

3.2.3 Views and Vistas

The Burra Charter states that conservation requires the retention of an appropriate visual setting that contributes to the cultural significance of the place. This section establishes key views to and from to the former HPS No.1 shown in Figure 3.13.

Views towards the building changed dramatically in 1952 with the demolition of the associated chimney and boiler room; then from the 1960s when the buildings in the row along Pier Street were progressively demolished, again in the mid-1980s when the Pier Street level was raised by approximately 6 metres as an overpass that blocked the north elevation; and again in 1999 when the hotel development was constructed abutting the eastern façade of the building. Current views to and from the building are once again dramatically changing with the ongoing development of the SICEEP Precinct in the vicinity of former HPS No. 1.

There are several primary significant view lines to and from the former HPS No.1 that should be retained so that the significance of the original form and fabric of the building can be acceptably presented and interpreted in terms of the building and its setting within the wider Darling Harbour landscape.

Key views to the former Hydraulic Pumping Station No.1

1. The north face is the main facade of the building and demonstrates the Late Victorian era's relatively flat facadism. This approach has been compromised by the raising of Pier Street to create an overpass which now cuts close to the façade of the building approximately 6m above the original Pier street level. The changes in the surrounding context have shifted the main building address to the west face of the building. While the expressway is the best place to appreciate the north facade, travelling at speed, and with the building surrounded by much

larger buildings, it is often lost in the background.

2. The Northern elevation can be viewed on foot from the boulevard approach west of Tumbalong Green and from the east forecourt to the ICC Theatre as well as from the southern side of the Chinese Gardens looking across the Pier Street overpass.

3. The current principal view of the former HPS No.1 is from the western side of the building looking towards the Darling Exchange Redevelopment Site. In 1987, a terrace was added to the western elevation as part of the adaptive reuse, which was altered again in 1999 to a two storey steel and glass annex, with further alterations in 2003. This single storey 1999 annex obscures the external façade of the building, with a modern steel and glass enclosed verandah. The western elevation can be viewed from the forecourt to the west of the building and from the newly built office buildings in Darling Square.

4. The Southern Elevation and East Annex is visible from the public realm to the west and south of the building with Novotel Rockford hotel beyond. This two storey face brick addition (c.1982) with steel and glass third storey (c.1999) obscures the eastern façade of the building. Any views to or from the building to the east are blocked by the multi-storey Novotel Rockford Hotel.

5. There are oblique views from the east, and the entire east face of the original Accumulator Room tower remains in view from the east almost up to the corner of Harbour Street. This view is of high importance as the original design of the tower intended for this view to be important in the streetscape.

6. The current main approach and views to the site are from the west and south across the Darling Redevelopment Walk area, and from the grassed area (Reflection Park) and courtyard of the soon to be completed Darling Square residential developments and Darling Exchange building.

   The former HPS No. 1 can be seen on approach from Little Pier Street and from Reflection Park to the south of the building. All of the south face of the original Engine House and the cast iron water tank panels are available to passing pedestrians, taxis and hotel guests. Once the redevelopment of the south is completed these views will stretch further to the south.

   Views of the remnants of the conserved cast iron panels for the former water tank remain as an enclosure valance at the perimeter of the roof over the former Engine House, can be seen on the western and southern elevations.

Key views from the former Hydraulic Pumping Station No.1

7. Views seen from the former HPS No. 1 are to the north east overlooking the Sydney city skyline, to the north-west towards the ICC Theatre, to the west to the Powerhouse Museum and to the newly built office towers as part of Darling Square. Currently views to and from the south and west are restricted by hoardings due to the construction of Darling Exchange and residential and retail buildings as part of Darling Square. Once construction is completed there will be significant views to and from the southern and western elevation. This will provide the former HPS No. 1 with a larger public domain context. There will also be a prominent physical and visual connection to the rest of Darling Harbour via The Boulevard, which is intended to create an active north-south pedestrian route, drawing people through the SICEEP precinct from Central Station past the former HPS No. 1 site to the Harbour.

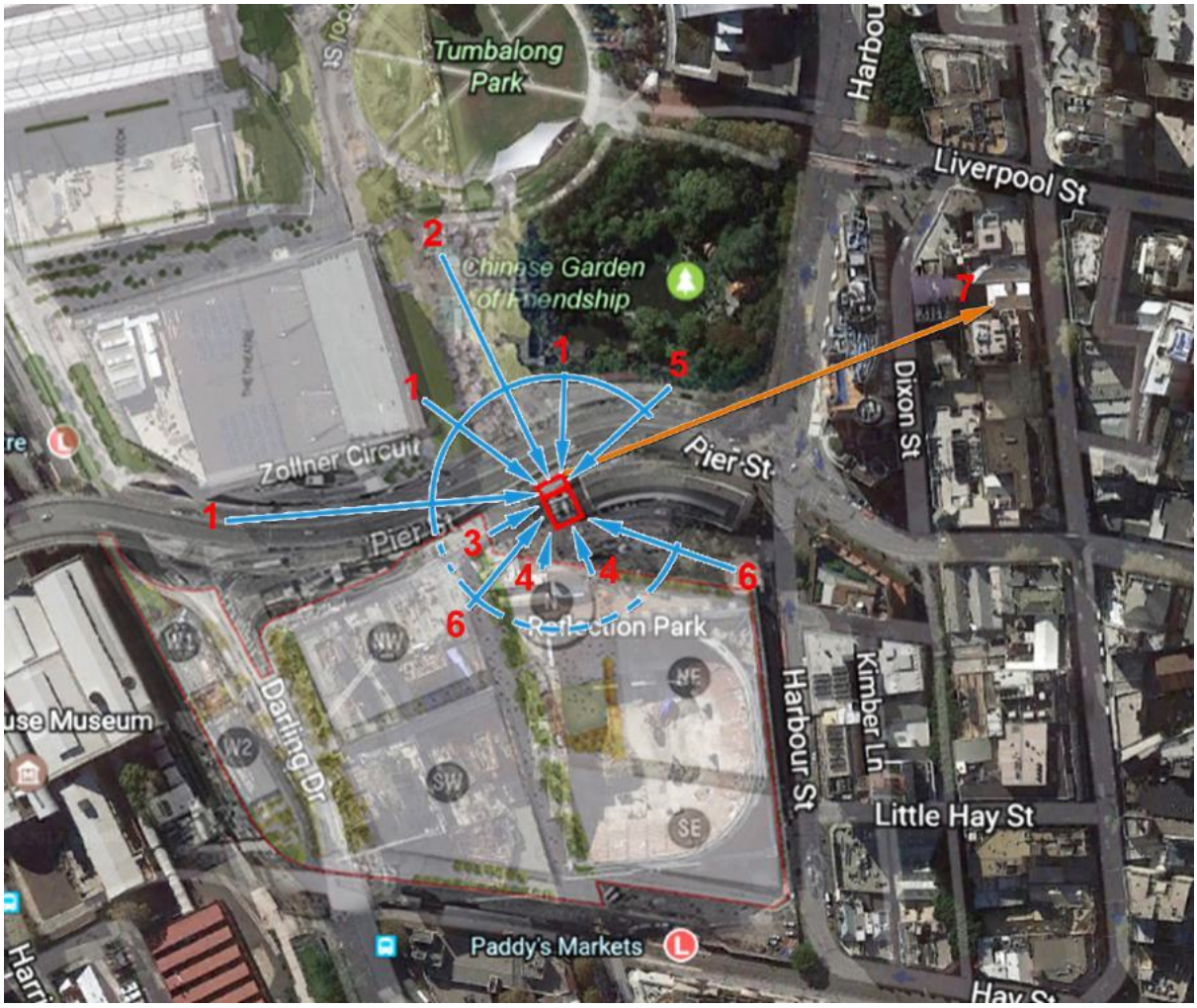


Figure 3.13 Significant views of the HPS No 1. The orange arrow indicates views from the former HPS No. 1 to Sydney CBD –*Source: Google Earth*

https://earth.google.com/web/@-33.87744738,151.20242629,6.13433665a,213.25375413d,35y,0h,0t,0r with overlay of SICEEP Precinct Plan showing the former HPS No.1 in relation to Darling Square. Source: SICEEP Darling Square, Mixed Use Residential Building (SSDA 9), EIS. March 2016, JBA Urban Planning Consultants.

Source: https://majorprojects.accelo.com/public/8855b5c3111bf1a3bd3d41c728caf874/2016-03-15%2015122%20Darling%20Square%20SE%20Plot%20SSD%2015March2016.pdf



Figure 3.14 View from North west corner of the former HPS No. 1 towards the newly built residential development and construction sites in Darling Square. *Source: Adaptive Architects - 2017*

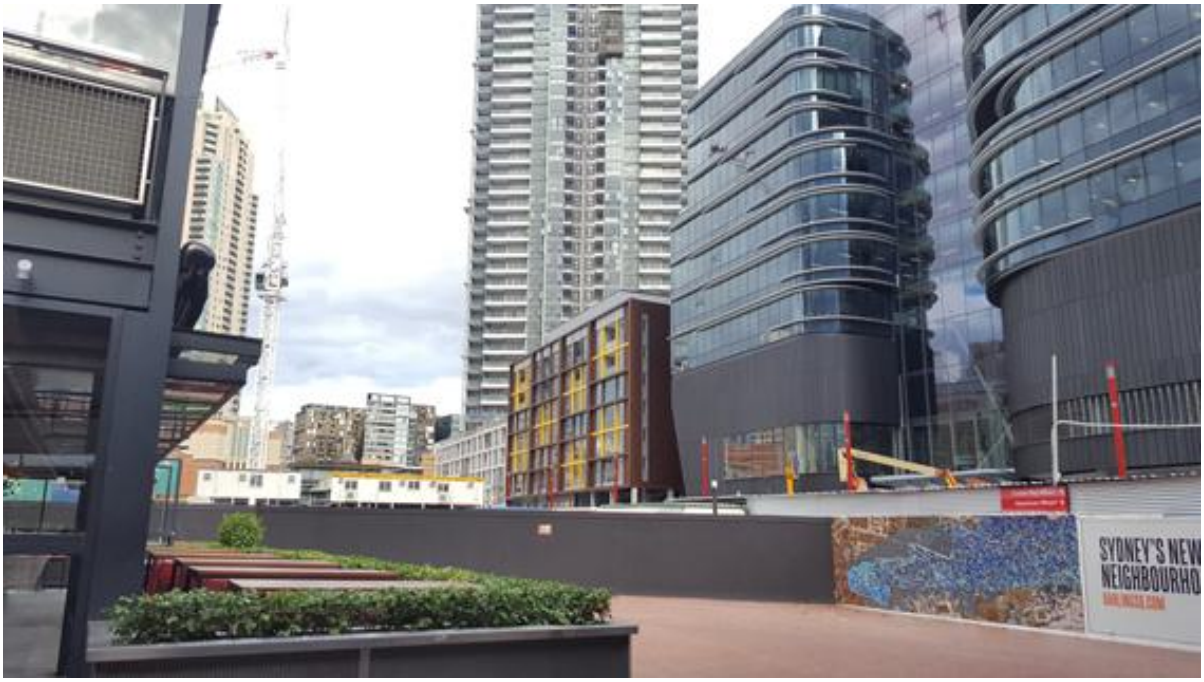


Figure 3.15 View from North west corner of former HPS No. 1 towards the newly built offices and residential development in Darling Square. *Source: Chantal Danieli 06/06/2017*



Figure 3.16 Streetscape around the former HPS No.1 showing raised Pier Street overpass to the north as part of the Darling Walk Redevelopment for pedestrian access to the north-west. Newly constructed ICC Sydney Theatre to the north west and hoarding for the construction of the Darling Exchange to the west. *Source: Chantal Danieli 06/06/2017*



Figure 3.17 View from former HPS No. 1 under the Pier Street overpass towards the ICC Sydney Theatre and public domain. *Source: Chantal Danieli 06/06/2017*



Figure 3.18 View from North West corner of former HPS No. 1 under the Pier Street overpass to ICC Sydney Theatre and public domain. *Source: Chantal Danieli 06/06/2017*



Figure 3.19 View of the western elevation of the former HPS No. 1 from the public domain area under the Pier Street overpass. *Source: Chantal Danieli 06/06/2017*



Figure 3.20 View from 8th floor of Novotel Rockford Hotel looking north across the Pier Street overpass towards the Chinese Gardens and Sydney Theatre in Darling Harbour. *Source: Adaptive Architects - 2017*



Figure 3.21 View from northern elevation of former HPS No. 1, across the Pier Street overpass towards the newly built ICC Sydney Theatre. *Source Chantal Danieli 06/06/2017*



Figure 3.22 Streetscape to the south west of the former HPS No.1 looking to the west towards A Place for Reflection Park and the Darling Square building site. *Source: Adaptive Architects – 2017*



Figure 3.23 Views of the Southern Elevation from Little Pier Street of the former HPS No. 1 with the newly built office buildings as part of Darling Square to the west of the building - *Source: Adaptive Architects - 2017*



Figure 3.24 Views of the Southern Elevation from Little Pier Street of the former HPS No. 1 with the newly built office buildings as part of Darling Square to the west of the building. Source: Adaptive Architects - 2017

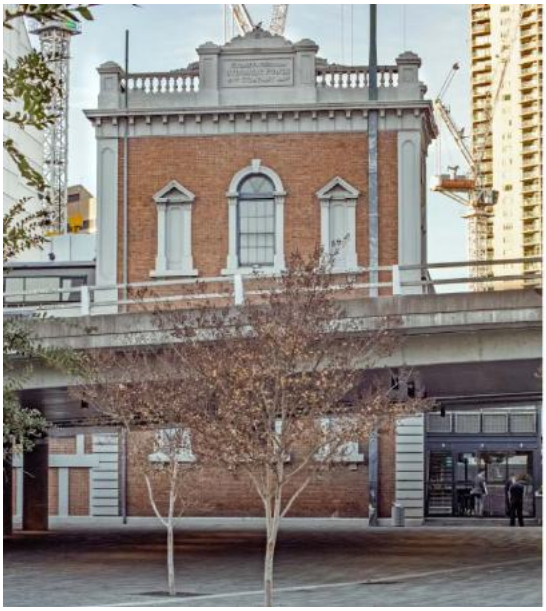


Figure 3.25 View of the former HPS No. 1 from the public domain near the ICC Sydney Theatre illustrating the obstruction to the view of the northern elevation of the building as a result of the Pier Street overpass. *Source: Adaptive Architects - 2017*



Figure 3.26 View of the Northern Elevation of the former HPS No. 1 from opposite side of Pier Street overpass to the north. *Source: Adaptive Architects – 2017*



Figure 3.27 View of the Northern Elevation of the former HPS No. 1 from Harbour Street approach. *Source: Adaptive Architects - 2017*

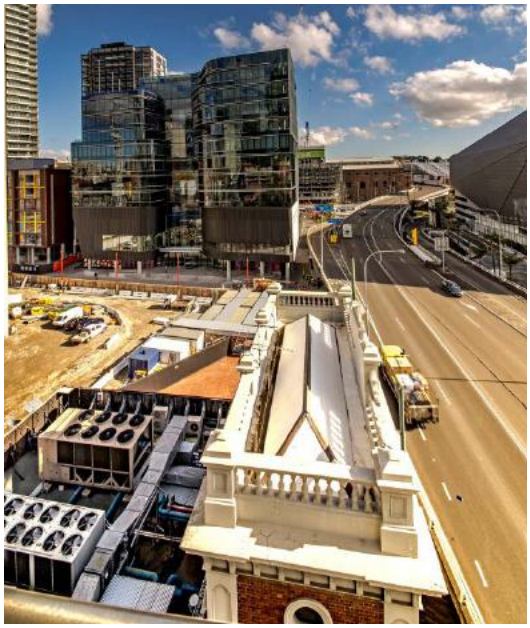


Figure 3.28 View of the roof of the FAR and FER with newly built offices and Darling Exchange construction site in the background. *Source*: *Adaptive Architects - 2017*



Figure 3.29 View from Northern elevation of former HPS No. 1 towards Harbour Street the public toilets under the Pier Street overpass. *Source: Chantal Danieli 06/06/2017*



Figure 3.30 View from North west corner of former HPS No. 1 towards the public toilets under the Pier Street overpass. *Source: Chantal Danieli 06/06/2017*

3.3 Building Description

3.3.1 Generally

The former HPS No. 1 is a two storey late Victorian Italianate industrial building with three storey tower. The building was originally designed to house the machinery and works that generated the hydraulic power that operated goods and passenger lifts in various warehouses and commercial buildings throughout Sydney. The present site comprises the original Engine House (now bar and restaurant) and original Accumulator Room, more recent West Annex, and East Annex with hotel beyond.

The two storey steel and glass West Annex (c1999) obscures most of the external façade of the former Engine House (ER), whilst to the east the two storey face brick addition (c.1982) with steel and glass third storey (c.1999) obscures the eastern façade of the ER.

External walls of the former HPS No.1 are of load bearing face brick (English Bond) with timber windows and decorative cement rendered cornices, pilasters and window elements. Remnants of the panels for the former water tank remain as a valance at the perimeter of the roof over the ER.

Internally the principal room is the large open space of the high ceilinged ER. The room has a bar at the southern end and a mezzanine floor extending across the north and eastern sides of the building. The mezzanine level is accessed via a new steel staircase located in the former Accumulator Room (AR). The ER walls are cement rendered with an applied antique style wash and the large iron girders supporting the roof are original. It has a new suspended timber floor that is raised approximately one metre above the original ground surface, whilst the AR has a concrete slab constructed approximately 1m above original ground level as part of the c1979 works following the decommissioning of the site.

In addition to the new staircase, the AR contains the two original accumulator tanks. The walls are (original) face brick with evidence of joists for flooring and stairs associated with the access requirements for the accumulator tanks (removed c1980).

3.4 External Building Fabric

3.4.1 West and East Elevations

The original external western elevation to the former Engine House (ER) and lower level of the former Accumulator Room (AR) (largely obscured by the modern Annex) consists of a rendered wall with four arched window openings and one arched door opening at first floor, whilst the ground floor has four square window openings with central square doorway. The wall of the upper floor has been finished with a modern wallpaper to replicate painted brickwork, whilst the lower floor has a dark paint finish.

The later addition Annex is of steel frame construction that is enclosed with aluminium framed glazing on the ground floor. On the first floor, a steel and mesh balustrade is provided and has transparent drop down café style blinds. Above the masonry walls, replica fiberglass panels (two tiers high) act as a valance to the ER.

The upper level (tower) of the AR appears largely intact, continuing the Victorian Italianate character of the north face, and was also designed as a feature elevation. It is constructed of English bond face brickwork with rendered decorative pilasters and a rendered central round arched window with keystone. Above a circular rendered (louvred) ventilator is located. These openings are largely for decorative purposes in the external composition, but also provide daylight to the top of the accumulators. The top of the tower is crowned with a bracketed projecting cornice surmounted by a decorative Italianate style balustrade.

The upper eastern elevation of the AR is visible from the pool deck and is a mirror image of its western elevation. The tower features and detailing are intact above the east annex. The projected parapet does cut into the elevation but not significantly. The brickwork, render details, and window joinery are all in good condition. There are small areas of mortar loss, and some mid range cracking in the frieze capping.

The east elevation of the ER is no longer discernible due to the abutment of the hotel. The east wall of the former HPS No. 1 has all the original openings infilled and the current openings are all recent.



Figure 3.31 Western view of former HPS No.1. *Source: Adaptive Architects - 2017*



Figure 3.32 SW view of former HPS No.1 looking towards the Rockford Novotel Hotel to the east on Little Pier Street. *Source: Adaptive Architects - 2017*



Figure 3.33 NW view of former HPS No.1. *Source: Adaptive Architects - 2017*

3.4.2 North Elevation

The original north elevation remains remarkably intact and is considerably more detailed than the remaining elevations as this was originally the front address of the building. There is a slight hint of damp damage at the base, evident by loss of mortar, but this is not very serious.

The north elevation is made up of the central original section of the building, with the modified c1920s east annex on the left, and the more recent verandah West Annex on the right. The original building reads as two storeys but the ground floor sills are raised to suit the original higher floor of the ER, the tower extends well past the upper floor windows, and the roof balustrade gives additional height. The north face is divided by horizontal rendered stringcourses. The façade is constructed of load-bearing English bond face brickwork with rendered quoins with a central arched window with Classical surrounds, and a pair of symmetrically located blind openings with open pediment Classical surrounds.

The central sixteen pane (8/8) double hung window and glazed fanlight employs a round arch with

keystone and Corinthian style pilasters, whilst the smaller blind windows that flank it are rendered with an open pediment and Corinthian pilasters. These windows are replicated on the first floor elevation. Photos show that these windows were replaced or repaired in the conservation works in 1983. The windows have been reconstructed without horns, which is an early Colonial feature inappropriate for a late Victorian building. Deep relief rendered quoins frame the building at ground floor, transforming into elegant pilasters that use part of a Classical bracketed frieze as their capital, with a Classical balustrade to the top of the wall.

To the east of this elevation is a brick annex façade addition (c1920s) which was well designed to be sympathetic to the style of the former HPS No.1 Italianate façade, with the continuation of similar elements, styles and symmetry. The façade consists of face brick in English Bond and matching rendered quoins, and adds a segmental pediment over the wider window. The original designer has married the addition into the original by extending two corbel details across the original HPS No.1 quoining. Early photos show the original windows were in a similar but distinct style, a pair of double sash windows with a tilting upper sash of 9 panes and an undetermined lower sash that may have been screened. It used the face brickwork edge rather than a rendered pilaster.

Much of the wall below the pediment has been rebuilt before the 1960s and is of various ages, due to the number of alterations made to the structure over time. The bricks are mismatched, of different sizes and quality of brick laying. The windows are now three fixed panes wide, with a sill raised because a lower door was once inserted. A wide flat band of render makes an attempt to imitate the original sill. The conservation works have attempted to remediate the damage but have not recovered the original proportion and character. There is also an extension of the parapet above the corbel of the original building that is capped by an unfinished low skillion roof, which is quite intrusive.

The solid external wall on plans is drawn approx 840mm thick (7 skins), but is likely to be 600mm thick (5 skins). Thick stepped brickwork was the standard way of building a high wall in 1890. This permits deep reveals on the inner and outer face. The mortar would have been lime mortar without cement, and this is sacrificing itself instead of the bricks, which is how it is intended. The external vent pipes are shown on the early plans are regarded as early elements. The north face has the building's identification panel which sits above the rendered bracketed cornice surmounting a central pediment with scrolls and a decorative Italianate balustrade that reads *"Sydney Suburban Hydraulic Power Company - Estd 1889".* There is some slight damage to this sign, and more significant damage to the parapet balustrade, particularly inside due to roof repairs.



Figure 3.34 Upper Storey of Northern Elevation of former HPS No.1 *Source: Adaptive Architects - 2017*



Figure 3.35 Central pediment with scrolls and a decorative Italianate balustrade *- Source: Adaptive Architects - 2017*



Figure 3.36 Ground Floor Northern Elevation of former HPS No.1 with east annex. *Source: Adaptive Architects - 2017*



Figure 3.37 Ground Floor Northern Elevation of former HPS No.1 with west annex. *Source: Adaptive Architects - 2017*



Figure 3.38 Northern Elevation of former HPS No.1 (photomontaged to remove expressway). *Source: Adaptive Architects – 2017*

3.4.3 South Elevation

The south elevation of the HPS No.1 is constructed of face brickwork (English bond) with a rendered top banding and rendered base course (now partially obscured because of the built up street paving). The façade is simply adorned with a widened central segmental arched window (the sill height also being lowered in the 1920s) and is flanked by narrower round arched windows with original sill heights. Below this there were originally three matching smaller openings to what was the basement under the ER floor level. The centre opening was altered when the central window above was enlarged by dropping the sill level, and this opening appears as a door (to a lower street level) in early photos. All windows have simple rendered sills with contrasting liver coloured brick arched headers. The timber double hung windows and sashes are from the 1983 conservation works and the four pane windows in the original openings may have been derived from surviving fabric. The large central opening is shown without a window in the 1930s, and nearly bricked up in the 1970s. The joinery in this window is interpretive and does not derive from documents or fabric.

At the top are the cast iron panels, two tiers high in a black finish. Whilst showing signs of rust, they are in good condition. There is evidence that a number of the panels have been moved and reinstalled.

The southern wall of the accumulator tower shows evidence of the original waterproof membrane at the height of the original two tier tank panels. While this is a likely explanation, the original drawings show the tank was enclosed by cast iron panels that sat against the wall, and this would equally explain why the lower section of wall is distinct from the section above it. These panels have not survived. A lead damp proof course (DPC) sits above this at a height of the third tier of tank panels (since removed). The good condition of the brickwork and the absence of soot between the original waterproof membrane and the DPC suggest that a physical waterproof membrane returned down the wall. This was inserted when the third tier of panels were installed before 1932. This has since been removed (date unknown) (see figures 3.92 and 3.93).

Centrally located within this elevation a vertically proportioned door with simple rendered lintel and threshold is located. The door appears original, and opened at the level of the top of the tank when it had the two tiers of panels, and must have been related to maintenance of the tank. It would have been sealed when the height of the tank was increased to three tiers, before 1932. The door has now been removed to allow for a large AC return air vent that consumes the entire opening (figure 3.93).

The top of the tower is crowned with a bracketed projecting cornice surmounted by a decorative Italianate style balustrade.

The Eastern Annex to this elevation is the three-storey link between the former HPS No. 1 and the multi storey component of the Novotel Rockford Hotel. The Eastern Annex is constructed of face brickwork (English bond) that references the materials and symmetry of the ER with two symmetrically placed round arched windows. Both windows are small and display contrasting liver colour brick arched headers and sills with fixed four pane timber sashes. At the bottom eastern corner of the elevation is a set of black louvre doors that provide access to the Hydrant and Booster Valves. At the top of the elevation is black vertically proportioned aluminium framed glazing.



Figure 3.39 Composite photo showing southern view from Little Pier Street of the former HPS No. 1. The context is presently greatly curtailed due to adjacent construction. *Source: Adaptive Architects – 2017*

3.5 Internal Building Fabric

3.5.1 Original Engine House (ER)

The original Engine House floor was more than one metre above the current timber floor that is constructed of treated pine framing and softwood floor boards and bearers on brick piers with ant caps, possibly associated with the brewery development (1989) or the tavern development (1999). The treated pine is not good at surviving for lengthy periods in a damp environment, and is reportedly suffering from some rot and termites. The site is on reclaimed land. The subfloor is reportedly damp, which may be a consequence of the reclamation, or may be the result of poor general drainage that directs water into the subfloor area. Our own limited inspection of the subfloor did not identify the normal mouldy smell associated with damp, and works since 2009 may have addressed this issue. No visible remnants of former plinths or other support structures for the engines remain, other than a dirt floor. Ozone generators have been installed below the new floor to reduce problems with rats for the hotel. The original floor below the accumulator room is inaccessible due to the recent works to stabilise the accumulators, which appear to have replaced the c1978 concrete slab with mass concrete to shore up the footings.

The internal faces of the massive brick walls of the ER consist of an arcade of segmental arched recesses at the original higher floor level, which continue around all four sides. Plaster finishes with decorative trims to the arches and pilasters are consistent across all faces, and are shown on photos that predate the 1983 conservation works. However an original newspaper image from 1891 shows the interior arcades as face brick. While the current plaster is likely to date from the 1983 conservation works it appears they have faithfully reconstructed the details from the fabric evidence, which may

date to a very early phase of the site's development. The original drawings show a similar internal detail was intended. It is unknown if the 1983 works specified and used cement based products or was lime only. The antique style wash paint finishes are far more recent and are not in keeping with the character of the building.

The arcade recesses did not extend below the original floor level, and so the lower part of the wall is flush and thicker. The plaster on this lower section of wall was not present before 1983. Originally the three bays to the south and up to four bays of the east featured a small arched window in each arcade bay at the original ER level. There were no windows to the west, and one original central arched opening to the north. Currently the east openings have been bricked up and replaced with later doors to the hotel, kitchen and toilets. The south openings are described under the wall exterior. The west wall has had upper level round arched openings consistent with the south wall in the five bays, and aligned newer rectangular openings at the lower original basement level.

The mezzanine floor at mid level is an L-shape connected to all but the south end of the east wall, returning along the north wall and connects into the West Annex verandah. The verandah is visually and acoustically linked to the bar area via the openings in the west wall of the bar area. The mezzanine is timber framed with timber boards and steel balustrade with mesh infill (c2003). Below the mezzanine joists a plasterboard soffit conceals services such as sprinklers, lighting and a cassette air conditioning unit.

The main ceiling is supported by five riveted box section (twin web) wrought iron girders supported on stone bearing pads in the massive brick east and west walls. Above this smaller secondary wrought iron beams are spaced to match the cast iron panels that form the base of the water tank above. The cast iron panels are concealed by a decorative perforated corrugated Colorbond steel sheet ceiling running parallel to the main beams (whereas the original ceiling ran perpendicular) that rest on the lower flanges of the secondary beams. The girders and joists are original fabric designed to hold the weight of the water tank, the Colorbond steel is associated with the c2003 fitout. The original design for the ceiling of the Engine House was a convex ceiling curved between box beams, most likely in ripple iron. as part of the functional industrial aesthetic associated with the buildings use. The current ceiling has some connection in that it is corrugated steel, but it is flat, coloured and perforated and does not quite have the same industrial character. It sits flush with the secondary beams instead of curving between box beams in a perpendicular direction. The conflict between the air-conditioning ducts and the box beams has been resolved unobtrusively.

Lighting consists of three large suspended pendants over the bar area, low voltage uplights below the girders, small flood or spotlights on the ceiling between the girders, feature lighting in the bar area and recessed downlights in the soffit of the mezzanine.



Figure 3.40 View looking to SW cnr and down at bar from mezzanine level. *Source: Adaptive Architects – 2017*



Figure 3.41 View looking to W wall from mezzanine level. *Source: Adaptive Architects – 2017*



Figure 3.42 View looking to S wall and down at bar from mezzanine level. *Source: Adaptive Architects – 2017*



Figure 3.43 View looking to SE corner and down to bar from mezzanine level. *Source: Adaptive Architects – 2017*



Figure 3.44 View looking to E wall and down at bar from upper verandah in West Annexe. *Source: Adaptive Architects – 2017*



Figure 3.45 View looking to W wall and down to bar from mezzanine level. *Source: Adaptive Architects – 2017*



Figure 3.46 View looking to W wall from bar level. None of these openings are original. The change from recess to solid wall is about 600mm above the original Engine House floor level. *Source: Adaptive Architects – 2017*



Figure 3.47 View looking to E wall from bar level. The mezzanine allows the volume to be understood but does prevent the arcaded wall surrounds to be appreciated. *Source: Adaptive Architects – 2017*



Figure 3.48 View looking to N wall from mezzanine level. *Source: Adaptive Architects – 2017*

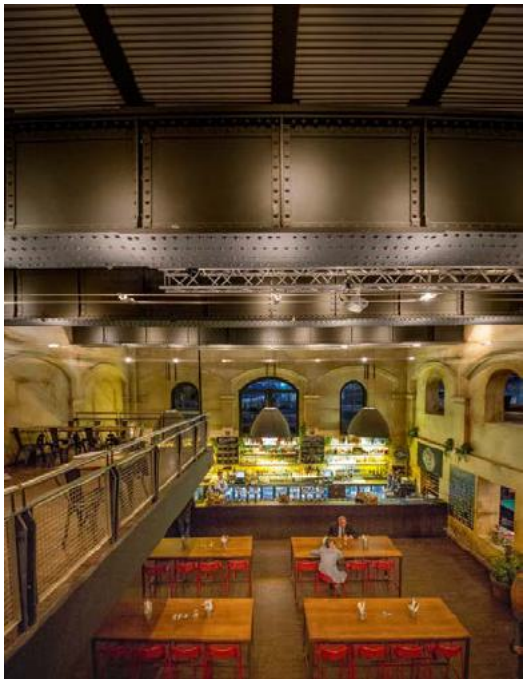


Figure 3.49 View looking to S wall and down to bar from mezzanine level. *Source: Adaptive Architects – 2017*



Figure 3.50 View looking to N wall and stair from ground level. *Source: Adaptive Architects – 2017*



Figure 3.51 View looking to S wall at the bar from ground level. The original Engine House floor level is documented at 900mm below the original smaller arched window sills, which would be slightly above the bar. *Source: Adaptive Architects – 2017*



Figure 3.52 Ground floor ER looking to NE at pizza kitchen that intrudes on original ER plan and prevents appreciation of full space – The mezzanine does not intrude greatly into the volume as it can be appreciated as one space. *Source: Adaptive Architects – 2017*



Figure 3.53 Ground floor ER Looking SE at the pizza kitchen that intrudes on the ER plan and prevents appreciation of full space. Souce: *Chantal Danieli -2017*

3.5.2 Original Accumulator Room (AR)

The AR consists of a tiled concrete floor, with massive original face brick walls in English bond extending to the ceiling of the tower. There is evidence of former joist pockets in the walls, for platforms and stairs associated with the maintenance access requirements for the accumulator tanks (removed c1980), indicating former floors at various levels in the tower that are important in understanding how the accumulator space worked. The walls are in very good condition.

There are four very large original vertical timber guide posts on the north and south walls each side of the riveted wrought iron tanks supporting pairs of large timber beams just below ceiling level. The posts have been cut off above floor level and those on the north side have suffered termite damage.

There are original timber windows in the north, east and west elevations, and a door opening with the door removed in the south to accommodate a large air conditioning duct.

There are two large riveted wrought iron accumulator tanks, both original and critically important to the building. The condition of the accumulator tanks was monitored over a twelve-month period in 2012 by the firm, Clive Lucas, Stapleton and Partners (now known as LSJ Heritage Planning & Architecture) noting the following:

The eastern tank was tilted to the point of contact with the brick wall although it had not yet done so; the potential for the tank to damage the external brickwork was noted. The tilting had also resulted in the floor cracking. Bulging noticeable in both tanks was more severe in the western tank, which had cracking walls and splitting riveted seams.[2]

Since the stabilization in 2012 - 2014 works, the tanks appear to have been well maintained and feature freestanding uplights at their base.

Between the two tanks a stair with powdercoated steel stringer, open timber treads and steel mesh balustrade leads to the mezzanine within the ER.

[2] *CLSP, Urgent Remedial Works to Accumulator Tanks HIS, pg2, 2013.*

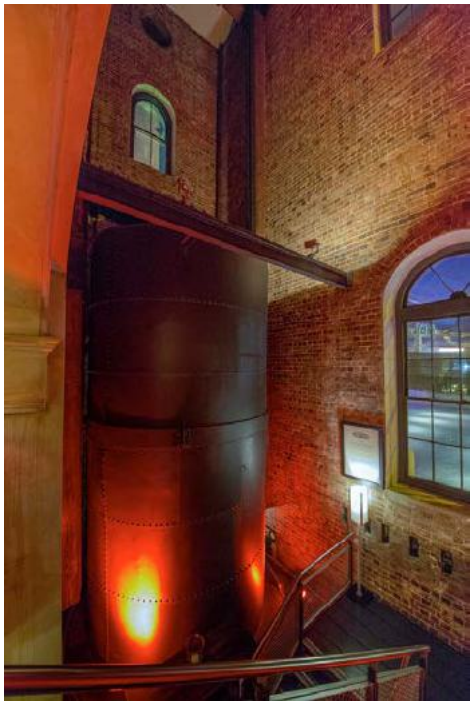


Figure 3.54 View looking to W accumulator from top of steps. North and west windows visible (nightshot). *Source: Adaptive Architects – 2017*



Figure 3.55 View looking to E accumulator from top of steps. North windows visible (dayshot). *Source: Adaptive Architects – 2017*



Figure 3.56 View looking up at ceiling above west accumulator at guide timber posts and the assembly of timbers at the ceiling. The damage to the accumulator tank is evident. *Source: Adaptive Architects – 2017*



Figure 3.57 View looking up at ceiling above east accumulator at guide timber posts and the assembly of timbers at the ceiling. The RA duct door is visible on the south wall. *Source: Adaptive Architects – 2017*



Figure 3.58 Detail of the timber blocks on the ceilings above the accumulator. The weights and means of connection to the accumulator have been removed, harming interpretation. *Source: Adaptive Architects – 2017*



Figure 3.59 Detail of the remedial works to brace and stabilise the accumulators. This is done very sensitively. We have seen plans where it was proposed to have a large steel beam under the timbers, but this solution has far greater merit in heritage terms. *Source: Adaptive Architects – 2017*



Figure 3.60 A closer detail of the remedial stabilisation works. The track for the accumulator can be seen on the timber guide post. *Source: Adaptive Architects – 2017*



Figure 3.61 Weights packed in between the large timber beams. It remains unclear how these related to the accumulator. *Source: Adaptive Architects – 2017*



Figure 3.62 View from mezzanine looking through original arched opening towards the accumulator room. Recent stairs and handrail. *Source: Adaptive Architects – 2017*



Figure 3.63 View from accumulator room floor looking south through arched opening towards original Engine House (now bar). The recent stair fits well enough in the space. *Source: Adaptive Architects – 2017*



Figure 3.64 Bottom of the new stair – this sits well under the window and does not compete with the heritage fabric. Original floor joist pockets above under the window. *Source: Adaptive Architects – 2017*



Figure 3.65 Lighting installed at the base of the west accumulator. The red colour is mood lighting for the bar but may not be the most appropriate for interpretation. *Source: Adaptive Architects – 2017*



Figure 3.66 Detail of joist pockets. Souce: *Chantal Danieli – 2017*



Figure 3.67 North side of accumulator south wall shows pockets at various levels indicating landings and platforms related to maintenance of the accumulators. Source: Chantal Danieli – 2017

3.5.3 East Annex

The Eastern Annex is the three storey infill link building between the former HPS No. 1 and the multi storey component of the Novotel Rockford Hotel. The ground floor (old basement floor) has openings for the toilets and kitchen that do not relate to any earlier openings. The annex includes bathroom facilities at the southern end of the ground floor and kitchen, storeroom and coolroom facilities to the north. The fit-out is associated with the c2003 refurbishment and conceals the original finishes to the east wall.

The East Annex connects the main hotel to the mezzanine of the former HPS No. 1 via a central corridor that opens up in one of the arched recesses. North of the corridor is a large conference room with bar (soon to undergo renovation). The walls of the room are lined with plasterboard on a stud frame with carpeted floors. The window frame on the north elevation shows evidence of former termite damage (treated c2014). The conference room on the southern side is smaller with plasterboard walls and ceiling, carpeted floors and AV equipment.

The third floor of the East Annex houses the indoor swimming pool. The east and west walls are light weight construction whilst the north and south walls are aluminium framed with floor to ceiling glazing. A glazed door to the north allows access to a small (unroofed) deck, whilst a narrow door within the western elevation adjacent to the pool provides access to the rooftop and the former water tank.



Figure 3.68 Termite damage showing through partition wall in upper level East Annex room *Source: Adaptive Architects – 2017*



Figure 3.69 Conference room on upper level of East Annex – *Hotel website*[3]

[3] *http://www.novotelsydneyrockforddarlingharbour.com.au/gallery.html - accessed 28/7/17*



Figure 3.70 Hotel corridor. *Source: Chantal Danieli - 2017*



Figure 3.71 Hotel corridor wheelchair accessible ramp to access mezzanine level of the former HPS No. 1. *Source: Chantal Danieli - 2017*

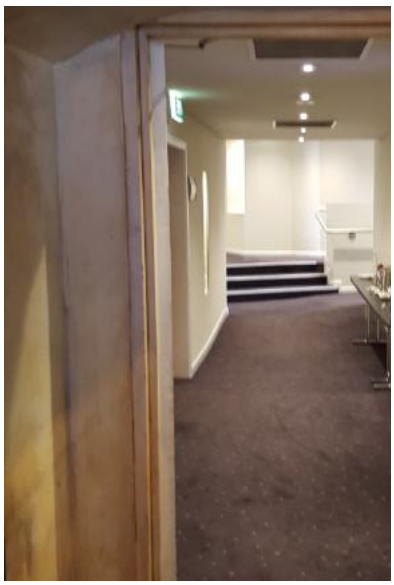


Figure 3.72 Hotel corridor from entrance of mezzanine level of ER. *Source: Chantal Danieli – 2017*

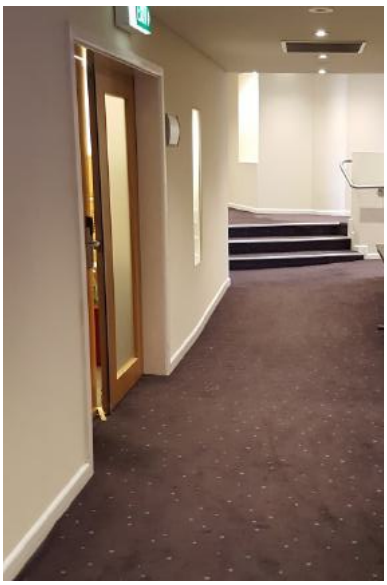


Figure 3.73 Hotel corridor with intrusive tea and coffee making facilities to entrance of mezzanine level of ER. *Source: Chantal Danieli – 2017*

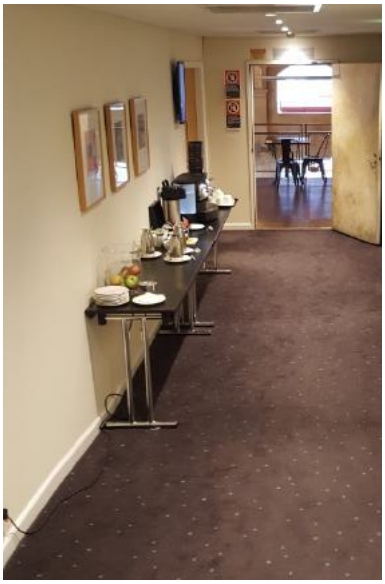


Figure 3.74 Hotel corridor leading to mezzanine level of ER. *Source*: *Chantal Danieli – 2017*



Figure 3.75 Ground floor East Annex south - entry to toilets showing stainless mesh to walls. *Source: Chantal Danieli – 2017*



Figure 3.76 Hotel toilets on ground floor East Annex on south side – tiles conceal original east wall of the former HPS No 1. *Source: Chantal Danieli - 2017*



Figure 3.77 Hotel kitchen on ground floor East Annex on north side – equipment and partition conceal original east wall of the former HPS No 1. *Source: Chantal Danieli - 2017*

3.5.4 West Annex

The West Annex is constructed of concrete slab with tile finish on the ground floor and steel frame with timber joists and (presumably) plywood substrate with vinyl sheeting replicating timber boards on the first floor. It is compatible with the industrial character of the building in bulk, scale and material. Both ground floor and first floor ceilings have been sprayed with Vermiculite like substance and are semi-concealed with stainless mesh drop in panels. A steel stair with timber treads and steel mesh balustrade is located at the northern end.

The Annex is enclosed with aluminium framed glazing along the north, south and west elevations on the ground floor. It employs steel and mesh balustrades with transparent drop down café style blinds on the first floor. The east wall (which is the former HPS No. 1 original west wall) is a huge load-bearing wall that has been rendered and is punctuated by various openings across both levels.

Replica brick painted wallpaper is used on the first floor, whilst a dark chalkboard paint finish is used on the ground floor.

The condition/integrity of the original face brick wall of this elevation is unknown due to verandah addition and render concealing the fabric. Openings created c1962, c1979 c1984 are now infilled and rendered. This render is most likely cement based

Lighting consists of hanging pendant globes. Ceiling hung planters are also located on the ground floor.

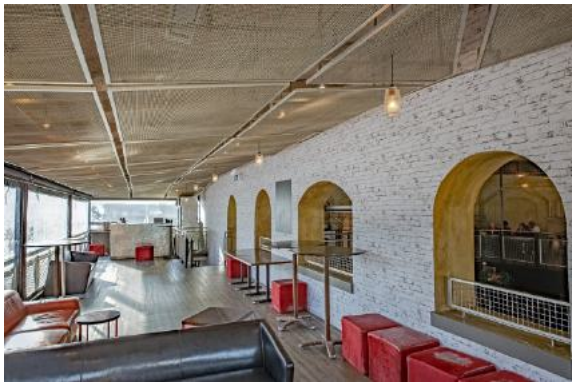


Figure 3.78 West Annex verandah – upper floor looking north – the original face brick walls have been rendered and then a face brick wallpaper added. *Source: Adaptive Architects - 2017*

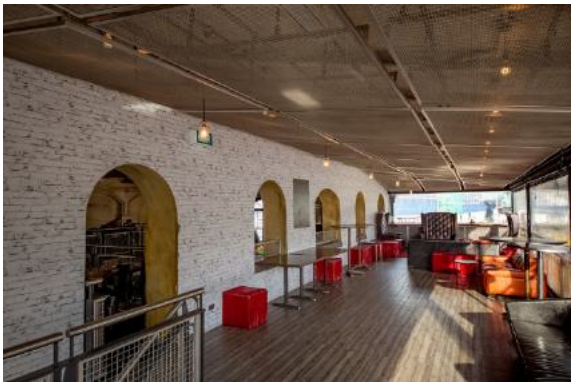


Figure 3.79 West Annex verandah – upper floor looking south. *Source: Chantal Danieli- 2017*



Figure 3.80 West Annex verandah – upper floor looking east through recent openings. *Source: Chantal Danieli - 2017*



Figure 3.81 West Annex verandah – upper floor looking east through recent openings. *Source: Chantal Danieli - 2017*





Figure 3.82 West Annex verandah – upper floor looking down stairs and at balustrade. *Source: Chantal Danieli - 2017*



Figure 3.83 West Annex verandah – ground floor looking up through stair well at sprayed ceiling and stainless mesh panels. *Source: Chantal Danieli - 2017*



Figure 3.84 West Annex verandah – ground floor looking east through main door. *Source: Adaptive Architects - 2017*

Figure 3.85 West Annex verandah – ground floor looking east to openings and stair. *Source: Adaptive Architects - 2017*

3.5.5 Roofs

Water Tank

The purpose of the water tank was to provide a settling tank for the silt in the water supplied from a natural watercourse. The water in the hydraulic system had to be free from silt. This means there must have been a way to periodically clean out the tank, a process that is not clear from the documents and may be informed by the surviving fabric.

The main two storey building has a flat slab roof that is topped with a self levelling agent and then graded to falls with a layer of water proof membrane. Wrought iron struts (now partially embedded in the concrete slab) provided a tensile force to hold the cast iron panels of the former tank together against the weight of the water on the east and south side, while on the west, steel angles support the reinstated cast iron and replica fibreglass panels. Air conditioning plant equipment associated with the restaurant and hotel fills much of the rooftop today.

The structure supporting the roof consists of major box girders that are approx 2' (610mm) deep running east-west and which are made up of gusseted wrought iron[4] plates riveted together. On top of this are smaller 8" (200mm) wrought iron rolled beams running north-south at centres matching the original cast iron panels (approx 1150mm) that form the base of the water tank (based on original

[4] Given that this was built in 1891 there is a small chance that the structure was made from steel beams, which would make it very significant in engineering history. However, an early steel beam in this context would have suffered a lot more from rust, and there is no evidence of this. On this basis we assume the more likely scenario that the beams are wrought iron, which were common for the period, and were resistant to rust damage

working drawings). These panels were fitted together with bitumen seals, and then the base of the water tank was filled with a bitumen aggregate, similar to a modern footpath, to provide the waterproofing. Given that modern waterproofing remains difficult with all our new technology, this primitive engineering solution is remarkable. A 1979 photo shows the cast iron panels were designed with openings where required for pipes. After 1979 the water tank base was covered with a concrete slab that concealed the bitumen base and lower sections of the side panels and iron bracing straps. The large box girders were necessary to take the weight of the tank, which had an approximate capacity of 12m x 15m x 2.3m volume of water, weighing approximately 400 metric tonnes. The box girders do not appear to have been upgraded when the tank was enlarged with a third tier, adding another potential 200 metric tonnes to its capacity. The tank has not held water since at least 1977, and was converted to a plant room for the hotel air-conditioning system.

Cast iron is not affected by rust in the same way as steel. Rust will continue to degrade steel, whereas it will form a protective layer on cast iron. Cast iron has good natural durability in external situations. It may have originally been coated internally to ensure water purity, but this finish is likely to have been bitumen or oil that has since been lost. The remains of the paint still evident on the panels is likely to have been a rust proofing paint applied in the 1983 conservation works. The cast iron panels should not be sand blasted, water blasted or cleaned with steel brushes as this will remove their surface and will not increase their protection.

East Annex

The roof over the East Annex (southern and northern elevation) is steel framed with corrugated roof sheeting which covers the swimming pool. To the north an open-air deck is located with timber decking boards set over a concrete slab.

Tower Roof

For most of the history of the building, the tower roof was a Second Empire[5] inspired steep mansard roof with iron cresting. Early photos are not clear enough to show the materials, but would most likely have been slates with lead capping. It is likely that the parapet gutters were narrow, as this is common in Victorian buildings in Sydney. The original drawings do not show a mansard roof. This roof was removed sometime 1979-1983 most likely due to material failure.

The reconstructed roof was built during the 1983 conservation works, with a much lower pitch and wider parapet gutter. Materials are unclear as they have been overlaid since. It would appear that the conservation works were done in a softwood timber framing with *synthetic slates,* or small pre-coated FC sheets, what appears to be copper ridge and hip cappings, and unknown parapet gutters and apron flashings as they have been covered by later waterproofing membranes. The copper cappings were either originally or subsequently fixed with ferrous nails, which have rusted badly as a result. The parapet gutters would not have survived well with copper cappings if they were galvanised or zincalume. There was little to no step down into the parapet gutter and the overflashing to the wall runs a significant way up the parapet balustrade. The water ponds on the south side and the sump is to the NW corner. There are no steps in the gutter base. Recent works (2014) to prevent leaks have involved overlaying the parapet gutters with a number of layers of waterproofing, and painting the synthetic slates with a waterproofing paint. No works to rectify the falls, longevity of materials, or galvanic incompatibility has been done.

[5] *A French Classical style under Napoleon III that greatly influenced Europe – Irving, R. et al 1989 p 68*

The decorative rendered balustrade that adorns the top of the tower remains intact, however shows evidence of delamination at the northern end. This balustrade was significantly damaged in 1979 photos and must have been largely reconstructed in 1983. The work has been done well, but long term there may be some issues with the mismatched materials used.



Figure 3.86 The roof over original Engine House was built from a modular cast iron panel system that forms a large industrial water tank – view from hotel balcony looking SW. *Source: Adaptive Architects - 2017*



Figure 3.87 The cast iron wall panels were stacked two panels high & braced with wrought iron straps against the water pressure. The later third tier was demolished – view from south end looking west. *Source: Adaptive Architects - 2017*

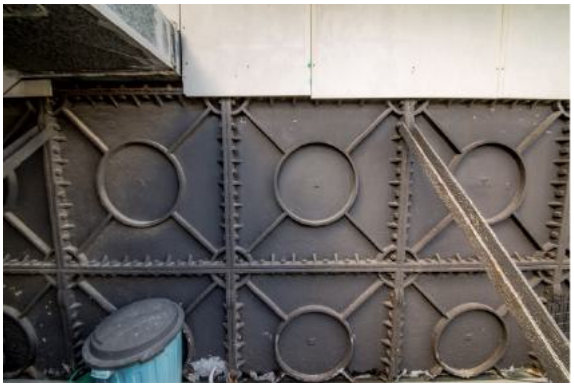


Figure 3.1 The cast iron panels were bolted together with bitumen soaked material between them to waterproof the container – east wall of tank. *Source: Adaptive Architects - 2017*



Figure 3.2 A later slab c1989 filled over the base of the tank, which was also cast iron panels with a bitumen topping, concealing the original finish and the base of the wall panels. *Source: Adaptive Architects - 2017*

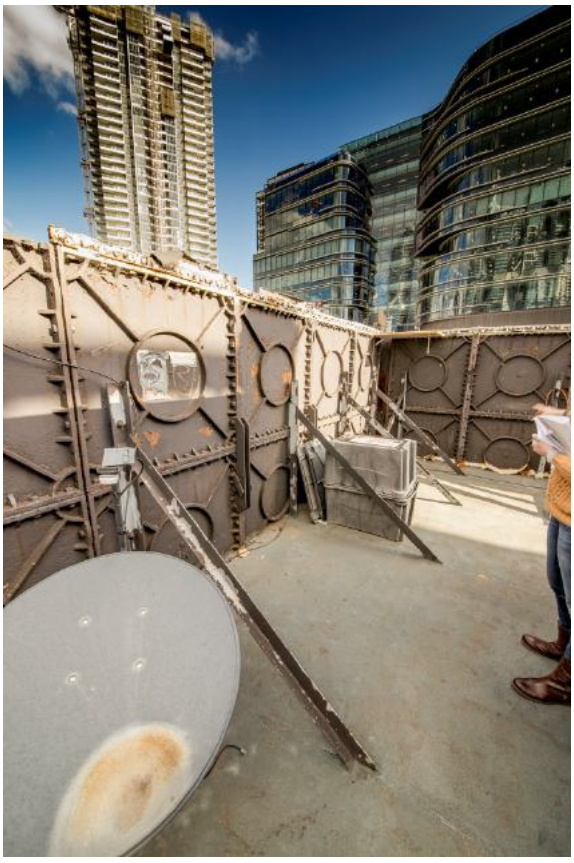


Figure 3.3 In the SW corner some demolished panels (1979) were reinstated during the conservation works (1983) using steel angles. *Source: Adaptive Architects - 2017*

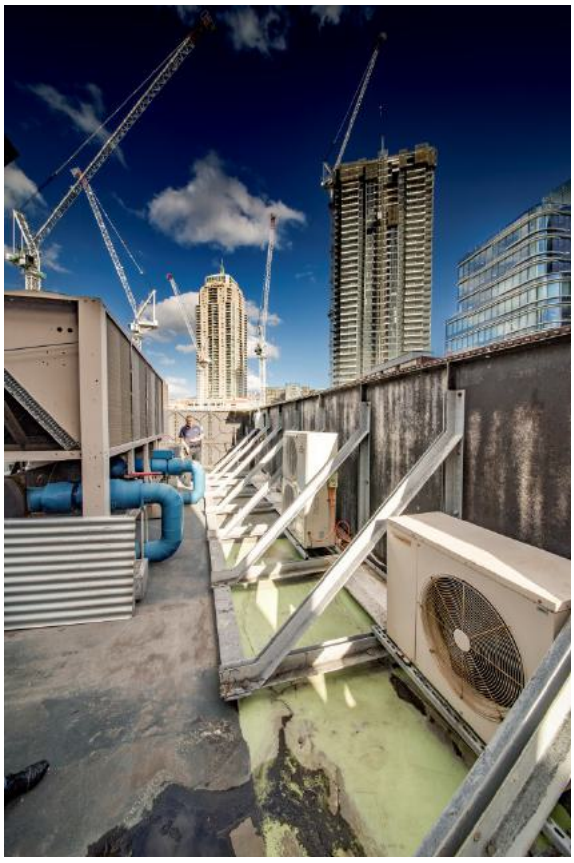


Figure 3.4 On the west face the missing panels were infilled with fibreglass panel replicas with later steel angles in 1989. *Source: Adaptive Architects - 2017*



Figure 3.5 The south wall of the tower retains evidence of the demolished cast iron tank panels as its base, and the extension third tier with a DPC and colour variations in brickwork. *Source: Adaptive Architects - 2017*



Figure 3.6 An original door opening at the high water level of the original tank is now a return air duct – it must have been sealed for the tank expansion. *Source: Adaptive Architects - 2017*



Figure 3.7 Four of the cast iron panels have been recovered and are stacked on the roof. These should form the basis of an interpretation installation. *Source: Adaptive Architects - 2017*

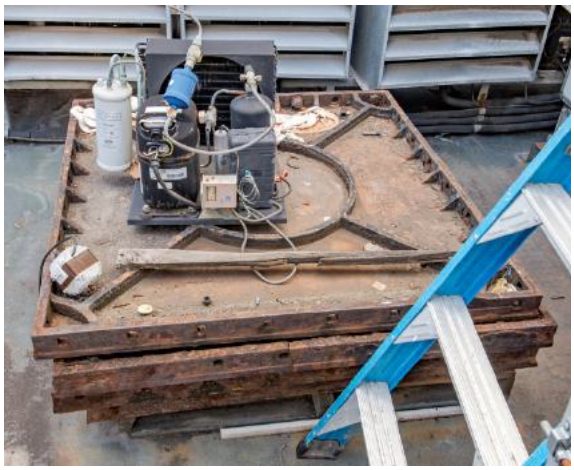


Figure 3.8 The panels are in good condition despite the nature of their removal. *Source: Adaptive Architects - 2017*



Figure 3.9 Evidence of the near demolition of the building in 1979 is most clear in the cast iron panels, which were fractured in the process. *Source: Adaptive Architects - 2017*

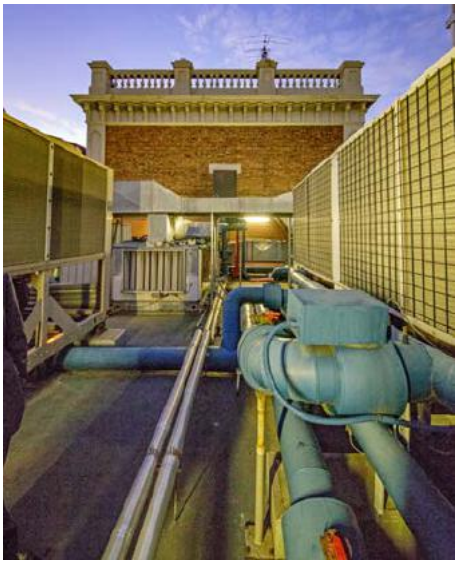


Figure 3.10 The air conditioning plant obscures any sense of the place as a water tank. *Source: Adaptive Architects - 2017*



Figure 3.11 View of tower roof from hotel balcony looking west. Some damage to the inner balustrade can be seen. Some cracking to the corbelling as well. The water is ponding on the south side. *Source: Adaptive Architects - 2017*



Figure 3.12 Close detail of ridge capping – colour could indicate copper or rusted steel – the nails are clearly rusting and thus are ferrous – the painted synthetic slates can be seen. *Source: Adaptive Architects - 2017*



Figure 3.13 Close detail of southern parapet gutter – water is ponding in this area, which reduces the membrane lifespan – the gutter is wide enough, but needs a step and longer lasting materials. *Source: Adaptive Architects - 2017*



Figure 3.14 Close detail of northern parapet gutter and sump – outlet appears too small for heavy downpour, and sump should be deeper with steps in gutter – no overflow evident. *Source: Adaptive Architects - 2017*

3.6 Assessment of Archaeological Potential

3.6.1 Below Ground

The Little Pier Street Precinct, located directly to the east of the Pumping Station and bounded by Pier, Harbour and Little Pier Streets, underwent intensive archaeological investigation in 1992. At that time substantial remains were identified pertaining to Dickson's Mill (established 1813). Machinery (steam boilers) and workshop footings constructed in the period c1829-30, and which later formed part of the Zollner Galvanising Works (c1870), were re-buried and preserved beneath the 1999 construction of the Rockford Novotel complex. In recent years further evidence of Dickson's Mill has been identified at the former Entertainment Centre redevelopment (directly south of the pumphouse site) which formed the dam that fed the Mill's steam boilers and engines.

The area has been identified as part of the 'Pier Street Precinct- Archaeological Remains' under Section 170 of the NSW Heritage Act 1977 (DB #4500372); identified as having high archaeological potential.

An assessment of the archaeological potential below the Pumping Station has been undertaken for this CMP, based on detail historical research and analysis and is outlined below.

The historical development of the site indicates the land on which Pumping Station is located has been reclaimed and was originally part of the harbour until the 1860s (Figures 3.102-3.104). Reclamation involves the creation of land where there was once water. This process may involve the importation of fills and soils from other locations and the dredging of soils from the local area. As part of these works drainage was addressed, primarily by the construction of the Hay Street sewer (1857) and its extension from Hay Street, north-west to Darling Harbour. The 1865 Trigonometrical Survey

indicates what appears to be an open drain at that time, passing directly through the pumphouse site (Figure 3.105). A plan dated 1910 indicates a major drain/ sewer located parallel to this, in Pier Street, by that time, almost certainly a relocation by, or at the time, of the Pumping Station's construction in 1889 (Figure 3.109).

3.6.2 Above Ground

All spaces within the Pumping Station appear to have undergone extensive renovation since the 1970s, removing any potential archaeological relics. Standing structure will however bear evidence of former uses, such as blocked windows and other apertures in walls, and are thereby covered by policies pertaining to architectural fabric.

The accumulators are in situ industrial relics that provide archaeological evidence for aspects of the site's use from 1889-c1975, and are therefore a valuable interpretative element, integral to the significance of the building.

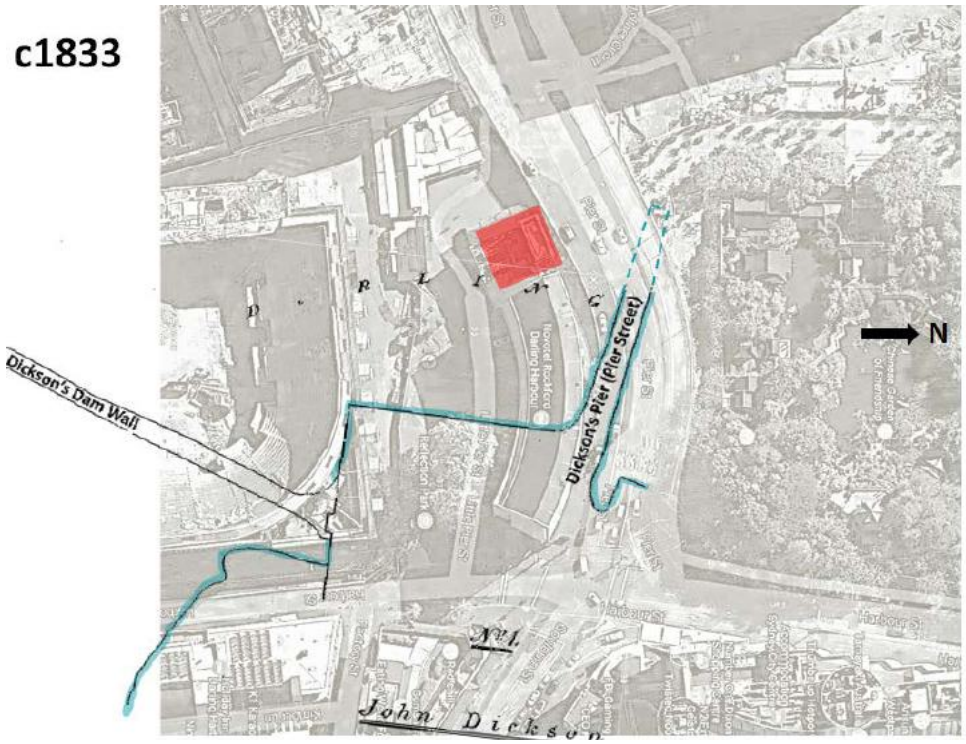


Figure 3.102: Location of Pump House (shaded red) relative to a plan of John Dickson's grant & steam mill/ mill pond in c1833. At this time the pumphouse site was still within the waters of Darling Harbour. (Sydney Council Archives)



Figure 3.103: Location of Pump House (shaded red) relative to the c1830 archaeological wall remains of John Dickson's steam mill identified in 1992 and preserved in situ. (From Little Pier St Precinct Archaeological Excavations - Vol 1 - Exec Summary - Fig 1.2)

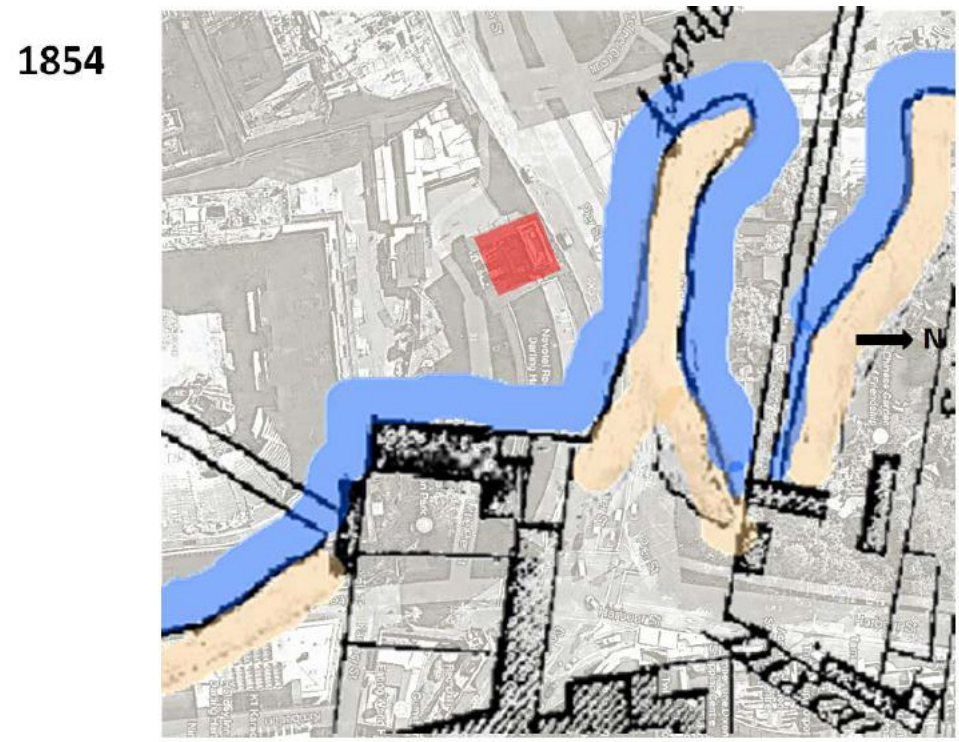


Figure 3.104: Location of Pump House (shaded red) relative to the shoreline of Darling Harbour in 1854. (Woolcott & Clarke map of Sydney, Sydney Council Archives)

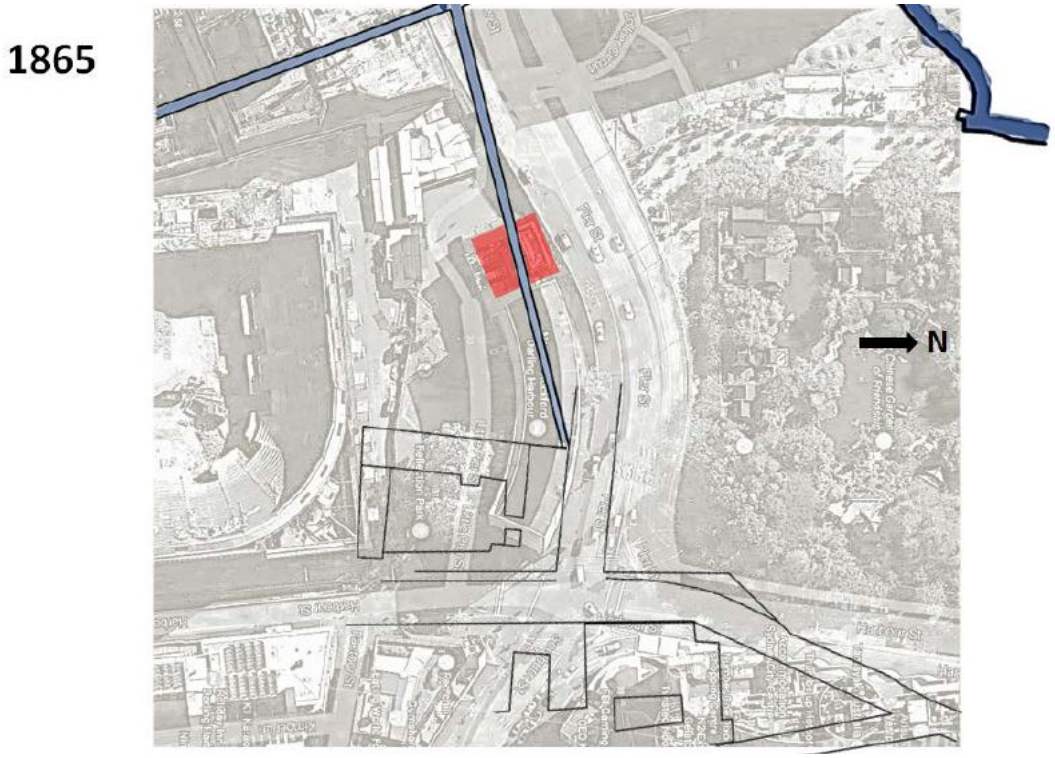


Figure 3.105: Location of Pump House (shaded red) relative to the shoreline of Da and 1865 and was progressively developed, mainly as railway yards in the 1870s. An open drain runs through the centre of the Pump House site at this time, connecting with the Hay Street sewer extension. The shore of Darling Harbour is top right. (Tracing of Trigonometrical Survey of Sydney, Sydney Council Archives)

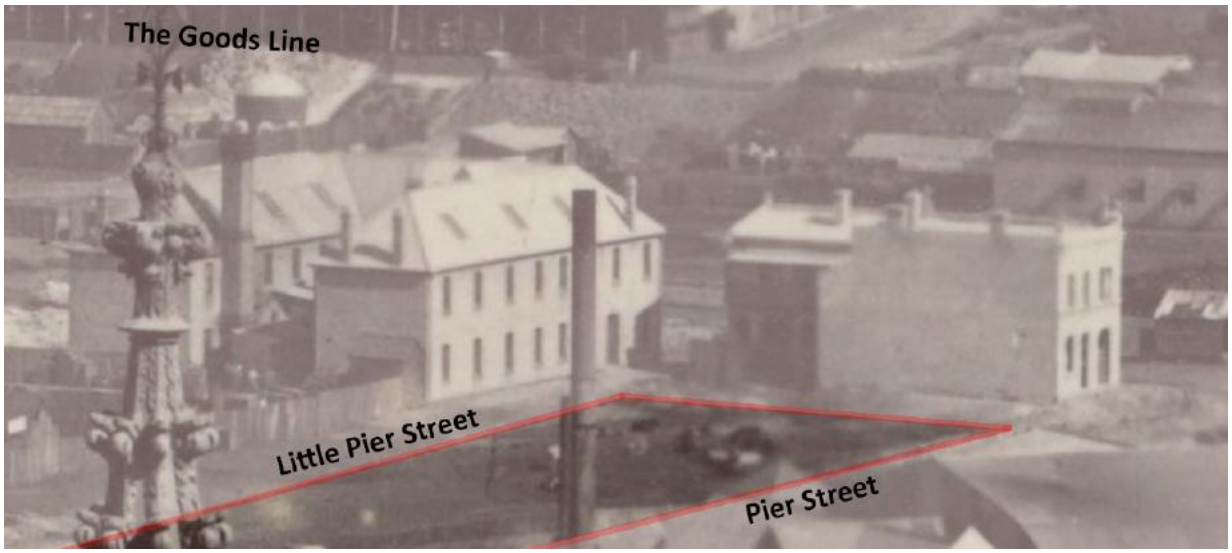


Figure 3.106: Pump House site in 1877 showing the site to be vacant. To its west is the Railway Pier Hotel, and south are Biddell Bros works. (Detail of a photograph by Nicholas Caire in the State Library of Victoria)

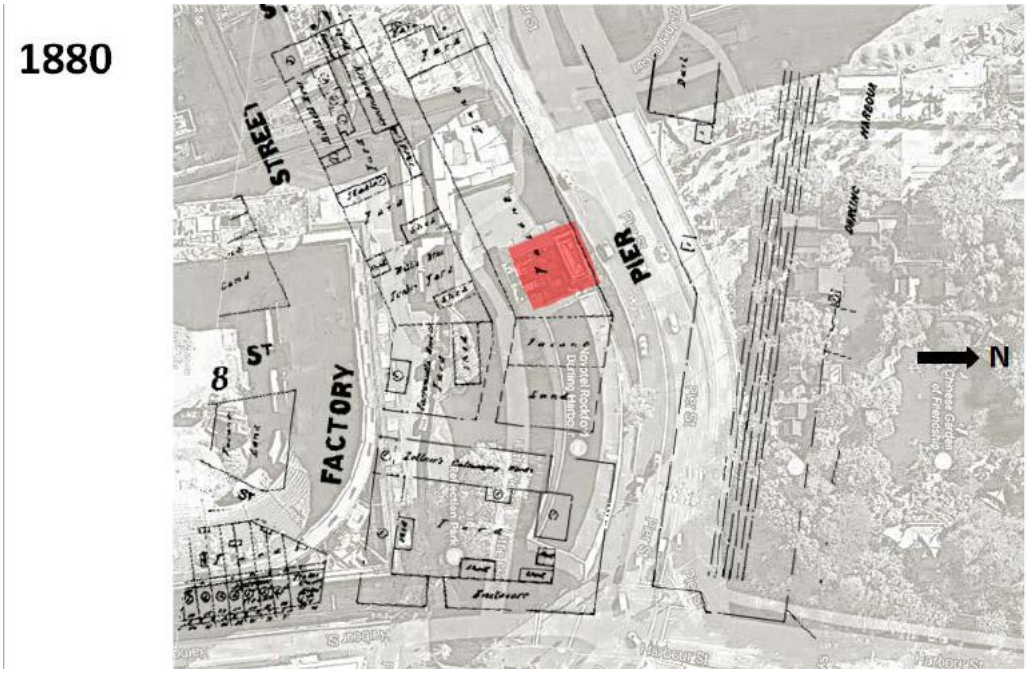
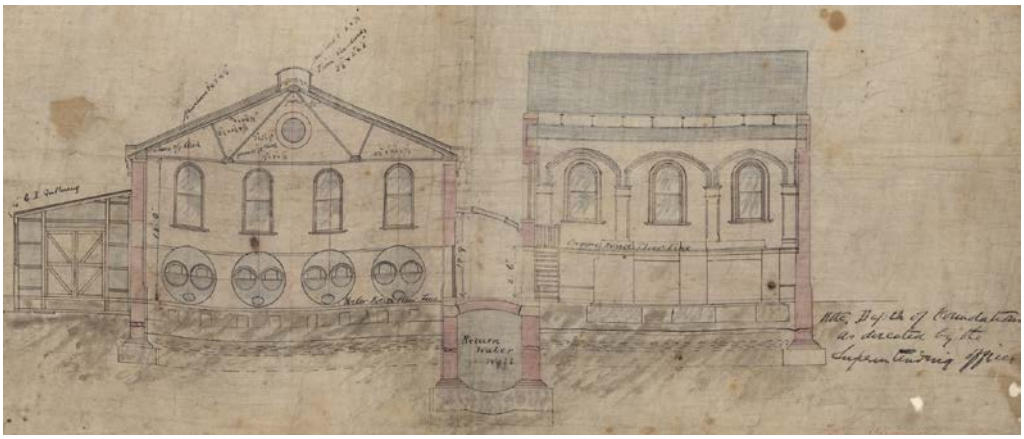


Figure 3.107: Location of Pump House (shaded red) relative to surrounding structures in 1880. The site is clearly marked “vacant land”. (Percy Dove Plan, Sydney Council Archives)



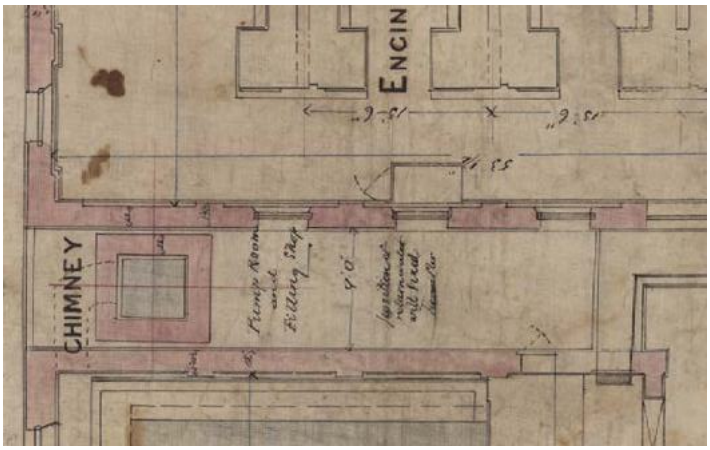


Figure 3.108: 1889 Detailed Section (E-W) of Engine House and Boiler Room (left). Substantial foundations are indicated, particularly between the boiler and engine houses where the chimney and flues were located (plan, right). This section shows a vaulted underground water reservoir running n-s, for "return water". (Source: State Archive & Records, AO Plan 2938: Plans of the Hydraulic Pump Station, Pier Street, Sydney)

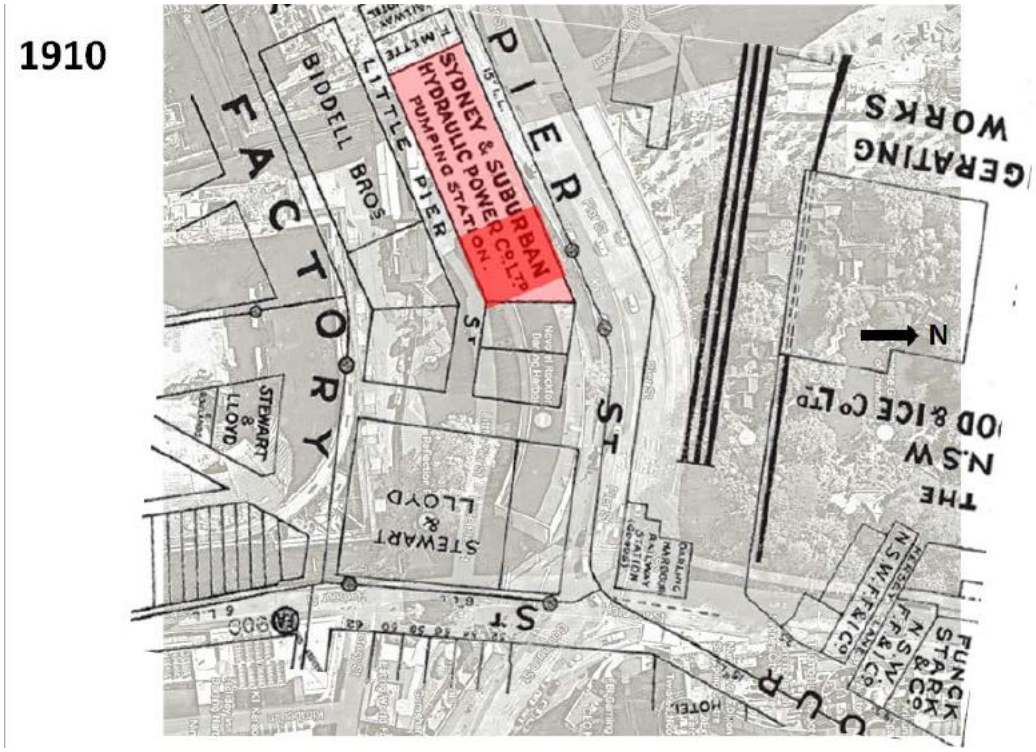


Figure 3.109: Location of Pump House (shaded red) relative to surrounding structures in 1910. A major drain is located in Pier Street by this time and probably replaced the open drain indicated in 1865. (Sydney Council Archives)

3.7 Archaeological potential

The standard controls for the uncovering of any archaeological deposit on a site listed on the State Heritage Register under the NSW Heritage Act will apply. The identification of archaeological potential is to determine where any areas of high sensitivity may exist to avoid unnecessary disturbance.

The sketch of the section of the boiler and engine houses dated to 1889 (Figure 3.109) indicates that the current floor is approximately 1.8- 2m below the original timber floor, and is actually the sub-floor service area of the original engine house. On this level the bases of the pumping engines were laid. No evidence of the substantial brick and concrete bases is evident and were in all probability completely removed when the current (timber) floor level was established by the 1980s. On inspection of openings in the current floor it was noted that the sub-floor ground is damp, requiring constant airing to dry it outside hours of the building's operation. This is consistent with the low-lying harbour reclamation fill. It is unlikely that evidence of service pipes between the steam engines and the pumps may survive, since the former sub-floor service area was located beneath the former engine house work floor, pipes would not ideally have been buried in this case (see Figures 2.8- 2.9).

The subfloor (basement) surface was most likely dirt, but may have been bitumen and there is the possibility that small items such as coins, nuts/bolts and personal items could have been dropped and buried in the dirt. If not found they would have been trodden down over the years. The basement floor may have been disturbed by the car yard use in the c1960s-70s however the floor was likely covered over rather than dug up due to the constraints of the walls. The subfloor was not significantly disturbed after this, as the new timber floor was introduced on individual piers. This history could potentially leave a stratum of subsoil deposits related to the former HPS No. 1 use underneath the present layer of soil. Some pipes and other smaller items may have been buried on the site. So, the sub-floor area of the original Engine House would need to be considered of moderate archaeological potential.

It is unclear whether archaeological resources survive below the surface east of the eastern brick annex (i.e. the site of the boiler house and manager's cottage which are outside the curtilage of this study), as subsequent developments, such as the brew house in the 1980s and the Novotel Rockford in the 1990s, may have significantly truncated or removed any archaeological deposits associated with the Pumping Station. The 1889 section and plan (Figure 3.109) shows an extensive vaulted void within the footprint of the eastern annex (approx. 3mx3mx5m), the base of which is up to a depth of 3m below the current ground level. It is labelled on the section as "Return Water Well", its function is somewhat unclear but may have been a condensing reservoir for the steam engines.

It is likely that some archaeological resources associated with the operation of the Pumping Station would be present below the floor surface of the accumulator room. It is likely that the lower tier of the accumulators, associated piping and valves would remain in situ or be partially truncated by subsequent development activities.

The archaeological potential of the footprint of the pumphouse building is considered moderate, and limited to (refer to Fig 3.110):

1. Evidence of reclamation fill from pre-1865, including evidence earlier fill or rubbish dumping episodes in Darling Harbour/ Tumbalong,
2. Evidence of material that may have accumulated on the former surface of the sub-floor area,

3. Evidence of the former drain/ sewer running through the site, c1865,
4. Evidence of mechanical/ hydraulic services associated with the operation of the Pumping Station (1889-c1975), including potential remains of the return water reservoir beneath the eastern annex and the chimney demolished in 1952.

Adjacent areas to the east, although outside the curtilage of this listing will be part of the consolidated property. These areas are listed under 'Pier Street Precinct- Archaeological Remains' under Section 170 of the NSW Heritage Act 1977 (DB #4500372) and will provide evidence of the former Dickson's Mill site, and may provide evidence for the operation of the Hydraulic Pumping Station (1889-c1975), managed under the s139 provisions of the Heritage Act.

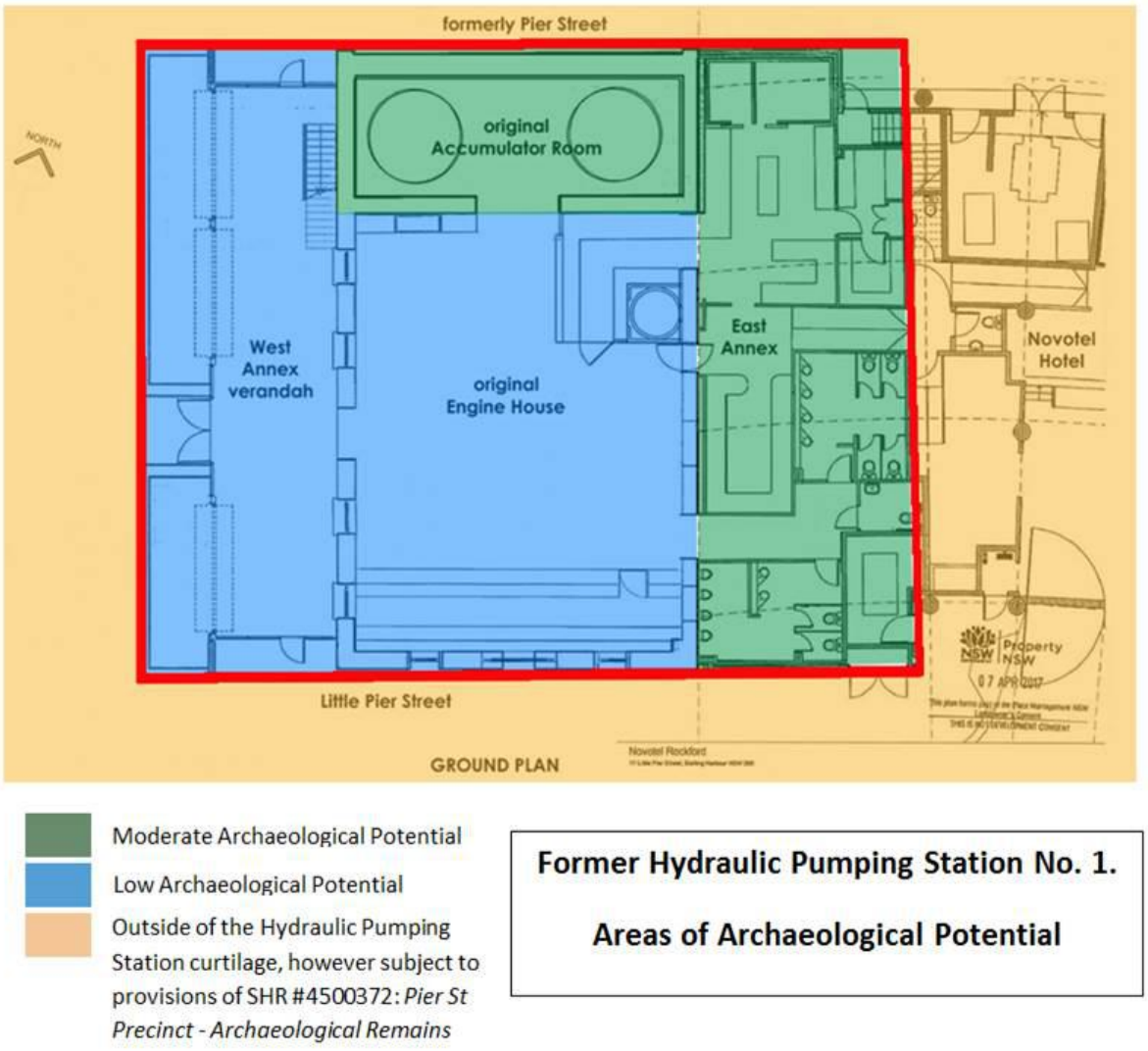


Figure 3.110 Areas of Archaeological Potential. Source Wayne Johnson, Property NSW

3.8 Moveable Heritage

The majority of the important elements of the former HPS No. 1 were industrial items of movable heritage, which is largely why they are not remaining on site. It is very rare worldwide for a steam engine pump house of this era to have survived intact, but there are examples in England.

Items ***no longer remaining*** at the former HPS No. 1 include:

- The steam engines were removed in stages, the first for a new centrifuge machine c1924 and then the remainder for the electric pumps in 1952. The electric pumps were short-lived and likely removed in 1960.
- The end of the steam engines resulted in the demolition of the chimney and boiler house. The boilers were removed at this time.
- The cast iron pipes were likely removed at the same time in 1960 for the building to be reused. Some pipes remained in the 1979 photos, but these also have been lost. There may still be lengthy sections of cast iron pipe related to the former HPS No. 1 throughout the city, given the extent of the serviced area.
- Internally, no original machinery associated with the ER remains, however the footprint and overall proportions of the room is evident.
- Items discovered during the clean out of the accumulators in 2014 were disposed of and not documented.

There are no documents indicating where the steam engines or boilers were taken, but it is likely they were scrapped for their metal content or reused as parts. Likewise the later engines and pipes have no documentation of their removal.

Items ***remaining*** at the former HPS No. 1 include:

- The cast iron panels of the water tank roof are to some extent removable, although in most cases it appears the bolts have seized. (refer to Figures 3.54 to 3.57)
- Four loose cast iron panels on the roof, and perhaps more elsewhere on the site. (refer to Figures 3.94 and 3.95)
- Several accumulator weights on the site. (Figure 3.100).

The table in Appendix G: Inventory of Moveable Heritage Items is to be completed by the owners once a decision is made on the final location of the items as part of an Interpretation Strategy that should be prepared by a suitably qualified heritage/conservation architect.

(a)



(b)



Figure 3.11 a) Accumulator weights in the Original Engine House, view looking towards West Annex Verandah. *Source: Sydney Heritage Consultants – 2017*

b) Accumulator weights removed from fill when accumulator tanks were emptied of their ballast Source: *Clive Lucas, Stapleton & Partners Pty. Ltd- Urgent Remedial Works to Accumulator Tanks Progress Report-2014*.

4.0 Assessment of Cultural Significance

4.1 Introduction

4.1.1 NSW Heritage Assessment Guidelines

This section outlines the approach to assessment of heritage significance set out in the NSW Heritage Manual guidelines, prepared by the NSW Heritage Office and Department of Urban Affairs and Planning (as amended July 2002). These guidelines provide the framework for the assessment of the significant heritage values of former HPS No. 1 and its contributory components, which is summarised in the Statement of Significance (in Section 4.3). The Heritage Guidelines incorporate the five types of 'cultural heritage values' identified in the Burra Charter into a specifically structured framework that is accepted as the required format by heritage authorities in New South Wales.

Under these guidelines, places are assessed against the following criteria:

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

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

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

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

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

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

g) An item is important in demonstrating the principal characteristics of a class of NSW's:

– cultural or natural places; or

– cultural or natural environments

(or a class of the local area's)

– cultural or natural places; or

– cultural or natural environments

In applying the assessment criteria, both the nature and degree of significance of the place need to be identified, with items varying in the extent to which they embody or reflect key values and the relative importance of their evidence or associations. The assessment also needs to relate the item's values to its relevant geographical and social context, usually identified as either Local or State contexts. Items may have both Local and State significance for similar or different values/criteria.

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

4.1.2 Ability to represent historic themes

The following table identifies the relevant Australian and New South Wales historic themes represented at the site.

The State historical themes of Industry, Technology and Utilities are particularly relevant for establishing the thematic framework for Darling Harbour which provides the primary context for the development of the former HPS No. 1. The key historical themes that apply to former HPS No. 1 and its' context within Darling Harbour are expanded in the outline below.

Australian Historic Theme	NSW Historic Theme	Representation of historic themes at Darling Harbour and the former HPS No.1
2 Peopling Australia	Aboriginal cultures and interactions with other cultures	***Darling Harbour:*** The Aboriginal people who lived along the coastal area of Sydney were called (erroneously by the Europeans) the Eora, or coastal Darug. The Sydney area, including The Rocks, Darling Harbour and Pyrmont/ Ultimo formed the territory of a "clan" (subgroup) known as the Cadigal. Physical evidence of the occupation of the Cadigal people in Darling Harbour area is largely demonstrated by an abundance of extensive shell middens in the area, many of which were destroyed by lime burners in the early years of the nineteenth century. Intact middens have been found during recent excavations at Cockle Bay (Darling Harbour). The area of Darling Harbour was known as Tumbalong, the name is still used in current naming conventions in the vicinity.
3 Developing local, regional and national economies	Industry Activities associated with the manufacture, production and distribution of goods	***Darling Harbour:*** Shipbuilders and mill owners soon supplanted the convicts. When Australia's first steam engine started work on the shore of the harbour in 1815, it initiated nearly two hundred years of industrial development in the general area. Early growth centred on the wharves and businesses that serviced the ships using the harbour. By the end of the nineteenth century Darling Harbour was handling much of Australia's wool, wheat and coal and a myriad of mills, foundries and factories were belching smoke around its shores. The area was also home to an army of workers whose houses lined the streets and alleyways leading down to the harbour. ***Former HPS No. 1:*** The building played a significant role in the industrial and commercial development of Sydney. The building houses the two original accumulators which provided the means to power production, industry and the distribution of goods in Darling Harbour and Sydney. It is one of the last surviving structures in the area that reflects Darling Harbours' industrial history.
3 Developing Local, Regional and National Economies	Technology Activities and processes associated with the knowledge or use of mechanical arts and applied sciences	***Former HPS No. 1*** Two remaining original accumulator tanks, cast iron panels of the original water tank, large riveted wrought iron girders, and potential archaeological remains of hydraulic pumping system. The structure is a monument to technological development in 19th century Australia
3 Developing	Transport	***Darling Harbour***

Australian Historic Theme	NSW Historic Theme	Representation of historic themes at Darling Harbour and the former HPS No.1
Local, Regional and National Economies	Activities associated with the moving of people and goods from one place to another and systems for the provisions of such movements	In 1856 a branch of the first New South Wales railway linked Darling Harbour to the first central station at Redfern. In the last decades of the 19th century and for the majority of the 20th century, the harbour side was increasingly dominated by the giant marshalling yards. Trains from all over NSW and beyond delivered supplies for the Darling Harbour industries or products for transhipment to vessels bound for ports around the world. ***Former HPS No. 1*** Houses the remains of the system which provided provision of moving people and goods in the city of Sydney.
4 Building Settlements, towns and cities	Towns suburbs & villages Activities associated with creating, planning and managing urban functions, landscapes and lifestyles	***Darling Harbour*** By the 1960s industrial decline was evident around Darling Harbour. The coastal shipping trade had dwindled to nothing and the giant wool stores were moving west in search of more space and better road access. The sixties also saw the closure of Ultimo Power station when buses superseded the last trams. The hydraulic pumping station closed in 1975 and in 1984 the last goods train trundled out of Darling Harbour. The 1980s however also saw the rebirth of the area when Sydney's premier entertainment precinct was established. ***Former HPS No. 1*** Hydraulic power produced by the former HPS No. 1 changed the landscape of the city as it allowed for the construction of taller prominent buildings, which changed Sydney City skyline. The use of hydraulic power in Sydney altered urban functions. Hydraulic power was an important factor in the operations of the Pyrmont and Darling Harbour wool stores and wool boom of the 1890s.
4 Building Settlements, towns and cities	Utilities Activities associated with the provision of services, especially on a communal basis	***Darling Harbour*** Darling Harbour was the natural home of public utilities which developed to meet the needs of Sydney's residents and industries. The most important of these were the gas works, which opened in 1841 on the eastern shore of the harbour, the former HPS No.1, which opened in 1891, and the Ultimo and Pyrmont power stations that were commissioned around 1900. The Ultimo and Pyrmont power stations provided power for the city's trams and fed the first reticulated electricity grid for domestic use. Electricity was ultimately to prove a cheaper and more easily distributed source of power, however, the hydraulic system remained viable until its closure in 1975. ***Former HPS No. 1*** The former HPS No. 1 provided power utility to the City of Sydney for over 82 years supplying at its peak 519 installations including passenger and goods lifts, whip hoists, bank doors, sprinkler systems, wharf cranes, dumping presses and motors. The former HPS No. 1 was part of a network of 2 other pumping stations that provided power across the city from Pyrmont to Woolloomooloo. The former HPS No. 1 power system is associated with an extensive network of high-pressure pipes buried under CBD roads and footpaths as well as cast-metal valve pit covers set into footpaths and roadway pavements and valves and other fittings which remain intact around Sydney CBD. Mt Rennie Dam (now Moore Park Golf Course) was constructed to supply water to power station as the demand for power increased from the former HPS No. 1

4.2 Comparative Analysis

4.2.1 Introduction

The Conservation Management Plan (CMP) makes use of comparative analysis in order to survey the extent and number of similar buildings and places so that the relative rarity of such places can be collectively measured. Rarity underpins the evaluation of a heritage place. If there are many other similar places, it cannot be rare. However, if there are only very few, its rarity factor will lead to policies calling for greater protection and more restricted changes.

Comparative analysis is undertaken to supplement an assessment of heritage significance and support an argument that a place meets a specific threshold of heritage value. It assists in locating a site within a particular movement or style, or determining what the nature of its contribution was within a particular epoch. The places discussed in the passages that follow demonstrate a range of extant remains of hydraulic power in the Australia and United Kingdom.

This comparative analysis examines:

- the site in the context of development of water hydraulic power systems and devices during the nineteenth century nationally and internationally;
- the site in context of a range of extant system elements and remains from Australia;
- the site in context of end-use applications that evolved.

4.2.2 Overview

The first hydraulic power station in the world was built in Hull in England in 1876. The first Australian system followed only two years later when a hydraulic station was built in Newcastle to provide power to cranes on the wharves. The first large multi-purpose system was established in Melbourne in 1889 and the Sydney system in 1891.

Several smaller systems were installed in Sydney throughout the last decades of the 19th century including the plant at Garden Island built in the 1890s which powered two lifts and five whips (hoists). Another example is the system at the Eveleigh Railway workshops that dates to 1887, which powered a number of presses and spring making tools.

Most systems were short lived because electricity became widely available early in the twentieth century and was cheaper, more flexible and could be efficiently transmitted over very long distances. The peak of hydraulic power was in the 1930s and from then on electrical machinery steadily replaced it.

The Sydney HPS No.1 must have been very efficient as it did not close until 1975 and was the longest lasting system in the world.

The only system that outlived it was the Wapping Hydraulic Pumping Station in London, which closed the following year.

Of the Australian systems only the water tank survives from the Melbourne system. The shell of the Newcastle building remains but all the machinery has gone.

The Garden Island Dockyard system is intact and has been preserved in good condition although the lifts have been converted to electrical power.

The Eveleigh system is still complete and possibly operable if a steam supply could be provided.

These two are almost certainly the best preserved small systems in Australia.

The former HPS No.1 can be compared with Newcastle Carrington Hydraulic Engine House for the only other large scale hydraulic system in NSW. The two systems, however, were quite different, with the former HPS No. 1 driving a great diversity of warehouse and commercial equipment across the CBD, while that at Carrington was constructed exclusively to drive the largest coal loading facility in the State. The Hydraulic Power Station at Carrington preceded the Sydney system by over a decade. It is considered that both are highly significant in demonstrating the use of hydraulic power in NSW.

The surviving elements of the former HPS No. 1 comprise the accumulator and engine house, somewhat modified, the two accumulators and some of the cast iron plates that formed the giant water tank. There are also a number of artefacts throughout the city that demonstrate various applications of the power supplied by the company. Together all these elements constitute the most comprehensive record of a public hydraulic power system in Australia.

4.2.3 Hydraulic Power Network System

A hydraulic power network is a system of interconnected pipes carrying pressurized liquid used to transmit mechanical power from a power source, like a pump, to hydraulic equipment like lifts or motors. The system is analogous to an electrical grid transmitting power from a generating station to end-users. Only a few hydraulic power transmission networks are still in use; modern hydraulic equipment has a pump built into the machine. In the late 19th century, a hydraulic network might have been used in a factory, with a central steam engine or water turbine driving a pump and a system of high-pressure pipes transmitting power to various machines.

The idea of a public hydraulic power network was suggested by Joseph Bramah in a patent obtained in 1812. William Armstrong began installing systems in England from the 1840s, using low-pressure water, but a breakthrough occurred in 1850 with the introduction of the hydraulic accumulator, which allowed much higher pressures to be used. The first public network, supplying many companies, was constructed in Kingston upon Hull, England.

The Hull Hydraulic Power Company began operation in 1877, with Edward B. Ellington as its engineer. Ellington was involved in most of the British networks, and some further afield. Public networks were constructed in Britain at London, Liverpool, Birmingham, Manchester and Glasgow. There were similar networks in Antwerp, Melbourne, Sydney, Buenos Aires and Geneva. All of the public networks had ceased to operate by the mid-1970s, but Bristol Harbour still has an operational system, with an accumulator situated outside the main pumphouse, enabling its operation to be easily visualized[1].

4.2.4 Development of water hydraulic power systems and devices during the nineteenth century

The following excerpt is from a paper entitled Remnants of Early Hydraulic Power Systems by J.W Gibson MA (Syd), MIE Aust & M C Pierce BE (Elec), FIE Aust. 3rd Australasian Engineering Heritage Conference 2009.

The first practical hydraulically operated machine was the hydraulic press, invented by Joseph Bramah in 1796. Bramah's press embodied the principle originally demonstrated by

[1] *https://en.wikipedia.org/wiki/Hydraulic_power_network*

Pascal in 1647, where-in fluid pressure created by applying a force to a small area plunger in a closed cylinder can be used to act on a larger area plunger to produce a correspondingly larger force if the fluid spaces in the two plunger cylinders are connected by a pipe. In Bramah's machine the larger plunger or ram operated the moving platen of the press.

Bramah went on to conceive other ideas for transmitting and using hydraulic power, most notably as documented in his 'omnibus' patent specification of 1812, however these ideas were not taken up in his lifetime (McNeil 1968). It was not until 1840 that William Armstrong – later knighted for his pivotal work in improving armaments – developed his ideas for a hydraulically operated crane based on the hydraulic jigger. The hydraulic jigger comprised a ram in a closed cylinder arranged with multiple pulley sheaves at each end so as to multiply movement of the free end of a chain or rope wound around the sheaves when a pressurised fluid, normally water, was admitted into the cylinder. (The hydraulic jigger operated in the reverse manner to the conventional block and tackle).

A 5 ton (5t) hydraulically operated crane based on Armstrong's design was installed on a Newcastle-on-Tyne wharf in 1846 (Armstrong 1858). Its success led to similar hydraulic cranes being installed for wharves and railway yards in other places in the UK. The source of the pressurised fluid for these early hydraulic cranes was the town's water supply. Water pressures of up to 90 psi (600 kPa) could be obtained in this way to act on the ram within the individual hydraulic jiggers, with control by way of lever operated three-way valves.

Although hydraulic cranes operated from the public water supply mains worked tolerably well, problems arose with pressure variations due to draw-off by other water users. Notwithstanding this, some installations continued to utilise mains pressure water sources, including some early hydraulic lifts. Armstrong's first solution to the variable pressure difficulty was to arrange for an independent elevated tank or 'water tower' into which water was pumped and from which the hydraulic plant was then powered. In 1851 Armstrong is credited with reinvention of the hydraulic accumulator used in conjunction with high-pressure plunger pumps, a system originally proposed although not implemented by Bramah in 1812. In this device a ram arranged in a vertical closed cylinder is loaded by dead weight ballast, with energy able to be stored by upward movement of the ram and recovered on its descent. Thus, the accumulator acts as a pressure sustaining device between the high-pressure pumps and the hydraulically operated machines connected to the system. (Armstrong 1858; Armstrong 1877). Figure 4.1 from Armstrong's 1858 paper illustrates the construction of the hydraulic accumulator.

By arranging to regulate the pumping rate to maintain the accumulator ram between its upper and lower travel limits, a constant pressure is sustained and short term peaks and troughs in water demand are accommodated by movement of the ram to utilise its water storage capacity. Although the accumulator could not offer the storage volume of an elevated tank, its major advantage was in permitting a much higher operating pressure with a consequent reduction in size of pressure mains and hydraulic machine cylinders, and also a marked improvement in operating efficiency.

The success of the hydraulic accumulator led to many more installations with an operating pressure in the range of 600 to 700 psi (4.1 to 4.8 MPa) becoming 'standard'. With the introduction of high-pressure hydraulic power, the range of hydraulically operated machines

and equipment expanded rapidly. Although hydraulic power was ideally suited to linear motion machines based on the ram and cylinder combination, such as utilised with the hydraulic jigger, rotary hydraulic engines were developed for operating haulage capstans and moving the lift sections of bascule and other bridges. Pelton wheels or other water turbines were also occasionally used to drive electric generators.

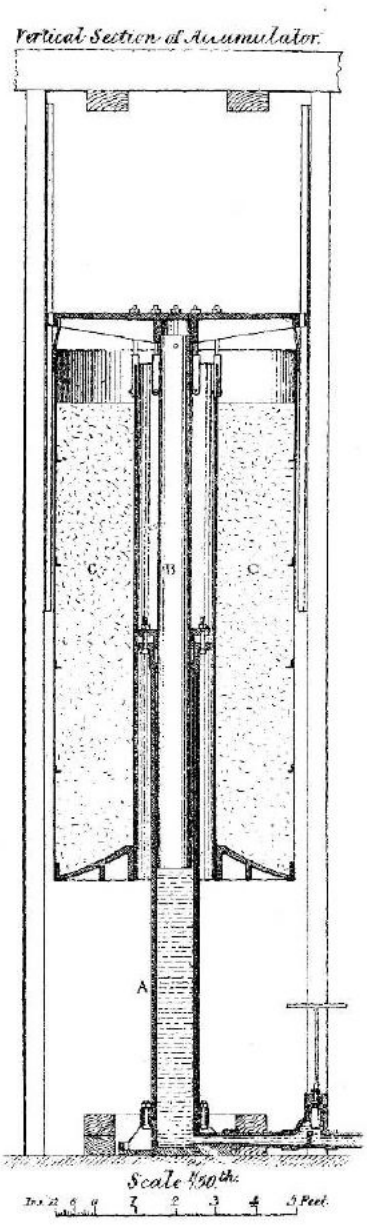


Figure 4.1 Armstrong's Hydraulic Accumulator.

Armstrong's Elswick (UK) Hydraulic Equipment Company manufactured high pressure hydraulic machinery for a central power plant system to supply hydraulically operated coal loading cranes for the Port of Newcastle in Australia. This facility was engineered by the NSW Public Works Department under Edward Moriarty. It went into service in 1877 and

operated continuously for the following 90 years (Bairstow 1986; Cockbain 1998).

The first public hydraulic power system commenced operation in Hull in the UK in 1876 (Pugh 1980). The Hull hydraulic power system had a central steam operated pumping station with some 4 km of 6 inch (150 mm) cast iron pressure mains buried beneath city streets. With this system customers could connect to the company's main and purchase high-pressure water to operate hydraulic machines at their individual premises. That is, the system was an early motive power distribution utility available to individuals and companies whose premises were near where the hydraulic company's mains were routed.

The Hull public power scheme, although modest, acted as a proving ground for the very much larger London system that followed it. The City of Liverpool followed London with a public hydraulic system that commenced operation in 1885 (Pugh, 1980). In July 1889 a public hydraulic power system was inaugurated in Melbourne by the Melbourne Hydraulic Power Company, making it the fourth such system in the world (Pugh 1980; Pierce 2008). It operated through to 1967. A similar public utility service for Sydney commenced operation in 1891 and operated until 1975. The use of water conveyed in pipes under high-pressure offered a convenient means of transmitting mechanical energy from a steam engine(s) driving plunger pumps to distant locations at a time when 'steam was king'. In this way, motive power could be delivered to end-use devices at distances of up to 10km with an efficiency of around 90% (Pugh 1980). A central pumping plant could be arranged to power many distributed end-use devices within an industrial site such as docks, railway workshops, etc, or in a city context where the high-pressure mains were laid under the streets, for powering passenger lifts in tall buildings. As well as convenience and an 'economy of scale' by using large central plant, the atmospheric polluting effect of a multiplicity of small steam boiler plants could be reduced along with avoiding the cost to operate and maintain each such installation. These latter considerations were particularly pertinent for the public hydraulic power utilities serving urban areas in the late 19th and early 20th centuries.

4.2.5 Examples of Hydraulic Public Power Stations

The following information is entirely quoted from the paper written by Pierce, Miles: on The Melbourne Hydraulic Power Company and Public Hydraulic Power Systems in Australia from the Australian Journal of Mechanical Engineering, Vol. 7, No. 2, 2009: 173-187 and from an article titled Hydraulic Power Network from http://www.wikiwand.com/en/Hydraulic_power_network.

Hull, England

Building	Location	Built	Date of Operation
Former works of the Hull Hydraulic Power Company, now a workshop.	Machell Street, Kingston upon Hull, England Grade II listed	1875 Henry Robinson	1876-1946

History

The first practical installation which supplied hydraulic power to the public was in Kingston upon Hull, in England. The Hull Hydraulic Power Company began operation in 1876. They had 2.5 miles (4.0 km) of pipes, which were up to 6 inches (150 mm) in diameter, and ran along the west bank of the River Hull from Sculcoates bridge to its junction with the Humber. The pumping station was near the north end of the pipeline, on Machell Street, near the disused Scott Street bascule bridge, which was powered hydraulically. There was an accumulator at Machell Street, and another one much nearer the Humber, on the corner of Grimsby Lane. Special provision was made where the pressure main passed under the entrance to Queens Dock. By 1895, pumps rated at 250 hp (190 kW) pumped some 500,000 imperial gallons (2,300 m3) of water into the system each week, and 58 machines were connected to it. The working pressure was 700 psi (48 bar), and the water was used to operate cranes, dock gates, and a variety of other machinery connected with ships and shipbuilding. The Hull system lasted until the 1940s, when the systematic bombing of the city during the Second World War led to the destruction of much of the infrastructure, and the company was wound up in 1947, when Mr F J Haswell, who had been the manager and engineer since 1904, retired.The man responsible for the Hull system was Edward B. Ellington, who had risen to become the managing director of the Hydraulic Engineering Company, based in Chester, since first joining it in 1869. At the time of its installation, such a scheme seemed like "a leap in the dark", according to R. H. Tweddell writing in 1895, but despite a lack of enthusiasm for the scheme, Ellington pushed ahead and used it as a test bed for both the mechanical and the commercial aspects of the idea. He was eventually involved on some level in most of the hydraulic power networks of Britain. The success of such systems led to them being installed in places as far away as Antwerp in Belgium, Melbourne and Sydney in Australia, and Buenos Aires in Argentina.

Description

Red brick with blue brick dressings and rendered plinth. Single storey; 4x2 windows. Windows are round-arched cast-iron glazing bar casements. Right return has a blocked door to left and a window to right. There is no separate roof, the whole building acting as support for a sectional cast-iron tank which is inscribed "Stacey Davis & Co., Phoenix Foundry, Derby". In Hull, the Machell Street pumping station has been reused as a workshop. The building still supports the sectional cast-iron roof tank used to allow the silt-laden water of the River Hull to settle, and is marked by a Blue plaque, to commemorate its importance.



Figure 4.2 Machell Street hydraulic pumping station in Hull, showing the water settling tank on the roof
Source: http://www.wikiwand.com/en/Hydraulic_power_network

Newcastle, Australia

Building	Location	Built	Date of Operation
Carrington Hydraulic Engine House	106 Bourke Street, Carrington, NSW - 3 Ports SEPP	c1877	1877-1967

History

The Carrington Hydraulic Power Station was the first large scale hydraulic power system to be established in Australia. This cutting edge late nineteenth century technology was introduced to operate a crane system for loading coal onto ships in Newcastle Harbour. The main structure was built in 1877 under the direction of the Public Works Department Harbours and Rivers or Provenance: Branch to house machinery which provided hydraulic pressure for the operation of cranes along the Dyke. The machinery was developed by engineer Sir William Armstrong for similar applications in England; it was built at the Hydraulic Machinery Factory of Sir W.G. Armstrong & Co. at Elswick, Newcastle-Upon-Tyne. Elements of the building may have been designed by Edmund Spencer in the office of the Colonial Architect, James Barnet; by Barnet himself; by Sir W.G. Armstrong & Co.; or through a collaboration of some or all of these. E.O. Moriarty of the Harbours and River Navigation Branch of the Department of Public Works exerted a strong influence on the inception of the scheme. The main Engine House was constructed with locally-made bricks by Jennings & Company of Sydney. A railway siding, with a wagon turntable, supplied coal to the boilers. Extended in 1890-1891 (as originally planned) and in c.1906 and 1915. These later additions were built in connection with electric lighting of The Dyke, and electric cranes at The Basin. It was because of this that the name of 'Power House' was gradually adopted. Apart from the demolition of the two large chimneys, the original building remains relatively intact, although deterioration of some elements continues. The last hydraulic crane was placed out of use in 1967, after which the machinery and cranes were removed. In providing power for cranes, the hydraulic power house is believed to be the only one of its kind in Australia. The site its associated buildings are of great historic, archaeological and aesthetic value. A conserved and reconstructed roof (1990s), new main doors, and some protective glazing are now featured. Source: http://www.portofnewcastle.com.au/Resources/Documents/Port-of-Newcastle-Heritage-and-Conservation-Register-2014-PART-III.pdf

Description

Predominantly brick single storey building with decorative sandstone detail to openings, cornices, valances and corbels. A central Engine House, to accommodate two engines, is flanked by twin boiler rooms. Timber windows and doors. Much carved stonework. Metal truss roof. Repaired and reconstructed slate roof (1990s). Disruption and voids to northern wall now obvious since demolition of unsympathetic additions on that elevation. Heavy cast iron guttering and downpipes. Cast iron 10" water pipes to harbour still extant. Interior is largely unaltered; while machinery has been removed, footings and fixing points are extant. Source:http://www.portofnewcastle.com.au/Resources/Documents/Port-of-Newcastle-Heritage-and-Conservation-Register-2014-PART-III.pdf

Significance:

The Power Station is of great historic, associative and aesthetic significance for the State of NSW, as a standing structure of great architectural quality, which was constructed to house machinery for the State's first large scale hydraulic power system. The Power Station represents an important landmark in energy technology in NSW, and demonstrates the employment of state of the art technology at Newcastle port, the State's largest coal loading facility for much of the last 150 years. The Power Station has a strong association with E O Moriarty, eminent Australian Engineer, as an integral component in the world class port facility he designed and implemented at Newcastle from 1855, his first major project in the colony. The Power Station is also significant through its association with England's Sir William George Armstrong, the father of modern hydraulic power, whose company supplied the hydraulic machinery for the Carrington system. Despite its utilitarian function, the building was designed with an imposing classical facade, which forms a local architectural landmark. Its architecture represented the excellence and permanence of the Bullock Island scheme as a port facility with economic importance to the State. Although the machinery has been removed from the inside of the Power House, its exterior design, the interior spaces and remaining features, the archaeological remnants of the hydraulic system on the site, as well

as its relationship with the with the crane base relics, located on the nearby Dyke (SHI 2171247), provide rare evidence of this phase of energy technology in NSW.
Source:http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=2170005

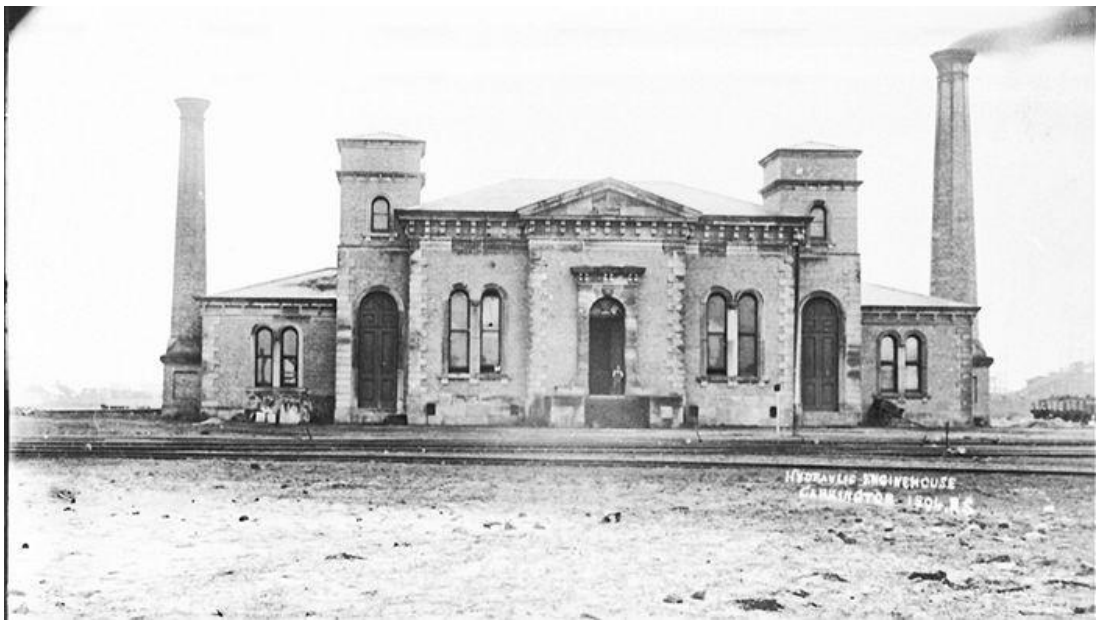


Figure 4.3 *Carrington Pump House, built in 1877, once provided the hydraulic pressure required to drive loading cranes in the port of Newcastle.* Source: http://www.abc.net.au/local/photos/2012/09/10/3586988.htm



Figure 4.4 The Carrington pump house in 2008. Picture: Ryan Osland- Source: http://www.theherald.com.au/story/4336750/pump-house-heritage-push-photos/#slide=10

London, England

Building/Location/Built	Date of Operation
Falcon Wharf Pumping Station-1883, Wapping Hydraulic Pumping Station-1890 ,Renforth Pump House-1894, City Road Basin-unkown, LHP at 80 Grosvenor Road-1908	1883-1977 Grade II Listed

History

The best-known public hydraulic network was the city-wide network of the London Hydraulic Power Company. This was formed in 1882, as the General Hydraulic Power Company, with Ellington as the consulting engineer. By 1883, another enterprise, the Wharves and Warehouses Steam Power and Hydraulic Pressure Company, had begun to operate, with 7 miles (11 km) of pressure mains on both sides of the River Thames. These supplied cranes, dock gates, and other heavy machinery. Under the terms of an Act of Parliament obtained in 1884, the two companies amalgamated to become the London Hydraulic Power Company. Initially supplying 17.75 million gallons (80.7 megalitres) of high-pressure water each day, this had risen to 1,650 million gallons (7,500 megalitres) by 1927, when the company was powering around 8,000 machines from the supply. They maintained 184 miles (296 km) of mains at 700 psi (48 bar), which covered an area reaching Pentonville in the north, Limehouse in the east, Nine Elms and Bermondsey in the south and Earls Court and Notting Hill in the west. Five pumping stations kept the mains pressurised, assisted by accumulators. The original station was at Falcon Wharf, Bankside, but this was replaced by four stations at Wapping, Rotherhithe, Grosvenor Road in Pimlico and City Road in Clerkenwell. A fifth station at East India Docks was originally operated by the Port of London Authority, but was taken over and connected to the system. The stations used steam engines until 1953, when Grosvenor Road station was converted to use electric motors, and following the success of this project, the other four were also converted. The electric motors allowed much smaller accumulators to be used, since they were then only controlling the pressure and flow, rather than storing power. While the network supplied lifts, cranes and dockgates, it also powered the cabaret platform at the Savoy Hotel, and from 1937, the 720-tonne three-section central floor at the Earls Court Exhibition Centre, which could be raised or lowered relative to the main floor to convert between a swimming pool and an exhibition hall. The London system contracted during the Second World War, due to the destruction of customers' machinery and premises. Following the hostilities, large areas of London were reconstructed, and the re-routing of pressure mains was much more difficult than the provision of an electric supply, so that by 1954 the number of machines had fallen to 4286. The company was wound up in 1977. In London, Bermondsey pumping station, built in 1902, is in use as an engineering works, but retains its chimney and accumulator tower, while the station at Wapping is virtually complete, retaining all of its equipment, which is still in working order. Source: http://www.wikiwand.com/en/Hydraulic_power_network



Figure 4.5 Front view of the LHP Company's premises at 80 Grosvenor Road, Pimlico in the mid-1960s.Source: http://www.subbrit.org.uk/sb-sites/sites/h/hydraulic_power_in_london/index1.shtml, http://wjlinnell.weebly.com/londons-power/archives/01-2015/2

Liverpool, England

Building	Location	Built	Date of Operation
Liverpool Hydraulic Power Company	Athol Street	1888	1888-1971

History

A system began operating in Liverpool in 1888.[15] It was an offshoot of the London-based General Hydraulic Power Company, and was authorised by acts of Parliament obtained in 1884 and 1887.By 1890, some 16 miles (26 km) of mains had been installed, supplied by a pumping station at Athol Street, on the bank of the Leeds and Liverpool Canal. Although water was originally taken from the canal, cleaner water supplied by Liverpool Corporation was in use by 1890, removing the need for a filtration plant. At this time two pumpsets were in use, and a third was being installed. Pressure was maintained by two accumulators, each with an 18-inch (460 mm) diameter piston with a stroke of 20 feet (6.1 m). The Practical Engineer quoted the pressure as 75 pounds per square inch (5.2 bar), but this is unlikely to be correct by comparison with other systems. A second pumping station at Grafton Street was operational by 1909. The system ceased operation in 1971. Source: http://www.wikiwand.com/en/Hydraulic_power_network

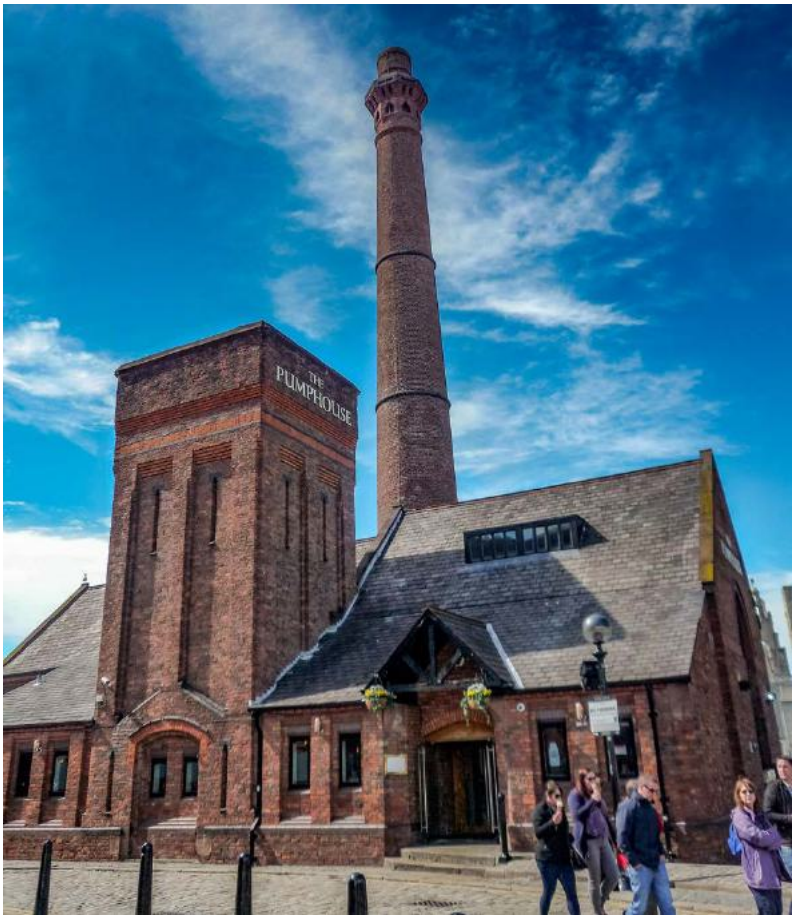


Figure 4.6 Liverpool Pumphouse – *Angelina Archer (Flickr)*[2]

[2] *https://www.flickr.com/photos/roselina/27227321542/in/photolist-HtZ97j-GGZfBK-HCyaXH-GGUVoy-HzCh2s-GGZpWM-HtYMfj-GGUnE3-HCyBGP-Hwndcr-HtZ537*

Birmingham, England

Building	Location	Built	Date of Operation
Birmingham Hydraulic Power Company	Dalton Street	1891	1891-

History

Birmingham obtained its system in 1891, when the Dalton Street hydraulic station opened. In an unusual move, J. W. Gray, the Water Department engineer for the city, had been laying pressure mains beneath the streets for some years, anticipating the need for such a system. The hydraulic station used Otto 'Silent' type gas engines, and had two accumulators, with an 18-inch (460 mm) diameter piston, a stroke of 20 feet (6.1 m) and each loaded with a 93-tonne weight. The gas engines were started by a small hydraulic engine, which used the hydraulic energy stored in the accumulators, and all equipment was supplied by Ellington's company. Very few documents describing the details of the system are known to exist. Source: http://www.wikiwand.com/en/Hydraulic_power_network

Glasgow, Scotland

Building	Location	Built	Date of Operation
Glasgow Hydraulic Power Station	Junction of High Street and Rottenrow	c1894	1895-1964

History

The Glasgow system was commissioned in 1895. It was equipped by Ellington's company, and used the higher pressure of 1,120 psi (77 bar). This was maintained by six sets of triple-expansion steam engines, rated at 200 hp (150 kW) each. Two accumulators with pistons of 18-inch (460 mm) diameter, a stroke of 23 feet (7.0 m), and loaded with 127 tonnes were installed. The pumping station was at the junction of High Street and Rottenrow. By 1899, it was supplying power to 348 machines, and another 39 were in the process of being completed. The pipes were 7 inches (180 mm) in diameter, and there were around 30 miles (48 km) of them by 1909, when 202,141 imperial gallons (918.95 m3) of high pressure water were supplied to customers. The system was shut down in 1964. Source: http://www.wikiwand.com/en/Hydraulic_power_network

Manchester, England

Building	Location	Built	Date of Operation
Water Street Pumping Station	Manchester Grade II listed	c1893	1894-1972

History

In Manchester, the Water Street pumping station, built in Baroque style, was used as workshops for the City College, but has formed part of the People's History Museum since 1994. One of the pumping sets has been moved to the Museum of Science and Industry, where it has been restored to working order and forms part of a larger display about hydraulic power. The pumps were made by the Manchester firm of Galloways.

It was equipped by Ellington's company, and used the higher pressure of 1,120 psi (77 bar). This was maintained by six sets of triple-expansion steam engines, rated at 200 hp (150 kW) each. Two accumulators with pistons of 18-inch (460 mm) diameter, a stroke of 23 feet (7.0 m), and loaded with 127 tonnes were installed. In Manchester, the hydraulic station was built on the east side of Gloucester Street, by Oxford Road railway station. It was later supplemented by stations at Water Street and Pott Street, the latter now under the car parks of the Central Retail Park. At its peak in the 1930s, the system consisted on 35 miles (56 km) of pipes, which were connected to 2,400 machines, most of which were used for baling cotton. The system was shut down in 1972. Source: http://www.wikiwand.com/en/Hydraulic_power_network



Figure 4.7 The Water Street pumping station now houses the People's History Museum Source: Budby (Flickr)[3]

[3] *https://www.flickr.com/photos/30120216@N07/6029582739/in/photolist-8MneV3-mkvfX6-WhghjF-WhggTa-e7wRMq-azKxHS-e8RK3Q-7RFQAp-e7LYEq-fJ6DD1-azQ6ry-e7LYLy-e7Fipk-e95wjs-k6Hj4g-e8YSnK-e8RK81-e7Fiv2-fDDzdU-abPbT6-abPdjH-fHP9ut-oFEJ2-8hisbq-4WdyrH-CC87P3-mrfp4v-Nfk7PV-oe2UvT-TgTx5N-H3Ntsq/*

Bristol, England

Building	Location	Built	Date of Operation
Bristol Harbour and Dock Hydraulic Pumping Station	Bristol Dock and Bristol Harbour Grade II listed	1887	1888-

History

Bristol Harbour still has a working system, the pumping machinery of which was supplied by Fullerton, Hodgart and Barclay of Paisley, Scotland in 1907. The engine house constructed in 1887,fully commissioned by 1888, with a tower at one end to house the hydraulic accumulator. A second accumulator was fitted outside the building (dated 1954) which enables the operation of the system to be more easily visualised. Source: http://www.wikiwand.com/en/Hydraulic_power_network



Figure 4.8 The external hydraulic accumulator at Bristol Harbour Source:http://www.wikiwand.com/en/Hydraulic_power_network



Figure 4.9 The pumping station and hydraulic accumulator at Bristol Dock. Source: http://www.wikiwand.com/en/Hydraulic_power_network

Melbourne, Australia

Building	Location	Built	Date of Operation
Melbourne Hydraulic Power Company Spencer Street Power Station Overhead Water Tank	Fronting the Australian Wharf (later known as North Wharf) Road and to the west of the West Melbourne gas works (MHTC Lease, 1889) State Significance	1888	1889-1967

History

Melbourne Hydraulic Power Company began operating in July 1889. The company was authorised by an Act of the Victorian Parliament passed in December 1887, and construction of the system began, with Coates & Co. acting as consulting engineers, and George Swinburne working as engineering manager. The steam pumping plant was supplied by Abbot & Co. from England. Expansion was rapid, with around 70 machines, mainly hydraulic lifts, connected to the system by the end of 1889, and a third steam engine had to be installed in mid-1890, which more than doubled the capacity of the system. A fourth pumping engine was added in 1891, by which time there were 100 customers connected to the mains. The mains were a mixture of 4-inch (100 mm) and 6-inch (150 mm) pipes. The water was extracted from the Yarra River until 1893, after which it was drawn from the Public Works Department's supply. There were some 16 miles (26 km) of mains by 1897. A second pumping station was added in 1901, and in 1902, 102 million gallons (454 megalitres) of pressurised water were used by customers. Source: http://www.wikiwand.com/en/Hydraulic_power_network

The pumping station was erected on land leased from the Melbourne Harbour Trust Commissioners (MHTC) fronting the Australian Wharf (later known as North Wharf) Road and to the west of the West Melbourne gas works (MHTC Lease, 1889). It appears that the site was chosen with a view to supplying cranes and hoists on the nearby docks. In the event, however, only a modest number of connections eventuated in the docks area with lifts in the CBD becoming the dominant load (City Engineer 's Report, 1916).

The system was operated as a commercial enterprise until 1925, after which the business and its assets reverted to the City of Melbourne, as specified by the original act. One of the early improvements made by the City Council was to consolidate the system. The steam pumps were replaced by new electric pumps, located in the Spencer Street power station, which thus supplied both electric power and hydraulic power to the city. The hydraulic system continued to operate under municipal ownership until December 1967. Source: http://www.wikiwand.com/en/Hydraulic_power_network

Description

The pumping station was a substantial brick building with piled foundations. It housed boilers, steam-operated horizontal pumping engines and two hydraulic accumulators, as well as some administrative accommodation. Water was delivered to cast iron segmental construction tanks mounted on the Engine House roof to provide a positive suction condition for high-pressure plunger type pumps.

The initial pumping station building was demolished somewhere around the 1930s, and the site is now part of the Victoria Harbour commercial and residential precinct being developed at Docklands. The No. 2 pumping station building was demolished as part of the Melbourne Central commercial development. Its location is now occupied by escalators connecting the ground and first floor levels beneath the glass cone containing its former neighbour, the preserved W Coop lead works building and shot tower.

The cast iron plate tank, bearing its makers name – Abbot & Co, Gateshead-on-Tyne – that was relocated from the original No. 1 pumping station to Spencer Street powe rstation in 1928 is still in-situ (2007) over a driveway at the now disused but scheduled for redevelopment site. This tank has been classified by the National Trust and is on the Victorian Heritage Register (H2117). Source: The Melbourne Hydraulic Power Company and Public Hydraulic Power Systems in Australia Author: Pierce, Miles: Australian Journal of Mechanical Engineering, Vol. 7, No. 2, 2009: 173-187

Significance

The cast-iron overhead water tank at the Spencer Street Power Station made in 1888 by J. Abbot & Co., Gateshead, England and altered and moved in 1927 to its present location is of historical, and technical significance at State level. The tank is of historical significant as the only major surviving element of the system used to generate and supply hydraulic power. The only other parts of the supply system to still exist are the valve covers visible in the streets of the Melbourne CBD, and hidden from view, the distribution pipes buried below the streets. The tank is also of historical importance as the only surviving element from the original Hydraulic Power Company No. 1 Pumping Station built in 1888. Located adjacent to the Australian Wharf, on the Flinders Street Extension this pumping station provided water at high pressure for operating lifts and cranes in the Melbourne central business district, South Melbourne, and Kensington. Melbourne was the first of only two cities outside England to build a public hydraulic power supply, the second being Sydney. The tank was in use from the opening of the system in 1889 until its closure on 31 December 1967.

The tank is of technical significance because it is an early and rare surviving example of the use of imported prefabricated cast iron plates. The tanks at the Western Treatment Plant in Werribee (c.1854), CSR Yarraville (c.1883), and Bendigo gasworks are the only other known examples in Victoria using this type of construction to remain. The prefabricated construction of the tank allowed for its reuse when the Melbourne City Council vacated the No. 1 Pumping Station site in 1927. When re-erected the tank was reduced in size from 115,000 gallons to approximately 58,000 gallons to suit the different pumping arrangements. Source: Victorian Heritage Register (VHR) Number: H2117



Figure 4.10 MHPC No. 1 Pumping Station building. Flag pole on top of accumulator tower. Photo from T Ingram's collection. Source: The Melbourne Hydraulic Power Company and Public Hydraulic Power Systems in Australia Author: Pierce, Miles Source: Australian Journal of Mechanical Engineering, Vol. 7, No. 2, 2009: 173-187



Figure 4.11 Cast-iron overhead water tank at the Spencer Street Power Station made in 1888 by J. Abbot & Co., Gateshead, England and altered and moved in 1927 to its present location Source: http://vhd.heritage.vic.gov.au/reports/report_place/11537

Geneva, Switzerland

Building	Location	Built	Date of Operation
Usine des Forces Motrices	Pont de la Machine, Lake Geneva	1879	1879-1958

History

Geneva started a public system in 1879 with a 300 hp steam engine installed at the Pont de la Machine pumping water of the Lake Geneva for a combined drinking water and pressurized water supply of the city. The water power was used by about hundred small workshops having Schmid type water engines installed. The power of the engines was between 1 and 4 hp at a pressure of 2 to 3 bar.[33]

Due to increased demand a new pumping plant was installed which started operation in 1886. The pumps were driven by Jonval turbines using the water power of the river Rhône. This structure was called Usine des Forces Motrices and was one of the largest structures for generation and distribution of power at the time of construction. At 1897 all of the 18 turbines were installed supplying the network with a gross power of 3,3 MW.

The distribution network used three different pressure levels. The lowest pressure level served for the drinking water supply, the intermediate and the high pressure level served as hydraulic power network. The intermediate pressure level had an operating pressure of 6.5 bar and was reached 1896 a length of 82 km. It was used for powering 130 water engines type Schmid with a gross power of 230 hp. The high pressure network had an operating pressure of 14 bar and reached an extension of 93 km. It was used to power 207 turbines and motors, as well as elevator drives. The gross power was 3000 hp. Many turbines were used for driving generators for electric lighting. In 1887 an electricity generation plant was built next to the powerhouse, which generated 110 V DC with a maximal power of 800 hp and an AC network with a maximal power of 600 hp. The generators were driven by a water turbine supplied from the hydraulic power network.

The hydraulic power network was not in competition with the electric power supply, but was more considered a supplement to the electric power supply. Only during the economic crisis of the 1930s, the demand of pressurized water as energy supply declined. The last water engine was decommissioned in 1958.

In order to avoid excessive pressure build-up in the hydraulic power network, a release valve was fitted beside the main hall of the powerhouse. A tall water fountain, the Jet d'Eau, was ejected by the device whenever it was activated. This happened typically at end of work when the factories switched off the machines one at the time, so that the pressure in the system was hard to control and the supply of pressurized water was difficult to adapt to the real demand. The tall fountain was visible from a long distance and became the landmark of the city. In 1891 it was moved to the current location in the lake where it is operated for the sole purpose of a tourist attraction without any other function. Source: http://www.wikiwand.com/en/Hydraulic_power_network

4.2.6 Summary of operating dates and details of Hydraulic Power Stations globally

(Source: http://www.wikiwand.com/en/Hydraulic_power_network)

	System	Operational	Closed	Pumping stations	Mains (miles)	Mains (km)	Pressure (psi)	Pressure (bar)
1	Hull	1876	1947	1	2.5	4	700	48
2	London	1883	1977	5	184	296	750	52
3	Liverpool	1888	1971	2	30	48	800	55
4	Melbourne	1889	1967	2	16	26	750	52
5	Birmingham	1891		1			700	48
6	Sydney	1891	1975	1	50	80	750	52
7	Manchester	1894	1972	3	35	56	1,120	77
8	Antwerp	1894		1	4.5	7.2	750	52
9	Glasgow	1895	1964	1	30	48	1,120	77
10	Geneva	1879	1958	1	109	175	94 / 203	6.5 / 14

4.2.7 Extant remains of Hydraulic Power in Sydney

J. W Gibson in an Article titled “Gone but not forgotten-Hydraulic Power in Sydney 1890-1975”, (Heritage Consulting, 20th December 2010) and Remnants of Early Hydraulic Power Systems by J.W Gibson MA (Syd), MIE Aust & M C Pierce BE (Elec), FIE Aust. 3rd Australasian Engineering Heritage Conference 2009 details other known independent extant remains of hydraulic power in Sydney. The information provided in his paper is quoted and tabulated below in its entirety from these two papers and no primary research was undertaken as part of the CMP.

Building	Location	Built	Date of Operation
Naval Stores	Garden Island	c1893	1893-
	State Significance		

The most significant remains by far is the hydraulic system in what was the Naval Victualling Stores building at Garden Island – building 89. The original equipment was supplied and installed by Mort's Dock & Engineering Co in 1893. Before it was shut down water pressure was raised by a three stage reciprocating pump driven by electric motor through a worm and wheel drive. Working pressure was approximately 1200 psi (8.3MPa) and this pressure was maintained by an accumulator with a 17.5" (445 mm) diameter cylinder and 16' (4.88 m) stroke. Pressure was supplied to 5 whip cylinders on the inside of the building connected by cables to the jibs on the northern face of the building.

Most of the equipment is still in-situ, and due to the work of Industrial Archaeologist, Don Godden much of it has been well conserved. With some relaxation of public access to the north end of Garden Island it may be possible to see the whip jibs on the north face of building 89 from near the new Naval Heritage Centre.



Figure 4.12 Naval Stores Building, Garden Island. Source: http://www.hevac-heritage.org/ANZAC/SYDNEY-HYDRAULIC-POWER.pdf

Building	Location	Built	Date of Operation
Argyle Stores	The Rocks	c1878	1878-
	s.170 NSW State agency heritage register SHFA, State Significance		

The whip that remains in the courtyard of the Argyle Stores building was part of a small private system that supplied power for lifts and a whip. The whip was made by Tannett Walker (Leeds) in 1885 and was installed by Mr. Isaac Ellis Ives following the rebuilding of the south wing c.1878. Isaac was Mayor of Sydney between 1897 and 1898.

The system comprised a small gas engine driving a 3 cylinder pump. Pressure was controlled by an accumulator and fed to the whip on the wall of the south wing, and at least one, possibly two, other lifts inside the north wing. The whip is all that remains of the system and it has recently had significant conservation work carried out by the author for its owner, Sydney Harbour Foreshore Authority



Figure 4.13 Argyle Stores Courtyard showing Hydraulic Whip 1980 Source: SCRA (Tim Collis-Bird) Copyright: SHFA.[4]

[4] *http://www.environment.nsw.gov.au/heritageapp/visit/VisitItemImages.aspx?isAttraction=1&ID=5053139#ad-image-6*

Building	Location	Built	Date of Operation
Walsh Bay System	Hickson Road, Walsh Bay	c 1915	
	State Significance		

Another independent hydraulic plant served the wharves of Walsh Bay, off Hickson Rd. The system supplied hydraulic power to lifts, wool presses, and possibly to wharf conveyors. The conveyors that remain on the redeveloped wharf were electrically driven by the end of their life.

A twin cylinder double acting reciprocating pump driven by a 65HP (48.5 kW) electric motor is still in-situ as a feature in the Ventuno cafe on ground level in the Central Wharf Stevedoring building (wharf 8/9). The accumulator is outside this same building but is not in its original position, where it has been reconstructed and interpreted. The cylinder and the upper portion of the ram are clearly visible. An early photograph shows the accumulator closer to the water on wharf 7/8. A hydraulic wool bale lift with its adjustable loading table has been relocated to this building as well. The remains of an in-situ hydraulic goods lift is at the western end of the same building.

The accumulator originally installed for the independent hydraulic power facility at Sydney's Walsh Bay wharfs utilised a rectangular platen to support a brickwork ballast instead of the more usual cylindrical style.. It is currently in a new nearby location

Significance

The hydraulic power system of wharves 8 and 9 is one of the most important power systems developed in the nineteenth century. The system includes the accumulator, pump and electric motor, the high pressure pipes and 3 ton hydraulic lift and two hydraulic hoists and was an essential part of the operations of the wool handling wharves, supplying power to lift hoists and the original wool dumps (bale presses). Other original features include bale elevators, bale elevator platforms, remnants of the bale stacking systems, trucking gangway and openings for the nine hinged wool chutes. (Department of Urban Affairs and Planning 1989:4) Source: http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045067



Figure 4.14 Reconstructed Accumulator, Walsh Bay *Source: Low Tech Magazine* Source: http://www.lowtechmagazine.com/2016/03/hydraulic-accumulator-power-water-networks.html



Figure 4.15 Accumulator, original site, Walsh Bay Source: http://www.hevac-heritage.org/ANZAC/SYDNEY-HYDRAULIC-POWER.pdf

Building	Location	Built	Date of Operation
Railway Workshops	Eveleigh (Australian Technology Park)	c1899 ?	-1988
	International significance		

Eveleigh's hydraulic power system centred on the Pump House and towering accumulator cylinders and was used to power the blacksmiths' presses, riveters, cranes and spring-making equipment using high-pressure water. State of the art when the Workshops opened, the hydraulic power system was still in consistent use when the Workshops closed in 1988. It is now the oldest system of its kind, surviving in Australia. The hydraulic system is comprised of a continuous water supply, high-pressure pumps, two accumulators, safety and control valves, and high-pressure piping. The water reservoir is mounted on a steel stand within the Pump House. Outside, the accumulator cylinders on large pistons are weighted with scrap iron or steel. Water is pumped into the bottom of the accumulator causing the cylinders to rise, consequently raising a high pressure in the water pipes. This high pressure water was circulated around the Workshops to power various machines 'down the line'.

Originally the system was powered by the Fielding & Platt steam pump and the northern accumulator. However, additional power was required to support the Workshop's shift from repair to manufacture of locomotives. So, in 1912, with electricity supplied to the Workshops from the White Bay Power Station, the electrically driven Hathorn Davey pump was installed, together with the second accumulator. The steam pump continued to be used as a backup during electric supply blackouts. And this was most likely part of the reason the engine was not discarded many years ago.

Two HP pumps, the remains of two accumulators, the Davy Press and Intensifier, and numerous supply pipes remain located within the NSWGR workshops, now Australian Technology Park, at Eveleigh. Whilst the Davy press and its intensifier are in public space, the two pumps are in a pump-house near to the set of steam boilers on the south side of the workshop buildings. One is a twin cylinder steam driven Fielding and Platt engine/pump in excellent condition. The other is an electrically driven 3 cylinder Hathorn pump. A pressure gauge on the wall suggests a red-line hydraulic pressure of 2500 psi (17.2 MPa).

Significance

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



Figure 4.16 Hydraulic Accumulators outside Bay 4, 2015 Source: https://eveleighstories.com.au/story/hydraulic-power

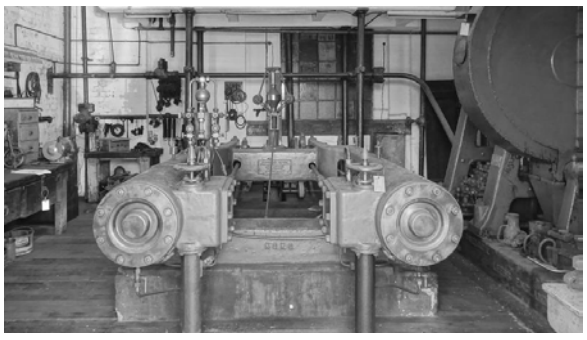


Figure 4.17 Fielding and Platt Hydraulic System Steam Pumping Engine (4745186), 2015 - Source: https://eveleighstories.com.au/story/hydraulic-power

Building	Location	Built	Date of Operation
Railway Workshops	Chullora		
	Heritage Act - s.170 NSW State agency heritage register		

The pneumatic and hydraulic powerhouse for the railway workshops at Chullora still stands. The building is red brick with a galvanised steel gable roof and a galvanised steel wall on the southern side. There is an hydraulic accumulator on the western side of the building and a water tank and 4 compressed air storage cylinders on the eastern side. Inside the building there are three air compressors, each electrically driven. Also, there are three electrically driven HP hydraulic pumps labelled 1, 3 and 4. Pump 1 is a two cylinder horizontal Worthington pump (2.75" (698 mm) bore and 7.5" (190 mm) stroke driven by a 50HP AGE motor. Pump No. 3 is a 3 cylinder vertical pump made by Henry Berry of Leeds. Pump 4 is a 3 cylinder vertical Henry Berry pump of 2.25" (57 mm) bore and 5" (127 mm) stroke.

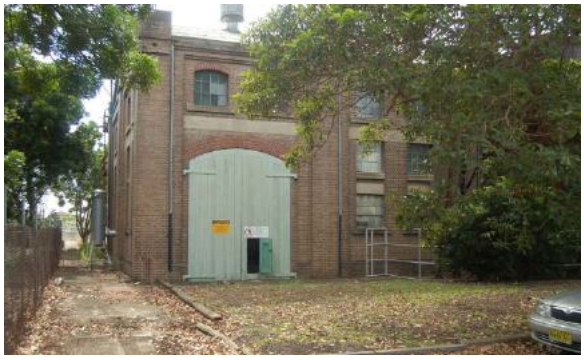


Figure 4.18 Pumphouse, Railway workshops, Chullora. Source: http://www.hevac-heritage.org/ANZAC/SYDNEY-HYDRAULIC-POWER.pdf

Building	Location	Built	Date of Operation
Cockatoo Island Dockyard	Cockatoo Island		
	UNESCO World Heritage		

The hydraulic system on Cockatoo Island operated at 1500 psi (10.3 MPa) and this was reticulated throughout the island to power presses and other machinery rather than whips and lifts. Hydraulic pressure was supplied from two 3 cylinder Ruwolt Pumps driven by 170 BHP (127 kW) electric motors. Pump bores were 4" (102 mm), with a stroke of 8" (203 mm). The only remains of the system on Cockatoo Island are two HP Pumps and electrical controllers located in the powerhouse which is not a public space.

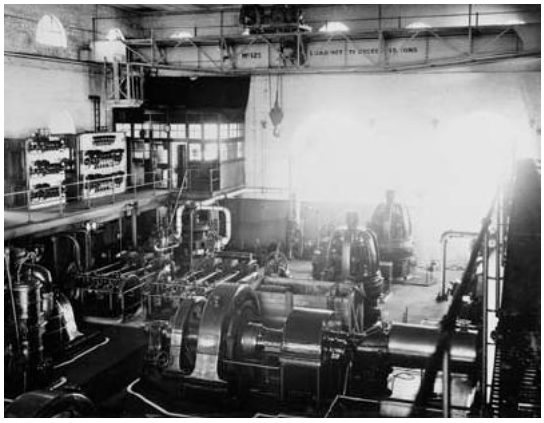


Figure 4.19 Cockatoo Island Dockyard Power Station showing dry dock, pumping motors and hydraulic pumps, 1919. Source: https://recordsearch.naa.gov.au/SearchNRetrieve/Interface/DetailsReports/PhotoDetail.aspx?Barcode=8556802,C4149, 13.1, 8556802

Building	Location	Built	Date of Operation
Whip on Campbell's Stores	The Rocks, Sydney		
	State Significance		

Remnants of hydraulic whips can be seen on the front wall of Campbell's Stores in The Rocks; part of Sydney's waterfront. The Campbell's Stores whips were connected to the Sydney Hydraulic Power Company's mains for which the owner paid a service fee and a water usage charge. A three-way valve, was operated by a rope passing close to the respective floor access openings which controlled the admission of water to raise the ram and thus lift the suspended load or conversely to release the water allowing the ram to retract and thereby lower the suspended load.

Significance

The remnant hoisting equipment of the Campbell's Stores building provides evidence of the changes of technology in goods handling and haulage that occurred during the nineteenth and twentieth century. The hydraulic hoisting equipment and the winches in particular are evocative of the industrial nature of the site and the hydraulic hoists are prominent examples within the Sydney area. They demonstrate the scale and efficiency of the industrial processes undertaken at Campbell's Stores during its use as dockside goods storage. (Godden Mackay Logan, 2004)



Figure 4.20 Hydraulic Whips on front wall of Campbell's Stores, The Rocks. Source: http://www.hevac-heritage.org/ANZAC/SYDNEY-HYDRAULIC-POWER.pdf

Building	Location	Built	Date of Operation
Goods and Passenger Lifts	CBD, Sydney	c1893	1893-

At No. 1 Kent St, Sydney a hydraulic passenger lift was reconstructed in the atrium of the refurbished building c1992. This lift was originally connected to the Sydney Hydraulic Power Company high-pressure mains. It is ostensibly still an operating lift, in that the hydraulic cylinder is connected to a modern oil based hydraulic system, however like the Hobart lift above, its continued use has been prevented by current lift regulations.

An in situ passenger lift car and hydraulics remain in the old AGL Gasworks building at the end of Gas Lane, extending to Hickson Rd, in Sydney. The lift shaft has been closed off at each floor to enable productive use to be made of the space, but the passenger car, the hydraulic cylinder, and the counterweight still remain intact. The lift valves were operated electro-mechanically, before this lift went out of service c1975. The car is at the bottom of the shaft at the Hickson Rd, level. A unique feature of this passenger lift is that the cylinder has, cast in along its length, the name of its maker – 'Sydney Hydraulic Power Co. Ltd'.

The movement of large quantities of coin between street level and the strong rooms (generally below ground level) by the banks was facilitated using hydraulic bullion/coin lifts. These tended to be bigger than passenger lifts but limited in travel height. In one of the Sydney banks the lift floor is 2m x 3.5m with two sets of heavy steel access doors. The steel framework has rolled into it "Dorman, Long & Co. Middlesbro" potentially dating it around the 1930s. The lift is no longer used.

The controls of another bullion lift located in a former Sydney bank building in George Street, now converted for retail use, This lift has its cylinder and counterweight in situ, as well as the lift car, but recent building work has left it covered in rubble. This lift had been converted at some stage to electrical control. The electro-hydraulic control system including what appears to be a time clock appears to be complete, and much of the pipe-work is still in place. There was no evidence of a pump, but the presence of SHPC control valves behind the building suggests a connection to the SHPC system.



Figure 4.21 Remnants of Bullion Lift-electric control, George Street, Sydney
Source: http://www.hevac-heritage.org/ANZAC/SYDNEY-HYDRAULIC-POWER.pdf

Building	Location	Built	Date of Operation
Bank Doors	CBD, Sydney		

Several of the prominent Banks in Sydney's central business district had their external doors operated by hydraulic power from the Sydney Hydraulic Power Company system mains. Typically, these doors were up to 6 m high and 3.5 – 5.5 m wide. They were constructed of steel frames clad with rolled bronze sheeting. The operating system on some was through a direct acting piston, with the cylinder in the basement extending down into a pit below the door to enable full travel. A typical cast iron piston of the period was 100 mm diameter, with the cast iron cylinder 180 mm diameter providing a lifting capacity of up to 4 ton.

The alternative arrangement was for a combination of hydraulics, pulleys and counterweights to be used. One of the doors on the Commonwealth Bank in Pitt St still operates on this format, although it has been converted to oil operation.



Figure 4.22 Commonwealth Bank, Martin Place, Hydraulically operated Bank Doors, Sydney – Chris & Steve (Flickr)[5]

[5] *https://www.flickr.com/photos/c-j-b/6989994735/in/photolist-bDFxUB-fZdAYe-85N62-799Spc-5Dzj3Q-7CxC8J-Qa7NQM-51TRdZ-apE6ca-653nBk-51TRGz-yjEiJ-5Fh6ZP-4vecxX-51AWfv-51TRR4-apE67k-51Y5Ph-7B6FxF-51TRy6-5FhmY2-6K4exs-nWS2GX-o1A9ej-9NEYMC-9NC9uz-qfaabB-buWJwM-bDFzMZ-fUDYAJ-5DuP4P-5Fmnpy-6JZLTS-fwCgxv-5Eh15s-3baxRJ-y2Cu2E-y1bZbd-xKZTZa-y2CDNo-y4bmgt-y3vwJp-eogbDQ-74mws6-8gR7FA-dH4TyF-6JZLTC-6GzrYk-4U3vBA-pDqjkR*

Building	Location	Built	Date of Operation
Textile Baling Presses	Apartment, in Jones Street, Pyrmont.		
Dalgety wool stores building,			

A large number of hydraulically operated wool presses were installed in many of the wool stores along the shores of the working harbour in Sydney, and in Ultimo/Pyrmont. One extant example is in the Dalgety wool stores building, now apartments, in Jones Street, Pyrmont. To gain sufficient force to press bales, particularly high-density bales for export, the hydraulic pressure supplied from the SHPCo mains was increased about fivefold by an hydraulic intensifier.

These devices essentially comprised a pair of coupled rams with cross-sectional areas in the ratio of the desired pressure step-up ratio, and arranged in 'low' and high pressure cylinders respectively. The output of the intensifier was then fed into the wool press hydraulic ram to perform the baling operation. The wool press depicted was manufactured by Austral Engineering Co. in Melbourne, with steelwork from Dorman, Long & Co.

Other hydraulic wool presses have been recorded in the nearby Farmers and Graziers wool store and such equipment was widely used elsewhere for the baling of textile fibres. Where a public high-pressure hydraulic utility service was not available, the site would require its own in-house high-pressure pumping plant and accumulator.



Figure 4.23 Intensifier (front) and Wool press, Dalgety's Ultimo. Source: http://www.hevac-heritage.org/ANZAC/SYDNEY-HYDRAULIC-POWER.pdf

4.3 Conclusion

The following conclusion is quoted directly from Miles Pierce in his paper on The Melbourne Hydraulic Power Company and Public Hydraulic Power Systems in Australia published in the Australian Journal of Mechanical Engineering, Vol. 7, No. 2, 2009: 173-187 and from J W Gibson MA (Syd), MIE Aust. & M C Pierce BE (Elec), FIE Aust), Remnants of Early Hydraulic Power Systems, 3rd Australasian Engineering Heritage Conference 2009.

> *The distribution of motive power capacity by hydraulic means was overshadowed by electricity distribution at the close of the 19th Century and early 20th. Thus, with public hydraulic power systems only commencing at the beginning of the last quarter of the 19th Century (the Hull HPC of 1876), their "window of opportunity" was limited to less than 25*

years (McNeil, I., 1972, Hydraulic Power, Longman, London, Chapter 7).

The development of public hydraulic power utilities was essentially a British initiative. At the time, Australia was closely aligned to Britain, including in regard to engineering and industrial products. The Melbourne and Sydney public hydraulic power systems were championed by John Coates and George Swinburne, both of whom were engineers from the UK. In some large USA cities, steam was reticulated and used for both motive power and building heating.

However, once established, the public hydraulic power systems quickly built up a loyal customer base. Accordingly, the public systems were relatively long-lived despite competition from electricity distribution. The closure of the very large London Hydraulic Power Company system in 1976, one year after the closure of the Sydney system, bought to a close 100 years of public hydraulic power, starting with Hull in 1876.

The commencement of the Sydney scheme in January 1893 was followed later in the same year by a public hydraulic power utility starting up in Birmingham (UK). This was then the sixth such system and, like those before it, had a nominal service pressure of 700 psi (4.8 MPa). Only two more public access systems were implemented, namely Manchester, which commenced operation in 1894, and Glasgow in the following year. Both of the latter systems operated at a higher nominal service pressure of 1100 psi (7.6 MPa) on the basis of a dominant use for operating customer 's cotton baling presses (Pugh, B. 1980, The Hydraulic Age, Mechanical Engineering Publications Ltd., London).

"The development of high-pressure water hydraulic power systems and equipment from the middle of the nineteenth century extended the reach of the steam engine by being able to efficiently transmit energy for motive power purposes at distance ranging up to ten or more kilometres and opened the way for a wide range of hydraulically powered devices. These included cranes and hoists, goods and passenger lifts, textile baling presses, theatre and stage machinery and heavy workshop machines and tools. A central pumping station could be used to serve a large industrial facility or a city area, with the motive power conveniently conveyed in pipes. No longer was it necessary to have engines close to each end-use device or line shafting and open belts to serve a group of powered equipment.

*The development of electricity generation at central stations and distribution by wires and cables for motive power applications challenged water hydraulic power systems from the latter years of the nineteenth century and ultimately superseded it. However, many water hydraulic systems and end-use devices remained in-service well into the twentieth century with some only ceasing in the last quarter. Nevertheless, once retired from service much of the former long serving equipment ended up as scrap metal. It is therefore important to identify, record and if practicable conserve significant remaining examples of this phase of motive power transmission and end-use applications" (*J W Gibson MA (Syd), MIE Aust. & M C Pierce BE (Elec), FIE Aust), Remnants of Early Hydraulic Power Systems , 3rd Australasian Engineering Heritage Conference 2009)

4.4 Assessment Criteria

The assessment of heritage significance has been prepared using the current evaluation criteria established by the New South Wales Heritage Council.

4.4.1 Historical significance

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

The historical significance of the **Former Hydraulic Pumping Station No.1** is demonstrated by:

- The former HPS No. 1 was the first public hydraulic pumping station to operate in Sydney. The success of this station led to the widespread acceptance and use of hydraulic power in the city.
- The former HPS No. 1 in Sydney was the sixth hydraulic power system in the world and one of ultimately only eight world cities to have this form of public power distribution utility.
- The former HPS No. 1 is historically significant as the first surviving hydraulic pumping station in Australia, since it's forebear, the Melbourne Hydraulic Power Company has been demolished with only the water tank surviving.
- The station played a pivotal role in the early commercial and industrial development of Sydney.
- The former HPS No. 1 represents a significant landmark in the history of technology in Australia, and illustrates the uptake of world class technology in NSW through commission of Coates & Co consulting engineers and equipment supplied by Abbot & Co from England.
- The station was part of a network associated with two other substations that provided power across the city from Pyrmont, Broadway to Woolloomooloo.
- The station was directly associated with the development of many prominent Sydney firms and with the construction of many prominent Sydney buildings.
- The provision of hydraulic power from this station was an important contributing factor in the operations of the Pyrmont and Darling Harbour wool stores and the wool boom of the 1890s.
- The station was directly associated with the construction of Mt. Rennie dam (now Moore Park Golf Course) to allow for a large direct supply of water to keep up with the high demand of power from the Station.
- The former HPS No. 1 provided an essential service to Sydney city for its 82 years of continuous service, from 1891 until 1975, and is a testament to the Victorian-era of engineering as the second longest lasting system in the world. At its peak it supplied 519 installations including passenger and goods lifts, whip hoists, bank doors, sprinkler systems, wharf crane, dumping presses and motors.
- Hydraulic powered lifts enabled high rise construction, which led directly to changes in the building industry which permanently altered the Sydney city skyline profile.
- The Accumulator Room with two accumulators, Engine House with rivetted wrought iron box girders and joists and cast iron panel water tank are of historical significance as the only major surviving elements of the system used to generate and supply hydraulic power.
- The building is associated with a number of artefacts throughout Sydney city that demonstrate various applications of the power supplied by the company as well as extant valve covers visible in the streets of the Sydney CBD, and hidden from view, the high pressure distribution pipes buried below the streets as part of the supply system.
- Together all the surviving elements of the former HPS No. 1 constitutes the most comprehensive record of a public hydraulic power system in Australia.

The item meets this criterion at a **STATE** level.

4.4.2 Historical Association

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

The associational significance of the **Former Hydraulic Pumping Station No.1**

- The former HPS No. 1 is associated with significant persons including Mr John Coates, Mr George Swinburne of Messrs. J. Coates and Co., of London, Sydney and Melbourne who acted as consulting engineers to the Sydney and Suburban Hydraulic Power Company. Their engineering expertise and specialists in the field of hydraulic installation was instrumental in construction of the Pumping Station, the erection of the machinery, and the laying of the pressure mains throughout Sydney CBD.
- The association of the former HPS No. 1 with significant persons including Mr Tom Dickinson, resident engineer who superintended the construction of the works, the erection of the machinery, and the laying of the pressure mains throughout Sydney CBD.
- The former HPS No. 1 is associated with Sir William George Armstrong (1810-1900) founder of the Armstrong Machinery Factory in England and inventor of hydraulic accumulator on which the basic functional configuration of the two surviving accumulators at the former HPS No.1 are based.
- The site forms part of the territory of the Cadigal Clan of Sydney and as such is today represented by the metropolitan and local Aboriginal Land Council. The area of Darling Harbour was known as Tumbalong, the name is still used in current naming conventions in the vicinity of the site.

The item meets this criterion at a **STATE** level.

4.4.3 Aesthetic/Technical Significance

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

The aesthetic significance of the **Former Hydraulic Pumping Station No.1** is demonstrated by:

- The former HPS No. 1 was the first and largest hydraulic pumping station to be built in Sydney.
- The station represents the arrival of new technology which had a major impact on the Sydney building industry and operations of stores in Darling Harbour and Pyrmont by furthering the construction of multi-storey buildings.
- It contains the largest extant set of hydraulic accumulators and a near intact example of the largest cast iron water tank in NSW.
- The building is aesthetically significant as an exemplar of Victorian Italianate design (with some French Second Empire features) that demonstrates the very conservative architecture in Sydney for the 1890s that sought to dress utility buildings in Classical design, while other cities were experimenting with American Romanesque or English Arts and Crafts styles. The building has become a local architectural landmark. It is also one of the last standing buildings demonstrating Victorian era design in the Darling Harbour area. Its architecture also referenced the design of hydraulic power houses in Britain, the home of this nineteenth century technology, and may have been influenced by Roman bath house interiors.
- The building is associated with a number of artefacts throughout Sydney city that demonstrate various applications of the power supplied by the company as well as extant valve covers visible in the streets of the Sydney CBD, and hidden from view, the distribution pipes buried below the streets as part of the supply system.

- The building structure in the Engine House shows an unusual small-scale application of massive load bearing brick wall and riveted iron girder technology due to the weight of the water tank. It is perhaps the most publicly accessible example of exposed large riveted wrought iron box beams in NSW, and perhaps the only example of cast iron panels as a suspended water tank.
- The former steam pumping plant and surviving cast-iron overhead water tank, of the former HPS No. 1 were made in 1888 by J. Abbot & Co., Gateshead, England, of which some of the remaining cast iron panels bear the insignia of the company.
- The building has technical significance for the State through its role in housing the state of the art hydraulic machinery of its day. Although the machinery apart from the two accumulators has been removed from the inside of the Power Station, its exterior design, the interior spaces and remaining features, and the archaeological remnants of the hydraulic system in the vicinity, provide rare evidence of this phase of energy technology in NSW.

The item meets this criterion at a **STATE** level.

4.4.4 Social Significance

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

The social significance of the **Former Hydraulic Pumping Station No.1** is demonstrated by:

- The advent of hydraulic power forever altered the conditions and environment of Sydney's office workers.
- The pumping station is a well-known landmark at the southern end of the city, Darling Harbour.
- The former HPS No.1 is today, the last major vestige of a suite of industrial structures in and around Darling Harbour. It is therefore of major social interest as the principal tangible evidence of the area's 170 years of industrial history.
- The building retains evidence of its near demolition, and thus also evidence of the public campaign and the heritage orders to save it. It is a dramatic part of the heritage story of Sydney and this is testimony to its importance to our society.
- The story of a small Victorian structure with a steam powered high pressure hydraulic system run through cast iron pipes that ran all the lifts, doors and presses in a large city is one that is a cause of wonder and amazement for the contemporary observer. It helps our society to value our history, and there are many steam enthusiasts due to the incredible ingenuity displayed, and as a result the technology has a high tourism potential and value.

The item meets this criterion at a **STATE** level.

4.4.5 Research Values

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

The research value of the **Former Hydraulic Pumping Station No.1** is demonstrated by:

- The history of the site's steam operations as part of Sydney, New South Wales, Australia and internationally in relation to contemporary installations in Britain is well documented. Thereby demonstrating that the structure is a monument to technological development in 19th century Australia.
- The surviving documents, visible fabric and any potential archaeological remains associated with the operation of the hydraulic pumping station provide an invaluable resource for explaining the use of hydraulic technology in New South Wales, and therefore are considered to be of State significance. Presently covered wall penetrations can aid in understanding the

hydraulic system and the building's history. The accumulators are important evidence for understanding the hydraulic system. These artefacts are now increasingly rare and not available elsewhere.

- The former HPS No. 1 has the potential to yield further information about the construction of the building.
- Remnant artefacts throughout Sydney city demonstrate various applications of the power supplied by the former HPS No. 1 as well as extant valve covers visible in the streets of the Sydney CBD, and hidden from view, the high-pressure distribution pipes buried below the streets as part of the supply, providing rare evidence of a large scale hydraulic system in NSW.
- The former steam engines were housed on large brick and cement hobs that finished at the level of the Engine House floor which were reduced down below the current floor level. There is potential for remains of the hob structure underneath the current floor level which would yield information about the former subfloor.
- While the subfloor has been disturbed, the original Engine House floor had boards with gaps between them. Small artefacts from the early years of the station may still exist in the subfloor space.
- The east wall of the former HPS No. 1 was also the west wall of a subterranean tank for return water and these footings remain intact under the building, demonstrating an important aspect of the hydraulic system.
- Important elements of the hydraulic piping system are likely to remain under the concrete floors of the Accumulator Room.
- The footings for the boiler chimney were extremely deep and are likely to remain underneath the small addition adjacent to the larger hotel building and may be available to excavate in the future.
- The base of the water tank is made up of further cast iron panels filled with bituminous aggregate (asphalt), which has now been concealed by a later slab. The panels may also have designated holes for various aspects of the hydraulic system.

The item meets this criterion at a **STATE** level.

4.4.6 Rarity Values

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

The rarity value of the **Former Hydraulic Pumping Station No.1** is demonstrated by:

- The former HPS No. 1 was the first and largest hydraulic pumping station to be built in Sydney and it is the last major vestige of the industrial history of Darling Harbour.
- It retains original elements associated with the operation of the station including the accumulator tanks and water tank panels that are the only surviving elements of this type of technology and use in NSW.
- With the demolition of the Melbourne HPS No 1, the Sydney HPS No 1 is now the primary resource in understanding the development of this important utility in Australia.

The item meets this criterion at a **STATE** level.

4.4.7 Representativeness

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

The representativeness of the **Former Hydraulic Pumping Station No.1** is demonstrated by:

- The former HPS No. 1 is representative of the important role of hydraulic power played in development of the Sydney and industry in Darling Harbour, as the first and the largest public hydraulic pumping station built in Sydney.
- It is one of the last remaining structures in Darling Harbour that reflects the areas historic use for industry and utilities.
- The building is a very competent example of Victorian Italianate design, a style that works well for the towers and large Engine Houses required.

The item meets this criterion at a **STATE** level.

4.5 Statement of Significance

4.5.1 Gazetted Statement of Significance

The State Heritage Register listing for Hydraulic Pumping Station No. 1 (former) provides the following Statement of Significance:

> *Hydraulic Pumping Station No.1 played a pivotal role in the industrial, commercial and architectural development of Sydney. As the city's first and major public provider of hydraulic power, it has strong historical associations with many prominent buildings and firms. The elegant structure of the remaining building is one of the very few industrial landmarks remaining in this part of the city[6].*

4.5.2 Supplementary Statement of Significance

The following summary statement of significance has been prepared for the former HPS No. 1.

The former Hydraulic Pumping Station No.1 (HPS No.1) is of State significance as a nineteenth century structure of great architectural quality, that has historic, aesthetic, technical and social significance, which was constructed to house machinery for the first large scale hydraulic power system in the State. It was the sixth hydraulic power system in the world to be built and one of ultimately only eight world cities to have this form of public power distribution utility. The former HPS No. 1 represents a significant landmark in the history of technology in Australia, and illustrates the uptake of world class engineering from England. The station provided an essential service to Sydney city for 82 continuous years, and is a testament to the ingenuity of the Victorian-era of engineering as the second longest lasting hydraulic power system in the world.

The building is of State significance for the pivotal role it played in the industrial, technological, commercial and architectural development of Sydney. As the city's first and major public provider of hydraulic power, it played a significant role in providing the means to power production, industrial operations and the distribution of goods in Pyrmont, Darling Harbour and Sydney. It is significant for its contribution to the urbanization and changing skyline of Sydney city as it permitted high rise lifts and allowed tall buildings to develop, and through its direct association with the development of many prominent Sydney firms and with the construction of many prominent Sydney buildings.

The former HPS No.1 demonstrates a high degree of technical achievement in engineering to provide a major city with hydraulic power for so many various applications. The surviving structure retains

[6] http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4500374

many original engineering components that were used to generate hydraulic power including the two original wrought iron accumulators, large cast iron plate water tank, and the riveted wrought iron box girders and joists in the Engine House. There are also a number of artefacts throughout the city that demonstrate various applications of the power supplied by the company. Together all these elements tangibly illustrate this remarkable technological achievement and constitutes the most comprehensive record of a public hydraulic power system in Australia, providing rare evidence of this phase of energy technology in NSW.

The water tank is of technical significance because it is an early example of a largely intact, technologically impressive, and rare surviving example of the use of imported prefabricated cast iron plates with bitumen sealing that formed the largest suspended water tank in NSW.

The surviving fabric and any potential archaeological remains associated with the operation of the hydraulic pumping station provides an invaluable resource for explaining the use of hydraulic technology in New South Wales, and therefore are considered to be of State significance.

The building is aesthetically significant as a local architectural landmark, and as an exemplar of Victorian Italianate design. By the 1890s utility buildings were already the focus of experimental architecture throughout the world and the very conservative design response of this building demonstrates something of Sydney's architectural demeanour at the time. The building structure shows an unusual small-scale application of massive load bearing brick walls and perhaps the most publicly accessible example of a large exposed series of riveted wrought iron girders. The building is rare as one of the last surviving Victorian era industrial structures in Darling Harbour. As well as the building's fabric and components, the form of the building and internal spaces contribute to its significance and interpretation of its former use as a hydraulic pumping station.

The former HPS No.1 has a strong association with workers and visitors to Sydney, as the station contributed to altering working conditions, the working environment and the design of some of the city's buildings. Steam power and the history of late Victorian engineering retains a high level of interest in contemporary society. It is therefore of major social interest as the principal tangible evidence of the area's 170 years of industrial history.

The building and its elements have a high potential to yield information that contributes to our understanding of the technological aspects of hydraulic power in NSW and its use and its effect on the development of the city of Sydney.

4.6 Curtilage

4.6.1 Defining a heritage curtilage

The curtilage of a heritage item is defined by the NSW Heritage Office as "the area of land (including land covered by water) surrounding an item or area of heritage significance which is essential for retaining and interpreting its heritage significance". The concept of curtilage should recognise that significance can be affected by the immediate and broader setting even if no fabric is altered within the place. Heritage curtilage can apply to either:

- Land which is integral to the heritage significance of items of the built heritage; or
- A precinct which includes buildings, works, relics, trees or places and their settings.

The heritage curtilage contains all elements contributing to the heritage significance, conservation and

interpretation of a heritage item in order to ensure a minimum necessary setting to protect the sense of place and appreciate the building.

In establishing a heritage curtilage the following factors are taken into account:

- Historic land subdivision patterns;
- Visual, physical, historical and functional links with important features in the area; and
- Setting, views and landmark qualities.

4.6.2 A curtilage for the former HPS No. 1

The current State Heritage Register (SHR) listing boundary plan for the former HPS No. 1 shown on Plan 382, includes the current property boundary as part of Lot 301 DP 1021761 (Figure 4.26). The curtilage for the former HPS No.1 is seen in two separate and distinct ways, firstly the immediate setting. The significance that remains at the former HPS No.1 site is principally seen in the building. The immediate setting also relates to the management of the site which is defined by and confined to the legal site boundaries. The whole of the gazetted site then forms the curtilage of the building in terms of its immediate setting and is referred to as a Lot Boundary Curtilage.

The second aspect of curtilage is the broader setting beyond the site boundaries, which in the case of the former HPS No.1 is of high significance in terms of broad and distant views to and from the place and setting within the wider Darling Harbour Landscape. This is called the "*expanded heritage curtilage*". The Heritage Division gives clear guidelines "*In defining an expanded heritage curtilage, it is important to identify the prominent observation points from which the significant item can be viewed, interpreted and appreciated* ". Other factors to be considered area:

- Views to and from the heritage item;
- The possible need for a buffer area between the curtilage and the adjoining land;
- The visual and historical relationship between the item and its environs.

The current building and site has been decontextualised from the original site character and streetscape as part of the former industrial area of Darling Harbour. The office, boiler house, coal store, stack and the fitting and workshops that were an intrinsic part of the former HPS No.1 were demolished between 1953 and 1962. The Pier Street streetscape setting and context, along with the Little Pier Street laneway context were altered as part of the 1980s works for the Darling Harbour development, in particular the construction of the Pier Street overpass which obstructs views to the front (north) elevation and western elevation of the site and building.

In its current Darling Harbour context, the building forms part of the Novotel Rockford Hotel and its setting is within the public domain and pedestrian walkways through Darling Harbour, Darling Quarter and Darling Square. Ideally the curtilage could now be redefined to relate to this new context and the role the heritage building plays in the setting.

The suitable visual context for of the former HPS No. 1 is defined in Figure 4.27, which shows:

- The important elements of the place, and the relationship between these components.
- The setting of the place in terms of its immediate and broader setting in Darling Harbour.

The north face, as the historical main address of the building and the elevation that was designed with the most detail, is the primary face. The east and west faces of the tower must also be considered part of this primary address as originally designed. The east and west faces of the lower sections of

the original building were not designed to be seen from a distance, but do contain important aspects of the building's significance such as the modular cast iron water tank and some decorative trims. The south face was designed for a lesser context, being within a small industrial laneway, but nonetheless has great significance in the current context as it demonstrates the industrial heritage of the site with its cast iron panels and early arched windows. The north face of the east annexe contributes a later compatible design that fits with the original building, and the more recent additions to the south of the east annexe sit well enough in the context with the original building. The west face is dominated by the later verandah West Annex addition, but this does not prevent the important original elements being seen from this vantage, and its restrained industrial character sits well enough with the context.

A suitable setting should preserve the northern streetscape along with the oblique views of the tower from any development that might intrude on the sense of the place. To some extent this has already been intruded upon with the expressway, but enough of this original address remains to be worthy of protection. The west face has become the new address of the building, and to the extent that it highlights original fabric elements this should be embraced. The east face remains important to its setting and context, and must acknowledge that the developments to the east may one day change to allow it to be exposed. The southern setting is more intimate but needs enough setback to see the whole building in its setting.

The curtilage for the former HPS No.1 is confined to the lot boundary as well as an Expanded Heritage Curtilage (Figure 4.27). The proposed curtilage will ensure that any future development in the vicinity of the item is appropriately managed and protects an appropriate public open space setting to the heritage item.

The setting and context can be protected through statutory or non-statutory controls. Non statutory controls include Conservation Management Plans[7].

4.6.3 Views and Vistas

The Heritage Division gives clear factors to be considered when identifying significant views and vistas:

- views to and from the heritage item (visual curtilage),
- the possible need for a buffer zone between the curtilage and the adjoining land
- the visual and historical relationship between the item and its environs.

There are several primary significant view lines to and from the former HPS No.1 (as discussed in Section 3.2.1 and illustrated in figure 3.13) that should be retained so the original form and fabric of the building can be acceptably presented and interpreted (Figure 3.13).

Views of the former HPS No.1 that should be retained from the southern and western extents of the item should include the two storey Engine House, water tank panelling and the three storey Accumulator Room. The view of the building from the north has already been obstructed by the raising of Pier Street, however views of the northern façade of the former Accumulator Room and eastern brick annex are accessible by pedestrians on the Darling Redevelopment Walk. The northern primary view line of the item should also be maintained (Figure 4.24).

The former HPS No. 1 can be seen on approach from the Little Pier Street and from Reflection Park to the south of the building. The Northern front elevation can be viewed from the boulevard approach

[7] *Heritage Curtilages, Heritage Office and Department Urban Affairs and Planning 1996:7*

west of Tumbalong Green and from the east forecourt to the ICC Theatre as well as from the southern side of the Chinese Gardens looking across the Pier Street overpass, and travelling (at speed) along the eastern and western approaches on Pier Street Overpass. The western elevation can be viewed from the forecourt to the west of the building and from the newly built office buildings in Darling Square (Figure 4.25).

Views that can be seen from the former HPS No. 1 are to the north east overlooking the Sydney city skyline, to the north-west towards the ICC Theatre, to the west to Powerhouse Museum and to the newly built office towers as part of Darling Square. Currently views to the south are restricted by hoardings due to the construction of Darling Exchange and residential and retail buildings as part of Darling Square. In the future there will be significant views to and from the southern elevation.

To establish a suitable visual context it is necessary to consider how views to the place could be retained to ensure any future development does not obscure distant views to the former HPS No. 1. Important setbacks and views are shown in Figures 3.13, 4.24, 4.25 and figure 4.27.

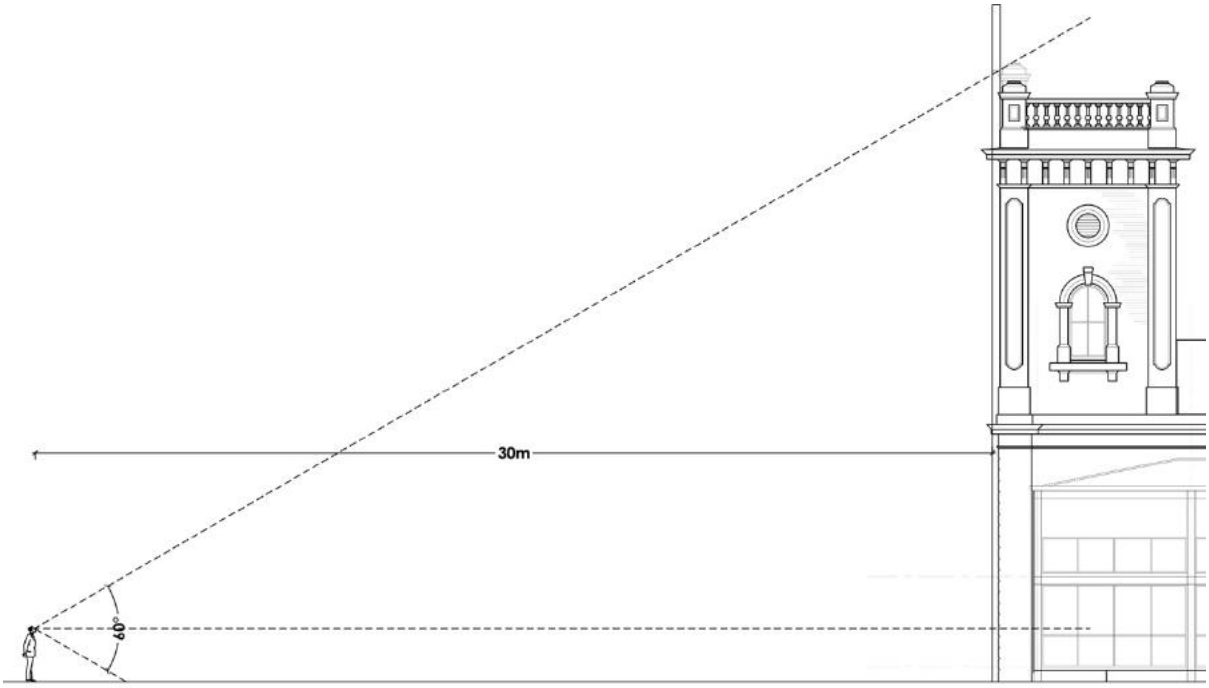


Figure 4.24 In order to see the north elevation of the building as one composition it needs to fall within a normal cone of vision (60deg). This determines a minimum setback for the full north elevation of 30 metres – *Adaptive Architects 2017*

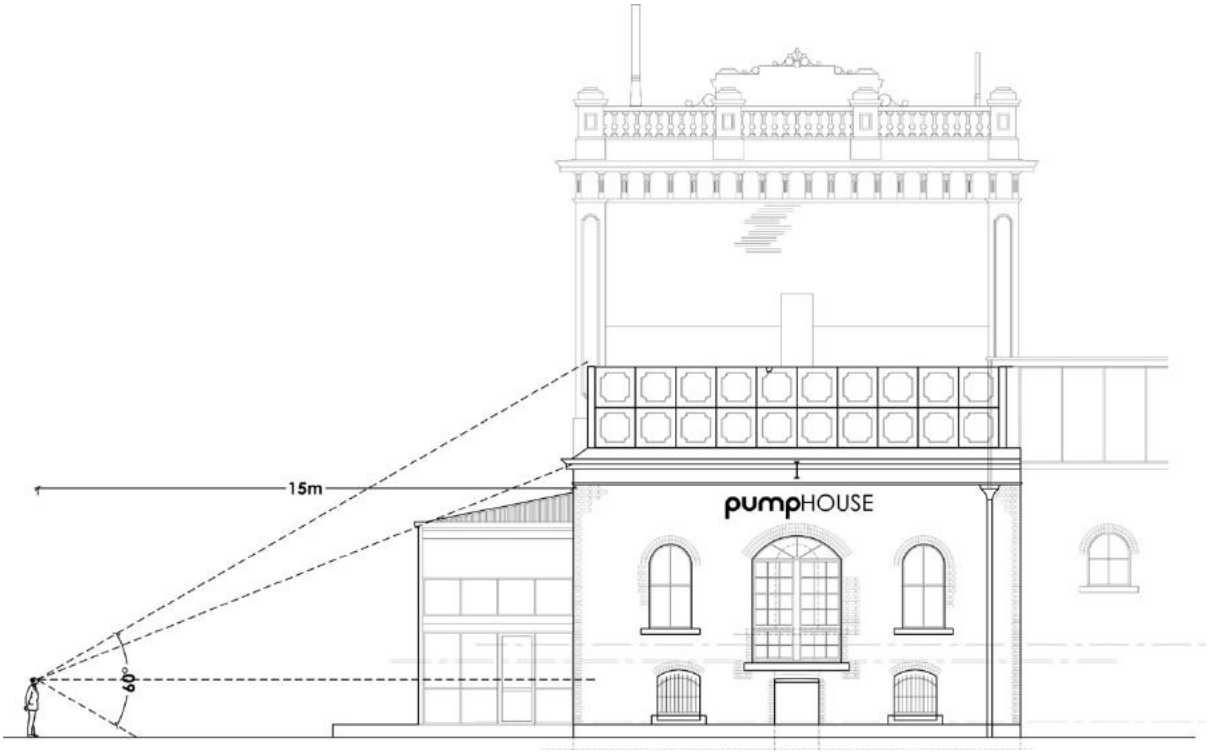


Figure 4.25 The minimum setback for the west elevation is 15 metres. From this setback it is then possible to determine what the extents of any western additions may be, in order to prevent the additions blocking the natural view to the corbelling at the top of the wall. The present verandah is at the very limits of this envelope. – *Adaptive Architects 2017*



Figure 4.26 The current State Heritage Register listing boundary or curtilage for the former Hydraulic Pumping Station No.1, Pier Street, Haymarket (Darling Harbour). *Source: State Heritage Register Database, Office of Environment and Heritage, Heritage Division*.

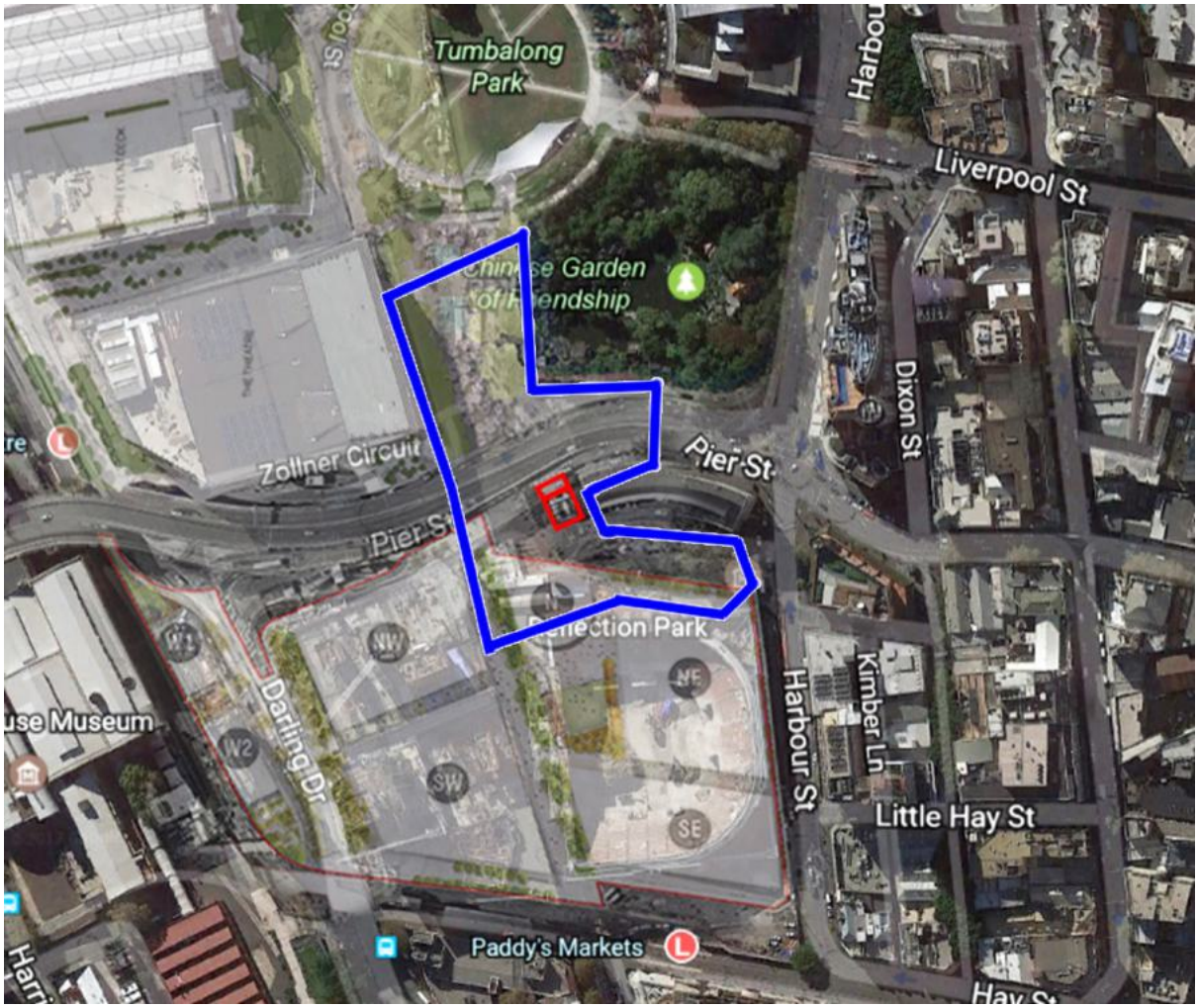


Figure 4.27 The SHR curtilage (red line) and suitable visual context (blue line) for the former HPS No.1, includes important views to the building that should be kept open.

Source: Google Earth https://earth.google.com/web/@-33.87744738,151.20242629,6.13433665a,213.25375413d,35y,0h,0t,0r accessed 08.06.2017 with overlay of SICEEP Precinct Plan showing the former HPS No.1 in relation to Darling Square. Source: SICEEP Darling Square, Mixed Use Residential Building (SSDA 9), EIS. March 2016, JBA Urban Planning Consultants. Source: https://majorprojects.accelo.com/public/8855b5c3111bf1a3bd3d41c728caf874/2016-03-15%2015122%20Darling%20Square%20SE%20Plot%20SSD%2015March2016.pdf

5.0 Grading of Significance

5.1 Basis of Assessment

Grading reflects the contribution the element makes to overall significance of the item, and the degree to which the significance of the item would be diminished if the component were removed or altered. The property has been assessed to determine a relative grading of significance into five levels. This process examines a number of factors, including:

- Original design quality
- Degree of intactness and general condition
- Relative age and authenticity (original, replaced)
- Extent of subsequent alterations
- Association with important people or events
- Ability to demonstrate a rare quality, craft or construction process

The standard five-grade system has been applied to assess individual elements of the property. This is a valuable planning tool and assists in the development of a consistent approach to the treatment of different elements. The various grades of significance generate different requirements for retention and conservation of spaces and elements as set out here.

This grading has been established as a tool to assist in developing appropriate conservation measures for the treatment of the former HPS No. 1 building and its elements. Good conservation practice encourages the focusing on change or upgrading of historical buildings to those areas or components which make a lesser contribution to significance. The areas or components that make a greater or defining contribution to significance need to be left intact and treated with the greatest care and respect. Programs of work need to be directed by the relative levels of significance of different elements.

5.1.1 Exceptional Significance

Fabric of ***exceptional significance*** is an essential or feature element directly associated with the central criteria or narrative of the heritage item's significance. The damage to or loss of exceptional fabric elements would greatly harm the item's ability to demonstrate its cultural significance to the State. It will generally include:

- items that are surviving original fabric elements
- elements of particular merit under each criterion
- elements that have developed the main characteristics of the site

Elements identified as being of ***exceptional significance*** should not be modified, damaged, enclosed or obscured other than to protect and preserve significance. There is the opportunity for limited restoration and reconstruction to interpret central elements of significance as long as the work is without incidental heritage impacts and is permitted in accordance with the policies. Works to adapt the item should be focused on other fabric elements.

5.1.2 High Significance

Fabric of ***high significance*** is also an essential element directly associated with the central criteria or narrative of the heritage item's significance. The damage to or loss of high significance fabric

elements would harm the item's ability to demonstrate its cultural significance to the State. It is distinguished from ***exceptional*** in that it will include:

- surviving original fabric that has lost an amount of its ability to demonstrate significance through modification or damage
- modifications that contribute to the narrative of the whole, including later fabric associated with or supportive of this narrative
- items that are important but not feature items of the site's significance
- reconstructed or interpreted items that complete and contribute to the main significance of the site.

Elements identified as being of ***high significance*** should not be modified other than to protect and preserve significance. There is the opportunity for restoration and reconstruction to interpret elements of significance as long as the work is without incidental heritage impacts and is permitted in accordance with the policies. Works to adapt the item should be focused on other fabric elements.

5.1.3 Moderate significance

Fabric of ***moderate significance*** consists of compatible elements that have no association with the significance criteria or narrative of the heritage item, and also do not adversely impact that significance. The damage to or loss of moderate fabric elements would have no impact on the heritage value of the item. Items of ***moderate significance*** will generally include compatible fabric from adaptive reuse of the site after the centrally significant use has ceased.

Elements identified as being of ***moderate significance*** can be modified to meet changing needs of the site, and should be the focus of any major alterations, as they do not embody any heritage significance of their own. Changes should remain compatible with the heritage significance in order to remain moderate.

5.1.4 Little Significance

Fabric that is of ***little significance*** consists of alterations and elements which detract from the significance of the heritage item and its fabric but are not causing damage or risk to the overall fabric. This can be through:

- obscuring or preventing a more significant element from demonstrating its significance
- unsympathetic modifications
- incompatible additions or alterations that affect the significance of the item

The removal and/or repair of ***little significance*** elements will permit the item to more fully demonstrate its significance or improve the legibility of the site's heritage narrative. Items that are of ***little significance*** will generally include alterations for a new use or unsympathetic changes that have impacted upon heritage fabric.

Elements identified as being of ***little significance*** should be removed in a way that does not impact upon the significance of the item. Items of ***little significance*** need to be dealt with on a timeframe dependent on how much impact they are having. Elements that are having an impact upon the significance of the site but are not increasing risk can be dealt with in the medium to longer term, in

accordance with the level of impact on the item's significance. Elements that have an impact on heritage fabric but also have a risk to the fabric in their removal will need specific approaches that test remedial works, and may conclude that the works would have more impact than retaining the element. ***Little significance*** elements that are required for other reasons may be able to be modified to mitigate the impact upon the heritage item.

5.1.5 Intrusive

Fabric that is ***intrusive*** consists of elements which adversely impact or damage the significance of the heritage item and introduce risk to its fabric. This can be through:

- damaging modifications
- inappropriate materials or techniques that introduce risks to the fabric
- works that are not reversible and cause damage to the fabric

The removal and/or repair of ***intrusive*** elements will act to preserve the significant fabric. Items that are ***intrusive*** will generally include poorly researched alterations and material choices that have a material incompatibility, have a poor lifespan, are structurally unsuitable, or are poorly suited to the conditions of the item.

Elements identified as being ***intrusive*** should be removed in a way that does not impact upon the significance of the item. Elements that are causing damage to heritage fabric or that increase the risk to the fabric should be dealt with as urgently as possible. Elements that have an impact on heritage fabric but also have a risk to the fabric in their removal will need specific approaches that test remedial works, and may conclude that the works would have more impact than retaining the ***intrusive*** element. ***Intrusive*** elements that are required for other reasons may be able to be modified to mitigate the impact upon the heritage item.

5.1.6 Fabric condition assessments

In addition to the significance of each element, it is necessary to determine their condition to determine what works are required. This CMP uses the following condition ratings:

Table 5.1 Condition Assessment

Condition Ratings	Description
Excellent	Building or fabric element has no defects. Condition and appearance are as new.
Good	Building or element exhibits superficial wear and tear, minor defects, minor signs of deterioration to surface finishes, but does not require major maintenance. No major defects exist.
Fair	Building or element is in average condition. Deteriorated surfaces require attention. Services are functional but require attention. Deferred maintenance work exists.
Poor	Building or element has deteriorated badly. Serious structural problems exist. General appearance is poor with eroded protective coatings. Elements are defective, services are frequently failing and a significant number of major defects exist.
Very poor	Building or element has failed. It is not operational and is unfit for occupancy or normal use.

5.2 The former HPS No.1 - Grading of Significant Elements

The coloured diagrams in this section are provided to illustrate the more detailed *Table of Significant Elements* in Section 5.3. The Table takes precedence in any discrepancy. The following drawings show the relative significance of the fabric elements with coloured gradings as a quick reference guide.

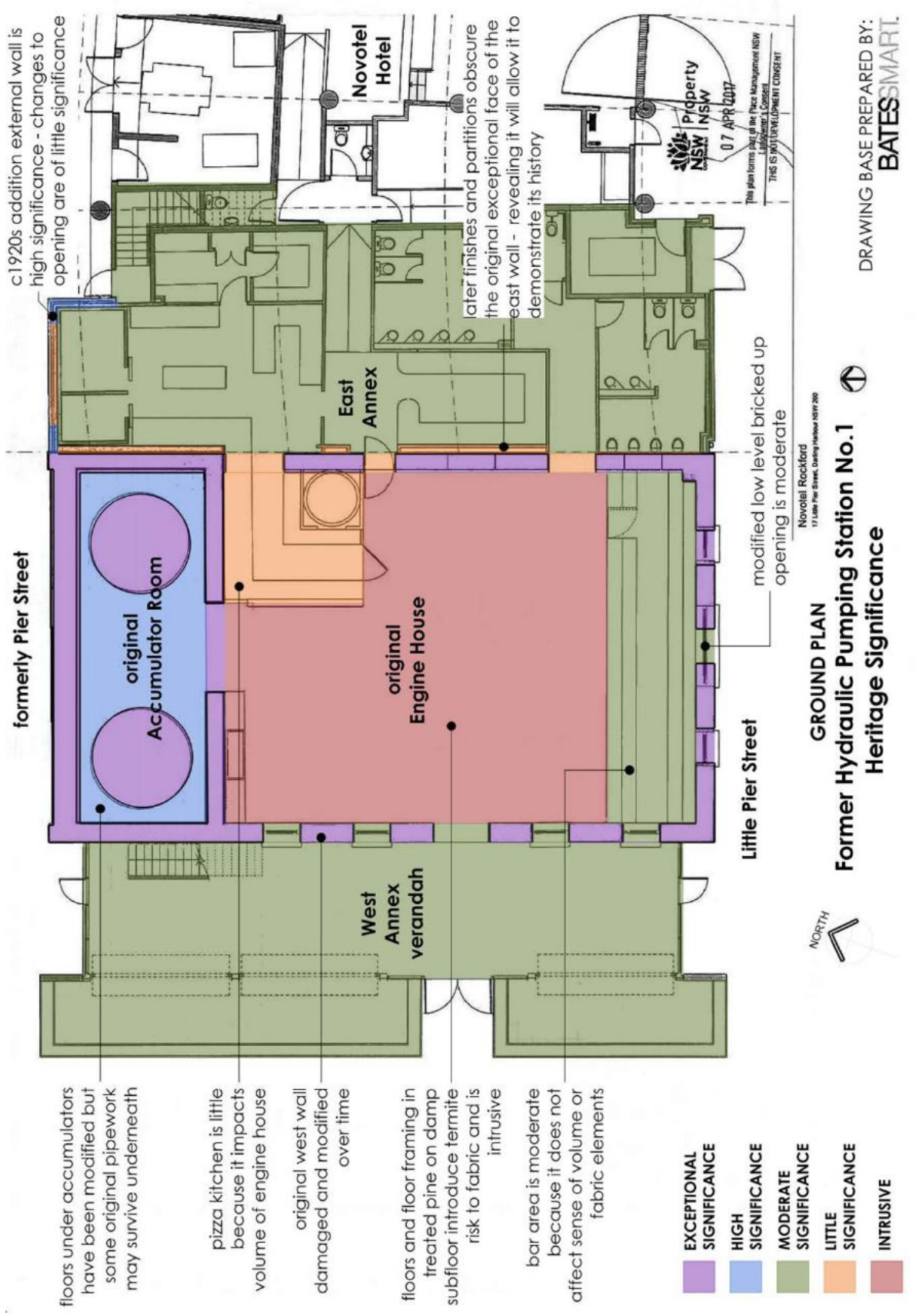


Figure 5.1 Heritage Significance: Ground Floor Plan. *Adaptive Architects 2017 - Base Plan - Bates Smart (PMNSW)*

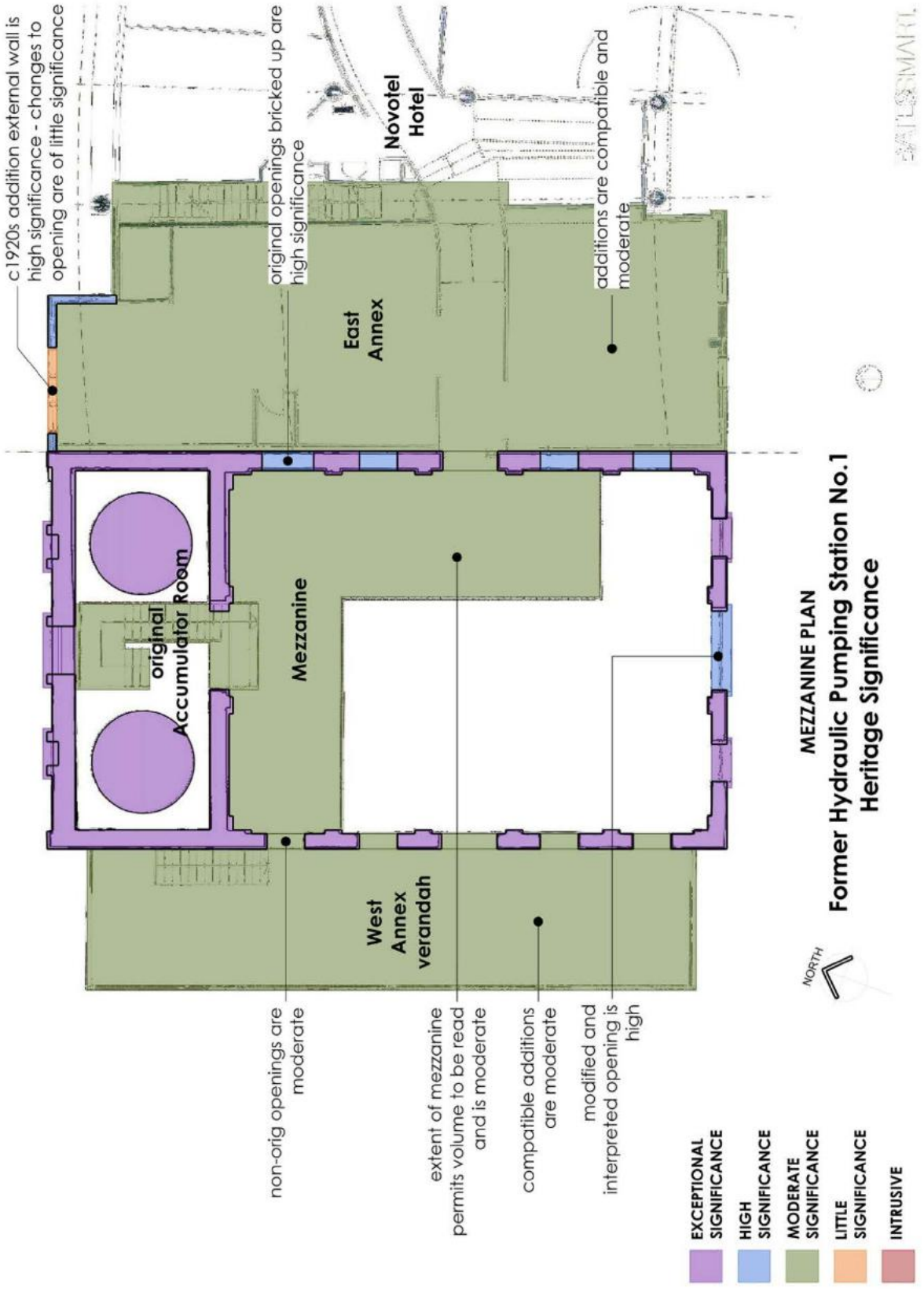


Figure 5.2 Heritage Significance: Mezzanine Floor Plan. *Adaptive Architects 2017 - Base Plan - Bates Smart (PMNSW)*

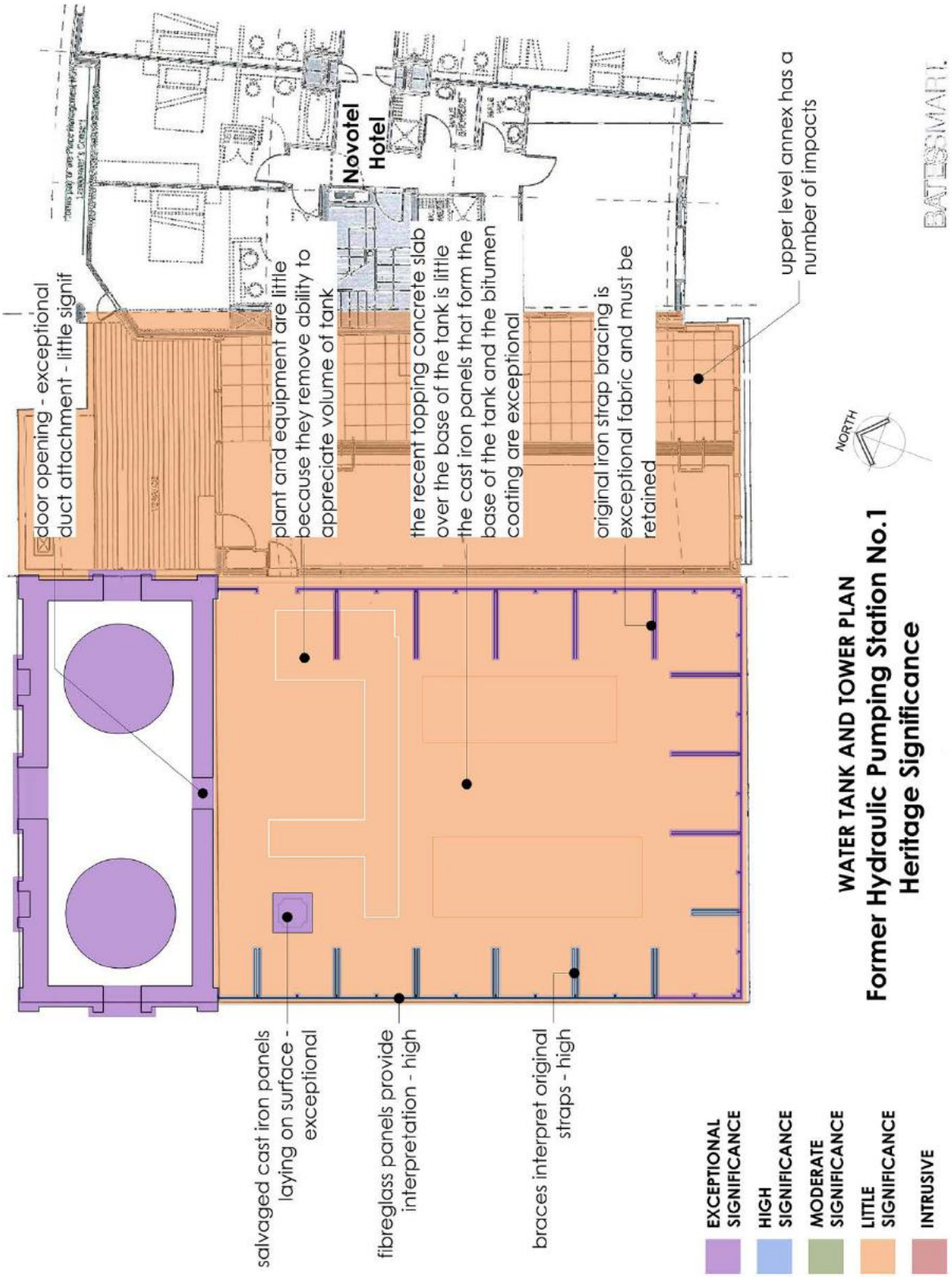


Figure 5.3 Heritage Significance: Water Tank Floor Plan. *Adaptive Architects 2017 - Base Plan - Bates Smart (PMNSW)*

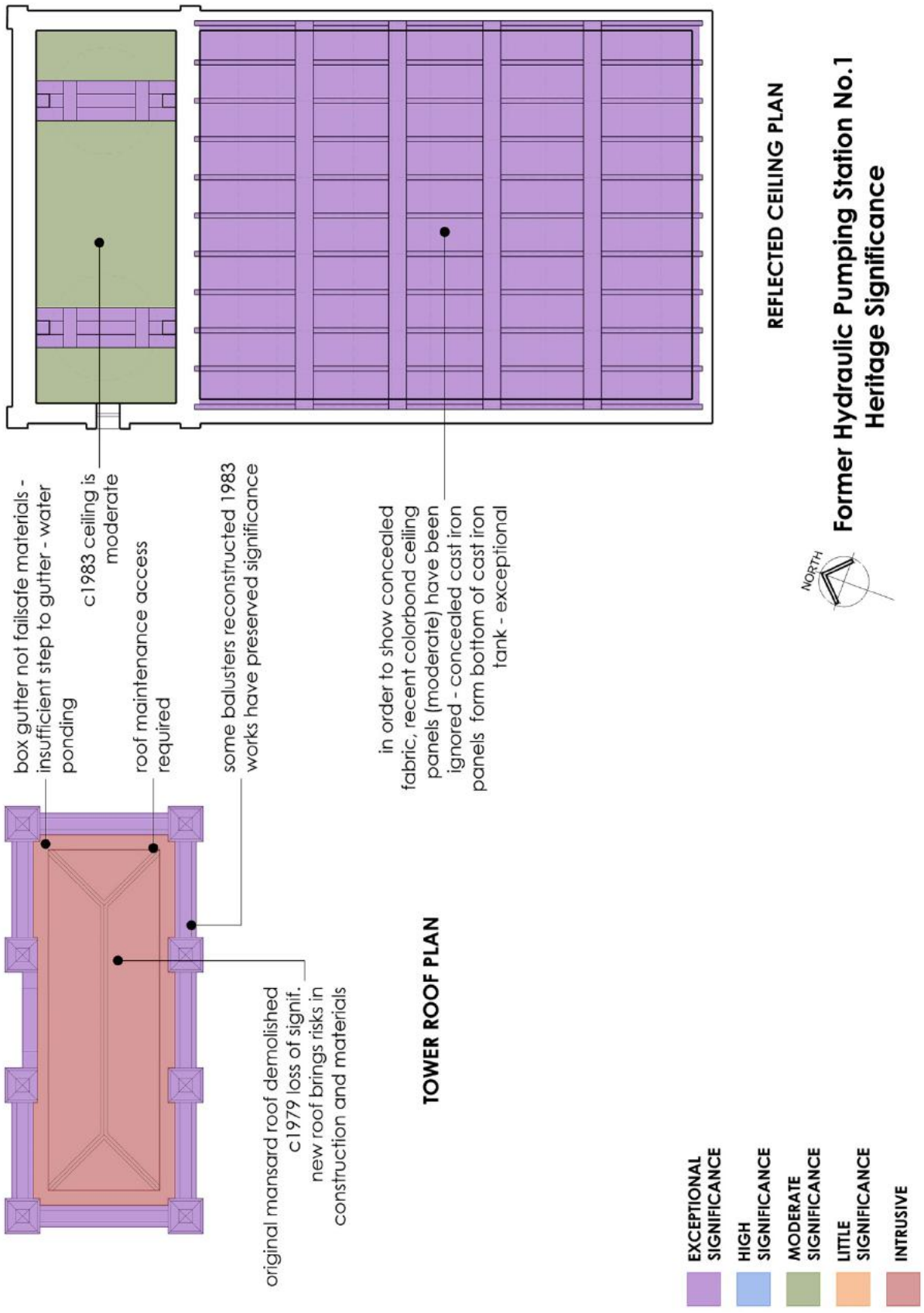


Figure 5.4 Heritage Significance: Roof & Reflected Ceiling Plan. *Adaptive Architects 2017*

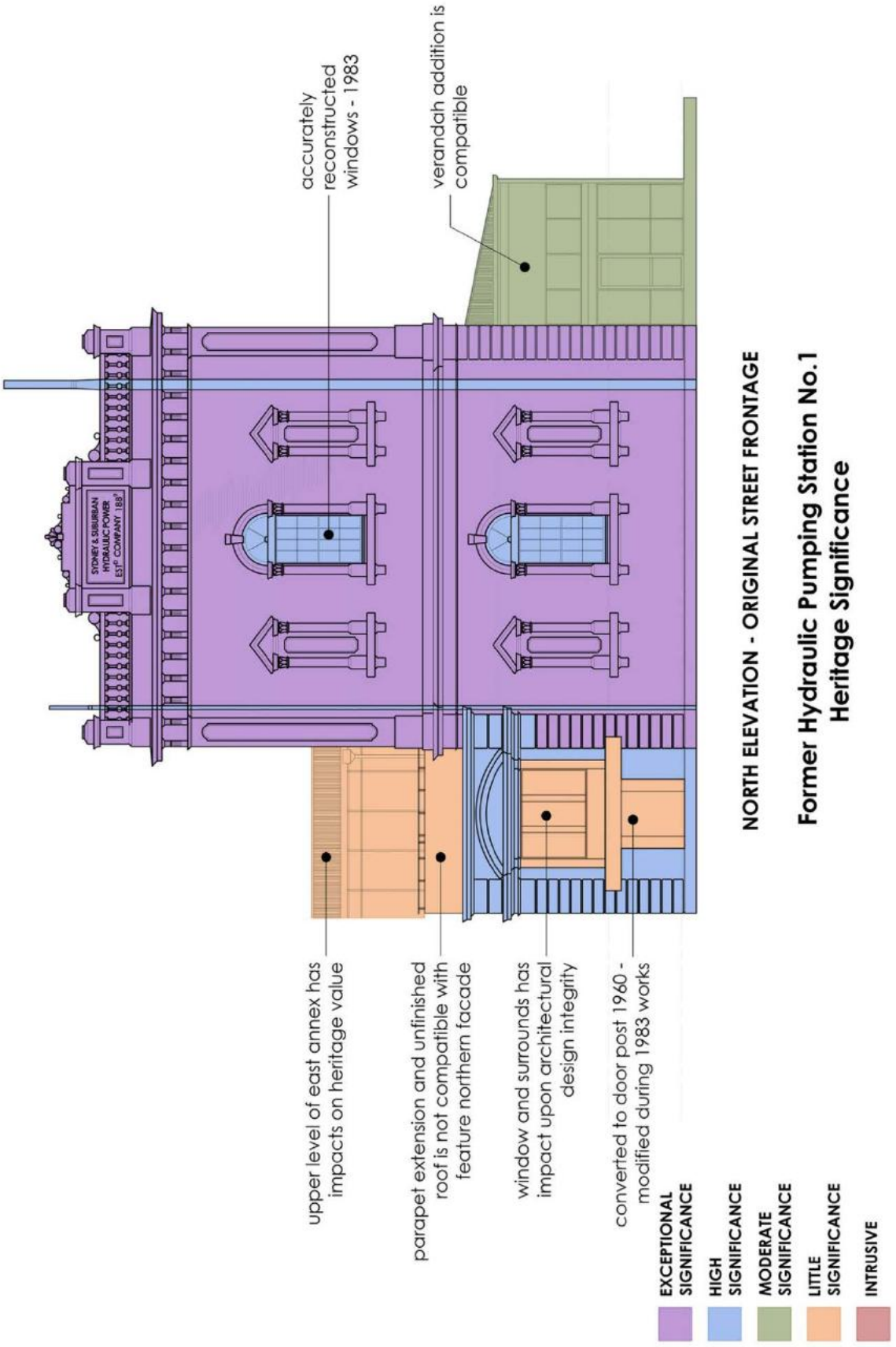


Figure 5.5 Heritage Significance: North Elevation (from photos). *Adaptive Architects 2017*

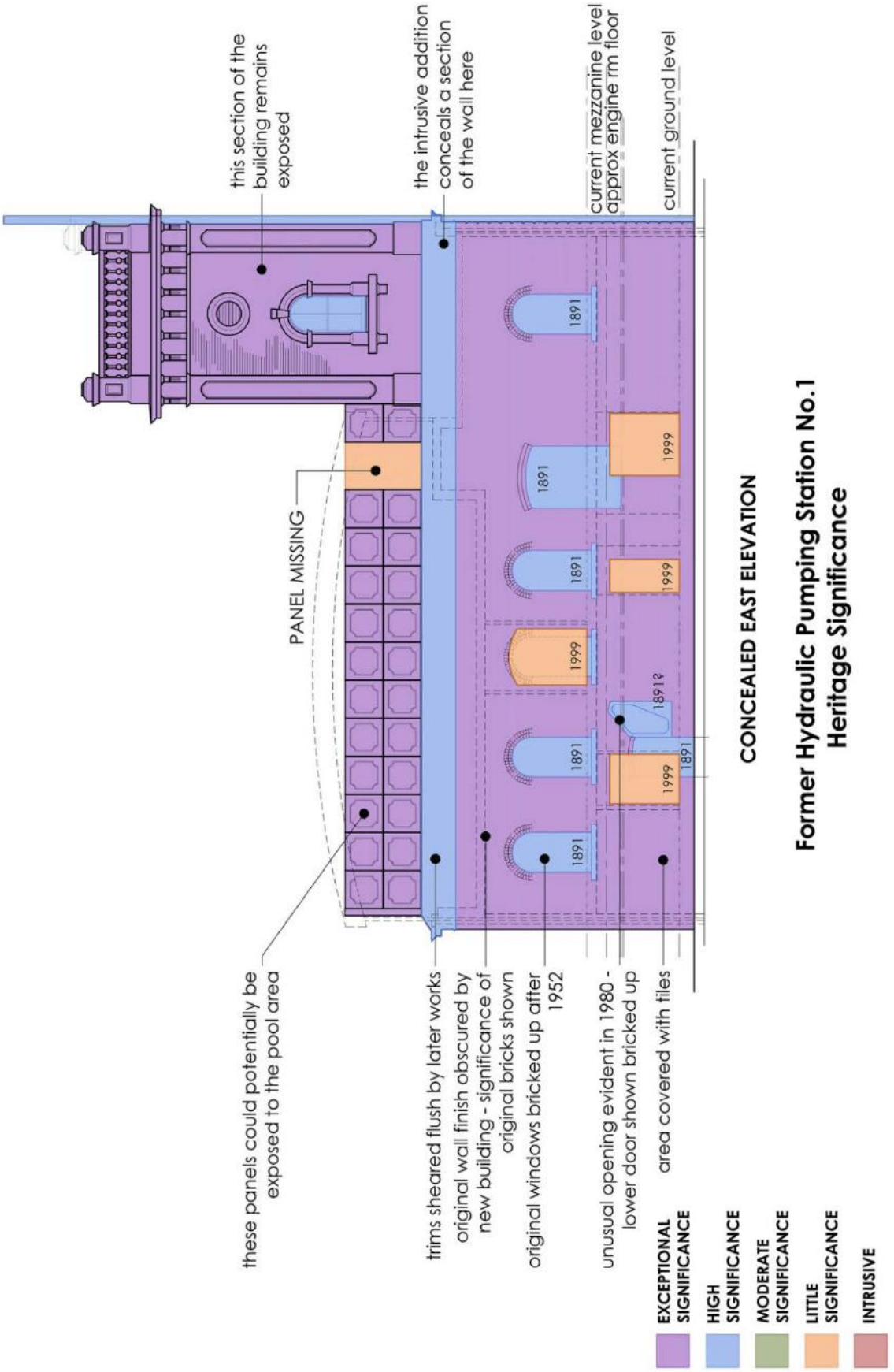


Figure 5.6 Heritage Significance: East Elevation – original wall (from photos). *Adaptive Architects 2017*

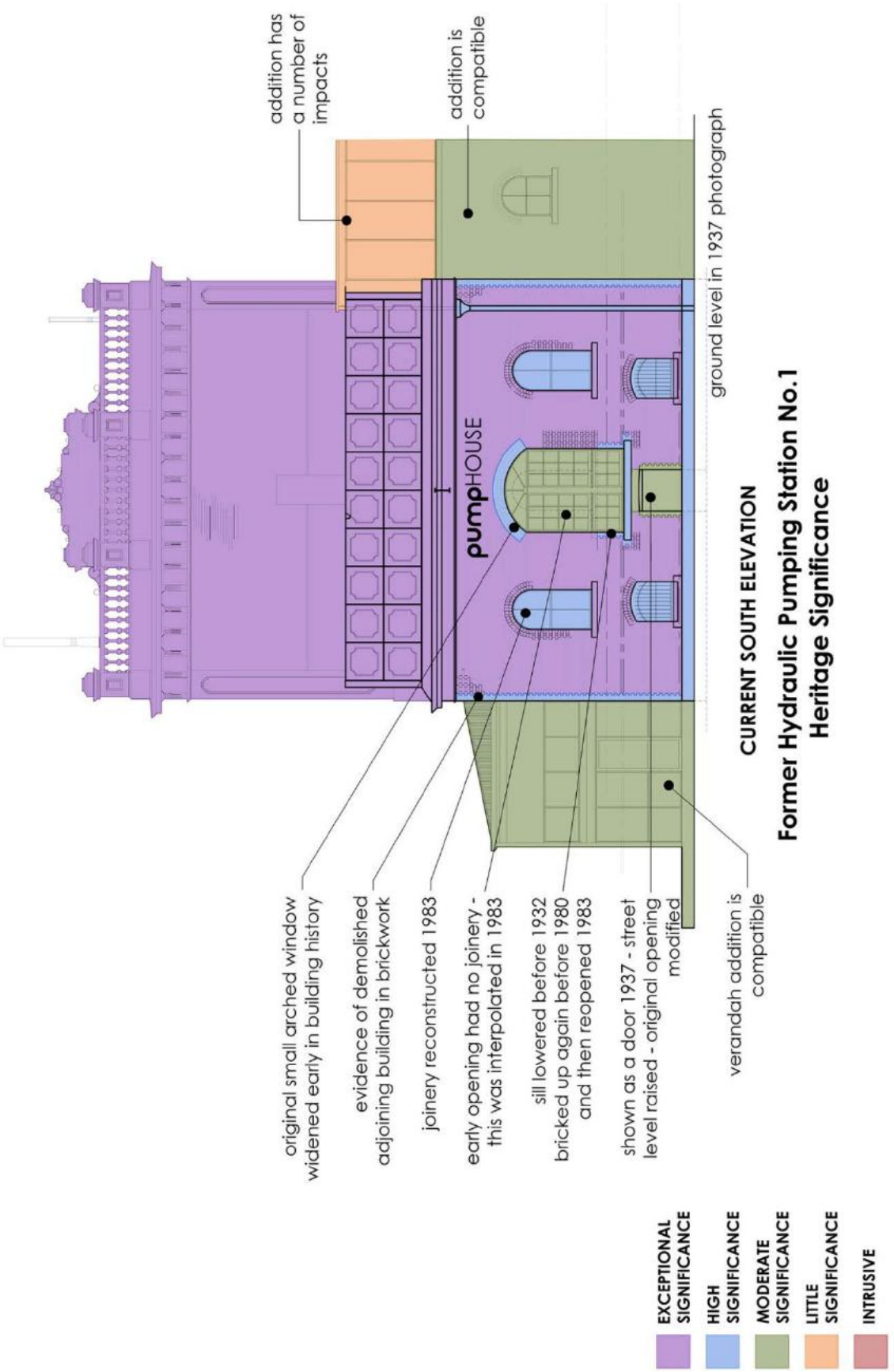


Figure 5.7 Heritage Significance: South Elevation (from photos). *Adaptive Architects 2017*

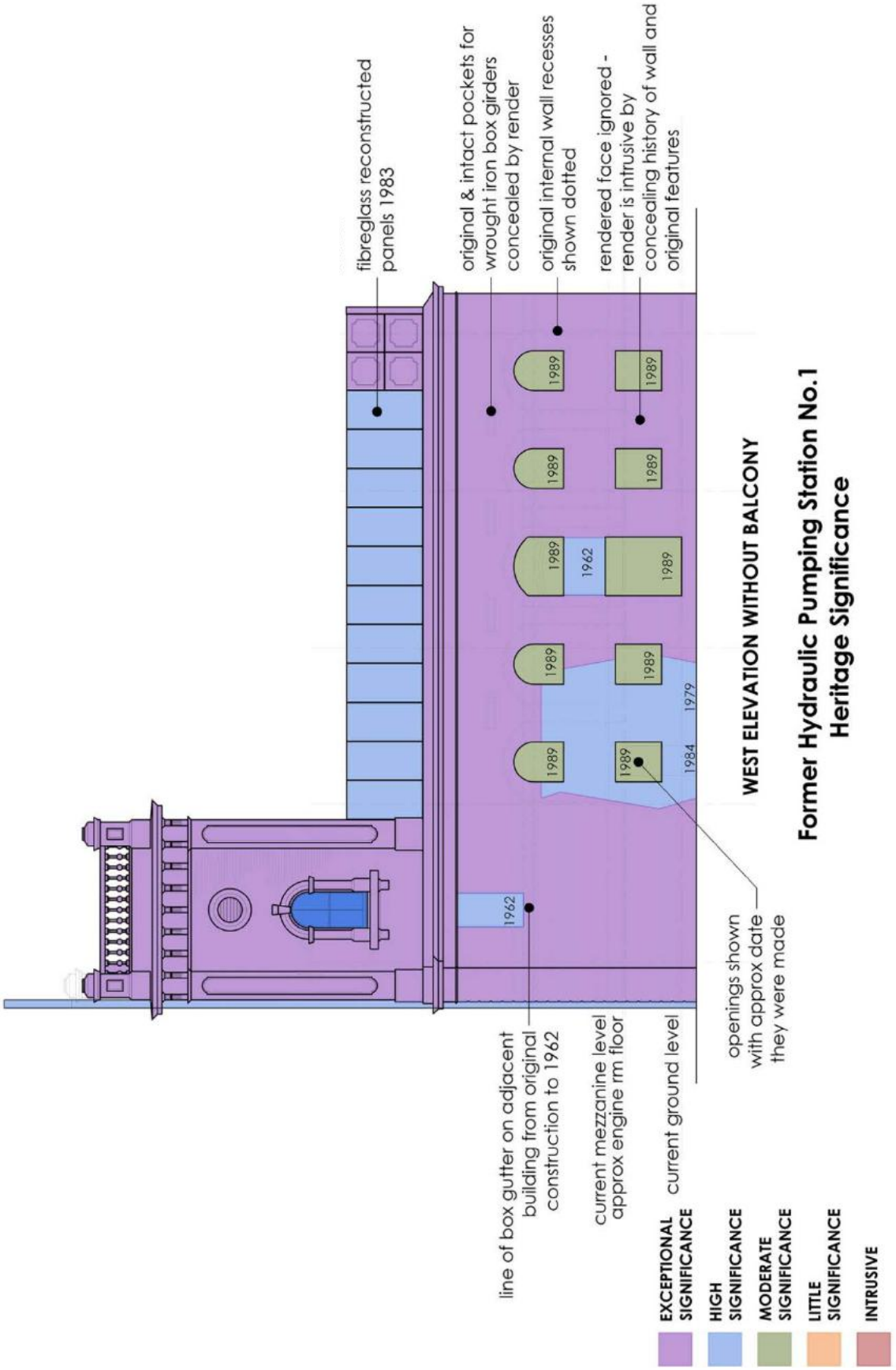


Figure 5.8 Heritage Significance: West Elevation – original wall (from photos). *Adaptive Architects 2017*

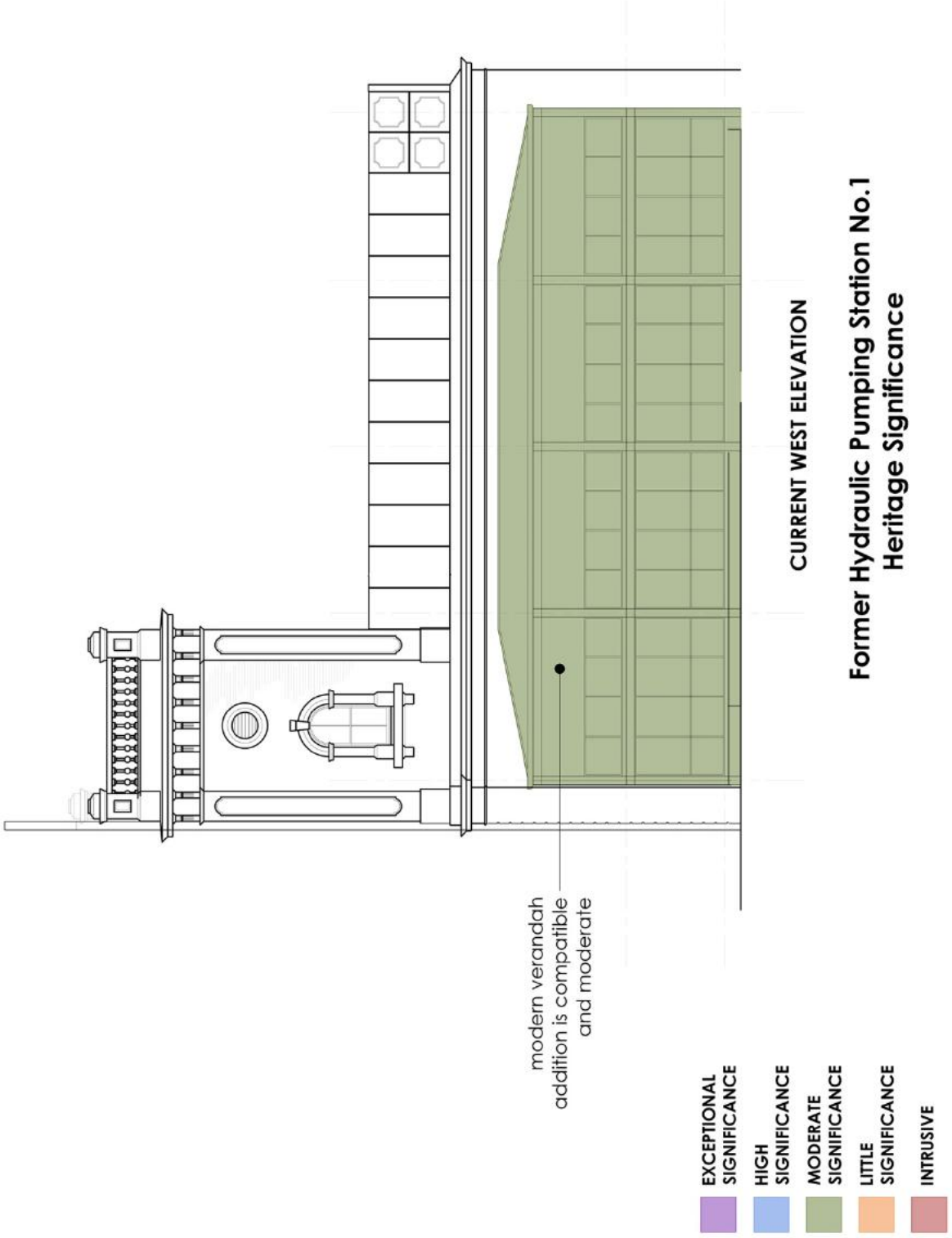


Figure 5.9 Heritage Significance: West Elevation – with West Annex (from photos). *Adaptive Architects 2017*

5.3 Grading of significant elements

The following tables document the grading of key elements of the HPS No.1 in terms of heritage significance.

Table 5.2 Grading of Significant Elements – Former HPS No. 1

Element	Significance	Commentary
EXTERIOR ELEMENTS		
SITE AND NORTH ELEVATION of TOWER		
Areas of Archaeological potential for the site	Moderate/Low	Refer to Fig 3.110 for details
Overall height, scale and configuration	Exceptional	Original 3 storey form with parapet – Condition: Good
Original load bearing English bond brick walls	Exceptional	Condition: Good - Some minor repointing required – some evidence of moisture at lower level.
Original rendered details including quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Condition: Good – minor cracking and delamination in some sections – sign has minor damage
Paint finish to rendered elements.	Moderate	Paint finish associated with maintenance of building. Condition: Good
Original pattern of openings and associated rendered classical detailing.	Exceptional	Condition: Good
16 pane double hung timber windows (8/8) to central arched openings	High	Sashes replaced as conservation works in 1983 with high quality workmanship - Condition: Good
Vent stack and downpipe – appears on early photos	High	Condition: Good
NORTH ELEVATION of WEST ANNEX VERANDAH		
Steel framed Annex addition including steps	Moderate	2 storey addition associated with c1998 redevelopment works for hotel - Condition: Good
NORTH ELEVATION of EAST ANNEX		
Overall height, scale and configuration	High	Constructed c1920s and in its original form was an artful design that complemented the style of the original - Condition: Good
Rendered quoins, parapet and segmental arch (excluding paint finish)	High	Condition: Good
Parapet extension and unfinished roof – may house air-conditioning ducts	Little	Constructed as part of the outdoor pool deck for hotel use c1998. The projected parapet does cut into the elevation but not significantly, but the small courtyard off the pool would be enhanced by its removal - Condition: Good

Element	Significance	Commentary
Timber framed window with three panels of fixed glazing, lower level face brick infill walls and rendered spandrel	Little	Original twin light timber double hung multipane windows and sill demolished – later door introduced underneath – 1983 conservation works attempted repairs but did not follow photo evidence of original configuration – result is unsatisfactory - The modified areas around the East Annex north wall window and base contrast against the aesthetic and historic significance of the building and must be considered intrusive. Condition: Good
Glazed pool house wall (behind parapet extension hotel)	Little	Associated with hotel use - Condition: Good
Paint finish to rendered elements	Moderate	Paint finish associated with maintenance of building - Condition: Good.
SOUTH ELEVATION of TOWER		
Original overall height, scale and configuration	Exceptional	Two storey form with parapet. Condition: Good
Original load bearing English bond brick walls	Exceptional	Condition: Good. Some repointing required above DPC.
Missing cast iron panels forming north end of water tank	Little	Shown in drawings and necessary for waterproofing – panels demolished in 1979 – affects ability to demonstrate - Condition: Missing
Waterproof membrane to brick wall (two panels high)	High	Waterproof membrane may be original fabric, and demonstrates role as water tank – possibly later fabric from conservation works 1983 - Condition: Good
Heavy grade lead sheeting DPC to third level of tank panels, and colour change in brickwork	High	Introduced when third level of tank panels added before 1932 associated with growth of pumphouse - Condition: Good
Rendered details including pilasters, bracketed cornice, and balustrade (excluding paint finish)	Exceptional	Approx 6 balusters replaced in central bay, approx 3 balusters replaced to right bay in 1983 conservation works – very important to aesthetic character of building - Condition: Good
Paint finish to rendered elements	Moderate	Paint finish associated with maintenance of building - Condition: Good
Original door opening – threshold at top of second tier of panels	Exceptional	This is likely to have been a maintenance access to the water tank – shown to be original as it predates the early change to three tiers of panels – now blocked by duct - Condition: Good
A/C duct into doorway opening	Little	The return air duct occupies the whole of the doorway - Condition: Good
SOUTH ELEVATION – LITTLE PIER ST		
Original overall height, scale and configuration	Exceptional	Two storey form with cast iron water tank panels above - Condition: Good
Original load bearing English bond brick walls	Exceptional	Condition: Good – some repointing required

Element	Significance	Commentary
Modified corners to brick wall	High	These indicate that there were originally buildings attached either side of this building – west demolished 1962, east demolished 1953
Original rendered middle string course cornice (excluding paint finish)	Exceptional	Condition: Good – minor cracking and delamination in some sections
Wrought iron former cathead beam projecting from the cornice of the building.	Exceptional	Position can only be associated with the movement of large engines in and out of original Engine House and may have been installed for the introduction of the centrifugal engine in 1920s
Original round arched openings with brick headers and rendered sills	Exceptional	Originally three along the rear face of the Engine House matched by four in the boiler room and the windows on the east wall – two outer openings unchanged
Original segmental arched openings with brick headers and rendered sills	Exceptional	Originally three along the rear face of the Engine House – two outer openings unchanged - Condition: Good
Reconstructed double hung timber windows to round arched windows	High	Sashes replaced as conservation works in 1983 with high quality workmanship - Condition: Good
Reconstructed security bars to lower openings	High	Appear very similar to the early photos – most likely a faithful reconstruction in new materials from 1983 conservation works - Condition: Good
Central upper opening – wider with segmental brick arch head	High	This opening shown as a smaller round arched window in drawings – missing quarter bricks at sides show it has been widened – segmental arch done very well and likely to be very early in building history c1900 - Condition: Good
Central upper opening – lower sill	High	This opening shown as a smaller round arched window in drawings – lowering of sill shown in early photos <1932 and may be related to the installation of centrifugal engine in 1920s. Window then subsequently bricked up shown in 1980 photo, and then reconstructed in 1983 – mortar joints do not match - Condition: Good
Central upper opening – window joinery	Moderate	Earliest photos show this opening without any joinery and it was likely used for moving large objects in and out of the building – engine repairs and the like. Current joinery is an interpretation introduced in 1983 conservation works and is clearly based on the northern arched windows, not based on evidence. It could be considered out of character with the subdued small laneway character of the rear elevation. The window is compatible with the building and the joinery is well done - Condition: Good

Element	Significance	Commentary
Lower central bricked up opening	Moderate	Original opening most likely matched the two outer lower windows (not shown on original drawings) – at some point (most likely matching the date of the lowering of the sill above) modified to be a door or access hatch to the basement as shown in 1937 photo. Bricked up before 1980 and not reopened in 1983 conservation works. Condition: Good
Downpipe	Moderate	Sympathetic replacement. Condition: Fair - some damage at low end and in need of protective guard.
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Cracked panel demonstrates demolition in 1979 – third thinner tier (evident only by damaged base of panels) – SW corner (8 panels) were restored to position c1988 – SE corner also appears restored – cast iron patina of rust will not further damage panel – Condition: Good
Cast iron panel – paint finish	Moderate	Most likely a protective paint from 1983 conservation works – largely unnecessary on cast iron and if repainted requires damaging surface preparation and more regular maintenance – Condition: Poor
Pump House signage	Little	Recent signage to elevation c2014 - Condition: Good
SOUTH ELEVATION of EAST ANNEX		
East Annex addition – 1st and 2nd floors	Moderate	3 storey building constructed 1998 as part of hotel development - obscures original East elevation of HPS No 1 – abuts rather than toothed into wall – brickwork and windows in similar character to original – Condition: Good
East Annex – 3rd floor	Low	
SOUTH ELEVATION of WEST ANNEX		
Steel framed Annex addition	Moderate	2 storey addition associated with c1998 redevelopment works for hotel - Condition: Good
EAST ELEVATION – CONCEALED FORMER HPS No, 1		
Original face brick wall	Exceptional	Wall now concealed by hotel — new openings introduced c1999 – parts plastered, tiled, covered by partitions – damage due to connection of floors and pool unknown – Condition: Good (assumed)
Partitions, tiles	Little	The treatment of the east wall with later layers, partitions and finishes have completely obscured the wall and must be considered detracting elements on the external face.
Original rendered middle string course cornice (excluding paint finish)	High	Condition: Poor – appears to have been shaved flush when the hotel was built
Original arched window openings, main door entry opening and secondary openings in basement of brick wall	Exceptional	Up to 4 original round arched openings remain intact, one larger door, and smaller openings – brick header arches intact, but sills unlikely to have survived - Condition: Good (assumed)
Bricked up panels within	High	Openings bricked up progressively through site

Element	Significance	Commentary
original openings		history – dates unknown - Condition: Good (assumed)
New openings in brick wall	Little	New openings have impacted historic openings and have penetrated the exceptional fabric of the wall
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Third thinner tier (evident only by damaged base of panels) – east panels may have been restored – cast iron patina of rust will not further damage panel – Condition: Good
Cast iron panel – paint finish	Little	Most likely a protective paint from 1983 conservation works – largely unnecessary on cast iron and if repainted requires damaging preparation and more regular maintenance – Condition: Poor
Two cast iron water tank panels missing for door opening	Little	Only access to water tank roof through this opening – does break down the significance as an enclosed water tank - Condition: Missing
Fibre cement partition enclosing cast iron water tank panels	Little	The partition prevents the cast iron panels from being seen from a public place - Condition: Good
The footings along the east face of the building may still retain evidence of the return water well under the ground, which would be of exceptional significance, and should not be disturbed without due archaeological process.		
EAST ELEVATION of TOWER		
Original overall height, scale and configuration	Exceptional	Lower part obscured by hotel parapet addition - Condition: Good
Load bearing English bond brick walls	Exceptional	Lower part obscured by hotel parapet addition - Condition: Good – small areas of repointing required – some moisture impact at low level
Original pattern of openings and associated rendered classical detailing.	Exceptional	Condition: Good.
Original rendered details including quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Condition: Good – minor cracking and delamination in some sections
Paint finish to rendered elements	Moderate	Paint finish associated with maintenance of building. Condition: Good.
4 pane double hung timber windows (2/2) to central arched openings	High	Sashes replaced as conservation works in 1983 with high quality workmanship - Condition: Good
WEST ELEVATION of ORIGINAL FORMER HPS No.1 WALL		
Original face brick wall external face	Exceptional	Majority of wall intact, some openings over time – originally a blank party wall to exterior – pockets for wrought iron box girders penetrate wall and can be seen externally – some evidence of original box gutter to neighbor (dem. 1962) - Condition: Good

Element	Significance	Commentary
	Moderate	The west wall openings would be considered Moderate as they are based on existing forms.
Sections of infill brickwork	High	Openings made and infilled numerous times through history – most significant opening infilled in 1983 conservation works
Render to external face of original brick wall (not shown on diagram)	Little	Rendered numerous times, most recent likely to be 1983 conservation works – conceals patchwork of openings and bricking up – also conceals history and condition of wall – likely to be cement based render – Condition: Good The external render on the west wall of the Engine House is intrusive as it conceals the history of the wall. However, if unobtrusive test patches find the render is not coming off easily and damaging the brickwork, it should remain insitu.
Brick pattern wallpaper - external	Little	Associated with 1988 hotel redevelopment
Original rendered string course cornice (excluding paint finish)	Exceptional	Condition: Good – remains intact and in view
Paint finish to rendered elements	Moderate	Paint finish associated with maintenance of building. Condition: Good.
NW corner vertical render	Exceptional	Quoining could not return as building was originally attached to side – demonstrates original condition
Restored cast iron panels – SW corner	Exceptional	Condition: Good
Reconstructed fiberglass water tank panel interpretation	High	Fiberglass reconstructed panels c1988 – contribute to understanding of water tank – modern interpretation in new material
Arched openings to upper level and square openings to lower level	Moderate	Openings created c1988 for use as a brewery – wall originally had no openings
WEST ELEVATION of TOWER		
Original overall height, scale and configuration	Exceptional	Condition: Good
Load bearing English bond brick walls	Exceptional	Condition: Good – small areas of repointing required – some moisture impact at low level
Original pattern of openings and associated rendered classical detailing.	Exceptional	Condition: Good.
Original rendered details including quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Condition: Good – minor cracking and delamination in some sections
Paint finish to rendered	Moderate	Paint finish associated with maintenance of

Element	Significance	Commentary
elements		building. Condition: Good.
4 pane double hung timber windows (2/2) to central arched openings	High	Sashes replaced as conservation works in 1983 with high quality workmanship - Condition: Good
WEST ELEVATION of WEST ANNEX		
Steel framed Annex addition	Moderate	2 storey addition associated with c1998 redevelopment works for hotel - Condition: Good
INTERIORS		
INTERIOR - Original Engine House		
Overall volume of space, height, scale and configuration	Exceptional	Original. Mezzanine intrudes into space but permits a sense of the full volume – kitchen intrudes into space and prevents sense of full volume - Condition: Good
Original ground surface to sub-floor area	Exceptional	May be ground surface or bitumen finish - Appears to be largely original although limited to 2 inspection holes only - Condition: Good
Current timber floor - constructed of plywood supported on softwood joists and bearers on brick piers with ant caps	Intrusive	Constructed c1989. Appears in good condition – previous documents note high risk factors of damp, rot and termites. Floor is not made from resistant timbers. (If anything remains of the subfloor surface it would be of high significance).
Arched recesses and simple pilasters on all internal faces	Exceptional	Original. Restored 1983 - Condition: Good
Five riveted box section (twin web) wrought iron plate girders supported on the massive brick east and west walls and iron ceiling girders	Exceptional	The riveted wrought iron box beams and smaller secondary beam structure of the Engine House roof is of exceptional significance and may be unique nationally. Original and in good condition
Corrugated Colorbond ceiling between girders	Moderate	Late 20th century. Good condition – diverts from original drawings showing curved corrugated ceilings running perpendicular between beams. A return to the original design is encouraged.
Opening to northern (internal) wall	Exceptional	Rendered and in good condition. Likely to be original
Cement rendered/plaster walls	High	Original photos show face brick walls internally – 1979 photo shows internal plaster (very damaged) – original drawings show plaster very similar to current – original plaster likely an early feature that needed to be reconstructed in 1983 conservation works Internal plaster to the Engine House is tentatively considered as high significance until further evidence can be uncovered.
Original window openings and sashes – south	High	See notes on external features – Condition: Good
Non-original window openings – west	Moderate	See notes on external features – Condition: Good

Element	Significance	Commentary
Bricked up openings - east	Exceptional	See notes on external features – Condition: Good The east wall contains areas of moderate significance where original openings have been bricked up and covered over.
Mezzanine floor, balustrade and associated furniture	Moderate	1988 – modified 1999. Extent of mezzanine allows volume of space to be interpreted
Pizza kitchen area including walls, floor and fitout	Little	1999 - Unsympathetic to overall space, height and configuration of space – prevents extents of original Engine House being appreciated
Bar area to south	Moderate	Late 20th century. Sympathetic to overall space, height and configuration of space – permits volume to be appreciated, does not block important elements
Paint finish (antique wash)	Little	Late 20th century. Good condition, however unsympathetic to industrial character of building
Lighting,	Moderate	Late 20th century additions – could be considered too delicate for industrial character of space, and not having the right focus for feature lighting
AV equipment, A/C vents	Moderate	Late 20th Century additions – generally low impact - Condition: Good
INTERIOR – Original Accumulator Room		
Overall space, height, scale and configuration	Exceptional	Original stairs and platform lost, but main features are the intact accumulators - Condition: Good
Concrete slab and tiles	Moderate	Anecdotally, the concrete slab constructed in 1979 failed and this is why the accumulators were tilting in 2012 - The 2014 remediation works excavated under the slabs, and foundations were filled with mass concrete prevent serious subsidence failure of the foundations – significance is potential for original pipe work under accumulators, but this now seems unrecoverable The floors underneath the accumulators were potentially the only areas in the building that retained original pipework.
Evidence of former joists being let into the walls, indicating former floors at various levels in the accumulator room	Exceptional	Original showing evidence of former floor levels. Date removed – post 1979
Load bearing English bond face brick walls	Exceptional	Original and in good condition
Opening to southern (internal) wall	Exceptional	Rendered and in good condition.
Window openings and sashes refer to external elevations for significance and commentary	High	-
4 large vertical timber posts (former guide rails) on the	Exceptional	Original and in fair condition. Treated for termites c2014. Bottom half of guide rails removed

Element	Significance	Commentary
north and south walls each side of the accumulator tanks with head rails below ceiling level		
Stair accessing mezzanine floor	Moderate	Constructed c1998.
Accumulator tanks	Exceptional	Fair to Good condition due to stabilization works (including removal of ballast) c2014 – wrought iron is stable with a patina of rust, it does not deteriorate like steel
Lighting	Moderate	Late 20th century – the red colouring could be improved
Plasterboard ceiling	Moderate	Late 20th century. Good condition, however obscures the interpretation of the original ceiling structure
INTERIOR - East Annex		
1st and 2nd floors	Moderate	Constructed c1998
3rd floor	Low	Constructed c1998
INTERIOR - West Annex		
Annex addition	Moderate	Constructed c1998
ROOF ELEMENTS		
ROOF – Original Water Tank		
Original water tank - space, size and volume	Exceptional	Original and in good condition. Third tier of water tank paneling constructed before 1932 removed in 1979 – third tier was constructed in a different material
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Cracked panel demonstrates demolition in 1979 – third thinner tier (evident only by damaged base of panels) – W side mainly missing – SW corner (8 panels) were restored to position c1988 – SE corner also appears restored – cast iron patina of rust will not further damage panel – The cast iron panels must be preserved insitu. The cracked panel is evidence of the near demolition of the building and should be retained. Condition: Good
Cast iron panel – paint finish	Little	Most likely a protective paint from 1983 conservation works – largely unnecessary on cast iron and if repainted requires more regular maintenance – Condition: Poor
Reconstructed fiberglass water tank panel interpretation	High	Fiberglass reconstructed panels c1988 – contribute to understanding of water tank – modern interpretation in new material
Original tank panel wrought iron strap bracing	Exceptional	Original and in good condition.
Replica tank panel steel angle bracing	High	Reconstructed to interpret original 1988
Salvaged cast iron panels (x4)	Exceptional	Original cast iron panels from tank salvaged and

Element	Significance	Commentary
		stacked at the north west corner of the tank.
Concrete topping slab and liquid applied membrane to tank floor	Little	Date of construction unknown. The slab base of the water tank is intrusive as it conceals the bottom of the cast iron panels and the Victorian water tank base. The Victorian water tank base is of exceptional significance and should be protected even though it is fully concealed.Removal of this slab is unlikely and would most likely cause significant damage to the building, so it should be retained. Fair condition
Plant and equipment	Little	Associated with the operations of the hotel. Unsympathetic fabric that obscures the size and volume of space
ROOF - Tower		
Rendered parapet rail and pediment	Exceptional	Original and in fair to good condition. Some evidence of delamination
Hipped roof including perimeter box gutter with paint applied membrane	Intrusive	Constructed 1983 in place of original mansard roof. Poor condition resulting in ponding and water penetration. Use of mismatched galvanic metals resulting in failure of materials. Roof failure is so critical in heritage buildings that the risk of failure in the tower roof of the Accumulator Room must be considered as intrusive.

6.0 Constraints and Opportunities

This section outlines the major issues for the conservation of the site. It takes into consideration matters arising from the statement of significance. It considers procedural constraints imposed by cultural conservation methodology, such as that of the Australia ICOMOS Burra Charter. It also identifies all statutory and non-statutory listings that apply for the site and describes constraints and opportunities arising from these listings.

6.1 Issues Arising from the Statement of Significance

As discussed in Section 4.3 Statement of Significance, the former HPS No.1 is of State significance as a nineteenth century structure of great architectural quality, that has historic, aesthetic, technical and social significance, and which was constructed to house machinery for the first large scale hydraulic power system in the State. It was the sixth hydraulic power system in the world to be built and one of ultimately only eight world cities to have this form of public power distribution utility. The following general heritage opportunities and constraints arise from the assessed significance of the former HPS No.1 as a whole:

6.1.1 Governing principle

C1 The former HPS No.1 is a place of State cultural significance and forms part of the remnant buildings associated with the former industrial purpose of Darling Harbour. It is a significant contributor to the overall significance of the heritage of Darling Harbour that should be managed in accordance with accepted conservation principles and practice as defined in the Burra Charter and through the NSW Heritage Manual.

C2 An updated datasheet on the State Heritage Register should be prepared using the information in this Conservation Management Plan as a guide to assist the community in understanding the significance of the place.

C3 Future management actions regarding the former HPS No. 1 must have due regard to its unique heritage significance.

6.1.2 Compatible Use

C4 The use of a historic building is critical to its conservation. To ensure continual care and maintenance, the building should not be left vacant for long periods.

C5 A compatible use will not impact upon identified historic fabric further than defined within the gradings of significance section of this CMP that identifies exceptional, high and moderate significance and makes recommendations about what level of change is acceptable to this fabric.

C6 The heritage item needs to be protected from inappropriate modifications by ensuring that it is only adapted for compatible uses. A compatible use will limit changes to those which are appropriate to its significance and will not require intrusive alterations to meet functional requirements or regulations that have unacceptable heritage impacts.

C7 A compatible use will have a high level of public accessibility so that the significant interiors are available to be viewed.

C8 A compatible use will recognise that the building is constructed from materials that date from the late Victorian period. Managing heritage fabric requires specialist advice and expert contractors to avoid inadvertently causing damage to the building with modern materials and construction techniques

C9 A compatible use will recognise the industrial aesthetic of the interior and seek to work with and enhance this character. As well as the building's fabric and components, the form of the building and internal spaces contribute to its significance and interpretation of its former use as a hydraulic pumping station.

6.1.3 Fabric and Moveable Heritage

C10 Significant fabric and moveable heritage is to be conserved in accordance with recognised conservation principles and procedures included in the Australia ICOMOS Burra Charter 2013. Such conservation actions include maintenance, preservation and interpretation including restoration and reconstruction.

C11 Documentation should be undertaken for moveable heritage items associated and located within the building. An inventory should record the item, its significance, location and policies to assist in conservation options.

C12 Moveable heritage associated and located within the building should be retained within its relationship to the site so as not to diminish or damage the significance of both the items and the place, unless there is no prudent or feasible alternative to its removal.

C13 The ranking of elements in the Gradings of Significance table 5.2 and diagrams 5.1-5.9 establishes how each element is to be managed.

6.2 Issues Arising from Physical Condition of the Place

This section considers some of the issues that may impact on the future of the place in relation to the physical condition and form of the place. It is primarily aimed at identifying areas where the poor condition of the building may be threatening significance, or may place limits on any conservation policy. The condition and integrity of the place gives rise to the following issues for the conservation of the place's significance.

C14 Urgent repairs to address include but are not limited to damp, termite issues, repointing of brickwork, improvements to electrical wiring, new flooring to ground floor of former Engine House and the reinstatement of the roof of former Accumulator Room to halt any potential damage to significant fabric.

C15 Decisions about works to the place, maintenance repairs or more extensive adaptation works should always take into account the impact on the significance of the place, both as a whole and on individual components.

C16 Advice should be sought from an experienced heritage professional when undertaking maintenance on the significant fabric. They will be able to advise on the right materials and techniques to avoid damaging early fabric through later and inappropriate materials and techniques.

C17 A comprehensive condition report of the former HPS No. 1 is required to inform and quantify repair work and a maintenance program to halt any potential damage to significant fabric. The report must address the potential removal of the existing late 20th century floor structure to the former Engine House.

C18 A planned cyclical maintenance program should be implemented that proactively addresses painting, floor refinishing, cleaning, minor repairs, compliance issues, vermin protection, termite inspections, structural movement, and electrical system condition

C19 The current ground floor to the original Engine House is constructed of treated pine framing which is susceptible to termite attack and rotting. Previous reports on the building condition have noted damp conditions in the sub-floor area. Our inspection did not find this, but this may be episodic. Any upgrade or renovation works associated with the place should include a new floor with hardwood framing that is resistant to termites and rot. New floor finishes are to be sympathetic to the industrial character of the place with sympathetically detailed coving. Floor finishes should also be slip and water resistant.

C20 The subfloor currently has two access panels that provide limited access to the subfloor. If further access panels are necessary to provide better access for inspections then these will need to be installed.

C21 The building appears to have been treated for termite infestation however there is evidence of termite movement in the surrounding external trees. This gives rise to the likely threat of further termite attack on the building. Establishing termite barriers around the building, and monitoring of termites, should be carried out as part of a cyclical maintenance plan as detailed in Section 8.0 of this CMP.

C22 It appears that air-conditioning ductwork penetrate the concealed original cast iron base to the water tank on the roof. This fabric is of Exceptional Significance. Where new ductwork of any kind is required for the site, existing penetrations are to be used. No additional penetrations through original fabric is permitted.

C23 There is physical evidence of ponding to the box gutter of the Accumulator tower roof due to the poorly constructed roof frame. A liquid applied waterproof membrane has been used across the entire roof as a short-term measure to prevent any further water ingress, however this is likely to fail and cause damage to significant building fabric. As a matter of priority the roof should be rebuilt with a box gutter designed with sufficient falls. There is enough documentary evidence that allows the sympathetic reconstruction of the original mansard roof, which would improve the aesthetic qualities of the place and restore some landmark qualities to the site. The detailed design of the roof is to be completed by a suitably qualified heritage/conservation architect.

C24 Limited access to the Accumulator roof presents as an ongoing issue for maintenance to occur as currently access is through the erection of scaffolding. This gives rise to irregular roof inspections. Consideration should be given as a priority to providing a permanent access ladder to the Accumulator roof to allow regular and safe inspections. The design of the ladder is to be completed by a suitably qualified heritage/conservation architect and should be constructed in conjunction with the roof reconstruction.

C25 The cast iron panels to the roof have been damaged in the process of demolition in 1979 and some of the panels are missing. The panels that have survived include some that have been restored to their positions, some incorrectly. Their condition and any repair will have significance implications and needs to refer to constraints related to significance.

C26 The third tier of the cast iron panels was fully demolished in 1979, but the broken base of these panels remains in various fragments on top of the second tier. There is enough of the panels to detect that they were a different type of panel. The bolts that fix them to the second tier have fused over time and they would need to be cut off to be removed. Their condition and any repair will have significance implications and needs to refer to constraints related to significance.

C27 The modular cast iron water tanks were built with a base made from the same panels, with a bituminous topping similar to an asphalt path. This has since been topped with a concrete slab, completely obscuring the panels. The panels should be well protected in this condition, but future care for them should include being aware they exist and not drilling holes through them.

C28 If the windows need repairs these should be assessed in detail by a heritage experienced professional, and should aim to repair and address any damage in accordance with the Burra Charter.

C29 The renderwork on the former HPS No. 1 is generally in good condition, but has some cracking and is in need of inspection and repair to ensure the cracks do not introduce greater damage.

C30 The fireplaces introduced quite recently into the ground floor of the former Engine House have flues that penetrate through exceptional fabric elements and vent to the outside from the water tank. The best we can determine is that the flues go around the cast iron water tank base panels and are cut into the brickwork. Likewise an exhaust vent penetrates through exceptional fabric to the former Accumulator Room (east wing) from the kitchen area. This sort of intervention into exceptional fabric must be prevented in future. If these flues ever need to be removed they will need to be repaired with the heritage impacts considered.

C31 The electrical cabling in the building needs to be planned and undertaken with minimal heritage impacts. Wherever possible cabling needs to be concealed under floors or in ceilings, with well considered and low impact conduit risers and droppers where needed.

C32 Consideration of heritage impacts need to preceed the introduction of any new services such as security or CCTV systems, lighting or speakers. Wherever possible wireless systems are preferred, however when wiring is necessary it should be well considered and designed to fit the building and minimise impact.

6.3 Place Management NSW

Darling Harbour is owned by Place Management NSW (PMNSW) formerly Sydney Harbour Foreshore Authority, under the Place Management Act (formerly the Sydney Harbour Foreshore Act 1998).

The principal functions of PMNSW, as stated in its Act, are to:

- to protect and enhance the natural and cultural heritage of the foreshore area;
- to promote, co-ordinate, manage, undertake and secure the orderly and economic development and use of the foreshore area, including the provision of infrastructure;
- to promote, co-ordinate, organise, manage, undertake, secure, provide and conduct cultural, educational, commercial, tourist, recreational, entertainment and transport activities and facilities.

6.3.1 Asset Owner's Requirements

PMNSW proposes to continue to use the former HPS No.1 for commercial uses, as part of mid-long term lease arrangements. While it is expected that the building will continue to operate as a bar and restaurant outlet as part of the hotel, the policies anticipate the needs and expectations of the lessees, and how these requirements can continue to be accommodated, whilst ensuring the retention of the heritage significance of the item and its setting. Any future adaptive commercial reuse

of the former HPS No. 1 must ensure that it is economically viable and positively contributes to Darling Harbour.

Since the enactment of the NSW Heritage Act in 1977, NSW Government agencies have been expected to identify and manage heritage assets in their ownership and control. Their responsibilities include keeping a heritage and conservation register (S170) listing heritage assets under its ownership, occupation or management.

PMNSW oversees the preparation of Conservation Management Plans (CMPs) for each of the items listed on the register. This CMP is one of documents used by the PMNSW as owners as well as the current lessees who are responsible for the maintenance of the property. The CMP policies and recommendations feed into current maintenance strategies and Total Asset Management Policy (TAM).

Total Asset Management Policy (TAM) is a NSW Government policy introduced to achieve better planning and management of the State's assets. Total Asset Management is the strategic management of physical assets to best support the delivery of agency services. It is part of a planning framework in which the Government's social, ecological and financial service outcomes are achieved by the most efficient means and within the resource limits of the community. It provides a structured and systematic resource allocation approach to infrastructure and physical asset management, so that resources are aligned with the service objectives of State agencies.

Lessees Responsibilities

Maintenance

As part of the lease agreement, the lessee is responsible for asset management and the maintenance and care of the building to meet Heritage Act Minimum Maintenance Standards, and those recommended in this CMP. The lessee must seek Land Owner's Consent and appropriate statutory approvals to undertake any works to the property and buildings.

A planned maintenance program and routine maintenance program should proactively address repair work. This should be categorised into urgent, necessary or desirable work depending on the nature of the defect to inform a phased approach to remedial maintenance works. Urgent areas to address include but are not limited to damp, termite issues, repointing of brickwork, electrical wiring, flooring to ground floor of original Engine House and the tower roof of original Accumulator Room.

'Loose Fit'

Continued use of the property in its current form will have the least impact. If changes are proposed, they are to adopt the principle of "loose fit", where the new use is adjusted as necessary to work within the available spatial and architectural configuration, rather than the opposite. All new work is to be designed to be reversible (that is, it can be removed and the original features reinstated) and is subject to approval.

Interpretation

At present patrons or visitors to the former HPS No. 1 may not be aware of the history of the place, or the pivotal role it played in the industrial, technological, commercial and architectural development of Sydney. There is an opportunity to interpret its significance as a nineteenth century structure of high architectural quality, which was constructed to house machinery for the first large scale hydraulic power system in the State; and as the sixth hydraulic power system in the world to be built and one of

ultimately only eight world cities to have this form of public power distribution utility.

The surviving structure retains many original engineering components that are on view to visitors which were used to generate hydraulic power including the two original wrought iron accumulators, large cast iron plate water tank, and the riveted wrought iron box girders and joists in the Engine House. There is an opportunity to interpret these tangible elements to illustrate its remarkable technological achievement and the most comprehensive record of a public hydraulic power system in Australia, providing rare evidence of this phase of energy technology in NSW.

There are opportunities to engage with visitors by providing various types of on-site interpretation to promote greater enjoyment of the site and to facilitate their understanding of the history of the place which does not conflict with the commercial use of the place. In fact, when interpretation is done well it provides a worthwhile experience to the viewer and can become an attraction for the commercial premises associated with the history of the place. The Interpretation Strategy should aim to achieve this symbiosis with the lessees and help them contribute to a better understanding of the building's history.

Location

The central location of the site within Darling Harbour, its connection with the Novotel Rockford Hotel and its close proximity to the Chinese Gardens of Friendship, SICEEP including Darling Square, ICC Sydney Theatre and the International Convention Centre and the soon to be built Darling Exchange affords the building with a relatively high profile and provides an excellent opportunity in terms of its current commercial use to capitalise on the location.

Reversibility

Continued use of the property in its current form will have the least impact. If changes are proposed, all works are to adopt the principle of reversibility, where the new use is adjusted as necessary to work within the available spatial and architectural configuration of the existing fabric, rather than the opposite. All new work is to be designed so that it can be removed and the original features retained without damage, and is subject to approval.

6.3.2 Place Management NSW Policies

Place Management NSW has developed a suite of policies to guide the detailed management of places, and these need to be considered in developing conservation policies, managing risks and managing the place. The principal policies that will need to be considered, depending upon the significance, character and uses of the place, are:

- Darling Harbour Commercial Outdoor Seating Policy 2013
- Darling Harbour Commercial Outdoor Seating Technical Manual 2013
- Darling Harbour Signage Policy 2013
- Darling Harbour Signage Technical Manual 2013
- Foreshore Authority Public Art Policy 2010
- Sustainability Policy (Draft) 2012
  http://www.shfa.nsw.gov.au/content/library/documents/E4915136-CCFE-EACB-C1954BE2C96873EF.pdf
- Sustainability 2020 Strategy

http://www.shfa.nsw.gov.au/content/library/documents/E480D450-A94D-A3A2-AD27B3BAE9BFA9C0.pdf

- Additional policy documents and technical manual can be accessed at http://www.shfa.nsw.gov.au/sydney-Resource_centre-Policies_manuals_and_guides.htm

6.3.3 Lessees Requirements

The former HPS No.1 is currently on a 99 year ground lease as a long-term leasing arrangement.

Security

The former HPS No. 1 is located within the public domain of Darling Harbour. Any use of the building must take into account the potential problems caused by vandals. Significant fabric or interpretive displays in or around the site need to be protected and designed with this in mind. It is however essential that security systems have minimal impact on external and internal fabric and minimal visual intrusion. Maintaining a minimum staff presence during opening hours should continue as well as the current security provided by the Novotel Rockford Hotel and security guards that are present around Darling Harbour.

Signage

It is recognised that commercial and retail tenancy identification and temporary signage are an intrinsic component of the commercial use and viability of former HPS No.1 as a whole. External lighting of the buildings can also add to its character. Signage and external lighting, however, should not have an adverse impact on significant heritage fabric and the overall character of the place.

Upgrades

The significant aspects of the architectural character of the former HPS No. 1, graded as Exceptional and High, should be retained, conserved and maintained with very little scope for alteration, change or adaption to those elements. Moderate fabric should also be retained, conserved and maintained, but there is some scope for adaptation of this fabric if it results in preserving the significance of the whole.

Fabric that has been identified as little or intrusive provides scope for alteration or change provided that it does not involve loss of significance to other areas.

All new works should adhere to building envelope controls and aspire to design excellence and demonstrate infill principles that respect and complement the form, scale, character and texture of the heritage building and contribute new work of an exceptional quality to the State significance of the former HPS No. 1 and its location in Darling Harbour landscape.

The high visibility of Former HPS No. 1, its water tank, external rear and side elevations particularly from the north, south and west means that any changes to the external building fabric and form will be evident and cannot be easily hidden from public view. All proposed external changes will need to be considered within this context and are subject to approval.

6.4 Heritage Management Framework

The principal statutory controls against which potential impacts on the significance of the former HPS No.1 will be assessed include the following:

- Environmental Planning and Assessment Act, 1979 and associated planning instruments,

policies, plans and guidelines;

- The Heritage Act 1977; and,
- The policies contained in this CMP on adoption by the PMNSW and endorsement by the Heritage Council.

Other controls, including the National Parks and Wildlife Act (NPW) Act 1979 and the NSW Government Total Asset Management (TAM) guidelines are considered in this Section.

It is essential that the PMNSW and the approval authority are consulted in order to determine any approvals that may be required for the execution of any works. Approvals for works may be required under both the Environmental Planning and Assessment Act (EP&A Act) 1979 and the NSW Heritage Act 1977. All statutory applications require the signature and consent of the landowner to enable lodgement. For the Former Hydraulic Pumping Station No.1, the landowner is the PMNSW; therefore all applications are to be forwarded to the PMNSW for endorsement prior to submission for development approval. Further information about the granting of landowner's consent can be sourced from the PMNSW.

6.4.1 Environmental Planning and Assessment Act[1]

All development applications are assessed by the Minister of Planning or under delegation by The City of Sydney Council (the consent authority). The Minister for Planning is the consent authority for 'deemed' development with a capital investment value of more than $10 million.

Under the EP&A Act, there are a number of Environmental Planning Instruments (EPIs), including the Darling Harbour Development Plan No.1, as well as State and Regional Plans and Policies, Development Control Plans and Guidelines that apply to the former HPS No.1, which are identified and discussed further in the following sections.

6.4.2 New South Wales Heritage Act 1977[2]

Architectural Works

The Hydraulic Pumping Station No.1 is listed in the NSW State Heritage Register, as SHR item #00125. This listing recognises the site as being of State significance and provides statutory protection under the NSW Heritage Act, 1977.

Under Section 57(1) of the NSW Heritage Act, Heritage Council approval is required for a wide range of works to a SHR item and moveable objects. Unless an item constitutes a danger to its occupants or the public, demolition of a SHR item and moveable objects is prohibited under the NSW Heritage Act (s63 (2)). An element of a SHR item may only be demolished if it does not contribute to the significance of the item. In relation to moveable objects approval will be required under Subdivision 1 of Division 3 in order to move, damage or destroy the relic or moveable object, alter the building, work, relic or moveable object, display any notice or advertisement on the place, building, work, relic, moveable object or land, or in the precinct.

To gain approval for any of the above works, an application must be made to the Heritage Council (Section 60 application). Authority has been delegated to the PMNSW to determine Section 60 applications for works which do not materially affect the significance of the item. PMNSW can advise

[1] http://www.legislation.nsw.gov.au/viewtop/inforce/act+203+1979+FIRST+0+N/
[2] https://legislation.nsw.gov.au/inforce/469e6ec5-1ab8-6e78-fda8-e7e26871bfb1/1977-136.pdf

applicants whether applications can be assessed under delegation, or whether they need to be approved by the Heritage Council.

The current State Heritage Register (SHR) curtilage listing boundary plan for the former HPS No. 1 shown on Plan 382, includes the current property boundary as part of Lot 301 DP 1021761 (Figure 4.26).

Archaeological Management

The NSW Heritage Act provides statutory protection to relics, archaeological artefacts, features or deposits.

Part 4 of the Act refers to items and places listed on the SHR. Section 60 also requires an application for an excavation permit for historical archaeological resources identified as having state significance issued by the Heritage Council, or in accordance with a gazetted Exemption under Section 57(2) of the Act.

The site of the former HPS No.1 falls within the Pier St Precinct - Archaeological Remains Precinct identified on the Heritage Register Inventory[3]

An Archaeological Assessment & Research Design (AA&RD) is to be prepared for works that may impact archaeology in accordance with the requirements of the Heritage Council. The AA&RD for the former HPS No.1 would be a valuable resource for understanding and managing the archaeological resources associated with the history of the site. The site has the capacity to gain a high public profile if its history and significance are interpreted to the public. Archaeological assessment in Godden Mackay Pty Ltd *Little Pier Street Precinct Archaeological Investigation Research Design* Jan 1992 Section 3.4 covers this site and should be referred to for any future development, but is likely to need to be updated.

Under Section 57(1) of the Heritage Act, Heritage Council approval is required to move, damage, or destroy a relic listed in the State Heritage Register, or to excavate or disturb land which is listed on the SHR and there is reasonable knowledge or likelihood of relics being disturbed.

A Section 60 application is required to be prepared by an historical archaeologist who meets the Heritage Council Excavation Directors Criteria for works on State significant sites to disturb relics on an SHR listed site.

Standard Exemptions for works to State Heritage Register items

Under Section 57(2) of the NSW Heritage Act, the Minister may make exemptions from approval otherwise required under Section 57(1) for works to State Heritage Register items (see above). Such exemptions are intended to streamline the approvals process. There are two types of exemptions:

- Standard exemptions: apply to all State Heritage Register items and cover maintenance and repair and minor alterations.
- Site specific exemptions: apply only to an individual State Heritage Register item.

Standard Exemptions

If proposed works are covered by a standard exemption, an Exemption Notification Form (not a Section 60 application) should be completed, with sufficient detail provided to determine whether the

[3] http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=4500372

proposed works meet the standard exemption guidelines. PMNSW has delegation from the Heritage Council to approve standard exemption applications.

Applicants need to confirm with the PMNSW whether proposed works fall within the Standard Exemptions, and what documentation will be required.

Site specific exemptions relate to the particular requirements of an individual State Heritage Register item, and can only be for works which have no potential to materially affect the significance of the item. Site specific exemptions are only applicable if the works to which they refer are identified as exempt development in a CMP endorsed by the Heritage Council, or in a CM Strategy endorsed under delegation by the Director, Strategic Planning and Heritage, Place Management NSW.

CMP endorsement by the Heritage Council is normally required for SHR listed items. Endorsement may alleviate the need for Section 60 applications for works that are consistent with the conservation policies in the endorsed CMP.

Site-specific exemptions

Reference can be made to the NSW Department of Environment and Heritage Standard Exemptions for Works Requiring Heritage Council Approval.[4] Currently, there are no site specific exemptions for the former HPS No.1 site or building and none are recommended in this CMP.

Minimum Standards of Maintenance and Repair

Section 118 of the NSW Heritage Act provides for the regulation of minimum standards for the maintenance and repair of State Heritage Register items. These standards were regulated in 1999 and apply to all State Heritage Register items. The minimum standards cover various areas, including for example, weatherproofing, fire protection, security and essential maintenance.

An inspection to ensure that the item is being managed in accordance with the minimum standards should be conducted at least once every year (or at least once every 3 years for essential maintenance and repair standards).

Section 118(2) states that the regulations may make provision for or with respect to minimum standards that may be listed on the State Heritage Register for the maintenance of a ruin or a moveable object that is listed on that Register, but those standards can only relate to the following matters:

(a) the protection of the ruin or moveable object from damage or destruction by fire,

(b) security (including fencing and surveillance measures to prevent vandalism),

(c) essential maintenance of a moveable object (being maintenance necessary to prevent serious or irreparable damage or deterioration).

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

Refer to the Minimum Standards for Maintenance and Repair.[5]

[4] *http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/StandardExemptions.pdf*

[5] http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/infominimumstandards.pdf

6.4.3 National Parks & Wildlife Act, 1974[6]

Under Section 89A of the National Parks and Wildlife Act 1974 (NPW Act), it is an offence for a person to destroy, deface, damage or desecrate an Aboriginal Object or Aboriginal Place without the prior issue of an Aboriginal Heritage Impact Permit (AHIP). The Act requires a person to take reasonable precautions and due diligence to avoid impacts on Aboriginal Objects. AHIPs may only be obtained from the Office of Environment and Heritage. It is also an offence under Section 90A of the NPW Act to disturb or excavate land for the purpose of discovering an Aboriginal Object, or to disturb or move an Aboriginal Object on any land, without first obtaining a permit under Section 90A of the NPW Act.

6.4.4 NSW government Total Asset Management[7]

The Total Asset Management (TAM) Manual prepared by NSW Government's Asset Management Committee requires that: "Sustainable management of heritage values should be treated by an agency as part of its core business". Similarly, TAM Guidelines for Government Agencies prepared by NSW Treasury require "planning use of heritage assets to maximise their service delivery while protecting their cultural values".

While protection of built heritage in Darling Harbour area is part of the core business of PMNSW, these TAM Guidelines can be interpreted to indicate that the retention of heritage value overrides the financial feasibility of the ongoing reuse of items. In an event where retention of heritage significance may collide with the financial feasibility of the project, the importance of retention of the heritage significance shall be given priority.

Refer to the NSW Government's Total Asset Management Manual (see footnote for hotlink).

6.5 Environmental Planning Instruments (EPIs)

There are three principle EPIs under the Environmental Planning and Assessment Act 1979 that are applicable to Darling Harbour.

6.5.1 State Environmental Planning Policy (SEPP) (State and Regional Development) 2011[8] and State Environmental Planning Policy (Major Precincts) 2005[9]

Under the SEPPs, the former HPS No.1 is an environmentally sensitive area of State significance, being on land in Darling Harbour and as a place and building listed on the State Heritage Register under the NSW Heritage Act.

Pursuant to the EPA Act, the SEPP (State and Regional Development) applies to development classified as State Significant Development (SSD) and requires a SSDA to be submitted to the Department of Planning and Environment for consideration. Development under $10 million requires approval under Part 4 of the Environmental Planning and Assessment Act.

The NSW Planning Minister is the consent authority for state significant development and major development, as described in the State Environmental Planning Policy (State and Regional Development) 2011 and the State Environmental Planning Policy (Major Precincts) 2005.

[6] http://www.legislation.nsw.gov.au/inforcepdf/1974-80.pdf?id=cb5ba894-2a75-4a36-f576-df69950c59f8
[7] http://www.treasury.nsw.gov.au/tam/tam-intro
[8] http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+511+2011+cd+0+N
[9] http://www.legislation.nsw.gov.au/maintop/view/inforce/epi+194+2005+cd+0+N

6.5.2 Sydney Regional Environmental Plan (SREP) (Sydney Harbour Catchment) 2005[10]

The Site is located in Darling Harbour and is identified within the following areas under the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* (SREP):

- the Sydney Harbour Catchment Area;
- the Foreshores & Waterways Area Boundary; and
- the City Strategic Foreshores Area.

Darling Harbour is included in the "Foreshores and Waterways Area" defined in the SREP (identified on the Sydney Harbour Catchment 2005 Foreshores and Waterways Map Area Sheet 3 of 5 (Amendment 2016). Accordingly any development must be considered in terms of the criteria set out in Part 3 Division 2 of SREP. The SREP has limited application the former HPS No.1, as The Heritage Provisions in Part 5 of the SREP are not applicable to sites that are not listed as a heritage item. Particular provisions of the plan apply to the Foreshores and Waterways areas, which encompass the subject site.

Darling Harbour is also included as a "Strategic Foreshore site" on Sheet 1 of the SREP, for which a Master Plan (deemed DCP) is required. However this only applies to the City Foreshores area if the Minister directs, and as yet there has been no such direction.

The NSW Planning Minister is the consent authority for the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005. The City of Sydney or the Central Sydney Planning Committee is the consent authority for development not covered by the Planning Minister, unless development that has a capital investment value of more than $10 million, in which case The NSW Planning Minister is the consent authority.

6.5.3 Darling Harbour Development Plan No.1[11]

The DHDP No. 1 is the principal planning instrument applicable to the Site made under the Darling Harbour Authority Act 1984. It provides a broad framework for development, principally through identifying permissible uses.

The objectives of the DHDP are to:

a) promote the development of the Darling Harbour area as part of the State's Bicentennial Program,

b) encourage the development of a variety of tourist, educational, recreational, entertainment, cultural and commercial facilities, and to set out those uses which are deemed permissible; and

c) to make provision with respect to controlling development within that area.

Clause 3, Part 2, Objects of this Plan, states the means whereby this plan aims to achieve its objects:

d) by providing that certain kinds of development may not be carried out in the Darling Harbour area otherwise than in accordance with the terms of a permit,

[10] http://www5.austlii.edu.au/au/legis/nsw/consol_reg/srephc2005587/
[11] https://www.legislation.nsw.gov.au/inforce/0e1b35be-5eb9-11dd-8fae-00144f4fe975/1985-333.pdf

e) by prohibiting all other kinds of development within that area, and

f) by ensuring that the controls that apply in that area in relation to the carrying out of development apply also in relation to the demolition and renovation of buildings and works.

Under Clause 6 the DHDP identifies Permits required for certain development which may be relevant to the site:

a) for the purposes of tourist, educational, recreational, entertainment, cultural or commercial facilities (other than facilities used for pawnbroking or other forms of moneylending),

c) for the purposes of beautifying the landscape,

Clause 8 of the DHDP identifies Permits required for renovation and demolition which may be relevant to the site:

b) The renovation or demolition of a building or work may not be carried out except with a permit being obtained therefor.

c) Part 5 of the Act applies to and in respect of the renovation or demolition of a building or work in the same way as it applies to and in respect of the carrying out of development.

6.6 Development Control Plans and Guidelines

6.6.1 Sydney Harbour Foreshore and Waterways Area DCP 2005[12]

Sydney Harbour Foreshores and Waterways Area DCP 2005 has been prepared to support the SREP (Sydney Harbour Catchment) 2005. The DCP provides detailed design guidelines for development and criteria for natural resource protection for the area identified as Foreshores and Waterways area. The DCP applies to all development proposals within the Foreshores and Waterways Area identified in SREP (Sydney Harbour Catchment 2005).

The heritage provisions of DCP are not relevant to former HPS No.1 as the site is not listed as a heritage item under the SREP 2005.

6.6.2 The City of Sydney Development Control Plan (DCP) 2012

Development Control Plans (DCP) support planning controls through more detailed provisions that guide design and development. The City of Sydney's Development Control Plan was adopted in 2012 (DCP 2012).

The City of Sydney DCP 2012 applies to all land as designated on the DCP map, which includes Darling Harbour (Sheet 015: Darling Harbour, Darlinghurst, Haymarket, Surry Hills, Sydney, Ultimo). Currently Darling Harbour is not identified as a Locality, Specific site or Specific area in the DCP. However the General Provisions, including Heritage, Development Types and certain Schedules apply.

The aims of the DCP 2012 are to provide controls which guide development in order to:

a) encourage development to respond to its context and is compatible with the existing built environment and public domain;

b) recognise and reinforce the distinctive characteristics of the City of Sydney's neighbourhoods and centres;

[12] http://www.planning.nsw.gov.au/harbour/pdf/dcp.pdf

c) *build upon the detailed objectives and controls under Sydney LEP 2012; (d) protect and enhance the public domain;*

d) *achieve the objectives of the City's Sustainable Sydney 2030 Strategy;*

e) *encourage design that maintains and enhances the character and heritage significance of heritage items and heritage conservation areas; and*

f) *encourage ecologically sustainable development and reduce the impacts of development on the environment.*

The heritage section of the DCP General Provisions (Section 3.9) sets out a number of provisions related to development which affects heritage listed items and conservation areas and is guided by the following objectives:

a) *Ensure that heritage significance is considered for heritage items, development within heritage conservation areas, and development affecting archaeological sites and places of Aboriginal heritage significance.*

b) *Enhance the character and heritage significance of heritage items and heritage conservation areas and ensure that infill development is designed to respond positively to the heritage character of adjoining and nearby buildings and features of the public domain.*

6.6.3 NSW Heritage Council – Design in Context[13]

The guideline is published by the NSW Heritage Council of NSW and the RAIA. The guideline establishes six criteria for assessing new development in a heritage conservation area or adjacent to a heritage item; character; scale; form; siting; materials; and, detailing. The criteria and guidelines are relevant to minor works, such as potential change to the rear wings which is to be designed to respect the significance and setting of the heritage item.

6.6.4 NSW Heritage Council – New Uses for Heritage Places

The guideline is published by the NSW Heritage Council of NSW and the RAIA. It contains principles that encourage careful and sympathetic designs and interpretation in the adaptation of historic places and sites.

6.7 Approvals

6.7.1 Landowner's consent

Before any application is submitted to a consent authority, the consent of PMNSW, as landowner, must be obtained first. Obtaining consent from PMNSW is not an approval for the works, only consent to submit an application. A consent authority will not be able to consider an application unless it has the landowner's consent.

6.7.2 Consent Authorities

There are a range of consent authorities to which applications for work will need to be submitted. These are described in the preceding sections, and are summarised as follows:

Consent Authority	Works or activities for which that consent

[13] http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/DesignInContext.pdf

	authority is responsible
• Minister for Planning	• Works with a capital investment value above $10 million • May direct preparation of a master plan (a deemed DCP) for a Strategic Foreshore Site (which includes most of Darling Harbour)
• Place Management NSW	• Landowner's Consent (to lodge an application) • Works that do not materially affect an SHR item, under a Heritage Council delegation • Additions/removals/revisions to its s170 Register listings • Notifying the Heritage Council of the transfer, ceasing to occupy, or demolition of any item in its s170 Register • Implementing TAM Guidelines for assets in PMNSW portfolio
• Heritage Council	• Works other than works that do not materially affect any SHR or IHO item • Standard and site-specific exemptions from approvals for SHR items • Listings/de-listings/revisions to SHR items • Approval to disturb, move, damage or destroy relics • Minimum Standards of Maintenance
• City of Sydney	• Works with a capital investment below $10 million • Principal Certifying Authority for accredited private certifiers
• Accredited Private Certifiers	• Issue of Construction Certificates and/or Occupation Certificates

6.8 Non-statutory listings and Community Groups

6.8.1 National Trust of Australia (NSW)

The former HPS No.1 is included on the Register of the National Trust of Australia (NSW). It was listed on the 20 August 1979. Listing on the Register of the National Trust carries no statutory implications. The Trust's opinions however, are usually sought when major proposals are being formulated in heritage precincts or in relation to heritage buildings. In this case it would appear the National Trust listing was instrumental in the retention and conservation of the building.

6.8.2 Australian Heritage Commission –Register of the National Estate

The building is listed individually on the RNE as the Hydraulic Pumping Station, 17 Little Pier Street, Haymarket – Place ID #2451 – Registered 11.08.1987. The RNE is no longer a statutory list, but the listing indicates that the building was once regarded as being of significance to the nation. It is interesting that the condition assessment seems to have been taken directly from the 1979 National Trust cards as the building described in the listing must predate the 1983 conservation works. The Bibliography references Freeland's book, *Architecture in Australia*, which must refer to the

Pumphouse. This listing also demonstrates the building's importance to the first phase of heritage conservation, which was characterised by much more activism, and this activism saved this building from demolition.

The building is not included on the National Heritage List pursuant to *the Environment Protection Biodiversity and Conservation Act 1999.* The building could not be listed on the Commonwealth Heritage List as it is not owned by the Commonwealth Government.

6.9 National Construction Code (NCC) and Building Code of Australia (BCA)

The National Construction Code incorporating the Building Code of Australia (BCA) is national set of building regulations with some state-specific variations. The main provisions of the BCA concern structural requirements, fire resistance, access and egress (including provisions for people with disabilities), services and equipment, health and amenity, and energy sustainability. Generally, minimum standards are required to be reached in building works.

The performance requirements of the BCA are mandatory, although the introductory sections of the Code makes clear that not all requirements will apply to a given case. The Code also includes 'deemed-to-satisfy' requirements which are accepted as meeting the performance requirements. However, the Code also makes provision for alternative solutions to meet the performance requirements, subject to satisfactory verification.

Under the Environmental Planning and Assessment (EP&A Act) Regulation 2000, all new building work must be carried out in accordance with the Building Code of Australia. In the case of an existing building with an approved use, there is generally no requirement to comply with changes to the BCA unless works are being carried out or there is a change of use.

An assessment of compliance the former HPS No.1 with the NCC has not been carried out for this report. It should be noted, however, that any DA/CC application would need to comply with the NCC. In general, when considering the NCC in heritage buildings, proposals are to ensure that significant fabric and spatial qualities are not compromised while full NCC compliance is achieved and public safety is assured.

A compliance report would need to be done separately, and address a particular use with a particular class of building. This CMP can only make broader statements on areas that may need to be addressed.

The biggest potential limitation on the building is disabled access, which is covered in Section D3 of the BCA, but will be addressed below under the DDA requirements.

6.9.1 The Disability Discrimination Act (DDA)

Access to premises for people with disabilities, as well as being covered by the BCA, is also controlled by the Commonwealth Disability Discrimination Act (DDA) 1992. Compliance with the BCA does not necessarily signify compliance with the DDA. Compliance with the DDA can be triggered by a complaint lodged with the Australian Human Rights Commission. In 2010 the Commonwealth published the Disability (Access to Premises – Buildings) Standards. Compliance with these standards ensures that the owner/lessee of the building cannot be subject to a successful complaint under the DDA in relation to those matters covered by the Premises Standards.

The DDA makes it illegal to discriminate on the basis of a person's disability. The DDA does not apply to private dwellings, but does apply to buildings which are expected to be used by the general public.

Heritage buildings are not exempt from meeting the requirements of the DDA. The preparation of an access action plan assists in preventing or defending a complaint under DDA. The defence of unjustifiable hardship is also available, and the Australian Human Rights Commission has ruled that heritage significance may be taken into account in this regard. The NSW Building Professionals Board has also established an Access Advisory Committee to consider referred applications for exemptions to the Premises Code on the basis of unjustifiable hardship.

It is important to note that a court is unlikely to remove all requirements for equitable access, even for a heritage building. It is important that the site owners and lessees make every effort to ensure the dignity of their disabled patrons.

It should also be noted that the Australian Standards related to disabled access, AS1428.1-4, were significantly upgraded in 2009. While the sizes of many features were enlarged in this upgrade, the main change was that the previous rules allowing owners to provide access to a portion of the building for a portion of guests were overwritten with new universal access rules requiring access to all areas available to the public, all areas where a disabled staff member may need to go, and even all areas where a disabled building manager or owner may need to go. This has had a very significant impact on building design.

6.9.2 NSW Work Health & Safety Act 2011

The New South Wales Work Health and Safety Act, 2011 (WH&S Act) aims to secure the health, safety and welfare of people at work. It lays down general requirements that must be met at work places in New South Wales. The provisions of the Act cover every place of work in New South Wales. The Act covers self-employed people as well as employees, employers, students, contractors and other visitors.

The former HPS No.1 must comply with the WH&S Act or seek alternative solutions. In the event that any part of HPS No.1 changes from commercial to another use, the requirements of this Act will need to be complied with. A full assessment report should be made to support any application.

Some specific issues that need to be considered for the former HPS No 1 are Termite Maintenance access, Roof access, Subfloor access, Tank struts and Slip.

6.10 Application of the Burra Charter

The Australia ICOMOS Burra Charter 2013 known as The Burra Charter is widely accepted in Australia as the underlying methodology by which all works to sites/buildings, which have been identified as having national or State heritage significance are undertaken.

As the former HPS No.1 is of demonstrated State cultural significance, procedures for managing changes and activities in the properties must be in accordance with the recognised conservation methodology of the Burra Charter[14].

- **Cautious Approach (Article 3)**

All conservation work must be based on a respect for the original fabric, must involve the minimum interference to the existing fabric and must not distort the evidence provided by the fabric.

[14] http://australia.icomos.org/publications/charters/

- **Location (Article 9)**

A building or work should remain in its historical location.

- **Contents (Article 10)**

Contents, fixtures and objects contributing to the cultural significance of a place should be retained at that place.

- **Change (Article 15)**

The contribution of all periods to the place must be respected, unless what is removed is of slight cultural significance and the fabric which is to be revealed is of much greater cultural significance.

Removed significant fabric should be reinstated when circumstances permit.

- **Adaptation (Article 21)**

Adaptation is acceptable where it does not substantially detract from the cultural significance of the place and involves the minimal change to significant fabric.

- **New Work (Article 22)**

New work may be acceptable where it does not distort or obscure the significance.

New work should be readily identifiable as such on close inspection.

- **Use and Conserving Use (Article 7 and Article 23)**

Where the use of a place is of cultural significance it should be retained and a place should have a compatible use.

Modifying or reinstating a significant use may be appropriate and a preferred form of conservation.

- **Managing Change (Article 27)**

Existing fabric, use, associations and meaning should be recorded before disturbance occurs.

- **Disturbance of Fabric (Article 28)**

Minimal disturbance of fabric may occur in order to provide evidence needed for the making of decisions on the conservation of the place.

- **Responsibility for Decisions (Article 29)**

The decision-making procedure and individuals responsible for policy decisions should be identified.

- **Direction, Supervision and Implementation (Article 30)**

Appropriate direction and supervision should be maintained at all stages of the work.

- **Records (Article 32)**

A record should be kept of new evidence and future decisions and made publicly available.

- **Removed Fabric (Article 33)**

Removed significant fabric should be catalogued and protected in accordance with its cultural significance. Where possible it should be stored on site.

7.0 Conservation Policies

Conservation can be regarded as the management of change. It seeks to safeguard that which is important in the built environment within a process of change and development. One of the functions of this document is to establish criteria, policies and recommendations for the conservation, maintenance and on-going use of the item to ensure best practice heritage management. In this way the owners and managers of the place will be able to formulate proposals within a known framework of acceptable directions, and planning authorities will be able to assess those proposals against the criteria.

The following section identifies Policies and Guidelines as the two basic mechanisms with which to achieve the conservation, maintenance and on-going use. A brief Background provides the context for each of the policies. The Policies identify conservation standards, which are required to be met. They are supported by Guidelines and in places they should be clearly identified by the proponent and discussed in any Development Application submission.

The policies and guidelines draw upon the work and input of all consultants and their investigations – documentary and physical.

7.1 Best Practice Heritage Management

Background

The former HPS No.1 has been assessed as being of State heritage significance and makes a strong contribution to the industrial heritage of Darling Harbour. It is significant for the pivotal role it played in the industrial, technological, commercial and architectural development of Sydney. It is significant as the sixth hydraulic power system in the world to be built and one of only eight world cities to have this form of public power distribution utility. It is part of a small and significant collection of related industrial relics in Sydney, New South Wales and Australia.

The management of the former HPS No.1 is to have a principal aim to protect its heritage significance and what remains of its setting. All work is to accord with statutory procedures and current best practice in the conservation and management of heritage places.

This CMP for the former HPS No.1 provides the site specific management framework for this place.

The Australia ICOMOS Burra Charter 2013, known as The Burra Charter, is widely accepted in Australia as a key reference by which all works to places identified as having national or state significance are undertaken. In particular, the terminology used in these policies will often have very specific meanings in the heritage field, and these definitions are found in the Burra Charter. Other resources, such as those available from the Heritage Division, Office of Environment and Heritage, will assist to achieve best practice for specific works and management issues.

Policy 1

The statement of significance and policies must be adopted as the basis for heritage management. All decisions must seek to retain the values identified in this CMP.

Policy 2

In recognition of the state significance, the former HPS No.1 must be managed to ensure best practice long-term conservation outcomes in accordance with statutory procedures and recognised planning and heritage principles, guidelines and methodologies.

Policy 3

The building must continue to be managed to ensure consistent and appropriate long term management and maintenance of the building, its heritage fabric and presentation including the external appearance and form, original internal configuration and volume, original fabric and engineering elements which include the accumulators and associated timbers, cast iron water tank panels and the external form and appearance of the water tank and the large exposed series of riveted wrought iron girders to the ceiling of the original Engine House.

Guidelines

- The basis for all heritage management of the former HPS No.1 is the assessment, grading and Statement of Heritage Significance and the policies contained in this CMP.
- The principles of The Burra Charter 2013 are to guide the heritage management of the former HPS No.1
- Refer to the guidelines prepared by NSW Heritage and Environment, including the NSW Heritage Manual and the guidelines referred to in this CMP.

7.2 Asset Management

7.2.1 Place Management NSW management responsibilities

Background

The former HPS No. 1 as part of Darling Harbour is owned by the Crown and vested in Place Management NSW. As landowner, PMNSW has overall responsibility for the management of the place. Additional responsibilities derived from the NSW Total Asset Management (TAM) Guidelines are also recognised.

The property is currently on a 99 year ground lease as a mid-term leasing agreement to Novotel Rockford as a licensed hotel and restaurant venue.

Policy 4

Place Management NSW shall continue to manage the former HPS No. 1 as a State significant heritage item within the overall context of the Darling Harbour precinct.

Policy 5

If there is a change in ownership and/or management, the former HPS No.1 must continue to be managed and maintained as a single entity, within the overall context of the Darling Harbour precinct.

Guidelines

- Conserve and manage the former HPS No.1 as an integrated whole, the building itself, original industrial heritage fabric and features as well as its spatial and functional relationships and potential archaeology.

- The long term lessee/owners should implement a management structure that integrates development and conservation work with the overall management of the former HPS No.1.
- PMNSW is to make this Conservation Management Plan a publicly accessible document.
- PMNSW should ensure that this document and any subsequent recording and investigations are achieved in such a manner that provides an accurate record of the changes to the significant fabric of the former HPS No.1.
- The intention, aims and policies of this CMP shall be disseminated through, and implemented by relevant key staff of PMNSW and the current lessee.
- PMNSW shall adequately assess the impact of proposed modifications to significant fabric, prior to the granting of owner's consent.
- All recording, when required, should be undertaken and archived in accordance with the recording guidelines prepared by the Heritage Division of OEH.
- A program of regular monitoring is to be undertaken covering both the physical changes and issues within the building. Findings of the monitoring are to be incorporated, where relevant, into management decisions.
- PMNSW should investigate mechanisms which give it better control of the design, documentation and implementation of work to heritage buildings. Total Asset Management Plans and CMPs

Background

This CMP will be one of the documents used by the asset owners, managers and tenants for management and maintenance of the former HPS No.1. The CMP needs to be fully compatible with other relevant documents addressing the same property, including any current Maintenance Plans and

7.2.2 Total Asset Management (TAM) Plans.

Policy 6

Use this Conservation Management Plan as a basis for the future management of the building and site. This CMP must be applied within the broader context of other heritage management and asset management documents including statutory requirements.

Policy 7

This Conservation Management Plan must be used to provide feedback to all future Management Plans for the building and its site.

Guidelines

- PMNSW is to include findings of this CMP in the PMNSW's asset management systems and plans, particularly TAM Plans, Maintenance Plans and lease/tenancy agreements for the site and building.
- Incorporate this conservation management plan into the Total Asset Management Manual http://www.treasury.nsw.gov.au/ data/assets/pdf_file/0015/5109/tam manual.pdf
- Ensure that compliance with this Conservation Management Plan is included in any lease

over the place, and consider non-compliance as a material breach.

- Refer to and manage in accordance with the following documents:
  - State-Owned Heritage Management Principles

    http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/stateagencyheritageguide.pdf
  - Minimum Standards of Maintenance and Repair

    http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/infominimumstandards.pdf

7.2.3 Adoption, Endorsement and Review of the CMP[1]

Background

This CMP for the former HPS No.1 sets out a conservation management framework for the management of heritage issues in relation to maintenance, upgrading and adaptive re-use projects and to ensure that the identified significance of the site is retained, maintained and conserved for the long term.

Circumstances will change over the years as various recommendations are implemented and new requirements for the use of the building emerge. Conservation policies that ensure the long term conservation of the place will need to be progressively updated to respond to changing situations so they remain relevant.

Policy 8

This Conservation Management Plan should be adopted by PMNSW as one of the bases for the future management of the site and endorsed by the Heritage Council NSW.

Policy 9

All parties responsible for management of the former HPS No.1 must have access to this conservation management plan and associated documents.

Policy 10

The current SHR listing for the former HPS No. 1 should be updated to include the Statement of Significance and Assessment of significance in this CMP.

Policy 11

An updated State Heritage Register record should be prepared using the information in this Conservation Management Plan as a guide to assist the community in understanding the significance of the place

Guidelines

- PMNSW is to make parts of this Conservation Management Plan (e.g., the statement of significance, policies, and implementation sections) a publicly accessible document, while respecting the right to privacy of the lessee. The relevant parts of the CMP will be available through Property NSW Website on PMNSW S170 Register listing.

[1] *Adoption (PMNSW), Endorsement (NSW Heritage Council) and Review (PMNSW)*

- The CMP is to be made available and distributed to:
    - PMNSW and lessee, in particular those responsible for day to day management PMNSW website.
    - Form part of and inform any Leasehold agreements updates; including any updates to CMPs from time to time
    - City of Sydney Library
    - Heritage Division, Office of Environment and Heritage
    - National Trust of Australia (NSW)

Policy 12

The CMP must be reviewed every five to ten years, taking into account changes in legislation, proposed changes in use or management, or proposed alteration works.

Guidelines

- Reviews of the CMP are to be based on The Burra Charter and other guidelines by the NSW Heritage Division, Office of Environment and Heritage.
- Reviews are to also take into account any other relevant legislation, planning frameworks, appropriate literature and widely recognised conservation practices and procedures.
- Reviews should be undertaken by experienced conservation practitioners in conjunction with relevant ownership and management representatives.
- Procedures for review of the CMP and for inspecting the condition of the former HPS No. 1 are to be specifically included in future lease terms for the property.
- The conservation policies should also be reviewed when major works are proposed to ensure that they are adequately addressed.
- Irrespective of the recommendation to review the document every five to 10 years, the currently adopted CMP is to remain as a valid basis for on-going heritage management until such reviews are completed.

7.2.4 Approvals' Process and Landowners Consent Background

To prevent gradual loss of cultural significance through gradual change, a mechanism needs to be established for controlling any modifications by lessees to the significant fabric.

Forms for development applications, Section 60 applications and Standard Exemption notification forms are available from PMNSW.

Policy 13

Prior to the lodgement of applications and the commencement of works the proponent should liaise with PMNSW's heritage architect and obtain the consent of PMNSW as landowner.

Guidelines

- As PMNSW is the owner of land and buildings in Darling Harbour, the consent of PMNSW is required prior to lodging an application for works. This part of the process is separate from approving the works, and the landowners consent to lodge an application does not present

the approval to actually undertake the works.

- Prior to granting landowner's consent to a proposal, PMNSW should, in its capacity as land owner and manager, be satisfied that there are no adverse heritage impacts associated with the proposal.
- Where necessary, a Heritage Impact Assessment and adequate documentation of the proposed works should be required to assist in the assessment of owner's consent applications.
- Assessment and adequate documentation of the proposed works should be required to assist in the assessment of owner's consent applications.

7.3 Documenting Change

Background

Archival records as well as the systematic recording of work at the site are valuable resources to support and ensure the proper overall management of heritage sites. They record the environment, aesthetics, technical skills and customs associated with the creation and use of heritage items before they are altered, removed or lost either by development, incremental change or deterioration.

Well-managed records enhance the understanding of the heritage item, its significance and the impact of change as part of the conservation and management process. The reasoning behind the selection of a particular conservation approach and the methodology, and the scope of each major conservation project are to be recorded and archived. This recording of the methodology, and the scope of works, is to be undertaken by a heritage professional, and forms the basis of future documentation for repair and maintenance works. These records, including copies of all consultant reports are to be retained.

There is a substantial amount of recording of the former HPS No.1 missing from the PMNSW archives, including comprehensive photographs and records of changes made to the building.

Policy 14

PMNSW as the land owner is to continue to acquire, collate, maintain and archive the drawings, schedule of works, photos and specifications of works undertaken to the building and site and any future works including the reasoning for particular works. These records must be placed in the PMNSW archival storage repository.

Policy 15

Accurate and up-to-date records should be maintained of the site, building and significant elements to archival standards.

Policy 16

The study of the former HPS No.1 should continue to be facilitated. Access to the building (and related documents) should be made available to people with a professional interest in the place for research, interpretation and study, and the public so that they may understand the history and significance of the place and its role in society.

Guidelines

- The lessee is to undertake regular photographic recording, before, during and after changes

to the fabric, maintenance, changes in use and interpretation. The photographic recording is to be provided to PMNSW for inclusion in its asset maintenance and historical research records.

- All changes to significant fabric are to be recorded in accordance with recording guidelines issued by the Heritage Division, Office of Environment and Heritage – How to prepare Archival Records of Heritage Items, 1998[2] and the Photographic Recording of Heritage Items Using Film or Digital Capture 2006[3] prepared by the NSW Heritage Division.
- All works would be greatly enhanced if PMNSW possessed up to date accurate plans in a form that can be manipulated (such as CAD) by consultants at each work stage in the future.
- As-built records on completion of future works are to be provided to PMNSW by those undertaking the works.

7.4 Appropriate Conservation Skills and Experience

Background

The Burra Charter encourages the use of skilled and appropriate professional direction and supervision from a range of disciplines for conservation activities.

The skills and experience required and creative approaches taken in the context of a conservation project are quite different to those applied to the design and construction of new buildings.

This policy seeks to ensure that consultant advice and contractual work on significant elements and/or fabric are carried out by firms or person with proven expertise in conservation-related projects in the relevant field(s).

Professional archaeological advice should be obtained as part of planning any work which will disturb subsurface areas (including conservation or additional development).

Policy 17

Appropriate conservation skills and experience must be employed for documentation and supervision within project teams and the undertaking of works for any programs of conservation and upgrading of the building components of the former HPS No.1.

Guidelines

- Appropriate professional skills and experience assembled to work on the detailed conservation of the building will include, as appropriate, historians, researchers, archaeologists, conservation architects, structural engineers, building code compliance advisers, materials conservation specialists and cost planners.
- Building contractors, project managers and trades personnel who are experienced and have worked on historic buildings are to be selected to work on the building ensuring the long term conservation of the building.

[2] *http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/infoarchivalrecords.pdf*
[3] *http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/infophotographicrecording2006.pdf*

7.5 Ownership, Participation and Approvals

Background

The site is owned by the Crown and vested in Place Management NSW (formerly Sydney Harbour Foreshore Authority). The property is currently on a 99 year ground lease to Novotel Rockford as a licensed hotel and restaurant venue.

Subject to protecting the former HPS No. 1, which is the heritage component of the premises, the long-term lease allows for sympathetic redevelopment during the 99 year term.

There needs to be a clear strategy since the premises includes the former HPS No. 1, a State heritage item intended to have a life beyond the 99 year lease term.

This CMP recognises that there may be future pressure for change of ownership as the needs of public institutions change over time, as some sites are made surplus to government requirements. These changes can threaten conservation of significance by bringing about unsuitable changes to the site. Where public ownership is no longer feasible, responsibility for caring for the heritage values of the site and its SHR responsibilities under the Heritage Act will pass to the new owner/s.

A range of statutory controls are in place to ensure the long term conservation, should the building be sold into private ownership, and integrity of the cultural significance of the building and site.

Section 7.1 Best practice heritage management and section 7.2, Asset management discusses this issue and includes Policies and related guidelines.

Policy 18

In all land ownership and long term lease arrangements, there must be common commitment to this CMP and its recommendations from key agencies, including the PMNSW, Department of Planning and Environment, the Heritage Council of New South Wales and the City of Sydney Council.

Policy 19

In leasing arrangements, the management principles set out in this Conservation Management Plan, must guide the ongoing conservation and management of the former HPS No.1 to ensure its long term conservation. Reference should be made to Policies 3 and 5 and related guidelines in this CMP.

Policy 20

All proposed work to the former HPS No.1 must comply with statutory requirements and conservation principles and may be subject to statutory approvals. Any proposal for change to the property must be discussed with and agreed to by PMNSW.

Policy 21

Any changes or amendments to statutory heritage listing (SHR listing) and relevant planning instruments must follow statutory processes set out under the relevant legislation and may require gazettal by the relevant Minister.

Guidelines

- Effective implementation of this plan requires agreement of objectives, processes and actions by the relevant authorities including the site owners, PMNSW, Department of Planning and Environment and the Heritage Division of the Office of Environment and Heritage and

Heritage Council of NSW.

- Under current legislation (2017) any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of the following consents and approvals:
    - Consent from the landowner, PMNSW.
    - Under the NSW Heritage Act, Approval under delegation from PMNSW for works that do not materially affect the heritage significance.
    - For other works that do materially affect the heritage significance, approval from the Heritage Council of NSW by means of an s60 application.
    - Development approval from the City of Sydney for projects with a capital value under $10 million.
    - Development consent from the Minister of Planning for projects with a capital value of over $10 million.
    - Appointment of a Principal Certifying Authority (PCA).
    - Construction Certificates approval
    - Occupation Certificate approval

PMNSW is the owner of the land and building in Darling Harbour, and the consent of PMNSW is required prior to lodging an application for works.

Landowners' consent is a separate process from approving the works, and the landowners' consent to lodge an application is not the approval to actually undertake the works. Prior to granting owner's consent for a proposal, PMNSW in its capacity as landowner, is to be satisfied that there are no adverse heritage impacts associated with the proposal. A Heritage Impact Assessment, adequate drawing documentation and supporting specialist reports of the proposed works will be required where necessary to assist in the assessment of owner's consent applications.

There are provisions for exemptions under s57 (2) of the NSW Heritage Act which enables certain works to be carried out without the requirement of the NSW Heritage Council approvals. These exemptions include minor repair and maintenance works and painting to an approved colour scheme. If proposed works are covered by a standard exemption, an Exemption Notification Form is to be completed, with sufficient detail provided to determine whether the proposed works meet the standard exemption guidelines. PMNSW has delegation from the Heritage Council to approve standard exemption applications. For details of the standard exemptions, refer to the Heritage Division, the former NSW Heritage Office's publication Standard Exemptions for Works Requiring Heritage Council Approval, 2009. There are currently no site specific exemptions for the former HPS No.1 and none are recommended in this CMP.

Policy 22

Works must only be undertaken to the former HPS No.1 site and building with consent from the landowner and the required statutory approvals.

Policy 23

Works to the former HPS No.1 will fully comply with all the relevant PMNSW Policies applicable to development in Darling Harbour.

Policy 24

Any changes or amendments to statutory heritage listing (SHR listing) and relevant planning instruments must follow statutory processes set out under relevant legislation and may require gazettal by the relevant minister.

Policy 25

PMNSW shall not give landowner's consent unless it is satisfied that an application is consistent with the applicable Policies and will not result in adverse impact on the significance of the place within the overall context of Darling Harbour.

Guidelines

- Refer to PMNSW's Landowners Consent Supplementary Guide:

  http://www.shfa.nsw.gov.au/content/library/documents/A8D06A3F-0D3B-E978-A5AE5CA6EC529C01.pdf

- All new work will comply with PMNSW Policies including: Lighting, Signage, Disabled Access, Telecommunications, Commercial Outdoor Seating, and Building Ventilation Installation.
- Prior to the lodgement of applications and the commencement of works, the proponent is to liaise with PMNSW Strategic Planning and Heritage team's heritage architect and obtain the consent of the PMNSW as landowner.
- Undertake initial pre-application discussions with other consent authorities to determine requirements and nature of approvals.
- Refer to the City of Sydney's Sydney Development Control Plan 2012

  http://www.cityofsydney.nsw.gov.au/development/planning-controls/development-control-plans

- Refer to the NSW Heritage Council's Standard Exemptions for Works Requiring Heritage Council Approval

  http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/standardexemptions.pdf

7.6 Current and Future Use

Background

The former HPS No.1 was purpose built as a two storey late Victorian Italianate industrial building with three storey tower. The building was originally designed to house the machinery and works that generated the hydraulic power that operated goods and passenger lifts in various warehouses and commercial buildings throughout Sydney.

The current use as commercial bar and restaurant is among the most compatible uses to ensure the building retains its significance, highlight its previous industrial use and that continues to allow public

access. It is important to minimise the impacts of modern servicing, work health and safety, disability access, and fire egress and compartmentation regulations by encouraging uses that require the least change in these areas. This also means preventing uses that will require significant changes in these areas.

Policy 26

The former HPS No.1 should continue to be used for commercial purposes that allow public access, or may be adapted for other uses that are consistent with, highlights and interprets its previous industrial use and significance.

Policy 27

Future uses should be compatible with the nature and significance of the building components and should enable the former HPS No.1 to remain a vital and important component of Darling Harbour.

Policy 28

The introduction of other commercial or retail uses may be acceptable, but will be dependent on the ability to introduce suitable upgrades to meet Building Code Australia and accessible access requirements without damaging or adverse impacts on the heritage significance of the building fabric or spaces.

Policy 29

Surviving evidence and fabric of the industrial use of the building should be retained and should not be obscured by any future use of the building or their parts.

Policy 30

In areas where adaptations are proposed, the approach should ensure that the building and its parts retain their character and significance. New uses should be selected that are compatible with the structure, volume, fabric and access for services in those areas. Uses requiring subdivision or services requirements that would have a strong adverse impacts on the heritage significance and industrial character of the space are unacceptable.

Policy 31

PMNSW shall ensure that any new uses selected for the existing building shall adopt the principle of reversibility, where the new use is adjusted as necessary to work within the available spatial and architectural configuration, so as to avoid adversely impacting on significant heritage fabric or spaces.

Guidelines

- The retention of the heritage building fabric is to take precedence over the requirements of tenants and its commercial use. A preferred approach is to find commercial uses that are appropriate and that fit the industrial nature, character, form and fabric of the building. Essentially adapt the tenants to suit the building rather than adapting the building to suit the tenants.
- The adaptive re-use of building components is acceptable, with compatible new uses selected that utilise the original character or permit a creative and responsible reuse of the fundamental architectural, functional and spatial characteristics and conserves and retains fabric of exceptional and high significance.

- The detailed requirements of new uses should not generate undue changes to the original fabric and form of the building that cannot be reversed in the long term, or which do not respect the original industrial feel, fabric, form, original internal volume and spatial configuration of the building.
- Current and future uses should seek to maximise patronage from the Novotel Rockford Hotel by integrating access from the hotel to the mezzanine level. Design of this area should interpret the former use of the HPS No. 1 and highlight the entry point to the building by removing the visually intrusive tea/coffee making facilities.
- The high potential for further damage due to plant expansion or modification indicates that the water tank is a non-compatible location for the hotel mechanical plant and equipment. Future relocation to a less sensitive area would be encouraged. This may be driven by the need to improve the energy efficiency of the air conditioning system.
- Any new use for the water tank must retain the original cast iron panels and original wrought iron straps and later steel diagonal braces. The straps are a trip hazard and would need to be made safe in a way that did not obscure or lower their significance.
- Specific Development Controls and BCA requirements for any new uses must be carefully considered as part of the design process and would be subject to appropriate advice from those with appropriate conservation skills and experience (Refer to Policy 16).
- The Engine House roof and modular cast iron water tank are of exceptional significance and must be retained and conserved. The original volume of the water tank has been converted to a plant room, which obscures the base construction and fills up the tank so the volume cannot be appreciated. There is an opportunity to restore the original volume of the water tank by relocating the plant to another area of the hotel in future works so that the tank can be seen as one element. Possible compatible future low key uses for the Water Tank roof top space include:
    - Sundeck- this would be low impact sympathetic use that would relate well with the swimming pool and provide opportunity to remove the wall to the west of the swimming pool and replace with glazing to expose the eastern face of the cast iron water tank panels. Thereby also creating a visual link between the two areas and the opportunity for more natural light to the swimming pool area.
    - Open air rooftop gym – exercise equipment could be located around the perimeter with some activity centres in the middle of the tank. This use would require weatherproof gym equipment (similar to those in parks). Soft fall across the floor surface could be inserted.
    - Recreational area/rooftop open air garden – this could involve soft-fall to the ground surface with faux grass (or soil with real grass if drainage can be solved). Potted plants to the water tank bays around the perimeter. There is opportunity for a play area for children, some picnic tables and BBQ facilities.

7.7 Management of Significance

7.7.1 Conservation of Significant Fabric

Background

One of the key objectives of contemporary conservation practice is that the significant original fabric of the building or place is to be retained and conserved in order to preserve the essential integrity of the heritage resource for future generations. While any conservation activity will affect the building in some way, the aim - consistent with responsible reuse or management aims, is to minimise or eliminate the work and changes necessary.

Article 3 of The Burra Charter indicates that conservation is based on a respect for the existing fabric of a place and involves the least possible physical intervention in order not to distort the evidence provided by the fabric. Article 4 of The Burra Charter requires appropriate knowledge; skill and disciplines are applied to the care of the place.

The significant fabric is to be conserved in accordance with recognised conservation principles and procedures included in the Australia ICOMOS Burra Charter 2013. Such conservation actions include maintenance, preservation and interpretation including restoration and reconstruction.

Much of the building fabric of HPS No. 1 both internally and externally, is of exceptional significance and must be treated with great care. The significance of the item derives from its previous use as a hydraulic pumping station, its external appearance, internal configuration and spatial layout, original fabric and surviving machinery.

The existing external fabric of the former HPS No.1 is largely intact; however some alterations have occurred on the western side of the structure and of the eastern brick annex. The water tank cast iron panels are largely intact to the eastern and southern elevations with some fibreglass replacements on the western side of the building.

Internally, a large amount of the building fabric survives and is uncovered. Some fabric associated with the engineering elements of the former HPS No.1 survives, such as the accumulators and timber elements, cast iron water tank panels and the large exposed series of wrought iron girders to the ceiling of the original Engine House. Potential elements may survive below the current floor surface associated with the pipes for the accumulators and footprints of the engine mounting blocks below the ground surface in the basement of the Engine House.

Policy 32

Extant building fabric, both internally and externally, should be retained and conserved in accordance with the levels of significance identified in Section 5.0 Grading of Significance, Section 7.7.3 Element Specific and in accordance with particular actions specified in the Section 8.2 –Schedule of Conservation Works of this CMP. The significant form, fabric and spaces that comprise the architectural character of the former HPS No. 1 along with the site and potential archaeological resources are to be retained and conserved.

Policy 33

All fabric elements rated as exceptional or high significance must be preserved, conserved and maintained. Alterations and change are permissible for fabric of moderate, little or intrusive significance, subject to approval. Refer to element specific policies in section 7.7.3 and also to Section 7.8 for policies on New Work in this CMP.

Policy 34

Redundant features and fixtures associated with the site's historic industrial use must be retained and preserved. New fittings and fixtures should be sympathetic to the place. Fittings and fixtures should be reinstated where evidence of the original exists. The retention and conservation of these features and fixtures should be considered as part of the design work for future adaptive reuse programs.

Policy 35

Additional elements or changes should not be planned in isolation but in the context of its location, whole building, its layout, and overall use.

Policy 36

Alterations and additions to the existing building should be reversible; that is to enable subsequent removal with little or no damage to significant fabric and spaces.

Policy 37

The removal of significant fabric for the introduction of doorways and openings in original walls is not permitted.

Policy 38

Fabric from later periods should not be altered to imitate earlier periods in a bid to unify the building. The individual integrity of each period must be retained.

Guidelines

- All conservation works should be preceded by thorough investigation, and monitored to assess their efficacy.
- Recovery, assessment, conservation and reactivation of significant spaces/fabric that assists in the interpretation of the former uses and functions of the former HPS No. 1 are encouraged.
- Works to lesser significant fabric should not impact on more significant fabric. Care should be taken in removing little significance and intrusive elements so as not to impact significant fabric. Particular care should be taken not to damage concealed items or items that have been sealed shut or built into later fabric. This is relevant to the outer face of the east wall, the outer face of the west wall, and the concealed cast iron panels at the base of the water tank. Where a method of removing intrusive elements has been tried in a test panel, and the removal has the potential to cause damage to the significant fabric, then the intrusive fabric should remain intact.
- Considering the relative significance of building elements listed in Section 5.0, the following policy for treatment of the fabric is considered appropriate:

- The conservation, adaptation and maintenance of the former HPS No.1 should be approached with the general Burra Charter principle of changing as much as necessary but as little as possible.
- Internal alterations and renovations are acceptable within the context of compatible use; however they should not impact on the significance of the original fabric and original internal spatial qualities of the building, the external façade, or the external form.
- No conservation or maintenance work should alter or negatively impact the elements of the external façades or internal fabric/space.
- No structural alterations to the building components should impact on the integrity or significance of the former HPS No. 1.
- Where repairs or alterations are required, new material should closely match original or adjacent materials. Evidence of change will be identifiable on close inspection.
- All structural elements should be retained as existing, with appropriate maintenance. No structural members should be removed, other than to re-instate significant architectural elements.
- Where it is clear that original or significant fabric has been removed it is considered appropriate to adaptively reconstruct based on documentary evidence.
- Period detailing should be used to reconstruct original elements and reference original surviving fabric as a priority, with contemporaneous similar structures or documents as a secondary source.
- Intervention into any building fabric should respect the integrity of the extant material, be carefully controlled, and be limited to that required by the proposed works.
- The conservation of particular materials should seek due consideration and the expertise of appropriately experienced personnel. The NSW Heritage Office 'Maintenance Series' provides general advice as to the cause, treatment and remediation of various traditional building materials. These publications can be sourced from the NSW Heritage Division[4].

7.7.2 Conservation of Significant Spaces

Background

The significance of internal spaces has been somewhat diminished by recent alterations. Alterations to the spaces in the original Accumulator and Engine Houses were undertaken from the late 1980s to 2000 to adapt the place as a restaurant and bar. These alterations include the removal of several internal fittings and the addition of a staircase in the Accumulator Room leading to a mezzanine level in the Engine House. These alterations do not heavily impinge on the original spatial qualities of the building.

[4] *http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/infocarryoutwork.pdf*

Policy 39

The open plan configuration of the building and the spatial qualities and volume of the original Engine House and Accumulator Room and modular cast iron water tank of the former HPS No.1 contributes to its significance and interpretation and therefore should be conserved, as part of the ongoing use, management and future development of the building and site.

Policy 40

The provision of new elements and changes to spaces within the existing building should be limited to those which are appropriate, having regard to:

- *The significance of the space and fabric;*
- *The spatial qualities/volume of the room/space to be adapted; and*
- *The key relationships created by the location of windows, former and current openings, floors, remaining industrial fabric and other relevant architectural features.*

This policy should be read in conjunction with Section 5.0 Grading of Significance.

Policy 41

To appreciate the volume of the original Engine House the kitchen / pizza cooking area may be removed from the ground floor.

Policy 42

The mezzanine floor level can be retained or replaced but any changes must be reversible, be within the footprint of the existing mezzanine, and should retain qualities of the open space and volume of the room. If the mezzanine is to be removed, great care must be taken to prevent damage to the original fabric elements. If the mezzanine is to be retained it must not be further enclosed or extended. Balustrades must remain as largely open panels. If the mezzanine were to be replaced it must not exceed the existing plan footprint or section area, and all construction must be reversible.

Policy 43

The volume, features and fabric of the original Accumulator Room are significant and should be retained and conserved.

Policy 44

Plant equipment may be removed from the Engine House rooftop if this would allow the volume of the water tank area to be appreciated.

Policy 45

There is to be no internal subdivision of the original Engine House and Accumulator Room.

Guidelines

- No substantial changes to the building should be considered without first assessing the potential loss of heritage value that such changes may cause on significant spaces.
- Should circumstances in the future give rise to changes of use, new uses should be selected that are most compatible with the retention and recovery of the character and primary significance of the former HPS No. 1 spatial qualities and volume of the building.

7.7.3 Element Specific Policies

Background

In addition to general policies applicable to all areas of the site, element-specific policies for the management of individual elements are set-out in this section for each element. The management of the fabric is developed further in Section 8.0.

Policy 46

Surviving historic built fabric and other site elements are to be retained and conserved in accordance with the levels of significance identified in Section 5.0 of this CMP –Grading of Significant Elements and Spaces, and managed in accordance with Schedule below and in Section 8.0 of this CMP.

Guidelines

The following schedule contains conservation policy statements for specific individual elements of the former HPS No.1. The conservation actions should not attempt to recreate a particular situation from the history, but acknowledge past and recent changes and modifications as evidence of technological advancements and evolution of the use of the place.

The two options for rebuilding the tower roof to the Accumulator Room and the implications are outlined below:

- A Mansard roof would restore the French Second Empire character that the building possessed for most of its history. In this case the best options for cladding would be Welsh slates with heavy lead capping, or a completely zinc or copper clad roof. The best material for the box gutter lining would be copper or stainless steel sheeting, but care must be made to separate any zinc roofing from copper guttering. Any metals below a copper gutter cannot be ferrous, but cast iron downpipes are acceptable. The box gutters should be sufficient width to cope with the most intense falls, and to prevent bird carcasses blocking the drains. The box gutter should have a visible overflow to alert building occupants that they are blocked.
- If the present pitch was maintained then the best roof claddings would be copper sheet or zinc roofing. The roof should be designed and built well to last more than 100 years without maintenance. The box gutters would be as above. The roof does need to be raised a little as there is not a sufficient step down into the box gutter, and the insufficient falls in the box gutter allow ponding at present. The sumps need to be deep to meet a 1:100 year downpour. The roof framing is likely to need replacement, although if properly sealed this can be done in lightweight modern framing. The box gutter should have a visible overflow to alert building occupants that they are blocked.

- The central window to the southern elevation has undergone two modifications to its opening and joinery. It should be retained in its current form as it demonstrates the evolution of the building. The speculative joinery in this window is suitable enough, but it can be reinterpreted if a better arrangement or if photographic evidence was put forward. Below this window the bricked in opening was originally a door (photo 1937) prior to the raising of the street level. There are potential uses for this opening, such as deliveries, and it has the potential to be reopened should it prove useful.
- The central window to the eastern annex on the northern façade should be reconstructed. It

was demolished and modified a number of times and is now out of character with the rest of the building as is the parapet. The timber framing has been subject to termite attack. Photographic evidence from 1932 illustrates the original type of window in the 1930 addition and this detail should be referenced by a heritage professional for reconstruction purposes

Table 7.1 Element Specific Conservation Policies

Element	Significance	Policy
EXTERIOR ELEMENTS		
NORTH ELEVATION of TOWER		
Overall height, scale and configuration	Exceptional	Conserve and retain – maintain curtilage zones
Original load bearing English bond brick walls	Exceptional	Conserve and retain – provide repointing in mortar to match existing where required
Original rendered details including quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Conserve and retain – repair cracking with matching render – consider lead capping to top of bracketed cornice
Paint finish to rendered elements.	Moderate	Maintain – paint every 7-10 years or consider removing paint and leaving unfinished, especially at high levels
Original pattern of openings and associated rendered classical detailing.	Exceptional	Conserve and retain
16 pane double hung timber windows (8/8) to central arched openings	High	Conserve and retain – assess for repairs – paint every 7-10 years – assess timbers for durability – refer to CMP for suitable timbers where necessary
Vent stack and downpipe – appears on early photos	High	Conserve and retain
NORTH ELEVATION of WEST ANNEX VERANDAH		
Steel framed Annex addition including steps	Moderate	Focus of any future works – maintain compatible form and character with main building – all works to fit within curtilage and building envelope controls
NORTH ELEVATION of EAST ANNEX		
Overall height, scale and configuration	High	Conserve and retain
Rendered quoins, parapet and segmental arch (excluding paint finish)	High	Conserve and retain
Parapet extension and unfinished roof – may house air-conditioning ducts	Little	Remove and make good finishes
Timber framed window with three panels of fixed glazing, lower level face brick infill walls and rendered spandrel	Little	This window is of high importance for reconstruction to remove the detracting addition. As a clear photo of the original window exists it can be reconstructed from evidence. The rendered sections below the sill, the sill, the brickwork above the sill, the pilasters and the triple light fixed

Element	Significance	Policy
		windows need to be demolished and replaced with a window and opening to match the detail in the photograph. This will restore the compatible Classical details and proportions to this facade. The workmanship to the joinery needs to match the quality of those in the north wall. A highly durable, hard and workable timber for early joinery is PNG Rosewood. The timber needs to be strong and workable enough to hold fine details, while having durability class 1 or 2.– use heritage experienced consultants and contractors
Glazed pool house wall (behind parapet extension hotel)	Little	Focus of any future works – maintain compatible form and character with main building – all works to fit within curtilage and building envelope controls
Paint finish to rendered elements	Moderate	Maintain – paint every 7-10 years or consider removing paint and leaving unfinished, especially at high levels
SOUTH ELEVATION of TOWER		
Original overall height, scale and configuration	Exceptional	Conserve and retain
Original load bearing English bond brick walls	Exceptional	Conserve and retain
Missing cast iron panels forming north end of water tank	Little	Provide interpretative panels to match drawings and convey this important element on the site
Waterproof membrane to brick wall (two panels high)	High	Conserve and retain
Heavy grade lead sheeting DPC to third level of tank panels, and colour change in brickwork	High	Conserve and retain
Rendered details including pilasters, bracketed cornice, and balustrade (excluding paint finish)	Exceptional	Conserve and retain – repair cracking with matching render – consider lead capping to top of bracketed cornice
Paint finish to rendered elements	Moderate	Maintain – paint every 7-10 years or consider removing paint and leaving unfinished, especially at high levels
Original door opening – threshold at top of second tier of panels	Exceptional	Conserve and retain – if duct can be removed it would improve the interpretation – could reconstruct door opening if details can be found
Air duct into doorway opening	Little	Remove and make good – non urgent works
SOUTH ELEVATION – LITTLE PIER ST		
Original overall height, scale and configuration	Exceptional	Conserve and retain
Original load bearing English bond brick walls	Exceptional	Conserve and retain
Modified corners to brick wall	High	Conserve and retain
Original rendered middle string course cornice (excluding paint	Exceptional	Conserve and retain

Element	Significance	Policy
finish)		
Wrought iron former cathead beam projecting from the cornice of the building.	Exceptional	Conserve and retain – does not require rust protection if wrought iron
Original round arched openings with brick headers and rendered sills	Exceptional	Conserve and retain
Original segmental arched openings with brick headers and rendered sills	Exceptional	Conserve and retain
Reconstructed double hung timber windows to round arched windows	High	Conserve and retain – paint every 7-10 years
Reconstructed security bars to lower openings	High	Conserve and retain
Central upper opening – wider with segmental brick arch head	High	Conserve and retain
Central upper opening – lower sill	Moderate	Conserve and retain
Central upper opening – window joinery	Moderate	Conserve and retain – could be modified but the existing arrangement is suitable
Lower central bricked up opening	Moderate	Conserve and retain – brickwork could be removed if the opening has any potential use
Downpipe	Moderate	Conserve and retain – repair damaged areas and provide protection from impacts
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Conserve and retain
Cast iron panel – paint finish	Moderate	Conserve and retain – allow cast iron to remain unfinished and to develop patina of rust – do not sand blast or use iron brushes
Pump House signage	Little	Maintain – can be altered or removed when needed
SOUTH ELEVATION of EAST ANNEX		
1st and 2nd floors	Moderate	Maintain – can be altered or removed when needed
3rd floor	Low	Maintain – can be altered or removed when needed
SOUTH ELEVATION of WEST ANNEX		
Steel framed Annex addition	Moderate	Maintain – Focus of any future works – maintain compatible form and character with main building – all works to fit within curtilage and building envelope controls
EAST ELEVATION – CONCEALED HPS No 1		
Original face brick wall	Exceptional	Conserve and retain - where possible remove elements covering wall to allow wall to be seen –

Element	Significance	Policy
		protect wall with new transparent fabric separated from wall
Original rendered middle string course cornice (excluding paint finish)	High	Reconstruct when the opportunity presents itself
Original arched window openings, main door entry opening and secondary openings in basement of brick wall	Exceptional	Conserve and retain – take opportunities to reopen original arched window openings and reconstruct windows
Bricked up panels within original openings	Moderate	Conserve and maintain – if opportunity exists to reopen windows this material can be demolished
New openings in brick wall	Little	Maintain – all new access must go through existing openings – if opportunity exists to reconstruct original wall these openings should be bricked up
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Conserve and retain
Cast iron panel – paint finish	Little	Conserve and retain – allow cast iron to remain unfinished and to develop patina of rust – do not sand blast or use iron brushes
Two cast iron water tank panels missing for door opening	Little	Maintain access through this point to protect existing exceptional fabric
Fibre cement partition enclosing cast iron water tank panels	Little	Remove partition and provide glass connection to reveal cast iron panels and connect to roof space
EAST ELEVATION of TOWER		
Original overall height, scale and configuration	Exceptional	Conserve and retain – remove low level roof and duct that obscures lower part of wall – non urgent
Load bearing English bond brick walls	Exceptional	Conserve and retain – minor repointing required
Original pattern of openings and associated rendered classical detailing.	Exceptional	Conserve and retain
Original rendered details including quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Conserve and retain – repair cracking with matching render – consider lead capping to top of bracketed cornice
Paint finish to rendered elements	Moderate	Maintain – paint every 7-10 years or consider removing paint and leaving unfinished, especially at high levels
4 pane double hung timber windows (2/2) to central arched openings	High	Conserve and retain – paint every 7-10 years
WEST ELEVATION of ORIGINAL HPS WALL		
Original face brick wall external face	Exceptional	Conserve and retain

Element	Significance	Policy
Sections of infill brickwork	High	Conserve and retain – use these areas if service penetrations cannot be made elsewhere
Render to external face of original brick wall (not shown on diagram)	Little	Test removal in a concealed area – if render can be removed without damage to brick face this would be recommended – if removal causes damage to face then leave intact – non-urgent
Brick pattern wallpaper - external	Little	Subject to fitout – a simple colour might be more appropriate
Original rendered string course cornice (excluding paint finish)	Exceptional	Conserve and retain
Paint finish to rendered elements	Moderate	Maintain – paint every 7-10 years or consider removing paint and leaving unfinished, especially at high levels
NW corner vertical render	Exceptional	Conserve and retain – do not conceal
Restored cast iron panels – SW corner	Exceptional	Conserve and retain – allow cast iron to remain unfinished and to develop patina of rust – do not sand blast or use iron brushes
Reconstructed fiberglass water tank panel interpretation	High	Conserve and retain – replace with suitable interpretation when panels fail – non-urgent
Arched openings to upper level and square openings to lower level	Moderate	Use existing openings for any connections to West Annex
WEST ELEVATION of TOWER		
Original overall height, scale and configuration	Exceptional	Conserve and retain
Load bearing English bond brick walls	Exceptional	Conserve and retain
Original pattern of openings and associated rendered classical detailing.	Exceptional	Conserve and retain
Original rendered details including quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Conserve and retain – repair cracking with matching render – consider lead capping to top of bracketed cornice
Paint finish to rendered elements	Moderate	Maintain – paint every 7-10 years or consider removing paint and leaving unfinished, especially at high levels
4 pane double hung timber windows (2/2) to central arched openings	High	Conserve and retain – paint every 7-10 years
WEST ELEVATION of WEST ANNEX		
Steel framed Annex addition	Moderate	Maintain – Focus of any future works – maintain compatible form and character with main building – all works to fit within curtilage and building envelope controls
INTERIORS		

Element	Significance	Policy
INTERIOR - Original Engine House		
Overall volume of space, height, scale and configuration	Exceptional	Conserve and retain
Original ground surface to sub-floor area	Exceptional	Conserve and retain – where necessary provide complying crawl space – some potential for archaeological relics in the soil
Current timber floor - constructed of plywood supported on softwood joists and bearers on brick piers with ant caps	Intrusive	Demolish and replace with Cypress framing and resilient hardwood floorboards such as recycled Tallowwood or Turpentine. Urgent works
Arched recesses and simple pilasters on all internal faces	Exceptional	Conserve and retain
Five riveted box section (twin web) wrought iron plate girders supported on the massive brick east and west walls and iron ceiling girders	Exceptional	Conserve and retain
Corrugated Colorbond ceiling between girders	Moderate	Maintain – OPTION: original ceiling could be interpreted as shown on drawings – curved ceilings between beams likely made from ripple iron perpendicular to beams – non-urgent
Opening to northern (internal) wall	Exceptional	Conserve and retain
Cement rendered/plaster walls	High	Conserve and retain
Original window openings and sashes – south	High	Conserve and retain
Non-original window openings – west	Moderate	Use existing openings for any connections to West Annex
Bricked up openings - east	Exceptional	Conserve and retain – where possible – reconstruct original window openings – non-urgent
Mezzanine floor, balustrade and associated furniture	Moderate	Maintain – if change of use permits removal this would be supported – care not to damage existing walls – do not extend beyond current footprint – do not enclose
Pizza kitchen area including walls, floor and fitout	Little	Demolish and make good surfaces – non-urgent
Bar area to south	Moderate	Maintain
Paint finish (antique wash)	Little	Modify to a more sympathetic finish
Lighting	Moderate	New lighting designs that emphasised the sides of the wrought iron girders could be considered
AV equipment, air vents	Moderate	Maintain
INTERIOR – Original Accumulator Room		
Overall space, height, scale and configuration	Exceptional	Conserve and retain
Concrete slab and tiles	Moderate	Maintain

Element	Significance	Policy
Evidence of former joists being let into the walls, indicating former floors at various levels in the accumulator room	Exceptional	Conserve and retain – opportunity for interpretation with new maintenance platform
Load bearing English bond face brick walls	Exceptional	Conserve and retain
Opening to southern (internal) wall	Exceptional	Conserve and retain
Window openings and sashes – refer to external elevations for significance and commentary	High	Conserve and retain
Four large vertical timber posts (former guide rails) on the north and south walls each side of the accumulator tanks with head rails below ceiling level	Exceptional	Conserve and retain – provide maintenance access ladder and platform to enable regular termite inspections
Stair accessing mezzanine floor	Moderate	Maintain-can be replaced if required as they are not original fabric. The current stairs are compatible with the building aesthetic. Any change will require approval.
Accumulator tanks	Exceptional	Conserve and retain
Lighting	Moderate	Maintain – change red lighting to more appropriate type
Plasterboard ceiling	Moderate	Maintain – if changing to a Mansard roof this ceiling would be demolished and a raked ceiling introduced – see roof works
INTERIOR - East Annex		
Annex addition	Moderate	Maintain – look for opportunities to reveal original face of east wall – redesign for new lift and disabled access toilet – may need to redesign kitchen and toilets – urgency dependent on DDA compliance
INTERIOR - West Annex		
Annex addition	Moderate	Maintain
ROOF ELEMENTS		
ROOF – Original Water Tank		
Original water tank - space, size and volume	Exceptional	Conserve and retain
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Conserve and retain – allow cast iron panels to develop rusted patina
Cast iron panel – paint finish	Little	Allow paint finish to drop off panels – do not sand blast or use steel brushes
Reconstructed fiberglass water	High	Maintain and provide repairs and rust proofing to

Element	Significance	Policy
tank panel interpretation		fixings and bracing – replace when panels fail It would be possible to replace them with alternative materials if the interpretative value and detail was maintained can use replica cast iron panel, or another durable material that has the ability to be formed into a matching panel. As non-original fabric it would also be possible to change the braced steel struts associated with them with a single upright bolted to the slab to gain extra room in the tank area.
Original tank panel wrought iron strap bracing	Exceptional	Conserve and retain – prevent removal
Replica tank panel steel angle bracing	High	Maintain – provide rust proofing
Salvaged cast iron panels (x4) (Moveable Heritage)	Exceptional	Salvage for interpretation – rough estimate of weight of cast iron panel 1.2m x 1.2m x 0.02m x 7850kg/m^3 = 225kg each – require crane or other mechanical device (or 8 strong people each) and then a push forklift to move (sideways through doors) – cast iron **very brittle** and at risk of cracking and breaking during lifting and handling – take all precautions to brace and protect panels during lifting – leave on roof until required
Concrete topping slab and liquid applied membrane to tank floor	Little	Maintain – ideally this slab would be removed and the original base of the water tank revealed, but the work to do so would inevitably damage the tank base and so it should remain in situ.
Plant and equipment	Little	Maintain – In the long term this plant should be removed from the tank and relocated elsewhere to allow the full tank volume to read as one space
ROOF - Tower		
Rendered parapet rail and pediment	Exceptional	Conserve and retain
Hipped roof including perimeter box gutter with paint applied membrane	Intrusive	Remove roof and rebuild with similar wide box gutters but with a step to roof, adequate sump for 1:100 yr rainfall, adequate falls on gutters and materials to last for 100 years – see notes on materials in Implementation section – opportunity to rebuild roof as original Mansard roof following detail in photos and recover lost significance

7.8 New Work Policies

7.8.1 Integration of New Work

Policy 47

The introduction of new fabric should be undertaken in such a manner that it does not result in a lessening of the cultural significance of the place. New work should be identifiable as such and should be capable of being removed without damage to significant fabric or spaces. Generally the original building form and the complete original northern elevation, southern elevation, and the upper level east, west and south elevations of the tower are intact and cannot be modified

Policy 48

No additions can be built at ground or upper levels to the northern and southern façades, nor to the upper faces of the tower.

Policy 49

All new works should adhere to building envelope controls and aspire to design excellence and demonstrate infill principles that respect and complement the form, scale, character and texture of heritage buildings and contribute new work of an exceptional quality to the State significance of the former HPS No. 1 and its location in Darling Harbour landscape.

External alterations or additions should be strongly discouraged. If they are needed to meet approved interpretation, re-use or cultural tourism requirements, these should be of minor nature and only occur on the western and eastern elevations below the line of the cornice and be subservient to the primary architectural features and composition of the existing structure. They should be conceived as subordinate and temporary elements that do not compete with the main item, using reversible elements that do not impact on the original fabric, existing finishes or details.

Policy 50

The western and eastern annexes can be retained, altered or demolished. Any new additions to these facades must be built within the same footprint and be of similar bulk, scale and constructed in sympathetic materials to the industrial character of the building. Additions should be governed by the views, building envelope, and curtilage controls.

Policy 51

Within the general principles outlined in this Conservation Management Plan, some relatively minor internal alterations and additions could occur in the original Engine House and Accumulator Room. These should be confined to less significant areas and should not affect fabric of exceptional or high significance.

Policy 52

The high visibility of former HPS No. 1, its water tank, external rear and side elevations particularly from the north, south and west means that any changes to the external building fabric and form will be evident and cannot be easily hidden from public view. All proposed external changes will need to be considered within this context and are subject to approval.

Policy 53

The three storey East Annex conceals the east elevation of the original Engine House and cast iron water tank panels. There is opportunity to remove the party wall on the third storey between the swimming pool area and water tank area and replace with glazing to reveal the cast iron water tank panels to an area used by the hotel guests. More long term, should the hotel significantly renovate, this CMP recommends changes to the way the building connects to the heritage item to reveal the importance of the original east elevation of the building.

Policy 54

The mezzanine floor level in the Engine House can be retained or replaced but any changes must be reversible and should retain qualities of the open space and volume of the room. A replacement should not be greater than the existing footprint of the current mezzanine.

Policy 55

The plant room and slab of the Engine House roof has obscured the base construction, introduced penetrations, and also occupies a lot of the tank area so it cannot be seen as a water tank. Removal of the concrete slab to the base of the water tank is likely to damage the cast iron base in the process and is not recommended. Opportunities to reuse this space as a low key sundeck, open air gym or recreational area would allow appreciation of the volume and original purpose of the water tank – Refer to Section 7.6 Current and Future Use. Specific development controls are outside the scope of this CMP and subject to further appropriate advice.

Policy 56

The best location for a disabled access lift between the ground floor and the mezzanine is the present location of the disabled toilet in the East Annex. The lift should not be introduced within the footprint of the former HPS No 1.

Policy 57

Internal or external walls of exceptional and high significance are to be retained and conserved. No new openings or penetrations for servicing or ducting are permitted in walls of exceptional or high significance unless they restore original openings on the east wall, subject to approval.

Policy 58

Design for reversibility needs very careful construction detailing to ensure minimal damage to the significant fabric. Minimise fixings to significant fabric by using wedged details that can provide secure fixing while being removable without damage.

Policy 59

New fittings and fixtures should complement the existing architectural character.

Policy 60

New work should be identifiable as new work and not visually dominate over existing elements. New work is to be reversible and removable without damaging heritage fabric.

Policy 61

Contemporary materials and design may be used for new work, and should be designed in a manner in which its location, form, scale, grain, colour and texture is compatible with the original fabric and spaces.

Guidelines

- Under current legislation any proposed development including alterations and additions of the building including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals – policies and guidelines.

- When new work is being introduced, the new architectural vocabulary of details and materials needs to complement the existing architectural character.
- The internal spaces of the building should reflect and be sympathetic to the original industrial character and internal form of the building as part of the interpretation of the original use and heritage value of the former HPS No.1.
- While undesirable and not recommended, where a subdivision of internal spaces is shown to be necessary; all partitions should stop well short of the ceiling of the main space; not occupy a significant area within the space; not have any impact on original finishes or features; and be constructed to be fully reversible as a lightweight and temporary element.
- While it would be ideal for the building to stand alone, the existing configuration involves the contiguous connection between the heritage building and the adjacent hotel.
- The western and eastern elevations have undergone significant changes and any future changes will need to be concentrated in these areas; noting that substantial areas of exceptional fabric remain on these faces as well. The detailed drawings need to be referenced to determine the significance of the fabric. New work should be carefully designed and integrated with the original character of the significant components.
- There is opportunity to remove, modify or rebuild the West Annexe verandah, however any replacement structure must be compatible with the industrial aesthetic and historical significance of the building. A building envelope for any western addition will be formed by the view and curtilage controls that will ensure the visibility of the cornice line at the top of the wall, along with the full extent of the cast iron water tank panels, and the front rendered reveal of the NW corner to ground level must be retained.
- A partial roof enclosure of the space can be considered but should be located in the north east corner near the current access point to the swimming pool to ensure that it would not be visible from street level. The area of such an enclosure would need to be limited to below 10% of the tank footprint and have open or transparent walls.
- The East Annex which includes a commercial kitchen and public bathrooms to ground floor, conference rooms on the second floor and indoor swimming pool on the third floor can be modified and new services such as a lift can be introduced. However, the eastern wall and cast iron water tank panels are of exceptional significance and should not be negatively impacted. The current disabled toilet connects to the corridors into the Engine House on both levels, is large enough, and has complying access for re-use as a lift space. It would require some redesign of the remainder of the East Annex to provide the toilet and kitchen facilities required. This will mean that any future changes may be able to provide a setback from the HPS No 1 without impacting on the lift.
- The eastern annex conceals the eastern wall of the building and the former water tank cast iron panels on top of the original Engine House. There is opportunity on the third story of this annex, between the swimming pool area and water tank roof for the party wall between these two areas to be removed and replaced with glazing to reveal the cast iron panels on the eastern façade of the building.
- A long term option, if the hotel significantly renovates, is that the new design could introduce

the opportunity to reveal the importance of the original east elevation of the HPS No 1. In this case the east setback in the curtilage of 6m would set the limits of any new work. This setback would allow the original east face to be reconstructed to its original configuration when it opened onto a courtyard that lead onto the boiler room. Internally the arched windows in each of the arched recesses would return the building to an earlier state. Connection between the heritage item and the new building could be by enclosed glass walkways that would allow much greater appreciation of the HPS No 1 as a heritage item. This would also open up the heritage building to more vantage points and increase its landmark qualities. There would be a loss of space, and such things as the toilets and kitchen would need a redesign. The setback would recover a lost aspect of the place and greatly improve the setting of the heritage building. It is unknown how the pool structure connects to the building, and if it has been constructed into the existing wall, this may leave a large scar on the eastern elevation if this were to be pursued.

- The parapet and unfinished roof over the eastern annex on the northern façade should be removed as it is an intrusive element and is not compatible with the aesthetic significance of the building. There is opportunity to modify and enlarge the terrace to the East Annex leading out from the swimming pool. This is subject to approval and must not have a negative impact on the significance of the fabric of the eastern elevation of the Accumulator Room tower.
- No dormer windows or skylights can be introduced in the building. The main roof is the base of the water tank, which has high significance and should not be penetrated. The tower roof is very small and at a high level, and there is little reason to introduce a skylight.
- No grilles or security screens can be attached to the windows in any of the elevations. Where forceful entry may be an issue the windows can have clear security film, subject to approval and appropriate heritage impact assessment.
- The Heritage Council's publication *Design in Context* should be consulted. It provides guidelines for the design of infill and additions to heritage buildings.[5]

7.8.2 Integration of Services

Background

It is recognised that service and safety features need to be updated in heritage buildings and that future upgrades may be necessary. Limited minor changes to existing fabric for practical reasons such as the installation of new services, sustainability upgrades, and the need to meet statutory requirements may be required in order to continue the viable use of the building.

A planned approached for integrating new services or review of existing services must be undertaken. The preparation of schematic layouts is not sufficient. Service routes are to be planned so as not to damage the significant fabric or disrupt significant spaces. New services are to be designed to be unobtrusive, and to have no or minimum impact upon heritage fabric. Where exposed the new services are to be designed to work with existing fabric, using symmetry where the fabric demands it, and considering how the layout will affect existing fabric.

[5] *http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/DesignInContext.pdf*

Policy 62

The extension or alteration of existing services in the former HPS No. 1 must not have a detrimental impact on the significance of the building components, or as a whole and are subject to approval.

Policy 63

Remove redundant or intrusive service runs where possible. Where possible service runs should be concealed in floors or ceilings and only become visible at the nearest point to the service. To minimise impact and loss of original fabric use existing service routes or replace existing surface mounted services without damaging or removing fabric. Services must not discharge liquids (such as condensate) or gases that will cause damage to significant fabric.

Policy 64

New services must be installed inconspicuously without further damage to significant fabric, and must be grouped together to minimise impacts. Wherever possible, penetrations required for new services in significant fabric should be made where it has previously been penetrated.

Policy 65

Proposed locations for services must be clearly identified on all proposal drawings for new works. Any proposed upgrading of services is to be carefully planned. The preparation of schematic layouts is not sufficient. Service routes are to be planned so as not to damage the significant fabric or disrupt significant spaces.

Policy 66

Proposed adaptation or changes which would require the introduction of particular services and/or structural alterations which would have an adverse impact on the character and/or heritage significance of significant spaces are unacceptable.

Policy 67

Services are to be surface-run, as the chasing of walls or other significant fabric for service runs is not acceptable.

Policy 68

Brackets or fixings for services are not to damage significant fabric.

Policy 69

Light fittings and switches are not significant and can be changed using existing outlets. Lighting that highlights the girders of the original Engine House without impacting on the fabric are acceptable.

Guidelines

- Any upgrading of services is subject to a proper approval process and will need an assessment of the impact of new services in a heritage impact statement.
- The introduction of new services and associated fittings in order to continue the viable commercial use of the building, or as part of an approved new compatible use, are to be carried out with the minimum of disruption to the fabric and spaces.
- Intervention into building fabric should respect the integrity of the extant material, be carefully

controlled, and be limited to that required by the proposed works.

- Limited intervention for exploratory or research purposes should generally be restricted to approved programs of reuse, or upgrading of service areas and facilities.
- The introduction of new services and associated fittings in order to continue the viable commercial use of the building, or as part of an approved new compatible use, are to be carried out with the minimum of disruption to the fabric and spaces.
- No externally mounted air-conditioning, ventilation equipment, water heaters or service components are to be fixed to any of the buildings elevations.
- The current internal air conditioning system can be upgraded or replaced as required in the current position, as it has been introduced in a sympathetic and unobtrusive manner.
- Incoming services to the building should preferably be installed in the subfloor subject to archaeological investigation.
- Some new services including:
    - Antennas and other technology may be sensitively introduced into the plant area of the original water tank on the roof, subject to approval.
    - New roof mounted services should not be visible above the top of the cast iron water tank panels when viewed from ground level to the west and south of the building.
    - Any aerials that need to be well above other elements would not be permitted on the heritage building.
    - Any new use for the water tank space should not have a high servicing requirement and any new services should be routed through existing openings and through later service additions.
- The original extent of the building is not a suitable location for the introduction of a lift to provide equitable access as this will have a major and unacceptable impact and should therefore only be located in the East Annex. Refer to Diagram A at the end of the FAQs.
- New bathrooms or commercial kitchen must not be located within the original Engine or Accumulator rooms. The East Annex, which includes the current commercial kitchen and public bathrooms, is the only possible location for new service facilities. Refer to Diagram A at the end of the FAQs. Any changes must not negatively impact the eastern wall and cast iron water tank panels which are of exceptional significance.
- If additional security is required, the use of wireless movement detectors is the most acceptable form of security protection that has the least impact on heritage fabric, subject to approval. Wireless features eliminate the need for hiding wires and multiple penetrations through the fabric.
- As technology is continually changing and is likely to be replaced and upgraded every few years, it is essential that security systems have minimal impact on external and internal fabric and minimal visual intrusion.

7.9 Building Code Compliance

Background

The National Construction Code (NCC), incorporating the Building Code of Australia (BCA) has been adopted in NSW planning and building legislation as the technical standard for design, construction and operation of buildings. The NCC also includes the National Plumbing Code and is planned to incorporate other similar codes and Australian Standards by reference. The Commonwealth Disability Discrimination Act (DDA) makes it unlawful to discriminate against people on the grounds of their disability.

In terms of on-going use programs, the key issues are usually compliance with fire resistance, egress provisions, and provision of disabled access and facilities. It is essential that the cultural values of the buildings and the overall complex are not degraded by inappropriate responses to meeting ordinance requirements.

Policy 70

Works to the building are to avoid conflicts with the code upgrade requirements of the BCA by ensuring low impact uses that do not have difficult compliance requirements. Where there are conflicts between the BCA and the heritage significance of the building, an alternative solution must be sought to avoid unacceptable heritage impacts.

Incompatible proposals must not be permitted to impact on exceptional or high significant fabric and need to be abandoned.

Guidelines

- Under current legislation any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.
- Any new commercial use can only be introduced where the exceptional significance of the building fabric is retained, and compliance requirements for accessible access and building codes can be met without adverse heritage impacts.
- The BCA can have a major adverse impact upon heritage fabric. This means that the heritage significance will introduce limits on the most appropriate uses for the building, in order to avoid the incompatible regulations associated with some classes of building. For example the compliance requirements for any class of building (Classes 2-4) that involves people sleeping in the building would require unacceptable heritage impacts on the building's heritage fabric, and therefore is incompatible.
- The most compatible type of use is one that falls under Classes 5 & 6 of the Building Code of Australia. These uses permit public access and require the least impacts for servicing, compartmentation, smoke management and egress requirements. (The NSW Amendments have at last removed the confusion between the Class 9 entertainment areas and possible Class 6 entertainment areas associated with the bar. The building now cannot be a Class 9 building unless it was converted to an assembly hall or a teaching space. If that were the case there are additional requirements for Class 9 that may prove difficult to comply with.)

- The building has very good fire resistance and compartmentation but has a limited egress, which limits the number of people it can safely accommodate. It also has areas that are more difficult to access, and this will limit the nature of its use. It also has limits on the nature of emergency services it can accommodate without heritage impact, and this will also guide how it should be used.
- The potential use of the original water tank / roof area as a publicly accessible area from a fire safety perspective results in some significant issues with using the roof area. This would have very significant heritage impacts in terms of BCA compliance as there is only one point of egress, and heritage constraints would prevent any additional points of egress being introduced. The distance and the path of travel on the roof alone is a minimum of 17 metres, which would require a fire stair within 3 metres of the single entry to the roof. This would be a very significant intrusion into the East Annex. Use of the roof by the public would make the building 3 storeys high, which introduces a higher level of fire isolation, and depending on use may trigger the need for the whole building to be upgraded to Type A construction.
- To prevent egress issues impacting on the significance of the space the Water Tank Roof should be limited to the number of persons that can safely egress under the BCA with existing arrangements unchanged. Therefore a relatively low key use without focused events where numerous people need to congregate at once would be appropriate. A restored rooftop water tank can be used as an outdoor recreation area without needing to comply with the BCA.
- Future upgrades of the buildings are to take into consideration any newly developed approaches for the implementation of fire safety standards that do not harm the existing significant fabric. Fire engineering assessments can provide alternative solutions when conflict with heritage significance is an issue.
- An assessment of compliance the former HPS No.1 with the NCC has not been carried out for this report. It should be noted, however, that any DA/CC application would need to comply with the NCC. In general, when considering the NCC in heritage buildings, proposals are to ensure that significant fabric and spatial qualities are not compromised while full NCC compliance is achieved and public safety is assured.
- A compliance report would need to be done separately, and address a particular use with a particular class of building. This CMP can only make broader statements on areas that may need to be addressed.
- The biggest potential limitation on the building is disabled access, which is covered in Section D3 of the BCA, but will be addressed below under the DDA requirements.

7.10 Accessibility

Background

The Commonwealth Disability Discrimination Act (DDA) makes it unlawful to discriminate against people on the grounds of their disability. Section 23 of the Act requires non-discriminatory access to premises which the public or a section of the public is entitled or allowed to use.

Heritage places are not exempt from the DDA, although the Australian Human Rights Commission has advised that heritage significance may be taken into account when considering whether providing equitable access would result in unjustifiable hardship.

The trigger to need to upgrade is also fairly unclear. The BCA requirements do not trigger unless there is a significant amount of works or a significant change of use. The DDA will always apply, and a building owner or manager needs to address the provisions of the DDA to avoid the risks of a complaint leading to penalties.

Since HPS No. 1 is a publicly accessible building, key issues for the provision of accessible access and facilities must be addressed. It is essential that the state significance values of the building fabric, spaces and overall setting are not degraded by inappropriate responses to meet ordinance requirements.

Policy 71

An equitable access solution to the former HPS No. 1 must be achieved with an acceptable intervention that does not adversely impact on the significant heritage building fabric and setting, and will be subject to approval.

Policy 72

Areas where disabled access cannot be made available without significant impact on exceptional and high significance fabric, is not compatible and should not be used for any purpose that would be defined as a class of building under the BCA.

Guidelines

- Under current legislation any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.
- An accessible access strategy for the entire building should be developed by an access consultant who has extensive heritage experience. This will avoid piecemeal and incremental improvements and provide solutions that are appropriate to the heritage values.
- Reference should be made to the Heritage Council publication *Improving Access to Heritage Places* and *Access for All to Heritage Places* produced by the Heritage Council of Victoria.
- It is important to note that a court is unlikely to remove all requirements for equitable access, even for a heritage building. It is important that the site owners and lessees make every effort to ensure the dignity of their disabled patrons.
- It should also be noted that the Australian Standards related to disabled access, AS1428.1-4, were significantly upgraded in 2009. While the sizes of many features were enlarged in this upgrade, the main change was that the previous rules allowing owners to provide access to a portion of the building for a portion of guests were overwritten with new universal access rules requiring access to all areas available to the public, all areas where a disabled staff member may need to go, and even all areas where a disabled building manager or owner may need to go. This has had a very significant impact on building design.
- In the case of the former HPS No.1, there are some issues with disabled access. A full report will be needed to address all of the detailed issues, highlighted below are some of the more obvious areas with issues.

Entry doors on ground floor West Annex:

- At present these are double equal leaf doors that are held open during the day to permit wheelchair access. This does not meet the new universal access requirements.
- It is possible to provide equitable access to the ground floor of HPS No.1 in accordance with the DDA and AS1428.1 through the front door of the western elevation by modifying the double doors to have one leaf that is 920mm wide. This would permit a person in a wheelchair to negotiate the door for themselves without needing to leave them open. This would have added benefits of being able to close the door in winter.

Access between ground floor bar and mezzanine:

- If a group were to enter the bar and then choose to sit upstairs in the mezzanine, a member in a wheelchair would have no option than to go out of the bar, make their way up the driveway to the hotel that is not made for pedestrian or disabled access, enter a lift, and then go down a long corridor to meet up with friends on the mezzanine. This clearly does not meet the universal access requirements.
- It is possible to provide equitable access from the ground floor bar area to the mezzanine area by installing a lift in the East Annex that is accessible to a corridor on both floor levels. A lift within the confines of the former HPS No 1 is not permitted. We would suggest the present location of the disabled toilet is easily accessible to the existing passageways on both levels, within the East Annex.
- Due to construction of the access stair it is not possible to introduce access to the mezzanine floor via a chair lift. Modifying the stair to be able to accommodate a chair lift would make the stair more bulky and have heritage impacts on the Accumulator Room. Should this option be pursued it should be focused on the West Annex stair, which is in an area of moderate significance, if a lift cannot be introduced in the East Annex.
- The door from the mezzanine to the hotel hallway currently does not comply with the Code. The brick openings in the east wall of the former HPS No 1 must not be modified.

Disabled Toilet

- The ground floor provides one accessible toilet accessed via a hallway that appears to comply with AS1428.1. It appears the accessible toilet has not been upgraded to meet the changed requirements of AS1428.1-2009 and is undersized. A significant redevelopment would trigger the need to redesign this toilet and resize and potentially relocate it.
- The new dimension minimum is 1.9m x 2.3m, with additional space to accommodate a basin. As noted above, this space could accommodate a lift, and a new complying disabled toilet could be located in the East Annex.

Roof Water Tank level:

- The roof level does not provide any wheelchair access, and this would appear to be a very significant impediment to any future public use of the water tank. The tank is fully enclosed by exceptional fabric elements, so no new openings would be permitted. The existing opening could be modified to cater for wheelchairs, but this would involve significant work to the levels of the pool and surrounds and redevelopment of the hotel to allow public access.
- Removal of plant equipment would allow the volume of the water tank area and the detail of

the cast iron panels to be appreciated. Any use of this space would require controls greatly limiting the area that can be covered or enclosed, and there are detailed elements such as the wrought iron straps that must be retained and managed against WH&S public safety issues. Any use that increased the need for access and egress, servicing or fire separation would potentially threaten significant fabric and thus would not be a compatible use. Disabled access would seem to largely prevent any consideration of this.

- The CMP concludes that disabled access is not feasible for the original water tank / roof space, and this precludes any public use of the space.

7.11 Setting, Views and Adjacent Sites

Background

Darling Harbour is a distinctive waterfront precinct, located on the south-western edge of the Sydney Central Business District, and to the east of the Pyrmont Peninsula. The Precinct is unique in terms of its function, location, land ownership and physical characteristics, and accommodates a wide range of land uses. These predominantly relate to education, recreation, tourism, entertainment and business.

Darling Harbour is currently undergoing dramatic changes to create the SICEEP precinct[6]. The former HPS No.1 sits just outside the boundary of the SICEEP precinct (Figure 3.1) and is bound by Pier Street overpass and Darling Walk to the north and Little Pier Street, A 'Place for Reflection' Park and Darling Square redevelopment to the south. To the west is the Darling Exchange building site and newly built office buildings. To the east it abuts and connects through to the Novotel Rockford Hotel via the eastern annexe built in 1999.

The former HPS No. 1 is of high significance in terms of its aesthetic significance and the broad or distant views to and from the building and its setting within the wider Darling Harbour landscape. There are several primary significant view lines to and from the former HPS No.1 that should be retained so that the significance of the original form and fabric of the building can be acceptably presented and interpreted.

Policy 73

Any proposal for new development in adjacent sites must ensure that an appropriate setting for the former HPS No.1 is retained. The setting in fig 4.27 will ensure that any future development in the vicinity of the item cannot encroach upon the nominated curtilage and retains and protects an appropriate public open space setting to the heritage item.

Policy 74

Any proposal for new development in adjacent sites must take into account views of the former HPS No.1 seen from the north, south and west are of particular importance as they add value to the aesthetic significance of the former HPS No.1 in the Darling Harbour Landscape. Refer to Section 3.2 and Figures 3.13 and Section 4.4 and Figure 4.27 in this CMP

Guidelines

- The potential impact of new development on the significance and setting of the former HPS No. 1 is to be considered in accordance with statutory requirements.

[6] http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6633

- Views of the former HPS No.1 that should be retained from the northern, southern and western extents to allow for ongoing use and interpretation of the building of the item should include:
    - Two storey Engine House
    - Water tank panelling
    - Three storey Accumulator room.
- The majority of the building is presently obscured by the hotel on the east face. There are oblique views from the east, and the entire east face of the original Accumulator Room tower remains in view from the east almost up to the corner of Harbour Street. This view is of high importance as the original design of the tower intended for this view to be important in the streetscape and it should be retained.
- The high visibility of the Accumulator room, Water Tank panelling and Engine House of the former HPS No. 1 means that any changes to the external building fabric and form will be evident and cannot be easily hidden from public view. All proposed external changes will need to be considered within this context and are subject to approval.
- Any new roof mounted services should not be visible above the top of the cast iron water tank panels when viewed from ground level to the west and south of the building and should not impact on significant fabric or the setting.

7.12 Sustainability

The HPS No. 1 should pass Section J with few modifications. The walls are extremely thick brickwork, the windows are very small in comparison with the floor area, the main roof is a concrete slab, and the building is relatively small. It has little direct need for water use.

The areas of fabric that could be upgraded are;

- The new flooring should be installed with thermal insulation
- The replacement tower roof should be insulated
- The Engine House ceiling may permit insulation (if not already installed) in the plane of the secondary wrought iron beams above the later corrugated ceiling
- The entry door, once modified to comply with the DDA, will be able to be closed on winter's days
- The mezzanine door to the East Annex is also being upgraded for equitable access and will not need to be held open.

Policy 75

Solar panels may be permissible but must be concealed in the rooftop water tank area.

Guidelines

- The rooftop water tank area is a poor position for solar panels as it situated to the south of the HPS No. 1 tower, and more significantly it is to the SW of the large multi-storey hotel building. Other multi-storey buildings are being built to the NW. Solar PV panels at such a low level in this context would be overshadowed for much of the day and would have a very poor return

on investment. Solar PV would be much better installed at the top of the hotel building.

7.12.2 Thermal comfort in heritage buildings

Policy 76

All applications for building modifications and fit-outs are to demonstrate measures which work toward the objectives of PMNSW Sustainability Policy and are subject to approval.

Policy 77

Ceiling fans can be installed but must use fixtures and fittings such as clamps that will have no impact of fabric of exceptional significance including ceiling beams in the original engine house.

Policy 78

The lessees of the former HPS No. 1 should ensure the inefficient open fireplaces in the original Engine House are converted to more efficient sealed fireplaces, and that the fuel used is considered to be renewable biomass.

Guidelines

- Under current legislation any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.
- The current building provides heating via an air-conditioning system, and through open fires.
- The building is already served by open fireplaces. Open fireplaces are inefficient at around 30%, whereas sealed enclosed double burning fireplaces can have the same ambience with over 60% efficiency. These should be considered for an upgrade to maximize energy efficiency. In addition, the fires should be burning certified renewable biomass.
- Air movement can play an important role in thermal comfort levels and is proven to be more energy efficient than air conditioning within a closed building envelope. Ceiling fans can be used when there is not sufficient air movement to maximise the effectiveness of natural ventilation. Fans which are used to enhance summer thermal comfort can also be used to destratify indoor air to save heating energy in winter.

7.12.3 Passive design solutions

Background

Historically, buildings were designed, constructed and sited to maximise the effectiveness, using the seasons to provide for thermal comfort needs. Historic buildings also often have thermal properties that need little modification to maintain good thermal comfort levels for the majority of operational hours.

The former HPS No. 1 has very thick solid brick wall construction with enclosed sub-floor spaces and small double-hung windows. The roof space is made from a thick concrete slab and may already be insulated. The building already has a high level of insulation. This could be improved by insulating the new floor and the new tower roof, along with being able to close doors in winter.

Studies have indicated that the implementation of passive measures can result in a 50% decrease in

energy consumption within historic buildings. This figure is reflective of the inherent thermal properties of many historic buildings. This is unlikely to be the case with the HPS No 1, as the building has very good thermal properties and the available options to improve it are limited.

Policy 79

In addition to the former HPS No. 1 building's inherent strength of good passive thermal comfort additional measures, such as floor and roof insulation and the ability to close off doors in winter, should be introduced to maximise the passive performance of the building.

Guidelines

- Under current legislation (2016) any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.
- Select energy efficient products.
- There is little need for insulation to the ceiling of the original Engine House as it has cast iron panels and a concrete slab above. If further insulation is necessary install between the secondary iron beams and above the recent ceiling original Engine House. Do not cover the bottom flange.
- Insulation in the tower roof will depend on the final configuration of the repaired roof. If replacing the roof in its current configuration then insulation can be installed above the flat ceiling. If, as this CMP recommends, the mansard roof is reconstructed with raked ceilings, then insulation can be installed in the rafter zone.
- The total area of windows in the HPS No. 1 is so low and the masonry walls are so thick that there is little to no benefit in any works to the windows for thermal, acoustic or solar reflection purposes. All solutions for these issues would involve heritage impact for very little gain. This CMP recommends against any upgrading of the windows in the original HPS No.1 building.
- The West Annex windows can be upgraded without any impacts
- Floor insulation can be added in the joist zone with replacement of the existing intrusive timber floor of the original Engine House. The West and East Annex can have climate control or noise abatement added as their fabric is not significant, subject to approvals.

7.12.4 Mechanical solutions to supplement passive design

Policy 80

The lessees of the hotel should continue to ensure the air-conditioning system is upgraded to the highest level of efficiency to ensure sustainable energy use.

Policy 81

Mechanical solutions, in addition to passive solutions, must be designed to fit with low impact to the heritage significance of the place, and meet the objectives of the Sustainability Policy. The design of mechanical solutions must demonstrate that the proposal presents the least impact to the significant fabric of the place.

Guidelines

- Under current legislation any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.
- The HPS No. 1 is already served by a well concealed HVAC system. This option has the least heritage impact. There are potential improvements available in efficiency that could be considered.
- Mechanical systems should be designed to supplement existing passive measures. This will ensure that any necessary mechanical systems are not overloaded, operate efficiently and in turn reduce energy consumption.
- Careful system selection and implementation is integral to the success of any mechanical heating, cooling and ventilation (HVAC) system. This is critical with heritage buildings, where the impact of mechanical systems coupled with passive systems should be minimised for their visual and physical impact on the building.

7.13 Archaeological Resources

7.13.1 Archaeological Monitoring

Background

There is some archaeological potential at the site relating to former HPS No.1 in the sub-floor area underneath the original Engine House. This area has been disturbed ground, but was most likely flattened and covered over rather than removed. Relics would thus be located deep under the soil layer. It is possible that archaeological relics of the chimney footings and the return water tank lie deep beneath the eastern brick annexe due to the depth of these items. There is some potential that relics of the footings of adjacent demolished buildings lie underneath the West Annex verandah. There is some potential that relics of the pipework associated with the HPS No 1 could be found over a wide area, but no specific site has been identified. There is no chance that any relics of the boiler house would have survived under the multi-storey hotel.

Policy 82

Where the site is identified as having archaeological potential, all excavation should be carried out under supervision by a qualified archaeologist. Appropriate permits should be sought from the NSW Heritage Council prior to the commencement of works.

Guidelines

- Based on the significance of the site, it is the recommendation of the CMP that any ground disturbance on the property in the future be subject to further archaeological monitoring.

7.13.2 Prehistoric (Aboriginal) Archaeological Potential

Background

Sites of prehistoric archaeological potential are protected under clauses of the NSW National Parks and Wildlife Act 1974.

The site of the Pumping Station consists of reclamation fill within Darling Harbour which dates from

the period 1854-65. The site is located more than 100 metres from the pre-1788 shoreline and therefore has little potential to contain items associated with indigenous use or occupation prior to European colonisation.

Policy 83

Any potentially encountered Aboriginal archaeological resources should be conserved in accordance with the requirements of the NSW National Parks and Wildlife Act 1974 and their potential for interpretation considered.

Guidelines

- A search of the AHIMS website (Office of Environment and Heritage) should precede any application for works
- Should disturbance be required where Aboriginal archaeological material has been identified, an application under Section 90 of the National Parks and Wildlife Act will be required for this disturbance.
- In the event archaeological material is unexpectedly discovered during works to this site, work shall immediately cease in the affected area and PMNSW and the NSW National Parks and Wildlife Service (Office of Environment and Heritage) will be contacted for advice.

7.13.3 Archaeological Potential (European)

Background

Sites of archaeological potential are protected under clauses of the NSW Heritage Act 1977.

Policy 84

Any potential archaeological resources on the property are subject to the requirements of the NSW Heritage Act 1977 and their potential for interpretation must be considered.

Guidelines

- No areas of high archaeological potential have been identified for this site.
- Some areas of low and moderate archaeological potential have been identified on this site. In the event that works require disturbance of an area of archaeological potential an excavation permit application under Section 140 of the Heritage Act will be required with an Archaeological Assessment.
- Any archaeological resources must be managed in accordance with the recommendations arising from the Archaeological Assessment and any approval issued by PMNSW and/or the NSW Heritage Council.
- In the event archaeological material or relics are unexpectedly discovered during any works to this site, work shall immediately cease in the affected area and PMNSW should be contacted for advice.
- The Pier Street Precinct-Archaeological Remains listing on the State Heritage Register (under Section 170 of the NSW Heritage Act, 1977) should be updated to include the assessment of the archaeological potential of the former HPS No.1 site from this CMP
- The sub-floor area of the original Engine House is considered of moderate archaeological

potential on the basis that the original basement area was covered over rather than dug up – this potential may only be the footings for the engine blocks, but may also include smaller relics dropped through floors and by workers in the basement

- There is likely to be significant footings related to the large chimney and the return water tank underneath the East Annex. This area needs to be considered as of moderate archaeological potential if this area is ever redeveloped.
- It is unlikely that any footings from the boiler room or manager's residence have survived the hotel construction. This area is of negligible archaeological potential.

7.14 Painting and Finishes

Policy 85

Generally: Do not paint unpainted surfaces. Do not render face brickwork.

Policy 86

Existing finishes including exposed masonry and brickwork should retain the existing finish and not be painted or rendered

Policy 87

The internal plaster should remain intact.

Policy 88

The internal paint colour scheme should be changed, subject to approval. The existing internal antique style wash paint scheme is not sympathetic to the exceptional significance of the Engine House and should be changed with further research into an appropriate colour scheme for this building.

Policy 89

The original English bond face brick to external and internal elevations contributes to the exceptional significance of the building and must remain unpainted and unrendered.

Policy 90

External joinery must be regularly painted in a high quality high gloss oil based enamel paint in the existing colour scheme.

Policy 91

The external render work must be repainted every 7-10 years in low sheen acrylic paint.

Guidelines

- Under current legislation any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.
- The existing pine floor and framing in the original Engine House should be replaced with a new floor that is both termite and damp resistant and slip resistant.

- A new floor should allow for sub-floor access for regular termite inspections by providing a complying crawl space and included hardwired subfloor fans to introduce ventilation and reduce the vapour pressure in the timbers.
- The paint finish to external rendered elements of the HPS No. 1 and the East Annex (northern elevation) is of moderate significance and needs to be maintained in a regular cycle.
- Where old paint layers are sound they should be left undisturbed. The removal of paint with a high content of lead or other hazardous materials requires considerable care and use of experienced tradespeople. If the removal of such paint layers will adversely affect the heritage significance of the item, an application will be required under section 60 of the Heritage Act.
- Professional consultants should be engaged in order to minimise the potential for any loss of the valuable historical record provided by surface finishes and to ensure that the ensuing conservation works will be correctly specified and supervised.
- Reference should be made to The Maintenance Series, NSW Heritage Branch, particularly Information Sheets 6.2 Removing Paint from Old Buildings, 7.2 Paint Finishes and 7.3 Basic Limewash which are available online at www.environment.nsw.gov.au.[7]
- Regular painting forms an essential part of maintenance for a number of building materials, especially timberwork, and can extend their service life.
- The external load bearing face brick and internal face brick of the Accumulator room contributes to the exceptional significance of the building. Surfaces that have not been painted are to remain unpainted.
- The existing internal antique style wash paint scheme is not sympathetic to the exceptional significance of the Engine House and should be changed with further research into an appropriate colour scheme for this building.

7.15 Landscaping/Planting

Background

Generally, gardening work does not require approval. However, if landscaping works involve more than normal garden works (i.e. paving, garden beds and plantings), and excavation of 300 mm or deeper is required (e.g. for drainage works), then approval from the NSW Heritage Council is required, and an archaeologist may need to be involved with the works.

Policy 92

Minimal landscaping including planter boxes is acceptable providing it does not damage significant building fabric.

Guidelines

- Under current legislation any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.

[7] *http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/maintenance72paintfinishes.pdf*

- Landscaping works involving more than normal garden work including paving, introduction of garden beds, planting or removing trees and excavation of 300mm or deeper may require approval if the work is not covered under the Heritage Act's Standard Exemption for Excavation. Landscape maintenance is covered by a Standard Exemption. Approvals may be required from the City of Sydney Council and Heritage Council of NSW and an archaeologist may need to be involved with the works. Refer to archaeological policies in section 7.13 of this CMP.
- Landscape work, other than above-ground planter boxes, needs to be preceded by an investigation of the substrate and any paving, early footings, drains, or pipes.
- Elements such as trellises mounted on the walls, or the introduction of "green walls" is not recommended as this can introduce moisture or damp problems into the building fabric, along with root penetration and cracking which will affect the significance of the building.
- Trees should not be planted close to the HPS No. 1 as there is the potential for damage to the foundations.
- The paved courtyard to the west of the building should be retained as open public space with the possibility of the area being used for interpretation of the site.
- The fixed planters to the outdoor seating area to the west of the building can be retained or replaced with similar height planters.
- There is potential for a BBQ, recreational area/rooftop open air garden within the original water tank roof top. Soft-fall to the ground surface with faux grass would be permitted with approval.
- There is opportunity if the original water tank is used as a sundeck for soft landscaping such as potted plants to be introduced. These should not visible from ground level above the cast iron water tank panels. Any landscape work will require approval from PMNSW and may also require approval from the Heritage Council of NSW.
- No vines are to be grown on the building.
- No irrigation system is to be used near the walls of the HPS No. 1.

7.16 External Signage, Seating and Lighting

Background

It is recognised that commercial and retail tenancy identification and temporary signage are an intrinsic component of the commercial use and viability of former HPS No.1 as a whole. External lighting of the buildings can also add to its character.

Lighting consists of three large suspended pendants over the bar area, low voltage uplights below the girders, small flood or spotlights on the ceiling between the girders, feature lighting in the bar area and recessed downlights in the soffit of the mezzanine.

Policy 93

External signage, seating, safety and feature lighting should be in harmony with the overall character of the place, complement the historic character of the building and should not have an adverse impact on significant heritage fabric.

Policy 94

All signage should be consistent with the Darling Harbour Commercial Signage and Outdoor Seating Policy and Technical Manual 2013 where relevant and should not have an adverse impact on significant heritage fabric and the overall character of the place.

Policy 95

Signage and external lighting should not have an adverse impact on significant heritage fabric and the overall character of the place

Guidelines

- Under current legislation any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.
- All new works relating to seating are to comply with the Darling Harbour Commercial Outdoor Seating - Technical Manual 2013 and Darling Harbour Commercial Outdoor Seating Policy 2013. Darling Harbour Commercial Signage Technical Manual 2013 and Darling Harbour Commercial Signage Policy 2013.

  Darling Harbour Commercial Outdoor Seating Policy 2013

  Darling Harbour Commercial Outdoor Seating Technical Manual 2013

  Darling Harbour Signage Policy 2013

  Darling Harbour Signage Technical Manual 2013
- Signs on the individual building components should be discreet, complementary and sympathetic in terms of colour, material, proportion, positioning, wording and font.
- It is not necessary to attempt to create or recreate an “historic” character in the signage, but modern standardised “trademark” signage is not appropriate.
- The ‘pumphouse’ sign to the Southern Elevation above the central window and to the bollard to the western elevation for the outdoor seating area are both sympathetic introductions of signage and should be retained or replaced with similar.
- Neon lit signs, fluorescent signs and iridescent paints are inappropriate.
- Consult with PMNSW for all proposed external and internal signage. External signs will also need NSW Heritage Office approval and City of Sydney DA approval.
- External and internal lighting and service runs are to be achieved with minimum intervention of significant fabric. Refer to policies in section 7.7 of this CMP. Signs should be harmoniously integrated with the architecture of the building and should not obscure or damage the significant features or fabric.
- Replacement fittings should use the existing power outlets.
- The illumination of former HPS No.1 should highlight architectural features rather than floodlighting whole façades. Care should be taken to ensure that over-illumination does not occur.

- Illuminating views of the building at night when the venue is most frequented, is vital for the ongoing use and interpretation of the building. Illumination of the former HPS No. 1 via the controlled and precise use of light by small sources and fine optics is important so that architectural details are accented and light is only used where it is needed. The intent is to highlight the texture of the building, giving depth to the form of the building and eliminating unwanted spill light.
- It is recommended to engage a lighting designer/engineer for a planned approach to security and any external lighting of the building. This is to ensure integration of external light fixtures with the architecture of the building (for example, highlighting external features of the building), the contribution of the visual effects of external lighting to the character of the building, surrounds and skyline, and the energy efficiency of the external lighting system.
- The building has existing external security lighting installed. Any additional lighting could be added subject to approval and appropriate heritage impact assessment. It is recommended that security lighting be well designed to work with the architecture of the building.
- The internal light fittings have been changed previously and can be changed again, subject to approval. Any new light fitting should be installed in the existing locations. Lighting should emphasise the volumes of the original Engine and Accumulator room and highlight the original ceiling beams and accumulators.
- The current red lighting in the Accumulator room should be changed to a more sympathetic light.

7.17 Ongoing Maintenance and Repair

Background

The nature of any building is that its fabric will deteriorate due to the effects of age, maintenance, weather, vegetation incursion and use. To ensure the ongoing conservation of significant building fabric, a regular maintenance schedule is to be implemented, and should include regular inspections, and remedial actions where necessary, as outlined in Section 8.0 of this CMP.

Maintenance should not be confused with repairs, conservation or stabilization works; maintenance specifically looks at the long-term regular work required to keep the building in good useable condition.

Policy 96

The significant fabric of former HPS No.1 should be maintained by the implementation of the short, medium and long-term maintenance program outlined in Section 8 –Ongoing Maintenance.

Policy 97

As a necessary minimum, the ongoing maintenance must include works that will ensure that each element retains its current level of significance and not allow the loss of significance due to neglect or the deterioration of fabric, as required under Section 118 of the NSW Heritage Act minimum standards for the maintenance and repair for State Heritage Register listed properties.

Policy 98

A photographic archival record must be prepared of the building before any works in accordance with NSW Heritage Division's guidelines for photographic recording. The record is to be submitted to PMNSW for archiving.

Policy 99

Inspection and direction of maintenance works should only be undertaken by those with professional knowledge and demonstrated experience with heritage buildings and materials. All maintenance work and repairs are to be undertaken by heritage experienced contractors using appropriate materials and skills to ensure that there is no negative impact on significant fabric.

Policy 100

A comprehensive condition report of the former HPS No. 1 is required to inform and quantify repair work and to assist in preparing a maintenance program to halt any potential damage to significant fabric. The report should assess the building in a systematic order noting conditions graphically on plans and elevations.

Policy 101

A planned maintenance program and routine maintenance program should be implemented by the lessee to proactively halt any potential damage to significant fabric. This is to prevent any loss of significance through incremental change, accidental damage or inadvertent actions.

Policy 102

Urgent maintenance issues to address include damp, termite issues, repointing of brickwork, electrical wiring, flooring to ground floor of original Engine House and the tower roof of original Accumulator Room. In addition to regular maintenance activities, prompt preventative action and repair is to be undertaken as necessary as set out in Section 8.0.

Policy 103

A yearly detailed inspection of the building should be built into the long term program to assist in informing the lessee of the extent of deterioration since the last inspection and assist in discovering new issues. Comparative rates of deterioration may change the maintenance priorities.

Guidelines

- Under current legislation any proposed development including alterations and additions on the site including repairs and maintenance, may require one or more of consents and approvals – refer to Section 7.5 Ownership, participation and approvals - policies and guidelines.
- The building fabric and services are subject to continuing care and maintenance by lessees under a lease agreement, in accordance with the NSW Heritage Council minimum standards of maintenance and repair.
- The significant fabric of the former HPS No. 1 is to be repaired in accordance with the recommendations outlined in Section 8.2.
- Categorise into urgent, necessary, or desirable work; depending on the nature of the defect to inform a phased approach to remedial maintenance works.

- Prevention and regular ongoing maintenance of fabric is essential to prevent continuing deterioration and the need for future widespread repair or reconstruction.

7.17.2 Retention of Fixtures, Fittings and Moveable Heritage

Background

Components relating to the former use of the place as a hydraulic pumping station, particularly engineering elements such as the accumulators and any associated piping, water tank panels are relics of the site's historic use that contribute to the special character of the building components and former HPS No.1 as a whole.

Policy 104

Intact features, fixtures and moveable heritage associated with the site's historic use as the former HPS No.1 should be retained and preserved.

Policy 105

Maintaining a minimum staff presence during opening hours should continue as well as the current security provided by the Novotel Rockford Hotel and security guards that are present around Darling Harbour. This is to ensure the protection of significant fabric and moveable objects from damage or destruction.

Guidelines

- The retention and conservation of intact features and fixtures should be considered as part of the design work for future adaptive reuse programs.
- Four loose cast iron panels on the roof, and perhaps more elsewhere on the site need to be placed where they will not be damaged long term.
- Accumulator weights on the site need to be cared for correctly.
- Moveable heritage fabric is to remain on site.
- Moveable heritage fabric is to be stored securely in a location that does not threaten damage to the fabric.
- Moveable heritage fabric is not to be altered or damaged.
- Moveable heritage may be used in Interpretation.
- Items of Moveable heritage fabric are to be documented and the records kept by the site owners in an accessible location, with a copy sent to the Heritage Branch.

7.18 Interpretation

Background

Interpretation of historic places can reveal long-term connections that underpin the cultural significance of a place. To "interpret" a historic place, in its geographic and physical setting, is to bring its history to life in order to increase the public's understanding, and, through this extended understanding, provide an enhanced perception of the significance of the place.

The former HPS No. 1 is a remarkable example of Victorian era industrial heritage, and is an

important element of the city's heritage that needs to be promoted, appreciated and understood.

Some of the value of the story behind the former HPS No. 1 has been concealed by later development or lost through demolished fabric. The building is a prime candidate for interpretation to fill in the missing gaps in the story so that the building can fully demonstrate its significance. The level of interpretation to date has not achieved this end.

Due to its history, significance and setting in Darling Harbour, the former HPS No.1 should be interpreted for promotional and educational purposes to the general public. An Interpretation Strategy should be prepared by a suitably qualified heritage/conservation architect.

The Interpretation Plan or Strategy should provide policies, strategies and detailed advice for the interpretation of the former HPS No. 1.

Policy 106

The heritage significance of the former HPS No.1 should be interpreted on site by appropriate and engaging methods such as text, drawings, photographs, models, videos, audio and interactive media.

Policy 107

An Interpretation Strategy should be prepared by a suitably qualified heritage/conservation architect for the former HPS No.1 and implemented as part of any new fit out works proposed for the building in the short term future.

Interpretation of the former HPS No.1 should focus on the main areas of significance as identified in this CMP, and the hydraulic system and surviving elements across Sydney.

Interpretation of the previous use of the building, its elements, and its impact on Darling Harbour and the city should be undertaken to enhance the visitor experience and appreciation of its heritage values.

Policy 108

The name of the former HPS No.1, regardless of its use, should retain the words 'Pump house' or 'Pumping Station' to reflect its former use as a Hydraulic Pumping Station.

Guidelines

- One of the primary components of the conservation management of the former HPS No.1 should be to make the values of its cultural significance physically, intellectually and/or emotively accessible to the public.
- The ongoing management of former HPS No.1 should include the development and implementation of an interpretation strategy, which reveals the cultural significance of the place.
- An Interpretation Strategy should identify key themes (reference should be made to Section 4.2 of this CMP), storylines and audiences, and provide recommendations about interpretation devices, including construction, use and maintenance (refer to sections 2, 3 and 4). It should include information about how best to implement the strategies identified in the Plan through integration into the existing site. It should be based on research and analysis within this CMP, and further research where required, with the main aim being to communicate the significance of the former HPS No. 1 to a variety of audiences through a

number of different methods.

- In making significance accessible, PMNSW should take into account the policies and guidelines contained within the ICOMOS International Cultural Tourism Charter.
- Reference should be made to *Heritage Interpretation Policy*[8] and *Interpreting Heritage Places and Items Guidelines*[9] endorsed by the Heritage Council of NSW, August 2005.
- The Interpretation Strategy should consider the following ideas and themes:
    - Interpret the original floor level of the original Engine House by marking it on the walls and introducing a different material or colour below the original floor level as a dado around the space. Provide plaques or other means to identify the dado as the original floor level. An installation could have a section of reconstructed floor at the original level.
    - The two accumulator tanks and associated timber beams should be retained, conserved and interpreted as part of any reuse of the building.
    - The large exposed series of riveted wrought iron girders to the ceiling of the original Engine House should be retained, conserved and interpreted as part of any reuse of the building.
    - The four cast iron panels lying on the roof of the original Engine House are of exceptional significance and should be either reinstated or used in interpretation. These could form the basis of an interpretation installation and demonstrate how the modular tank system was fitted together using moulded plastic pieces to fill in the missing edge and corner sections. They are very heavy (about 225kg each), but nonetheless are moveable heritage items and need to be placed where they will not be damaged long term (refer to Appendix G).
    - The accumulator weights that were removed as part of the works undertaken to the accumulators in 2014 are scattered around the original Engine House, these need to be cared for correctly and included in interpretation as moveable heritage items (refer to Appendix G).
    - The red colour mood lighting installed at the base of the accumulators is not the most appropriate for interpretation and should be changed.
    - Explore the option to incorporate a model of one of the three former steam engines that were located in the original Engine House. Using a proprietary model of a steam engine in an installation at ground level – in a perspex box – there is a kit for an Armstrong Horizontal Twin Cylinder Hydraulic Pumping Engine (1870) that is very similar to the ones used in the former HPS No. 1.
    - The idea of a model could be extended into a very informative and world class museum display that could demonstrate all three steam engines in the Engine House, all the pipework, the attached accumulators, the chimney and the boilers in a model of the buildings with the building enclosure as clear acrylic sheets to allow the assembly to be understood in its complete form. It might also demonstrate the end points of wool press,

[8] *www.environment.nsw.gov.au/resources/heritagebranch/heritage/interpretationpolicy.pdf*

[9] *http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/NSWHeritageOfficeGuidelinesinfointerpreting.pdf*

lift and hydraulic doors.

- The Interpretation could utilise the original plans and historic photos, historic drawings, newspaper articles, aerial photos displayed of the building to retell the story and function of the former HPS No. 1.
- The replica fiberglass panels to the roof on the western elevation of the building provide a physical interpretation insitu by completing the full extent of the water tank. When their materials fail it will be important to replace them with alternative materials that have external durability so that the interpretative value and detail is maintained.
- The volume, features and fabric of the original Accumulator Room is of exceptional significance and no new work is permitted unless it is to reconstruct or interpret a demolished original feature. It is possible to have a modern interpretation of the original maintenance platforms at their original levels that would also provide amenity for termite inspections and access for roof maintenance.

8.0 Implementing the Plan

This Conservation Management Plan has been prepared to provide guidelines for the conservation, reuse, interpretation and management of former HPS No.1 and to ensure that the heritage value of the place is maintained and enhanced.

This section sets out the implementation guidelines for the policies, including a list of management issues**.**

8.1 Minimum Standards of Maintenance and Repair

The Heritage Amendment Regulation 1999 introduced the *Minimum Standards of Maintenance and Repair* to the Heritage Act. Standards that need to be addressed to assure the compliance of former HPS No.1 with their provisions are those for Inspection, Essential Maintenance and Repair, Weather Protection, Fire Protection and Security.

It is considered that the current arrangements fully satisfy Standards for the HPS No.1 and that the Standards for Conservation Management Plans will be satisfied with the adoption of this CMP by the PMNSW. In the current situation, these are not of concern.

8.1.1 Compliance Works Required

Section 119 of the NSW *Heritage Act* 1977 requires that owners of State Heritage Register items ensure that minimum standards of maintenance and repair are adhered to in order to prevent damage to the item through neglect. In particular, the Heritage Division of the NSW Office of Environment and Heritage identifies the areas of weatherproofing, fire protection, security, and essential maintenance as areas for regular consideration.

On the basis of the site inspection conducted in the preparation of this report, it is considered that the current arrangements satisfy the minimum standards as set out in the table below.

Schedule for Minimum Standards of Maintenance and Repair	
Standard	*Comment*
Site Inspections	Regular inspections of all areas of the property (on annual basis at least) by a suitably qualified person must continue to take place in order to identify newly arising areas to be addressed. During these inspections, weatherproofing, fire protection, and security systems must be checked.
Drainage	All drainage systems (surface/sub-surface, roof drainage) must be cleaned annually.
Fire Protection	Smoke alarms must be tested annually.
Maintenance and repair	All fences, gates, doors, and windows must be maintained in a working, lockable condition.

To assure compliance with the Minimum Standards of Maintenance and Repair on the site of HPS

No.1 the following works need to be undertaken:

ALL AREAS GENERALLY- AT LEAST ONCE EVERY 12 MONTHS

Regularly inspect:

To check for the potential presence of vermin. The issues expected particularly include termites. Introduce external perimeter termite baiting as recommended in previous reports.

To monitor cracking, delamination and rising damp.

The building appears to have been treated for termite infestation however there is evidence of termite movement in the surrounding external trees. This gives rise to the likely threat of further termite attack on the building. This is a major threat to the timber guides of the accumulator, which are of exceptional significance.

There is some evidence of repointing required at the upper part of the east wall of the tower and at the base of the northern wall of the HPS. Repairs must use compatible mortar mixes.

ROOF, AWNING, GUTTERING AND DOWNPIPES

There is physical evidence of ponding to the box gutter of the Accumulator tower roof due to the construction of the roof frame. A liquid applied waterproof membrane has been used across the entire roof as a short-term measure to prevent any further water ingress, however this is likely to fail in the medium term and may cause damage to significant building fabric. As a matter of priority the roof should be rebuilt with a box gutter designed with sufficient falls, steps and drainage. There is enough documentary evidence that allows the sympathetic reconstruction of the original mansard roof, which would improve the aesthetic qualities of the place and restore some landmark qualities to the site. The detailed design of the roof is to be completed by a suitably qualified heritage/conservation architect.

Limited access to the tower roof presents as an ongoing issue as currently access requires scaffolding. This also gives rise to irregular roof inspections. Consideration should be given as a priority to providing an internal permanent access ladder to the tower roof to allow regular and safe inspections. The design of the ladder is to be completed by a suitably qualified heritage/conservation architect and should be constructed in conjunction with the roof reconstruction. The most suitable location is the SE corner of the accumulator room, with a mesh enclosed ladder with lock to gate.

The roof/water tank above the Engine House should be inspected to check the condition of the liquid applied membrane and effects machinery and other equipment may have on the roof.

WATER TANK PANELLING

The original cast iron panels and corners should be left with a patina of rust, which protects and does not damage cast iron. The paint will continue to peel and drop off, and this should be collected and disposed of. Eventually the panels will be unfinished and rusted. The runoff from the panels should be collected before it can spill onto other materials. The cast iron panels should never be painted again.

ACCUMULATOR TANKS AND ASSOCIATED TIMBERS

The two accumulator tanks and associated timbers should be conserved. It is understood that the rectification works carried out c2014 have addressed the subsidence of the floor under the accumulator tanks. While there is no expectation this issue will resurface, as a precautionary measure, monitoring any movement in the tanks is required. The accumulators are made from wrought iron, which also is protected by a patina of rust. The accumulator tanks should never be painted.

FLOOR

The current floor to the original Engine House is constructed of treated pine framing which is susceptible to termite attack and rotting. Previous reports on the building condition have noted damp conditions in the sub-floor area. Our inspection did not find this, but this may be episodic. Any upgrade or renovation works associated with the place should include a new floor with Cypress framing and hardwood floor boards that are resistant to termites and rot, such as recycled Turpentine or Tallowwood. Areas in the bar that are hosed down need to have a resilient finish such as vinyl sheet with detailed coving. Floor finishes should comply with the relevant slip ratings and water proofing requirements.

The subfloor currently has two access panels that provide limited access to the subfloor. If further access panels are necessary to provide better access for inspections then these will need to be installed so as to be a very neat fit with the existing flooring. The subfloor needs to have sufficient crawl space for a complete inspection of all areas of the sub-floor. If this cannot be achieved there are now termite companies that offer a remote controlled camera inspection that can access previously inaccessible spaces. It costs more as would be expected.

There is no obvious physical evidence of rising damp, however as a matter of precaution, damp should be monitored and form part of an ongoing management strategy. Hard-wired subfloor fans may need to be installed to prevent any long-term damage to the building fabric.

GROUND WATER

The ground level around the building has been raised significantly since the former HPS No. 1 was constructed. The basement level, now the subfloor, is well below the surrounding ground levels. The groundwater flows in the local context are outside the site boundaries, but these need to be actively shaped to flow away from the building. Should ground water be directed at the building, it may end up flowing into the subfloor and causing damage to the fabric. If this was detected, then a vertical water barrier with an agricultural line may be necessary to prevent water entry to the sub-floor area.

8.2 Schedule of Conservation Works

Fabric condition ratings in this report use the following table:

Condition Ratings	Description
Excellent	Building or fabric element has no defects. Condition and appearance are as new.
Good	Building or element exhibits superficial wear and tear, minor defects, minor signs of deterioration to surface finishes, but does not require major maintenance. No major defects exist.
Fair	Building or element is in average condition. Deteriorated surfaces require attention. Services are functional but require attention. Deferred maintenance work exists.
Poor	Building or element has deteriorated badly. Serious structural problems exist. General appearance is poor with eroded protective coatings. Elements are defective, services are frequently failing and a significant number of major defects exist.
Very poor	Building or element has failed. It is not operational and is unfit for occupancy or normal use.

These condition grades should inform future building condition reports and maintenance schedules. For significant elements in Very Poor condition, reconstruction may be the only available option. For elements assessed as being in Poor or Fair condition, various degrees of repair or maintenance may be required in the short term to prevent further deterioration and the subsequent loss of significance. Elements in Good condition may need some maintenance but the need for repair is not anticipated in the next two or three years, while elements in Excellent condition are likely to need only minor maintenance in the next five to ten years.

Timeframe for conservation works used in the following table:

Timeframe	Details
Urgent	Priority works to prevent immediate damage to fabric – to be completed within one year
Short Term	Priority works to remove risk to fabric – to be completed in a 2-5 year period
Medium Term	Works to remove detracting elements or improve the interpretation of the site – to be completed within 10 years
Long Term	Works that would improve the heritage value of the site but that have significant issues to overcome, or need to be associated with a major redevelopment – to be completed within 20 years

The following Schedule of Conservation Works describes work that should be implemented to preserve the significant fabric of former HPS No.1. The works should be undertaken within the next 1 to 5 years, i.e. all works need to be completed before 2022 to assure ongoing retention of the significant fabric. Work that is not needed within the next 5 years is noted as non-urgent.

Urgent areas to address include but are not limited to damp, termite issues, repointing of brickwork, electrical wiring, flooring to ground floor of original Engine House and the tower roof of original Accumulator Room.

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
EXTERIOR ELEMENTS			
NORTH ELEVATION of TOWER			
Overall height, scale and configuration	Exceptional	Good	
Original load bearing English bond brick walls	Exceptional	Good - Some minor repointing required – some evidence of moisture at lower level.	Repoint damaged mortar to brickwork using matching material – ***Short Term***
Original rendered details including quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Good – minor cracking and delamination in some sections – sign has minor damage	Provide matching material or epoxy mixed with render for crack repairs – ***Short Term***
Paint finish to rendered elements.	Moderate	Good	Option to remove paint and expose render to reduce maintenance – ***Short Term***
Original pattern of openings and associated rendered classical detailing.	Exceptional	Good	
16 pane double hung timber windows (8/8) to central arched openings	High	Good	Inspect condition – especially high level windows – repair as needed – ***Short Term***
Vent stack and downpipe – appears on early photos	High	Good	
NORTH ELEVATION of WEST ANNEX VERANDAH			
Steel framed Annex addition including steps	Moderate	Good	
NORTH ELEVATION of EAST ANNEX			
Overall height, scale and configuration	High	Good	
Rendered quoins, parapet and segmental arch (excluding paint finish)	High	Good	
Parapet extension and unfinished roof – may house air-conditioning ducts	Little	Good	Remove roof, parapet extension and duct (?) and make good original elements -– ***Medium Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
Timber framed window with three panels of fixed glazing, lower level face brick infill walls and rendered spandrel	Little	Good	Demolish window, pilasters, brick above sill, sill, brick below sill – protect original rendered work and wall – reconstruct opening and original windows to detail by heritage architect – ***Medium Term***
Glazed pool house wall (behind parapet extension hotel)	Little	Good	
Paint finish to rendered elements	Moderate	Good.	Option to remove paint and expose render to reduce maintenance – ***Short Term***
SOUTH ELEVATION of TOWER			
Original overall height, scale and configuration	Exceptional	Good	
Original load bearing English bond brick walls	Exceptional	Good. Some repointing required above DPC.	Repoint damaged mortar to brickwork using matching material – ***Short Term***
Missing cast iron panels forming north end of water tank	Little	Missing	Potential to interpret missing panels against wall – ***Medium Term***
Waterproof membrane to brick wall (two panels high)	High	Good	
Heavy grade lead sheeting DPC to third level of tank panels, and colour change in brickwork	High	Good	
Rendered details including pilasters, bracketed cornice, and balustrade (excluding paint finish)	Exceptional	Good	
Paint finish to rendered elements	Moderate	Good	Option to remove paint and expose render to reduce maintenance – ***Short Term***
Original door opening – threshold at top of second tier of panels	Exceptional	Good	
A/C duct into doorway opening	Little	The return air duct occupies the whole of the doorway - Good	Remove return air duct along with air-conditioning plant and make good roof water tank – ***Long Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
SOUTH ELEVATION – LITTLE PIER ST			
Original overall height, scale and configuration	Exceptional	Good	
Original load bearing English bond brick walls	Exceptional	Good – some repointing required	Repoint damaged mortar to brickwork using matching material – ***Short Term***
Modified corners to brick wall	High	Good	
Original rendered middle string course cornice (excluding paint finish)	Exceptional	Good – minor cracking and delamination in some sections	Provide matching material or epoxy mixed with render for crack repairs – ***Short Term***
Wrought iron former cathead beam projecting from the cornice of the building.	Exceptional	Good	Do not paint or try to rust proof or clean – wrought iron should be left to develop rust patina – ***Medium Term***
Original round arched openings with brick headers and rendered sills	Exceptional	Good	
Original segmental arched openings with brick headers and rendered sills	Exceptional	Good	
Reconstructed double hung timber windows to round arched windows	High	Good	Inspect condition – especially high level windows – repair as needed – ***Short Term***
Reconstructed security bars to lower openings	High	Good	
Central upper opening – wider with segmental brick arch head	High	Good	
Central upper opening – lower sill	High	Good	
Central upper opening – window joinery	Moderate	Good	Inspect condition – especially high level windows – repair as needed – ***Short Term***
Lower central bricked up opening	Moderate	Good	Can be reopened if needed – ***Long Term***
Downpipe	Moderate	Condition: Fair - some damage at low end and in need of protective guard.	Repair damaged base of downpipe – provide galvanized steel protection for bottom 1200mm – ***Short Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Cracked panel demonstrates demolition in 1979 – third thinner tier (evident only by damaged base of panels) – SW corner (8 panels) were restored to position c1988 – SE corner also appears restored – cast iron patina of rust will not further damage panel – Condition: Good	Do not sandblast, water blast, steel brush, paint or try to rust proof or clean – cast iron should be left to develop rust patina – collect runoff to avoid it staining brickwork and render – ***Medium Term***
Cast iron panel – paint finish	Moderate	Poor	Allow to drop off naturally – dispose of – ***Medium Term***
Pump House signage	Little	Good	
SOUTH ELEVATION of EAST ANNEX			
1st and 2nd floors	Moderate	Good	
3rd floor	Low	Good	
SOUTH ELEVATION of WEST ANNEX			
Steel framed Annex addition	Moderate	Good	
EAST ELEVATION – CONCEALED Former HPS No. 1			
Original face brick wall	Exceptional	Wall now concealed by hotel — new openings introduced c1999 – parts plastered, tiled, covered by partitions – damage due to connection of floors and pool unknown – Condition: Good (assumed)	Works to reveal original face of wall to be encouraged – original wall may be painted or set behind glass depending on use – ***Medium Term*** While this includes a kitchen area that is subject to the Food Standards Code, there are design solutions within this context that can expose a flush jointed masonry wall. The other sections are within the toilets and a storage area, and offer some public access to this wall.
Original rendered middle string course cornice (excluding paint finish)	High	Condition: Poor – appears to have been shaved flush when the hotel was built	If East Annex ever removed – reconstruct detail to match other faces – ***Long Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
Original arched window openings, main door entry opening and secondary openings in basement of brick wall	Exceptional	Up to 4 original round arched openings remain intact, one larger door, and smaller openings – brick header arches intact, but sills unlikely to have survived - Condition: Good (assumed)	If East Annex ever removed – reconstruct detail to match south face – ***Long Term***
Bricked up panels within original openings	High	Openings bricked up progressively through site history – dates unknown - Condition: Good (assumed)	If East Annex ever removed – window infill can be demolished and window joinery reconstructed. Original openings should be reopened using hand tools with great care not to damage original fabric. Sills are likely to need to be rebuilt and rendered to match – ***Long Term***
New openings in brick wall	Little	New openings have impacted historic openings and have penetrated the exceptional fabric of the wall	All connections to be through existing openings - If East Annex ever removed – new openings to be bricked up to match adjacent wall – ***Long Term***
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Third thinner tier (evident only by damaged base of panels) – east panels may have been restored – cast iron patina of rust will not further damage panel – Condition: Good	Retain and protect – ***Long Term***
Cast iron panel – paint finish	Little	Most likely a protective paint from 1983 conservation works – largely unnecessary on cast iron and if repainted requires more regular maintenance – Condition: Poor	Do not sandblast, water blast, steel brush, paint or try to rust proof or clean – cast iron should be left to develop rust patina – collect runoff to avoid it staining brickwork and render – ***Medium Term***
Two cast iron water tank panels missing for door opening	Little	Only access to water tank roof through this opening – does break down the significance as an enclosed water tank - Condition: Missing	Missing panel is only access to roof – retain – ***Long Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
Fibre cement partition enclosing cast iron water tank panels	Little	The partition prevents the cast iron panels from being seen from a public place - Condition: Good	Remove fibro partition that obscures panels – install glass screen to pool to reveal cast iron panels – ***Medium Term***
EAST ELEVATION of TOWER			
Original overall height, scale and configuration	Exceptional	Lower part obscured by hotel parapet addition - Condition: Good	
Load bearing English bond brick walls	Exceptional	Lower part obscured by hotel parapet addition - Condition: Good – small areas of repointing required – some moisture impact at low level	Remove parapet addition and duct that obscures wall – make good finishes and pointing – extend verandah – ***Medium Term***
Original pattern of openings and associated rendered classical detailing.	Exceptional	Good.	
Original rendered details including quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Condition: Good – minor cracking and delamination in some sections	Provide matching material or epoxy mixed with render for crack repairs – ***Short Term***
Paint finish to rendered elements	Moderate	Paint finish associated with maintenance of building. Condition: Good.	Option to remove paint and expose render to reduce maintenance – ***Short Term***
4 pane double hung timber windows (2/2) to central arched openings	High	Sashes replaced as conservation works in 1983 with high quality workmanship - Condition: Good	Inspect condition – especially high level windows – repair as needed – ***Short Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
WEST ELEVATION of ORIGINAL HPS WALL			
Original face brick wall external face	Exceptional	Majority of wall intact, some openings over time – originally a blank party wall to exterior – pockets for wrought iron box girders penetrate wall and can be seen externally – some evidence of original box gutter to neighbor (dem. 1962) - Condition: Good	Desirable for conservation purposes to see the patches in wall – if render removed compromise is to paint brickwork – ***Medium Term***
Sections of infill brickwork	High	Openings made and infilled numerous times through history – most significant opening infilled in 1983 conservation works	
Render to external face of original brick wall (not shown on diagram)	Little	Rendered numerous times, most recent likely to be 1983 conservation works – conceals patchwork of openings and bricking up – also conceals history and condition of wall – likely to be cement based render – Condition: Good	Attempt render removal in 500mm square test patch – if render can be prised off then removal is recommended and paint bricks. Hard cement renders will often not bond well to soft bricks and be able to be prised off in sheets by levering them off. Use hand tools and take care not to damage brickwork face. If the render will not come off easily and the face of the bricks is being damaged then leave the render intact – ***Medium Term***
Brick pattern wallpaper - external	Little	Associated with 1988 hotel redevelopment	Paint over with more appropriate colour – ***Short Term***
Original rendered string course cornice (excluding paint finish)	Exceptional	Condition: Good – remains intact and in view	
Paint finish to rendered elements	Moderate	Paint finish for maintenance of building. Condition: Good.	Option to remove paint and expose render to reduce maintenance – ***Short Term***
NW corner vertical render	Exceptional	Quoining could not return as building was originally attached to side – demonstrates original condition	

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
Restored cast iron panels – SW corner	Exceptional	Condition: Good	Do not sandblast, water blast, steel brush, paint or try to rust proof or clean – cast iron should be left to develop rust patina – collect runoff to avoid it staining brickwork and render – ***Medium Term***
Reconstructed fibreglass water tank panel interpretation	High	Fibreglass reconstructed panels c1988 – contribute to understanding of water tank – modern interpretation in new material. Approximately thirty years old. Appear a little wooly on the internal face but may have a few more decades of life left. Their galvanised steel supports and ferrous bolts are showing points of spot rust.	Provide rust proofing to fixings and steel bracing – protect panels from weathering – ***Short Term*** – replace when failed with new interpretation panels – ***Medium Term***
Arched openings to upper level and square openings to lower level	Moderate	Openings created c1988 for use as a brewery – wall originally had no openings	All connections through existing openings – ***Short Term***
WEST ELEVATION of TOWER			
Original overall height, scale and configuration	Exceptional	Condition: Good	
Load bearing English bond brick walls	Exceptional	Condition: Good – small areas of repointing required	Repoint damaged mortar to brickwork using matching material – ***Short Term***
Original pattern of openings and associated rendered classical detailing.	Exceptional	Condition: Good.	
Original rendered details:quoins, pilasters, middle string course, bracketed cornice, window surrounds, sills, pediment and balustrade (excluding paint finish)	Exceptional	Condition: Good – minor cracking and delamination in some sections	Provide matching material or epoxy mixed with render for crack repairs – ***Short Term***
Paint finish to rendered elements	Moderate	Paint finish associated with maintenance of building. Condition:	Option to remove paint and expose render to reduce maintenance – ***Short Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
		Good.	
4 pane double hung timber windows (2/2) to central arched openings	High	Sashes replaced as conservation works in 1983- high quality workmanship Condition: Good	Inspect condition – especially high level windows – repair as needed – ***Short Term***
WEST ELEVATION of WEST ANNEX			
Steel framed Annex addition	Moderate	Good	
INTERIORS			
INTERIOR - Original Engine House			
Overall volume of space, height, scale and configuration	Exceptional	Original. Mezzanine intrudes into space but permits a sense of the full volume – kitchen intrudes into space and prevents sense of full volume - Condition: Good	The mezzanine floor can be replaced, subject to approval. This is made up of timber framing in a structural steel frame – ***Long Term***
Original ground surface to sub-floor area	Exceptional	Good	Where a crawl space is below minimum, hand tool excavate to minimum sizes – excavation permit required – ***Short Term***
Current timber floor - constructed of plywood supported on softwood joists and bearers on brick piers with ant caps	Intrusive	Constructed c1989. Appears in good condition – previous documents note high risk factors of damp, rot and termites. Floor is not made from resistant timbers.	Demolish timber floors and framing – use existing piers – provide Cypress floor framing – provide approved flooring and finishes that can survive in damp environments; examples would include recycled Tallowwood and Turpentine – ***Short Term*** The areas of flooring requiring hosing down should have a resilient finish such as vinyl with coved skirtings and a drainage point. Wet slip resistance ratings need to be complied with – ***Short Term***
Note: If natural timber floorboards are used they can be finished with a tung oil & sealer or a polyurethane finish. Tung oils will soak into the timber and provide a more natural finish, and do not require sanding before recoating, but will require an onsite wet pendulum test for slip ratings. Polyurethane coatings are a plastic film that sits on top of the boards, require sanding to remove them to recoat, but do come with a slip rating. Sanding of the boards prevents the patina of age building up, but is less critical in new work. Other stains can be used in combination with these clear finishes. Liming of flooring would not be appropriate for the heritage setting. Black Japan was in use in the 19th Century, but is more associated with the 1900s Arts and Crafts rather than the 1880s Italianate period.			

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
Arched recesses and simple pilasters on all internal faces	Exceptional	Good	
Five riveted box section (twin web) wrought iron plate girders supported on the massive brick east and west walls and iron ceiling girders	Exceptional	Good	Protect – ***Long Term***
Corrugated Colorbond ceiling between girders	Moderate	Good	If no insulation in ceiling – remove ceiling lining and insulate secondary beams zone – reinstall ceiling – ***Medium Term***
Opening to northern (internal) wall	Exceptional	Good	
Cement rendered/plaster walls	High	Original photos show face brick walls internally – 1979 photo shows internal plaster (very damaged) – original drawings show plaster very similar to current – original plaster likely an early feature that needed to be reconstructed in 1983 conservation works	
Original window openings and sashes – south	High	See notes on external features – Condition: Good	
Non-original window openings – west	Moderate	See notes on external features – Condition: Good	
Bricked up openings - east	Exceptional	See notes on external features – Condition: Good	
Mezzanine floor, balustrade and associated furniture	Moderate	1988 – modified 1999. Extent of mezzanine allows volume of space to be interpreted	Do not enclose or extend footprint – ***Long Term***
Pizza kitchen area including walls, floor and fitout	Little	1999 - Unsympathetic to overall space, height and configuration of space – prevents extents of original Engine House being appreciated	Remove kitchen extension and make good finishes – ***Medium Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
Bar area to south	Moderate	Late 20th century. Sympathetic to overall space, height and configuration of space – permits volume to be appreciated, does not block important elements	Waterproof flooring with correct slip rating as it is an area that is hosed down and has a high potential for spill – prevent water spilling onto main floor – ***Short Term***
Paint finish (antique wash)	Little	Late 20th century. Good condition, however unsympathetic to industrial character of building	Interpret original floor level with a dado line – darker full gloss acrylic below – lighter semi-gloss acrylic above – to approved colours – ***Short Term*** Colour schemes are subject to approval. Given the history of the wall, paint scrapes are unlikely to be productive. Original National Trust photos in colour (if they exist), or potentially Lend Lease archives may be of assistance for original colour schemes – ***Short Term***
Lighting,	Moderate	Late 20th century additions – could be considered too delicate for industrial character of space, and not having the right focus for feature lighting	Suggest more lighting focusing on the sides of ceiling beams – ***Medium Term***
AV equipment, A/C vents	Moderate	Late 20th Century additions – generally low impact - Condition: Good	
INTERIOR – Original Accumulator Room			
Overall space, height, scale and configuration	Exceptional	Original stairs and platform lost, but main features are the intact accumulators - Condition: Good	
Concrete slab and tiles	Moderate	Good	
Evidence of former joists being let into the walls, indicating former floors at various levels in the accumulator room	Exceptional	Original showing evidence of former floor levels. Date removed – post 1979	Interpret lost maintenance platform with mesh and steel platform at same level – access stair in mesh enclosure to SE corner of Accumulator room – key access – to detail by heritage architect – ***Short Term***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
Load bearing English bond face brick walls	Exceptional	Good	Repoint damaged mortar to brickwork using matching material – monitor vertical crack between windows for movement – ***Short Term***
Opening to southern (internal) wall	Exceptional	Good	
Window openings and sashes – refer to external elevations for commentary	High	-	
Four large vertical timber posts (former guide rails) on the north and south walls each side of the accumulator tanks with head rails below ceiling level	Exceptional	Original and in fair condition. Treated for termites c2014. Bottom half of guide rails removed	Recommend a mesh enclosed ladder in the SE corner of the accumulator room, with a locked gate to prevent public access, to access a galvanised weld mesh platform/gangway with open galvanised handrails at the level of the original – ***Short Term*** Use new platform to better monitor termite activity – regular 6 monthly inspections to protect significance – ***Short Term***
Stair accessing mezzanine floor	Moderate	Good	
Accumulator tanks	Exceptional	Fair to Good condition due to stabilization works (including removal of ballast) c2014	Prepare and paint – ***Medium Term***
Lighting	Moderate	Late 20th century – the red colouring could be improved	Lighting designer to provide suitable atmosphere while respecting industrial aesthetic and significance of accumulators – ***Medium Term***
Plasterboard ceiling	Moderate	Late 20th century. Good condition, however obscures the interpretation of the original ceiling structure	Replace with plasterboard for low pitched roof works – change to raked beaded board ceiling for mansard roof – provide R3.5 insulation – ***Short Term***
INTERIOR - East Annex			
Annex addition	Moderate	Good	Floors can be changed, subject to approval. These have modern panel flooring –

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
			Medium Term
INTERIOR - West Annex			
Annex addition	Moderate	Good	Floors can be changed, subject to approval. These have modern panel flooring – ***Medium Term***
ROOF ELEMENTS			
ROOF – Original Water Tank			
Original water tank - space, size and volume	Exceptional	Original and in good condition. Third tier of water tank paneling constructed before 1932 removed in 1979 – third tier was constructed in a different material	
Original two tiers of cast iron water tank panels (excluding paint finish)	Exceptional	Cracked panel demonstrates demolition in 1979 – third thinner tier (evident only by damaged base of panels) – W side mainly missing – SW corner (8 panels) were restored to position c1988 – SE corner also appears restored – cast iron patina of rust will not further damage panel – Condition: Good	Do not sandblast, water blast, steel brush, paint or try to rust proof or clean – cast iron should be left to develop rust patina – collect runoff to avoid it staining brickwork and render – ***Medium Term***
Cast iron panel – paint finish	Little	Most likely a protective paint from 1983 conservation works – largely unnecessary on cast iron and if repainted requires more regular maintenance – Condition: Poor	Allow to drop off – dispose of – ***Medium Term***
Reconstructed fibreglass water tank panel interpretation	High	Fibreglass reconstructed panels c1988 – modern interpretation in new material	Provide rust proofing to fixings and steel bracing – protect panels from weathering – ***Short Term*** – replace when failed with new interpretation panels – ***Medium Term***
Original tank panel wrought iron strap bracing	Exceptional	Original and in good condition.	Protect – do not sandblast, waterblast, clean or paint – allow rust patina – ***Long Term***
Replica tank panel steel	High	Good	Provide rust proofing – ***Short***

8.2.1 Schedule of Conservation Works
Former HPS No. 1

Element	Significance	Condition	Works
angle bracing			***Term***
Salvaged cast iron panels (x4) (Moveable Heritage) **Refer to Appendix G Inventory of Moveable Heritage Items-table is to be completed by owners.**	Exceptional	Original cast iron panels from tank salvaged and stacked at the north west corner of the tank	Store on roof until approval to form part of interpretation – ***Short Term*** – display – carefully lift (225kg each) due to brittleness – do not permit cracking – ***Medium Term***
Concrete topping slab and liquid applied membrane to tank floor	Little	Date of construction unknown. Fair condition	Check for cracking and repair as needed – ***Short Term***
Plant and equipment	Little	Associated with the operations of the hotel. Unsympathetic fabric that obscures the size and volume of space	Remove plant from roof and restore water tank to its original volume – ***Long Term***
ROOF - Tower			
Rendered parapet rail and pediment	Exceptional	Original and in fair to good condition. Some evidence of delamination	
Hipped roof including perimeter box gutter with paint applied membrane	Intrusive	Constructed 1983 in place of original mansard roof. Poor condition resulting in ponding and water penetration. Use of mismatched galvanic metals resulting in failure of materials. .	***Option A.*** Replace roof framing with similar pitch raised 100mm to provide step and adequate falls to gutter – provide larger sump and Ø150mm downpipe – ***Short Term*** ***Option B.*** Replace roof framing with Mansard roof to detail by heritage architect – provide larger sump and Ø150mm downpipe – ***Short Term***
Long life materials as noted in CMP The roof needs to be replaced with suitable heritage materials. Box gutters in particular need to be absolutely failsafe to protect the heritage asset. Waterproofing membranes have too short a lifespan for a box gutter above exceptional heritage fabric, and the gutter linings and apron flashings must be replaced with a longer lasting option of stainless steel or copper sheet – provide failsafe overflows and adequate downpipes			

8.2.2 Detailed Requirements for Conservation Works

Window Joinery

- The existing windows on the former HPS No. 1 building appear to all have been reconstructed in the 1983 conservation works. They were damaged openings in 1979 photos, and the workmanship is very high and attention to detail is very good. Maintaining these windows will require regular maintenance including cleaning every year, and repainting every 7-10 years. These windows are now 34 years old and if they have had no maintenance in that time, they

may be in great need of repair. This may be especially true of the high level windows that require special access for maintenance. The maintenance plan should schedule a cherry picker to address these windows at the frequency noted – ***Short Term***

- Any reconstructed window joinery should be constructed in durability class 2 timbers of moderate hardness in order to achieve the fine detail required for Victorian details. Suitable timbers would include PNG Rosewood, Jarrah, and Blackbutt. Original profiles and traditional mortise and tenon techniques should be used. Modern workmanship, laminated float glass and modern fixings are sufficient to identify reconstructed windows without the use of simplified details. The joinery is the language of the building and incorrect details confuse the story of the building. Windows can be stamped with the date in an inconspicuous place – ***Short Term***
- There is some possibility, although unlikely, that a poor timber choice was made in 1983 and the windows have significant damage that cannot be repaired. In this case the windows should be reconstructed using the Victorian details in a more appropriate Durability Class 1-2 timber that has the hardness to hold the fine detail and the workability to make fine joinery details. An excellent candidate is PNG Rosewood, which is DC1 and a superb joinery timber. The current market status and origins of Australian Red Cedar and its substitutes Calantas and Surian can also be explored. Western Red Cedar is too soft to hold Victorian details. Australian Jarrah also has the workability and hardness – ***Short Term***
- In all cases the original glass should be retained unless it is broken or significantly cracked. Loose putty and the like should be replaced to existing glass with a linseed oil based putty – ***Short Term***
- Where replacing a single pane or relatively small proportions of glass adjacent to existing 3-4mm glass, use 4.38mm laminated glass to maintain the correct weights – ***Short Term***
- Where replacing a whole element of glass use 6.38mm laminated glass and balance the weight where required – ***Short Term***
- The fine details of the window joinery needs to be retained for the significance of the building, so stripping of joinery paintwork should not be attempted. Paint removal of failed layers to achieve a stable base for repainting is exempt from approval but intervention should be minimised to avoid the loss of the significant historical record – ***Short Term***

Doors

- Where original doors have been removed or bricked up, reconstruction may be an option. This would refer to bricked up doors on the east wall of the Engine House. These must be durability class 2 hardwoods externally. Original matching profiles and traditional mortise and tenon techniques should be used. Given the industrial nature of the building, this access door would most likely have been a ledged and framed double door. Period door hardware is desirable, but not required – ***Long Term***

Brickwork and Render

- Repairs or reconstruction of brickwork should be carried out by a bricklayer experienced in heritage restoration with the skill to match existing workmanship. Salvaged bricks from the site and corresponding period are preferred to a matching dry pressed brick. Do not use extruded bricks. Any new arch bar lintels should be in stainless steel. Mortar should be lime rich mortar matched to the porosity of the existing work. Decorative courses, sills and arches should be matched to existing – ***Short Term***

- The renderwork on the former HPS No. 1 is generally in good condition, but has some cracking and is in need of inspection and repair to ensure the cracks do not introduce greater damage. It is possible that the crack in the bracketed cornice on the east face of the tower has contributed to the high level mortar loss on the wall below. The render dates from 1891. Early cement products were being explored at this time, and various pozzolans were added to lime to make harder renders. The exact composition of the render at the former HPS No. 1 would need to be investigated. When fully cured, lime render can be very hard and resilient. Repairs should not be made with modern cement products, which exacerbate cracks due to their brittleness. Repairs should aim to match the composition of the render and may need traditional curing times. Alternatives may include St Astier's lime with a natural pozzolan. The bracketed cornice may need to be shielded from the elements with a lead capping – ***Short Term***
- The small areas of damp damage through loss of mortar need to be repointed in lime mortar that matches the existing porosity. Do not use cement unless there is evidence the original mortar had cement content. A lime with pozzolanic additives/content should be used to speed curing. Ensure that the material selected has test results showing that the mortar will remain porous when cured – ***Short Term***
- Investigate original composition of render and match the porosity for all repairs. This may require a lime render with pozzolan additives and no cement. Seal cracks in projecting corbels with compatible materials that match the original render. Protect projecting corbelling with lead coverings flashed into the wall with lead wedges and lime mortar. Do not use cement based coatings unless evidence shows that the original has cement content. Repair damaged areas of rooftop balustrade in compatible materials. Epoxy repairs mixed with render from the site are suitable for small patches – ***Short Term***
- The paintwork on the render of the former HPS No. 1 needs to be repainted every 7-10 years, and this will involve high level access points needing scaffold or cherry pickers. High level acces is a deterrent and these areas may need greater preparation and repair before repainting. It may prove a better option to remove the paint, make the repairs to the render and leave the render unfinished – ***Short Term***

Cast Iron Water Tank Panels

- There is an opportunity to reconstruct the cast iron water tank panels to complete the enclosure where the panels are missing and have been interpreted using fibreglass panels. This CMP recommends AGAINST this work, as the missing panels are evidence of the near demolition of the building and there would be a loss of significance if they were reconstructed. The fibreglass panels do the job of interpreting the tank in its complete form, but do so in a way that demonstrates the missing panels from the inside of the tank.
- Over time the fibreglass will break down more quickly than the cast iron panels. At that point a replacement material for the interpretation will be needed. A suitably robust material that has durability externally and can be formed to match the detail of the cast iron panels should be selected – ***Medium Term***

- There is also an opportunity to reconstruct the third tier of panels for the water tank to recreate the tank as it was between c1930-1979. This CMP recommends AGAINST this work as this would have impacts on the historical significance of the building by removing the evidence of the tank's partial demolition, and would have significant impacts on the fabric as the surviving base of the third tier would need to be removed in order to install the new panels. The bolts have seized up and this would require cutting with oxy torches, damaging the fabric and changing the composition of the cast iron at the joint. This work would be very intrusive.
- The paint finish to the cast iron panels appears to be some form of steel protection paint, most likely applied in 1983. Underneath this paint the cast iron has a patina of rust, and wherever the panels have impact damage they have a localised deeper section of rust. Cast iron does not deteriorate more quickly when rusted, instead the patina protects the underlying material from further corrosion. The protective paint on the other hand has a limited life and it appears to be failing. Cleaning it through sand blasting, water blasting or steel brushing would further damage the surface of the cast iron.
- This CMP recommends AGAINST sand blasting the cast iron panels to remove the flaking paint and the rust, as cast iron is a very resilient material that will survive hundreds of years with a fine patina of rust on its surface. It is not like steel, which deteriorates more quickly when rust forms, it is like almost every other metal that is protected from further damage by the surface reaction with the air. Sandblasting the panels will only remove another layer of detail, which has heritage impact. This means that the panels should be left in their present condition, and that the protective paint applied most likely in 1983 will slowly fail and drop off. The final condition will be a row of rusty panels.

Accumulator Tower Roof

- The tower roof has been identified in this CMP as needing to be rebuilt to address the material failure and to provide a fail-proof roof to protect the heritage fabric below. This could be a replacement of the existing roof in the same form, with the drainage and material problems addressed. However, there is also the opportunity to reconstruct the original Mansard roof that the building featured 1891-1980. In this case the available photos should be used to determine the details of the roof, and the design will need to be modified to provide for wider parapet gutters. Materials should match the original as far as they can be determined. If they cannot be determined, then a long lasting material such as Welsh slates, or zinc or copper sheet should be used. The design must not introduce further galvanic series conflicts of metals – ***Short Term***

Matters identified in s6.2

- A comprehensive condition report of the former HPS No. 1 is required to inform and quantify repair work and a maintenance program to halt any potential damage to significant fabric. The report must address the potential removal of the existing late 20th century floor structure to the former Engine House
- Urgent repairs to address include but are not limited to damp, termite issues, repointing of brickwork, improvements to electrical wiring, new flooring to ground floor of former Engine House and the reinstatement of the roof of former Accumulator Room to halt any potential damage to significant fabric

- The ground level around the building has been raised significantly since the former HPS No. 1 was constructed. The basement level, now the subfloor, is well below the surrounding ground levels. The groundwater flows in the local context are outside the site boundaries, but these need to be actively shaped to flow away from the building. Should ground water be directed at the building, it may end up flowing into the subfloor and causing damage to the fabric. If this was detected, then a vertical water barrier with an ag line may be necessary to prevent water entry to the sub-floor area.

8.3 On-going Maintenance

The on-going maintenance schedule refers to cyclical maintenance works to fabric that should be implemented by the lessee as part of the process of on-going management of HPS No.1. Performed work and any faults discovered or repairs made should be recorded and kept separately alongside a copy of this maintenance schedule.

The schedule of works below assumes the Conservation Works (Section 8.2) have been undertaken and completed.

8.3.1 Exterior Maintenance

Element	Maintenance	Frequency
Surrounds:	Ensure water runoff is not directed to building	After rain
Original face brick walls:	Check for pointing failure, areas of damp, moss and lichen, brickwork failure and schedule repairs	Yearly
Original decorative render (painted):	Prepare and paint with durable exterior semi-gloss acrylic	10 years
Original decorative render (not painted):	Check for damage to render and patch as needed	2 Years
Timber window joinery:	Wash down windows exterior – check for damage	6 months
	Prepare and paint window joinery	10 years
Exposed timber elements:	Prepare and paint	10 years
Exposed steel sheet (prefinished):	Clean down, check for corrosion damage	Yearly
Exposed steel elements (galvanized unpainted):	Check for damage or corrosion, inspect coatings are intact – note: cast iron rust will deteriorate steel so keep it isolated	Yearly
Exposed steel elements (painted):	Clean and inspect finishes - check for damage or corrosion	Yearly
Archbar lintels:	Check for damage, corrosion or swelling	Yearly
Exposed cast/wrought iron elements (painted/unpainted):	Check loadings on panels – ensure impacts are prevented – ensure rusty water runoff is collected and drained – check any localized damage – remove failed paint without damaging iron patina surface	2 years

Exposed fibreglass panels:	Inspect condition – prepare and paint rear face with waterproofing – rustproof steel elements – assess if panels need replacement	5 years
Exposed aluminium elements:	Clean down, check for damage	Monthly
External glazing – commercial	Clean	Daily/Weekly
Perimeter termite baits	Check regularly – Inspections	6 months
Roof eaves gutters:	Inspect and clean gutters – test for cracks or leaks – check connection to downpipes	6 months
Downpipes:	Check for damage, cracks or leaks – ensure sealed to storm water system – check if blocked	6 months
Roof box gutters:	Regular inspections for cleaning out, blockages, fractures and other damage	3 months
Tower roof:	Inspect roof cladding, cappings and fixings	2 years
External timber decks:	Regular cleaning – refinish clear finishes	2 years
Mechanical systems:	Clean and check for contaminants	To manufacturer
Mechanical systems:	Check energy efficiency	5 years

8.3.2 Interior Maintenance

Element	Maintenance	Frequency
Subfloor / floor framing:	Termite inspections, check floor structure, test damp, maintain fans	6 months
New floors:	Clean regularly – refinish	Manufacturer
Face brick walls	Clean and check for mortar loss – schedule repairs as needed	5 years
Plastered walls / recesses	Clean regularly - Prepare and paint	10 years
Wrought iron (special paint)	Check finishes – patch with matching as needed – keep sealed – do not allow paint to fail internally	5 years
Timber windows	Clean regularly - Prepare and paint window joinery	10 years
	Check for termite damage	6 months
Exposed timber elements (unpainted):	Check for termite damage	6 months
Stainless steel:	Clean down, check for damage	Yearly
Electrical:	Check equipment, points and wiring for failure	Yearly
Fire systems:	Check as required by regulations	Regulations

9.0 Bibliography

Anon. *Sydney and Suburban Hydraulic Power Company: The Official Opening*, Australasian Building and Contractors News, September 5, 1891

Anon. *Sydney and Suburban Hydraulic Power Company's Works*, Australasian Building and Contractors News, September 26, 1891

Australia ICOMOS Inc*. The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance,* Australia ICOMOS Inc. 1999,

Barker, Ray M. *Vertical Transport in Sydney*, University of Sydney M.A Thesis, 1990

Brassil, A E and Sheedy, D. *National Trust Listing Proposal for Hydraulic Power Station at 19, Pier Street*, July 1979

Coates, CW, *Coates, the first one hundred years*, Sydney, 1985

Dickinson, T. *Hydraulic Power Supply in Sydney*, Proceedings of the Engineering Association of NSW, v.1X, 1894

Fitzgerald, S and Golder,H. *Pyrmont and Ultimo under Siege*, Hale and Iremonger Pty Ltd, 1994.

Freeland, M. *Architecture in Australia*, Penguin, 1966

Godden, D and Associates, *Heritage Significance of the Sydney and Suburban Hydraulic Power Company Building*, Pier Street, Sydney, Unpublished Report, 1982 (Held by SHFA archives)

Johnson, A and Parris, R. *A history of Sydney's Darling Harbour*, Sydney Harbour Foreshores Authority, Sydney, 2008

Kennedy, B and B. Subterranean Sydney, Reed, Sydney, 1982

Kerr, JS. *The Conservation Plan* (sixth edition) 2004.

NSW Heritage Office, Conservation Management Documents, revised edition, 2002

NSW Heritage Office, Heritage Information Series, Historical Research for Heritage, 2000

Sydney and Suburban Hydraulic Power Company. *Hydraulic power supplied to the public from street mains at 700lbs pressure per square inch, in the city of Sydney, by the Sydney and Suburban Hydraulic Power Company Limited,* Pamphlet published by Batson and Co, Sydney, c.1891.

The Melbourne Hydraulic Power Company and Public Hydraulic Power Systems in Australia Author: Pierce, Miles Source: Australian Journal of Mechanical Engineering, Vol. 7, No. 2, 2009: 173-187

9.1.1 Web Based Articles

Hydraulic Power article from Wikipedia, https://en.wikipedia.org/wiki/Hydraulic_power_network

https://www.revolvy.com/main/index.php?s=Hydraulic%20power%20network&item_type=topic

3rd Australasian Engineering Heritage Conference 2009 Remnants of Early Hydraulic Power Systems J W Gibson MA (Syd), MIE Aust. & M C Pierce BE (Elec), FIE Aust

https://www.ipenz.org.nz/heritage/conference/papers/Gibson_J.pdf

Overhead Water Tank (Power Station)

Spencer Street, MELBOURNE, MELBOURNE CITY, National Trust

http://vhd.heritagecouncil.vic.gov.au/places/65594

Hydraulic Power Sydney Architecture

http://www.sydneyarchitecture.com/SUB/SUB-04.htm

Dickinson, Tom, Notes on hydraulic power supply in Sydney, , Minutes of proceedings of the Engineering Association of New South Wales, 2000-10-10; Vol ix, 1893/94

http://openjournals.library.usyd.edu.au/index.php/EANSW/article/view/3144/3688

9.1.2 Web Based Policy Documents

Darling Harbour Commercial Outdoor Seating Policy 2013

Darling Harbour Commercial Outdoor Seating Technical Manual 2013

Darling Harbour Signage Policy 2013

Darling Harbour Signage Technical Manual 2013

Foreshore Authority Public Art Policy 2010

Sustainability Policy (Draft) 2012

http://www.shfa.nsw.gov.au/content/library/documents/E4915136-CCFE-EACB-C1954BE2C96873EF.pdf

Sustainability 2020 Strategy

http://www.shfa.nsw.gov.au/content/library/documents/E480D450-A94D-A3A2-AD27B3BAE9BFA9C0.pdf

Additional policy documents and technical manual can be accessed at

http://www.shfa.nsw.gov.au/sydney-Resource_centre-Policies_manuals_and_guides.htm

9.1.3 PMNSW Files

- File 02/01694, Place Management, Darling Harbour, Pumphouse, Tank Stream (Darling Harbour) Pty –General
- File 03/00714, Place Management, Darling Harbour Operations, All Seasons/Pumphouse Hotel, Energy Australia Substation
- File 03/01446, Place Management, DA 410-08-03 Internal Alterations and Refurbishment, Pumphouse Restaurant, 13 Little Pier Street
- File 03/01447, Place Management-S60-03-043, Internal Alterations & Refurbishment, Pumphouse Restaurant, 13 Little Pier Street
- File 04/00479, Place Management-DA 90-03-04, Erection Workers memorial Sculpture, Forecourt, Little Pier Street, Darling Harbour

- File 04/01285, Place Management, DA 206-06-04, Signage for Bar/Restaurant, Pumphouse, 17 Little Pier Street Darling Harbour
- File 05/00661, Corporate Services, P.AT-DA 92-04-05, Erection of “Reflection Park sign, Public Domain, Little Pier Street Darling Harbour
- File 06/01013, Corporate Services, PAT-DA 098-06-06, Additions and Alterations to existing hotel, Novotel Rockford, 17 Little Pier Street, Darling Harbour.
- File G.084/001, All Seasons/Pumphouse Hotel-Energy Australia substation No.3897
- File G.084/002, All Seasons/Pumphouse Hotel-Asset Management
- File G.105/093, Pumphouse/All Seasons Hotel, Asset Management
- File M.330/612, Little Pier Stret Urban Design
- File P.070/002, Development Sites, Little Pier Street
- File P082/017, Expression of Interest Pumphouse
- File P.165/060, Property Acquisition & Negotiation, 17 Pier Street, Pumphouse Restaurant
- File P.225/021, Masterplan, Little Pier Street Intergration works
- File P.325/001, Pumphouse Tavern Brewery
- File P.330/001, Little Pier Street Development, Design Proposal
- File P.410/001, Darling Harbour Authority, Pumphouse Hotel, Permit Application
- File P.014/002, DHA Pumphouse Hotel, Lease

10.0 Appendices

10.1 Appendix A

10.1.1 Jackson Teece Chesterman Willis & Partners Plans for The Pumphouse Brewery prepared for Centrepac Limited, 1987

- Elevations and Sections
- Roof Plan
- Site Set out and Boundaries Plan
- Sections
- Top of Tanks Plan
- Ground Floor Plan
- First Floor Plan

10.2 Appendix B

10.2.1 Trevor Hayter and Esther Hayter Plans for the Pumphouse Brewery and Tavern for Centrepac Limited, 1988

- Ground Floor and First Floor Plans
- Section and Elevation
- Floor Plans
- South Elevation and Section 1

10.3 Appendix C

10.3.1 Barrelle Partners Architects Plans for Pumphouse Tavern, 1991

- Proposed New Gates to Pumphouse Tavern
- Proposed Floor Infill to Pumphouse Tavern

10.4 Appendix D

10.4.1 Barrelle Partners Architects Plans for Redevelopment of Pumphouse Hotel for Mulpha Australia Limited, 1998/1999

- Ground Floor Plan
- Mezzanine Floor Plan
- Level 1 plan
- South Elevation
- Pumphouse Verandah plans and Elevations
- North Elevation

10.5 Appendix E

10.5.1 Dreamtime Australia Design Internal Alterations and refurbishment Pumphouse Restaurant, 2003

- Elevation North External
- Section Internal North Elevation
- Floor Plans
- Section Internal South Elevation
- Section Internal Western Elevation
- East Elevation Internal

10.6 Appendix F

10.6.1 Original Plans of the Former Hydraulic Pumping Station No. 1, State Archives & Records

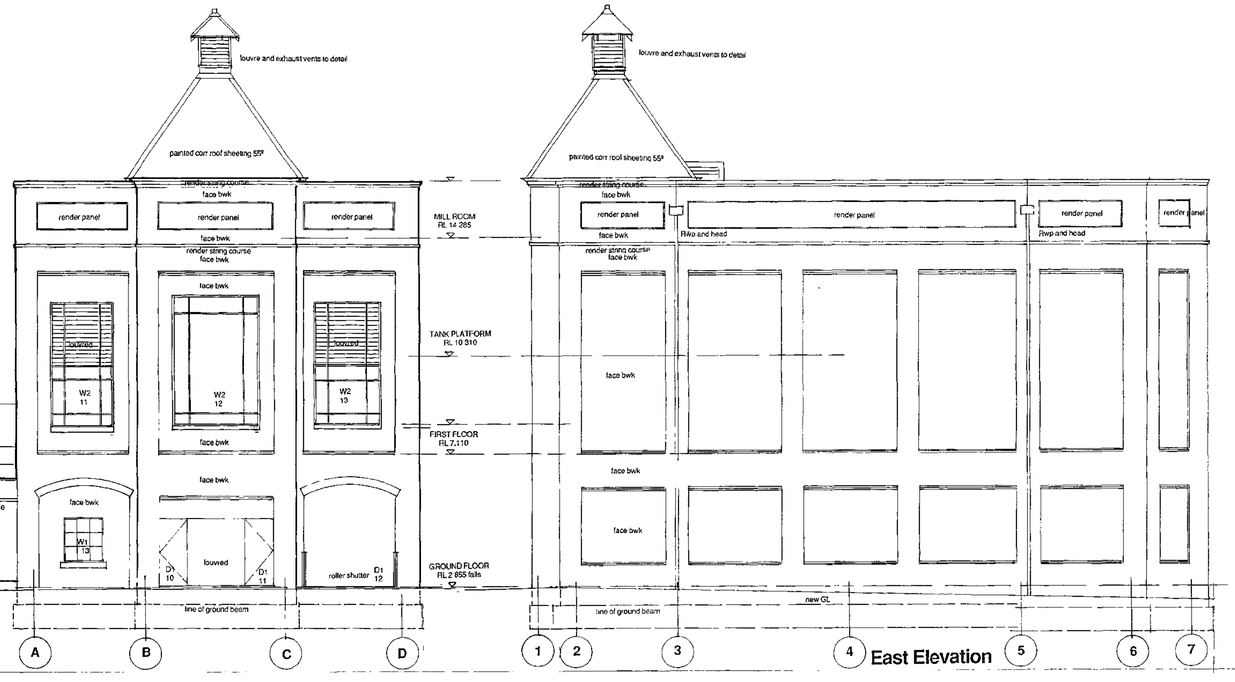
- Ground Floor Plan
- SR Plan 2938, NRS 5171
- SR Plan 2939, NRS 5171
- SR Plan 2940, NRS 5171
- Section through Engine Room
- X2820 Pt1 Hydraulic Pump Station
- X2820 Pt2 Hydraulic Pump Station

10.7 Appendix G

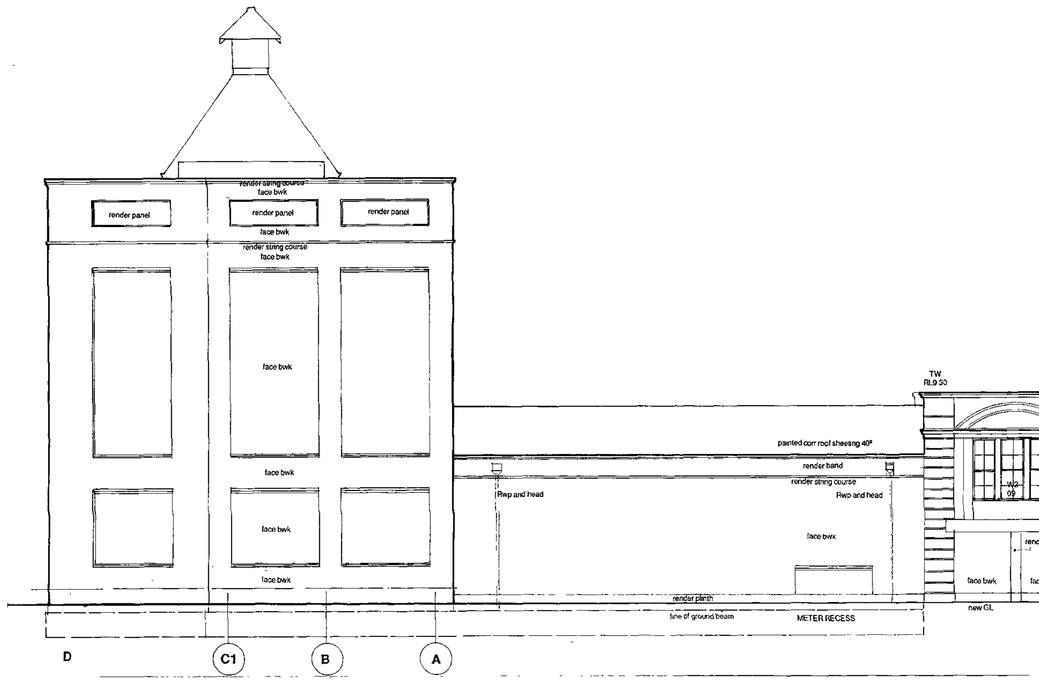
10.7.1 Inventory of Moveable Heritage Items

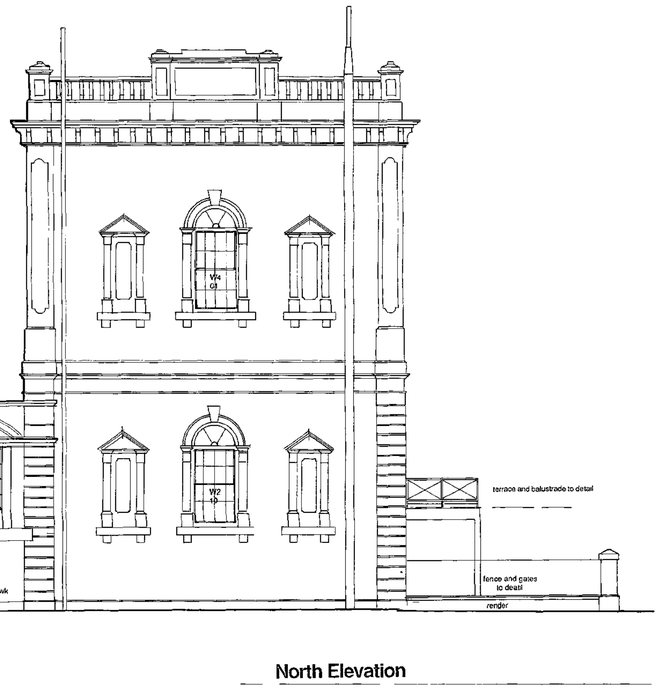


South Elevation



East Elevation





North Elevation



West Elevation

Rev	Date	
A	24/9	Brewery layouts general amendments Issued for brewery licensing

JACKSON TEECE CHESTERMAN WILLIS PARTNERS

ARCHITECTS PLANNERS AND BUILDING ECONOMISTS
61 KINGS TERRACE SYDNEY NSW 2000
TELEPHONE (02) 252 2722
TELEX ARCADIA AA 74552
FAX (02) 241 1159

Project

THE PUMPHOUSE BREWERY
Pier Street, Sydney 2000
For Centrepac Limited

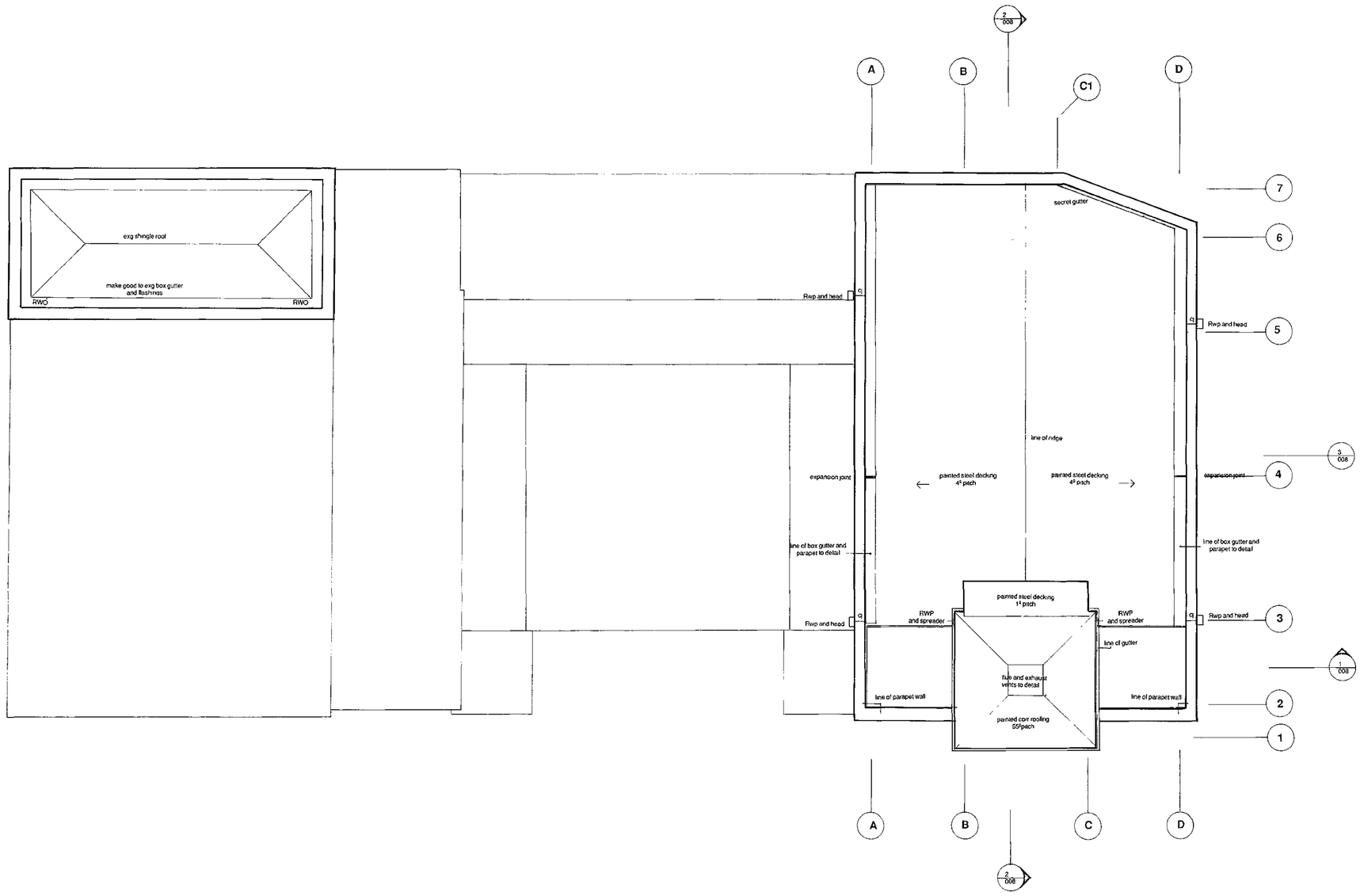
Title

Elevations 17

Scale	Drawn	Date
1 100	TEH	8/87
Job no	Drawing no	Rev
87.079 PH	WD 007	A

PA / DA No. 17
DARLING HARBOUR
Received Date 30 JUL 87

DEVELOPMENT APPLICATION
BUILDING APPLICATION
CODE
DHA/ 85L/DA../0884/88
SOUTHERN No. THE



IDENTIFIER: PROPERTY: DISCIPLINE: SEQUENTIAL NO.: TYPE: CODE:

DHA/85L/DA/00003/DR

PA / DA No. 17
DARLING HARBOUR
Received Date 30 JUL 87

A 24/9 Brewery layouts general amendments Issued for brewery licensing
Rev Date

JACKSON TEECE CHESTERMAN WILLIS & PARTNERS
ARCHITECTS, PLANNERS AND BUILDING ECONOMISTS
60 KING STREET SYDNEY NSW 2000
TELEPHONE (02) 290 2722
TELEX ARCAD NA 74462
FAX (02) 290 1150

Project
THE PUMPHOUSE BREWERY
Pier Street, Sydney 2000
For Centrepac Limited

Title
Roof Plan
17

Scale	Drawn	Date
1:50	TEH	8/87
Job no	Drawing no	Rev
87.079 PH	WD 006	A

Pier Street

co-ordinates TBA

N 49950 97
E 8589 38

N 49955 79
E 8600 92

N 49957 77
E 8605 50

2 40
2 31
2 50
2 67
2 51
2 66
2 54
2 52
2 69
2 30
2 69
2 66
2 69
2 69
2 69

lease boundary

Pump House Tavern

E 8580

co-ordinates TBA

N 49931.27
E 8597 34

N 49936 13
E 8608 88

N 49938 10
E 8613 56

2 43
2 42
2 27

Little Pier Street

E 8590
E 8600
E 8610
E 8620
N 49920
E 8630
N 49930
E 8640
N 49940
E 8650
N 49950
N 49960
N 49970

2 27
2 33

reference north

Pier Street alignment 67°12'30"

lease boundary

2 31

N 49963 511
E 8619 479

N 49967 61
E 8629 25

SOP
N 49968.702
E 8631.833

700 3600 3225 375 240 4800 700

1940 700 1900 3890 5990 21400 5990 3350 600 1800 600

A B1 C2 C1 D

7 6 5 4 3 2 1

2 20
2 39

Note
Brewery is setout square from Pier Street alignment 157°12'30"
For detail set out refer to engineer's drawings
existing RL's shown 2 64

Pump House Brewery

Pier Street alignment 275°5'112"

2 30

2 63
180 over
2 52
2 38
2 61
2 50

lease boundary
Little Pier Street alignment 67°10'32"

N 49945 312
E 8631 411

N 49947 443
E 8636 480

N 49943 782
E 8627 69

N 49944 390
E 8631 798

N 49945 521
E 8636 869

N 49948 973
E 8640 123

N 49944 73
E 8629 51

600 600

700 3825 4350 3825 700
13400

A B C D

Proposed new Little Pier Street alignment parallel to southern alignment To be advised

Area proposed to be included in lease

Little Pier Street alignment 27°5'112"

IDENTIFIER: PROPERTY DWG NUMBER: SEQUENTIAL NO: TYPE: CODE:
DWG/BSL/...DA/...2006/...07

FOR APPROVAL

A Redrawn, Issued for approval and construction 8/8/87

Rev Date

JACKSON TEECE CHESTERMAN WILLIS pty ltd & PARTNERS
ARCHITECTS, PLANNERS AND BUILDING ECONOMISTS
40 KING STREET SYDNEY NSW 2000
TELEPHONE (02) 290 2722 TELEX AA24043 FAX (02) 290 1150

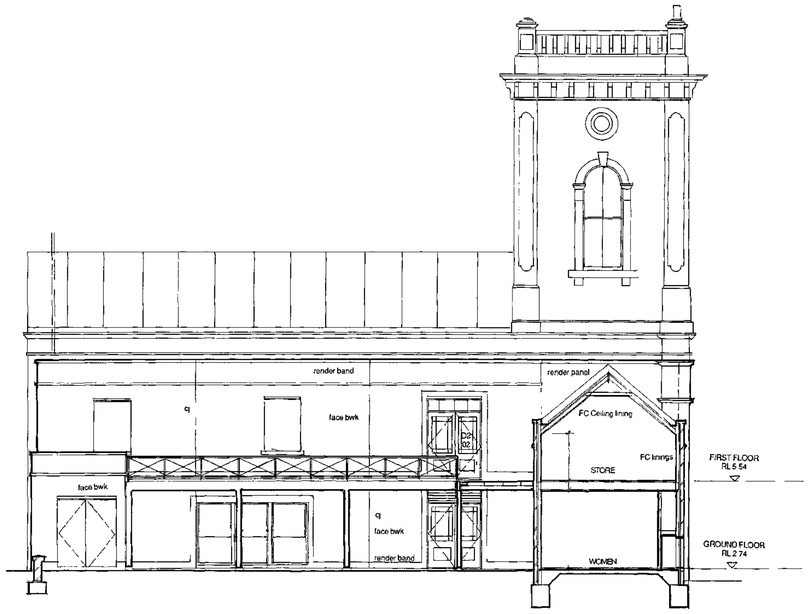
Project
THE PUMPHOUSE BREWERY
Pier Street, Sydney 2000
For Centrepac Limited

Title
Site set-out and boundaries

17

Scale	Drawn	Date
1 100	TEH	7/87
Job no	Drawing no	Rev
87.079 PH	WD 001	

PA / DA No. 17
DARLING HARBOUR
Received Date 30 JUL 87



West Elevation to Courtyard

IDENTIFIER: PROPERTY DIRECTORATE: SEQUENTIAL NO.: TYPE:
CODE:
PA/DA Required

PA / DA No. 17
DARLING HARBOUR
Received Date 30 JUL 87

Rev Date

JACKSON TEECE CHESTERMAN WILLIS & PARTNERS
ARCHITECTS PLANNERS AND BUILDING ECONOMISTS
49 KING STREET SYDNEY NSW 2000
TELEPHONE (02) 290 2722
TELEX AA 74622
FAX (02) 290 1159

Project

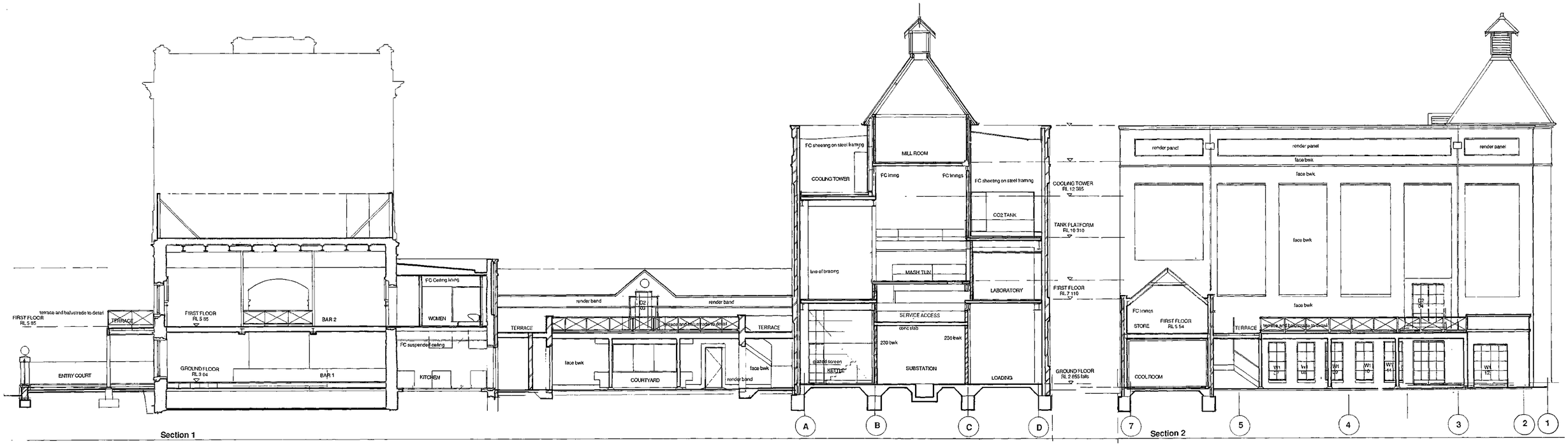
THE PUMPHOUSE BREWERY
Pier Street, Sydney 2000
For. Centrepac Limited

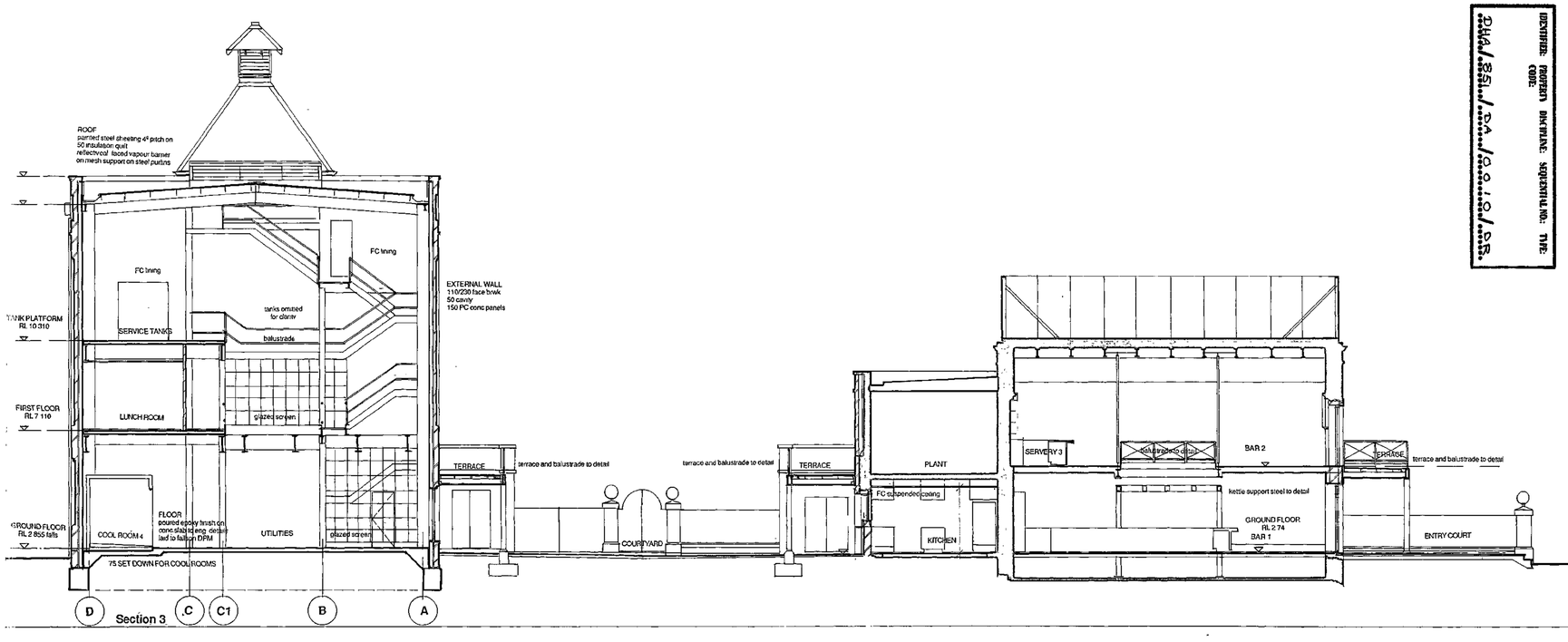
Title

Sections
2 of 2

12

Scale	Drawn	Date
1:100	TEH	8/87
Job no	Drawing no	Rev
87.079 PH	WD 009	





DHA/85/DA/00010/DR

DEVELOPMENT: PROPOSED BREWERY
CODE:
SEQUENTIAL NO:
TYPE:

A 24/3 Brewery layouts general amendments Issued for brewery licensing

PA / DA No. 17
DARLING HARBOUR
Received Date 30 JUL 87

LEGEND
- Existing work
- Brickwork as noted
- Blockwork as noted
- Steel framing
- PC conc panels
- Cool Room sandwich panels

JACKSON TEECE CHESTERMAN WILLIS PTY LTD & PARTNERS
ARCHITECTS: PLANNERS AND BUILDING ECONOMISTS
49 KING STREET SYDNEY NSW 2000
TELEPHONE (02) 290 2722 TELEX AA20 AA 74482 FAX (02) 290 1150

Project
THE PUMPHOUSE BREWERY
Pier Street, Sydney 2000
For. Centrepac Limited

Title
Sections 1 of 2

17

Scale	Drawn	Date
1:50	TEH	8/7/8
Job no	Drawing no	Rev
87.079 PH	WD 008	A

PUMPHOUSE TAVERN

Pier Street

LINK BLOCK

PUMPHOUSE BREWERY

Little Pier Street

W4 01
W4 02
W4 03
W4 04
ACCUMULATOR TOWER
exg RWO
RWO and RW head
line of parapet and box gutter to detail
vp
Painted corr roof sheeting 40°pitch
ridge
valley
valley
RWO and RW head
line of parapet and box gutter to detail
RWO and RW head
offset drainage pipes at HL
vp
oo
replace missing tank panels and metal framing to later detail cut back concrete infill to parapet make good to render to match exg
new membrane to exg conc slab
line of kitchen exhaust outlets
existing roof
existing box gutter
take out exg rooflight make good roof
exg rwo disconnect rwp and discharge to spreader on lower roof
remove exg VP
RWO
offset drainage pipes at HL
cut back roof where wall demolished
tank top access walkways by Predict
STAIRCASE 2
up
RWO
D1
01
FC sheeting on steel framing
COOLING TOWER membrane roofing to falls
UPPER PART MASH TUN
FC sheeting on steel framing
UPPER PART CO2 TANK
rwp
Top of Tanks plan
UPPER PART TANKS
FC sheeting on steel framing
100 block
01
100 block
FC sheeting on steel framing
UPPER PART COOLING TOWER
MILL ROOM ceramic tile
UPPER PART CO2 TANK
Mill Room Plan
reference north

LEGEND
Blockwork as noted
Stud framing
PC conc panels

4 008
2 008
3 008
1 008

A B C C2 D
1 2 3 4 5 6 7

IDENTIFIER: PROPERTY: DHA/PA/DA: SEQUENTIAL NO: TYPE: CODE:
DHA/851/PA/000017/DR

PA / DA No. 17
DARLING HARBOUR
Received Date 30 JUL 87

A 24/9 Brewery layouts general amendments issued for brewery licensing
Rev Date

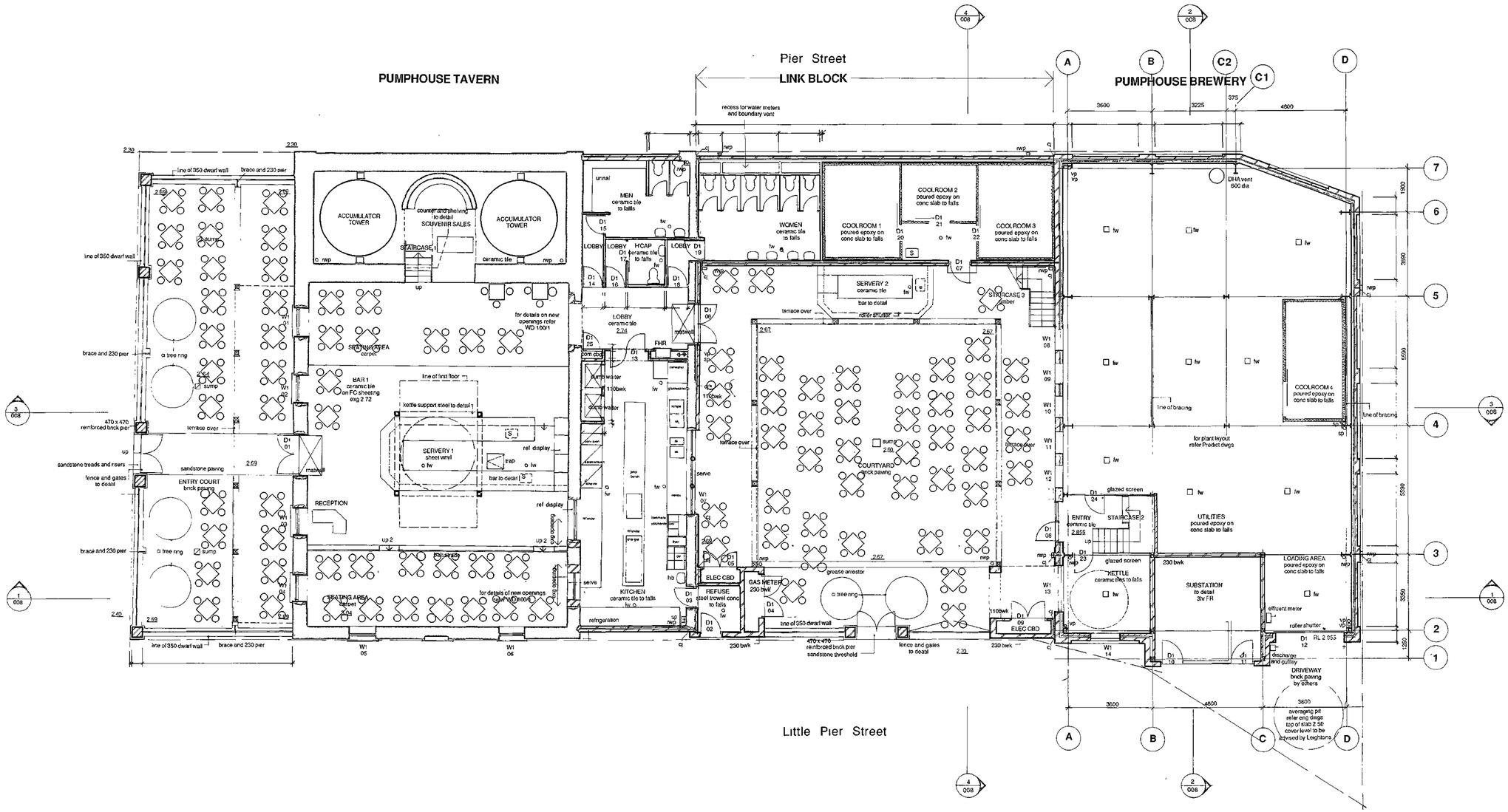
JACKSON TEECE CHESTERMAN WILLIS & PARTNERS
ARCHITECTS PLANNERS AND BUILDING ECONOMISTS
49 KING STREET SYDNEY NSW 2000
TELEPHONE (02) 290 2722
TELEX ARCAD AA 74442
FAX (02) 290 1150

Project
THE PUMPHOUSE BREWERY
Pier Street, Sydney 2000
For Centrepac Limited

Title
Top of Tanks Plan Level 4
Mill Room Plan Level 5

17

Drawn TEH
Date 8/87
Job no 87.079 PH
Drawing no WD 005
Rev A



PUBLIC FLOOR SPACE AND OCCUPANCIES

FLOOR	SPACE	AREA SQ M	STANDING AREA	ASSUMED OCCUPANCY	SEATING CAPACITY	TOTAL CAPACITY
GROUND						
	ENTRY COURT	124	-	-	100	100
	BAR 1	146	35	70	94	164
	COURTYARD	224	10	20	180	200
FIRST						
	WEST TERRACE	35	7	14	32	46
	BAR 2	133	8	16	124	140
	BAR 3	35	-	-	39	39
	COURTYARD TERRACE	84	10	20	99	116
TOTAL		796	70	140	662	802

SANITARY ACCOMMODATION

Is provided in accordance with the City of Sydney's Food Premises Code, Section 38, Table A
Total area available to patrons say 800 sq metres At 1 sq metre per person, total occupancy = 800
Applying 50 50 ratio = 400 men, 400 women

		reqd	provided
WOMEN	W C's @ 4 100 + 1 50 thereafter	10	10
	handbasins @ 1 2 W C's	5	7
MEN	WC's @ 2 300 + 1 300 thereafter	3/4	4
	urinals @ 6 200 +1 75 thereafter	11	11
	handbasins @ 2 300 + 1 300 thereafter	3/4	4

FINISHES SCHEDULE

SPACE	FLOOR	WALLS	CEILINGS
Courtyards	Brick/stone pavings		
Bar 1	Ceramic tile / carpet	painted render	Acoustic timber boarding, painted
Servery 1	Vinyl sheet		
Bar 2	Carpet	painted render	Acoustic ceiling lining
Bar 3	Carpet	painted render	Painted FC sheeting
Terraces	Ceramic tile		
Toilets	Ceramic tile to falls	Ceramic tile to 2100 Painted FC sheeting above	
Kitchen Areas	Ceramic tile to falls	Ceramic tile	Painted FC sheeting
Staircase 1	Carpet		

SITE AREA 1161.6

TOTAL FLOOR AREA 648

APPROX FSR 1:1.4

LEGEND
- Existing work
- Brickwork as noted
- Blockwork as noted
- Stud framing
- PC conc panels
- Cool Room sandwich panels

PA / DA No. 17
DARLING HARBOUR
Received Date 30 JUL 85

HERITAGE PROPERTY REGISTER No.
CODE
SIGNIFICANCE
SEQUENTIAL No.
TYPE
DHA / 851 / DA / CC / 12 / 05

Rev Date

JACKSON TEECE CHESTERMAN WILLIS & PARTNERS
ARCHITECTS PLANNERS AND BUILDING ECONOMISTS
40 KING STREET SYDNEY NSW 2000
TELEPHONE (02) 290 2722
TELEX AUCAD AA 74452
FAX (02) 290 1150

Project
THE PUMPHOUSE BREWERY
Pier Street, Sydney 2000
For Centrepac Limited

Title
Ground Floor Plan Level 1

PUMPHOUSE TAVERN
LICENSING APPLICATION DRAWING

Scale	Drawn	Date
1 100	TDH	7/85
Jobno	Drawing no	Rev
87.079 PH	L 104	

PUMPHOUSE TAVERN

Pier Street

LINK BLOCK

PUMPHOUSE BREWERY

Little Pier Street

reference north

First Floor Plan

Mezzanine Plan

LEGEND

- Existing work
- Brickwork as noted
- Blockwork as noted
- Stud framing
- PC conc panels

IDENTIFIER: PROPERTY DISTRIBUTE: SEQUENTIAL NO: TAPE CODE:

PA / DA No. 17
DARLING HARBOUR
Received Date 30 JUL 87

JACKSON TEECE CHESTERMAN WILLIS & PARTNERS

ARCHITECTS PLANNERS AND BUILDING ECONOMISTS

40 KING STREET SYDNEY NSW 2000

TELEPHONE (02) 290 2722
TELEX AA24440 AJS 74552
FAX (02) 290 1100

Project

THE PUMPHOUSE BREWERY
Pier Street, Sydney 2000
For Centrepac Limited

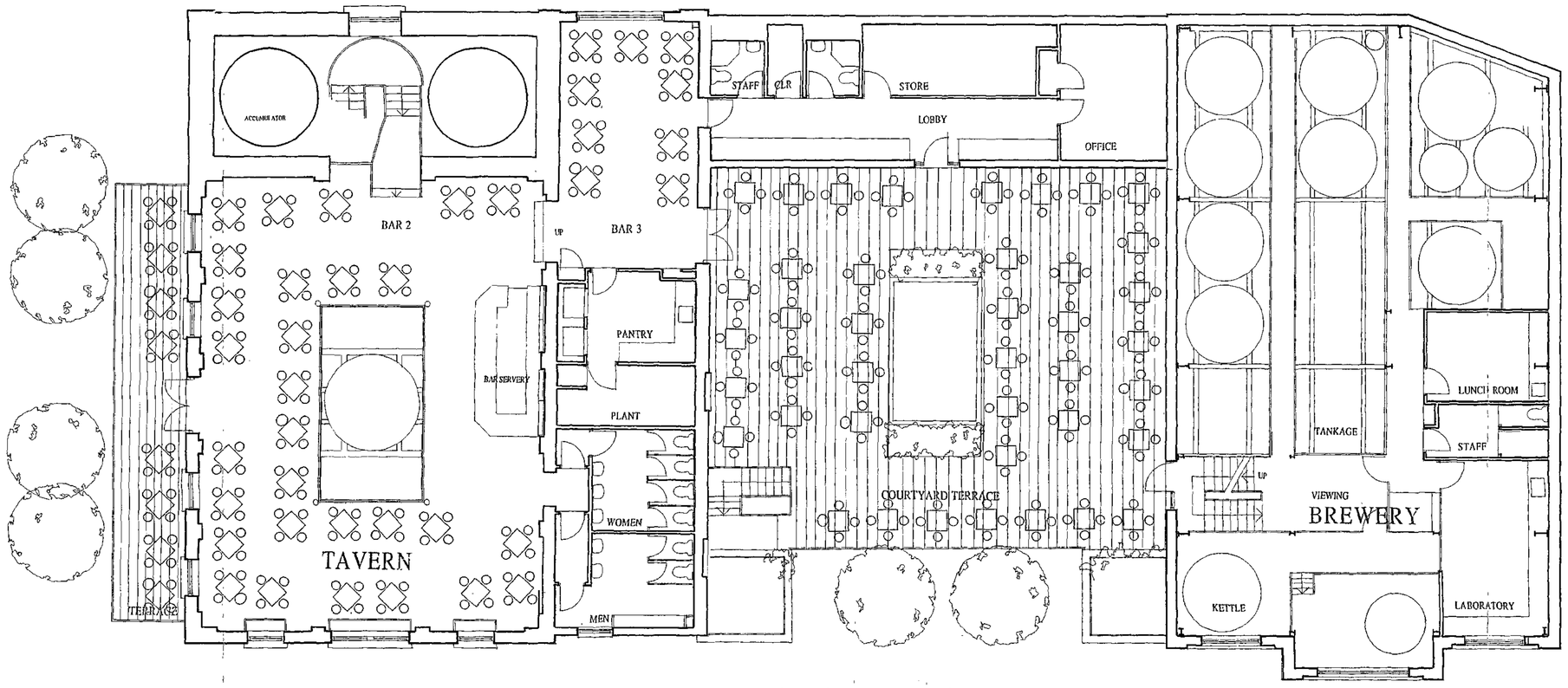
Title

First Floor Plan Level 2

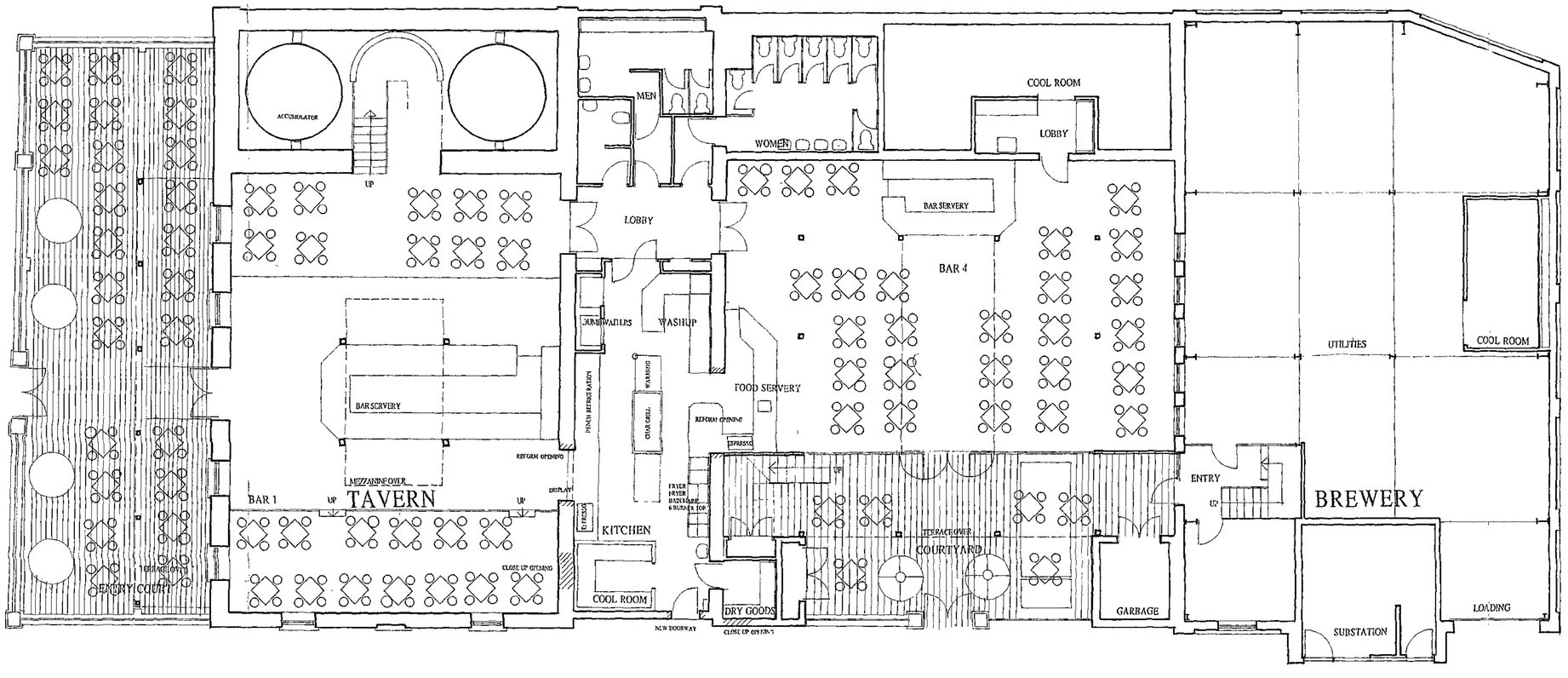
Mezzanine Plan Level 3 17

PUMPHOUSE TAVERN
LICENSING APPLICATION DRAWING

Scale	Drawn	Date
1 100	TEH	8/87
Job no	Drawing no	Rev
87.079 PH	L105	



FIRST FLOOR PLAN



LITTLE PIER STREET

GROUND FLOOR PLAN

NORTH

IDENTIFIER: PROPERTY DISCIPLINE: SEQUENTIAL NO: TYPE:
CODE:
PHA/85/../DA/0001/..../DR

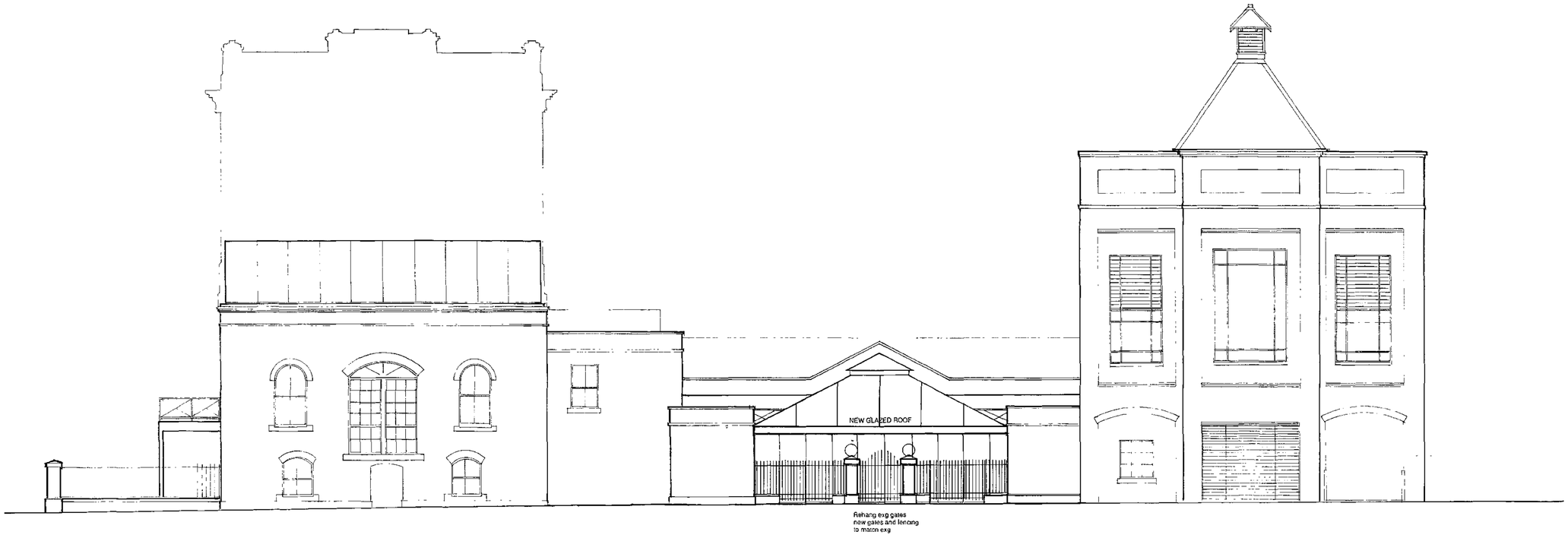
FA/DA No. 128
DARLING HARBOUR
Received Date 12 SEP 88

THE PUMPHOUSE BREWERY & TAVERN

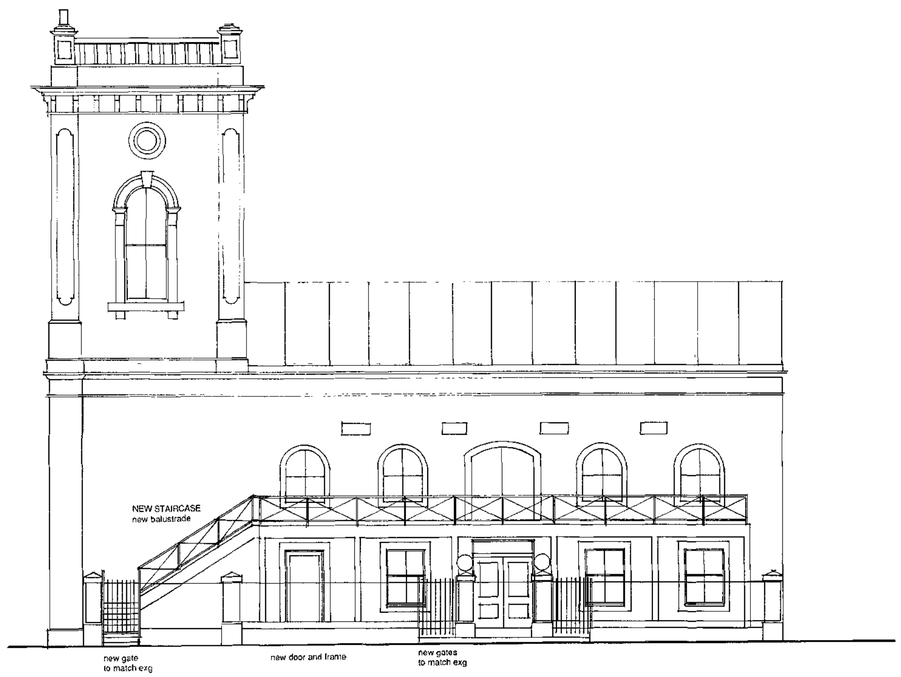
Centrepac Limited

Proposed Alterations & Additions
Sketch Design Floor Plans

Trevor Hayter / Esther Hayter
120½ Underwood Street Paddington NSW 2021 telephone 02 360 1333 facsimile 02 360 2501
scale 1:100 drawn FEB June 1988
y/s no 8820
dwg no SK01
revision 0



SOUTH ELEVATION



WEST ELEVATION



SECTION

IDENTIFIER:
PROPERTY
CODE:
DISPATCH: SEQUENTIAL NO:
TYPE:
DA/2005/...
PA/DA No. 214
DARLING HARBOUR
Received Date 01 JAN 90

project
PUMPHOUSE TAVERN
Little Pier Street, Darling Harbour
PROPOSED ALTERATIONS AND ADDITIONS

title
ELEVATIONS

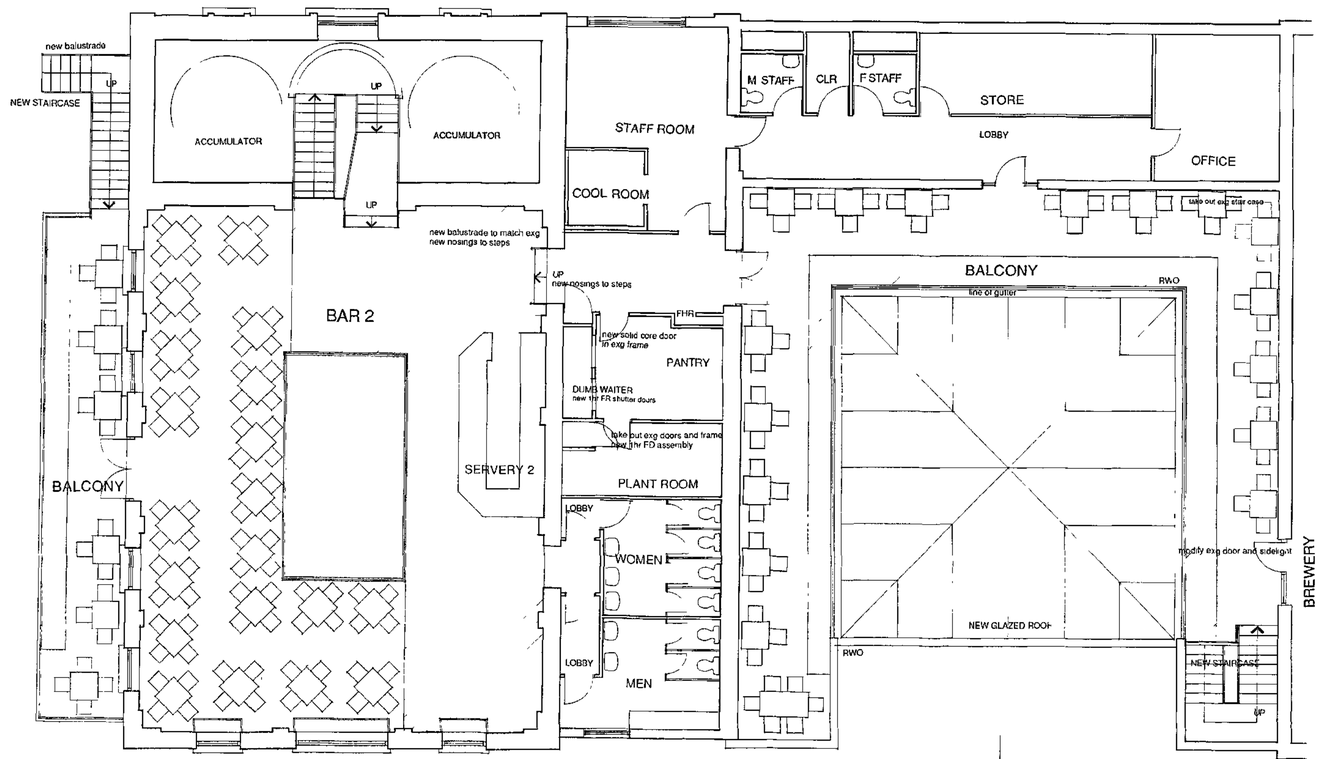
architects
Trevor Hayter | Esther Hayter
120½ Underwood Street, Paddington, NSW 2021
telephone 02 360 1331 facsimile 02 360 2501

structural engineers
Whelahan Grill + Partners Pty Ltd
621 Pacific Highway St Leonards 2065
telephone 906 1333 facsimile 906 1313

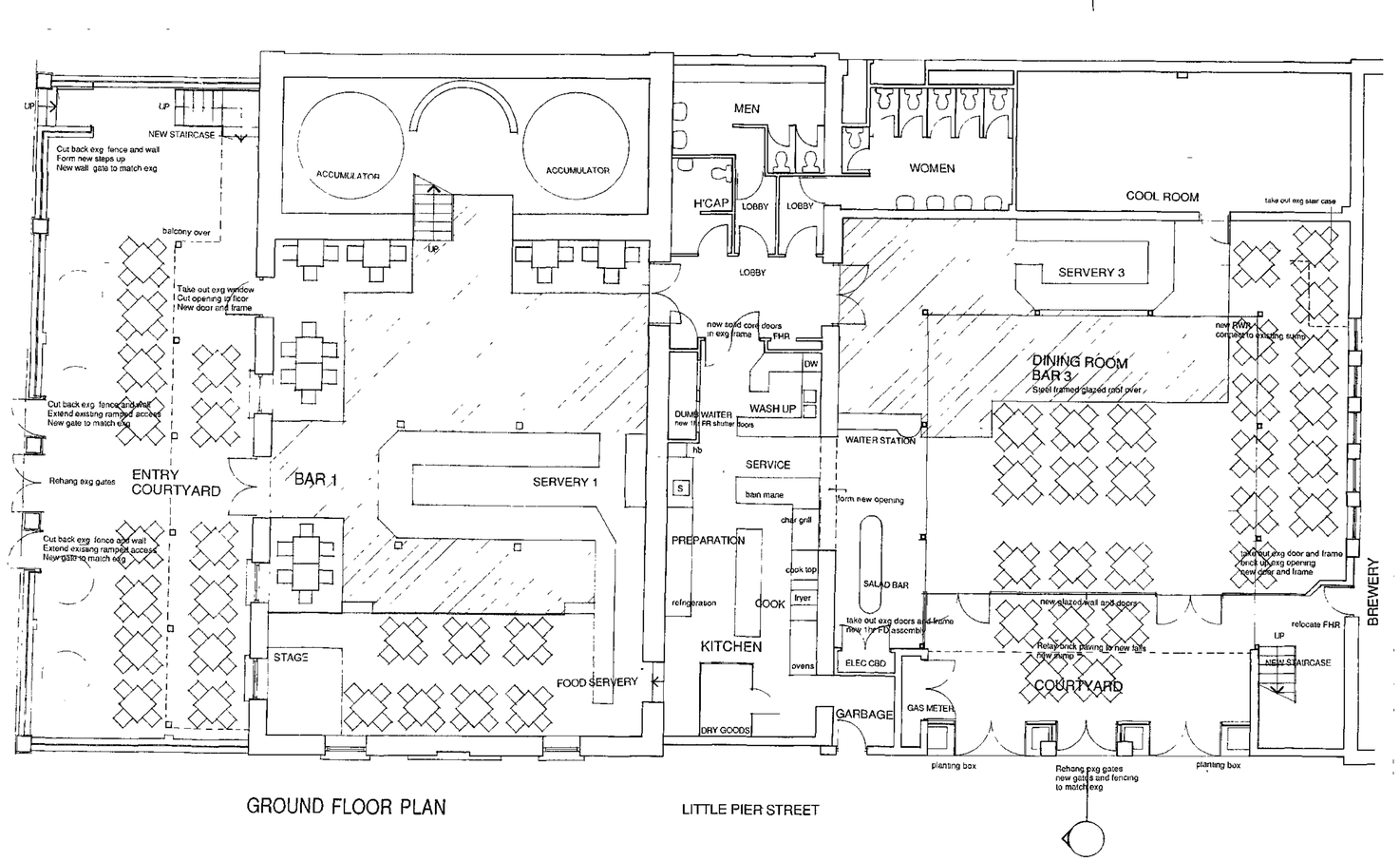
mechanical, electrical and hydraulic consultants
Stensen Varming (Australia) Pty Ltd
Level 2, 120 Pacific Highway, St Leonards 2065
telephone 439 5522 facsimile 438 1647

scale	date	drawn
1 100	8/89	MF

proj no	dwgno	revision
8819	L 103	



FIRST FLOOR PLAN



GROUND FLOOR PLAN

LITTLE PIER STREET

PUBLIC FLOOR SPACE AND OCCUPANCIES

FLOOR	SPACE	AREA SQM	STANDING AREA	ASSUMED OCCUPANCY	SEATING CAPACITY	TOTAL CAPACITY
GROUND						
	ENTRY COURT	124	-	-	56	56
	BAR 1	140	72.5	145	51	196
	DINING ROOM BAR 3	179	57.5	115	84	199
	COURTYARD	45	-	-	20	20
FIRST						
	WEST TERRACE	35	7.5	15	19	34
	BAR 2	138	60	120	80	200
	COURTYARD TERRACE	94	20	40	54	94
TOTAL		765	216	435	364	799

SANITARY ACCOMMODATION

Is provided in accordance with the City of Sydney's Food Premises Code Section 38 Table A
Total area available to patrons 765 sq metres At 1 sq metre per person total occupancy = say 800
Applying 50 50 ratio = 400men, 400women

		reqd	provided
WOMEN	WCs @ 1 100 + 1 50 thereafter	10	10
	handbasins @ 1 2 WCs	5	7
MEN	WCs @ 2 300 + 1 300 thereafter	3	4
	urinals @ 8 200 +1 75 thereafter	11	11
	handbasins @ 2 300 + 1 300 thereafter	3	4

NORTH

IDENTIFIER: PROPERTY DESIGNATIVE SEQUENTIAL NO: TYPE:
DHA/85/0000/0004/DR...
CODE:

PA/DA No. 214
DARLING HARBOUR
Applied Date 01 JAN 90

project
PUMPHOUSE TAVERN
Little Pier Street, Darling Harbour
PROPOSED ALTERATIONS AND ADDITIONS

title
FLOOR PLANS
LICENSING APPLICATION

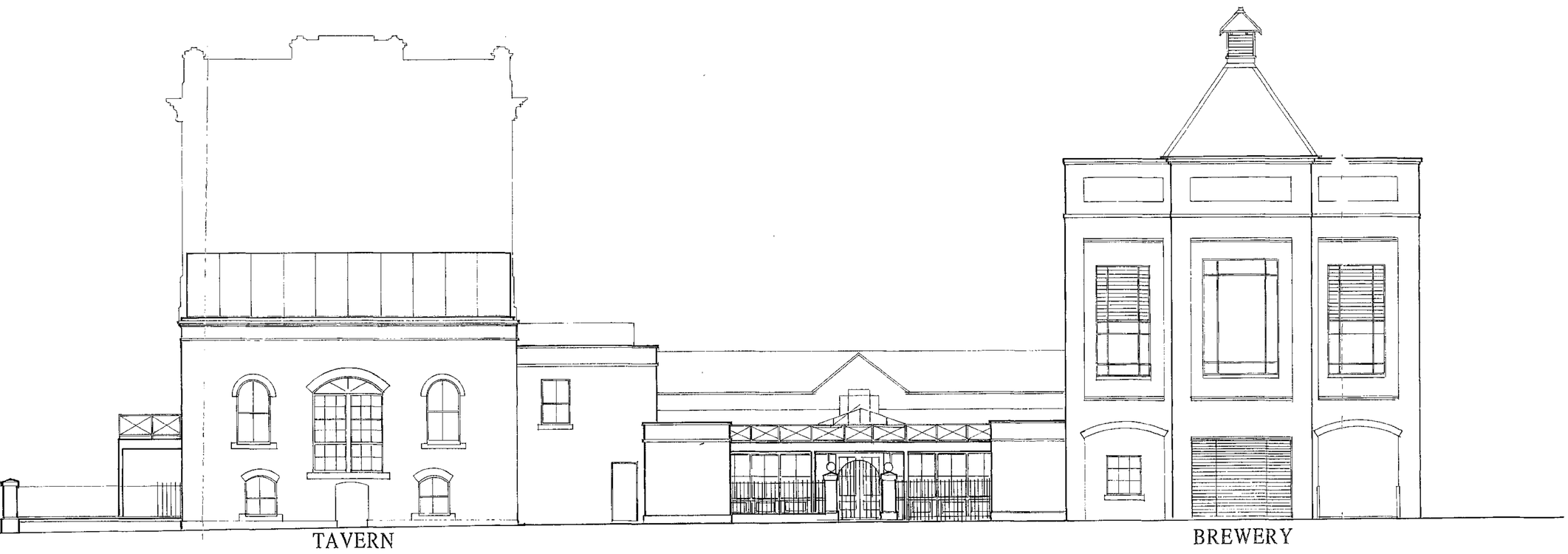
architects
Trevor Hayter | Esther Hayter
120½ Underwood Street, Paddington, NSW 2021
telephone 02 360 1331 facsimile 02 360 2501

structural engineers
Wholohan Grill + Partners Pty Ltd
621 Pacific Highway St Leonards 2065
telephone 906 1333 facsimile 906 1313

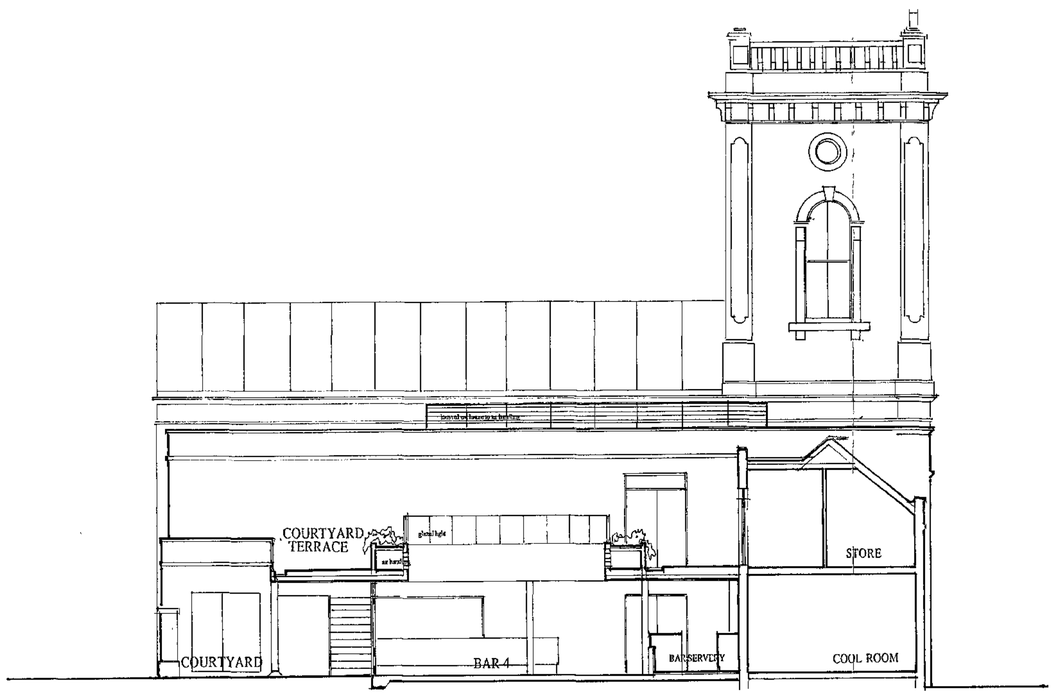
mechanical, electrical and hydraulic consultants
Steensen Varming (Australia) Pty Ltd
Level 2, 120 Pacific Highway, St Leonards 2065
telephone 439 5522 facsimile 438 1647

scale	date	drawn
1 100	8/89	MF

proj no	dwg no	revision
8819	L101	



SOUTH ELEVATION



SECTION 1

PA/DA No. 128
DARLING HARBOUR
Received Date 12 SEP 88

IDENTIFIER: PROPERTY DISCIPLINE: SEQUENTIAL NO: TYPE:
CODE:
DHA/85/DA/0028/DE

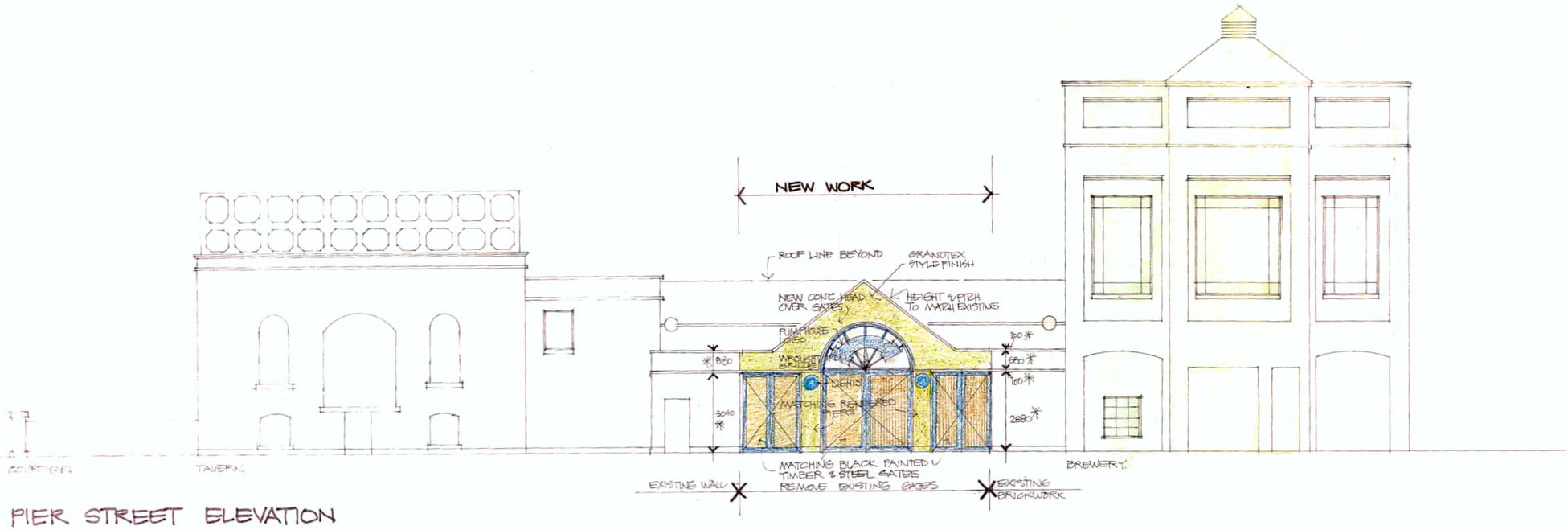
Amended Permit Application 18/7/88

THE PUMPHOUSE BREWERY & TAVERN

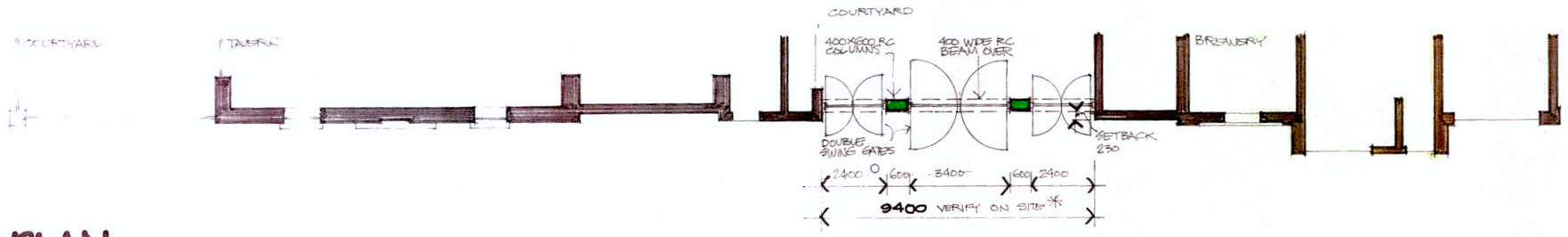
Centrepac Limited

Proposed Alterations & Additions
Sketch Design: Section Elevation

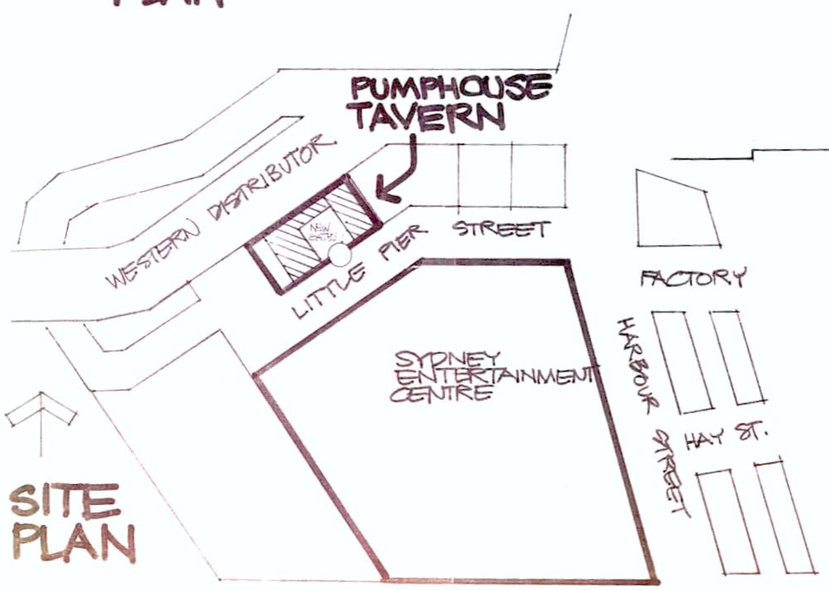
Trevor Hayter | Esther Hayter
120½ Underwood Street Paddington NSW 2021 telephone 02 360 1331 facsimile 02 360 2501
scale 1:100 drawn TEH June 1988
job no 8820
dwg no SK02
revision 0



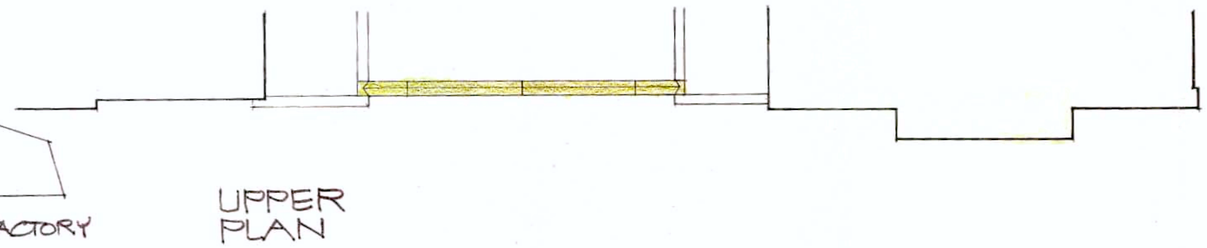
PIER STREET ELEVATION



PLAN



SITE PLAN



UPPER PLAN

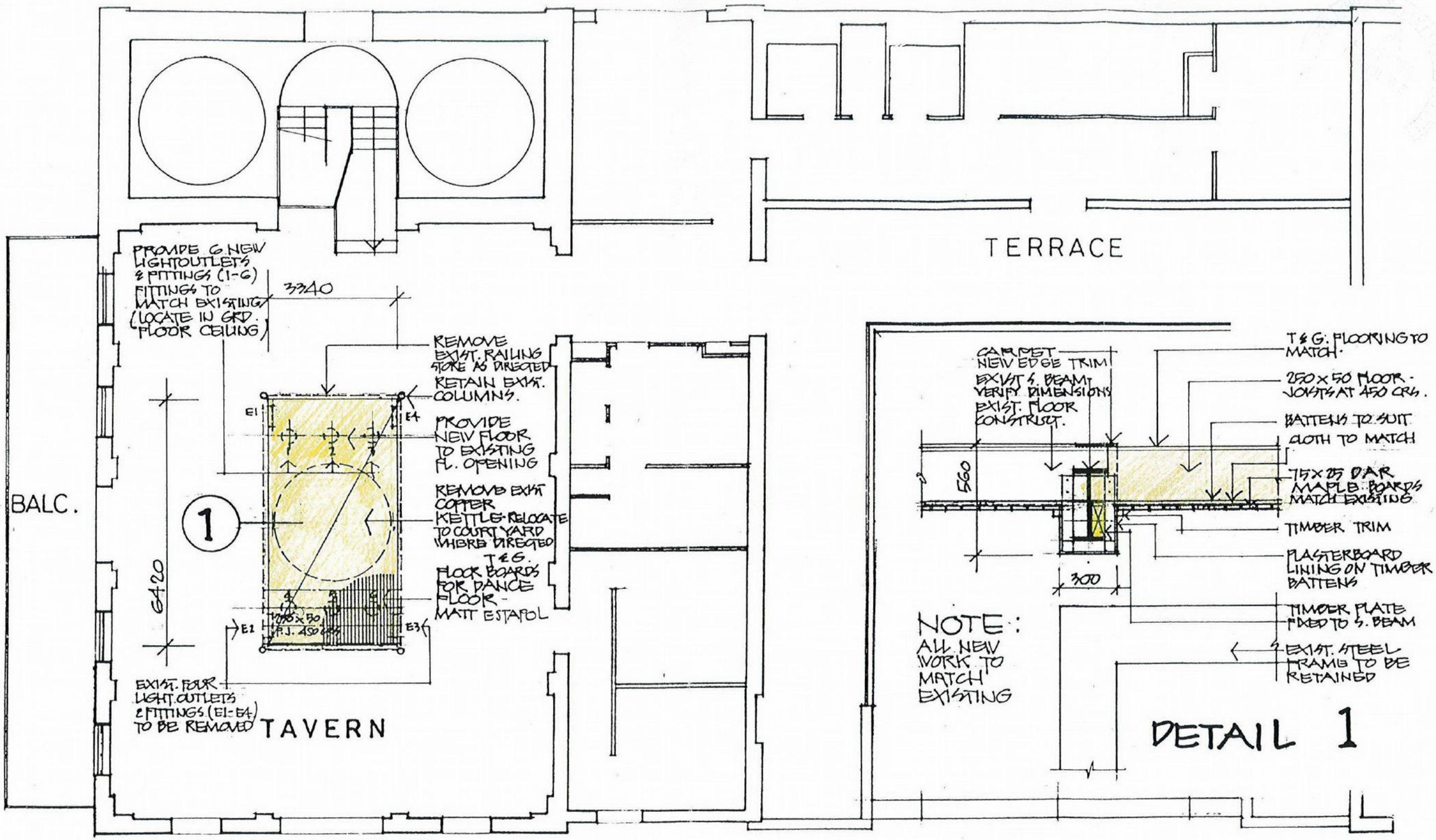
PROPOSED NEW GATES TO PUMPHOUSE TAVERN DARLING HARBOUR SYDNEY.

SCALE 1:100
DATE JUNE'91
DWG № 91286
Superseded
91286/A

PA / DA No. 290
DARLING HARBOUR
Received Date 11 JUL 91

BARRELLE PARTNERS Architects

IDENTIFIER: PROPERTY DESCRIPTION: SEQUENTIAL NO.: TYPE:
DHA/851/DA/00003/DR



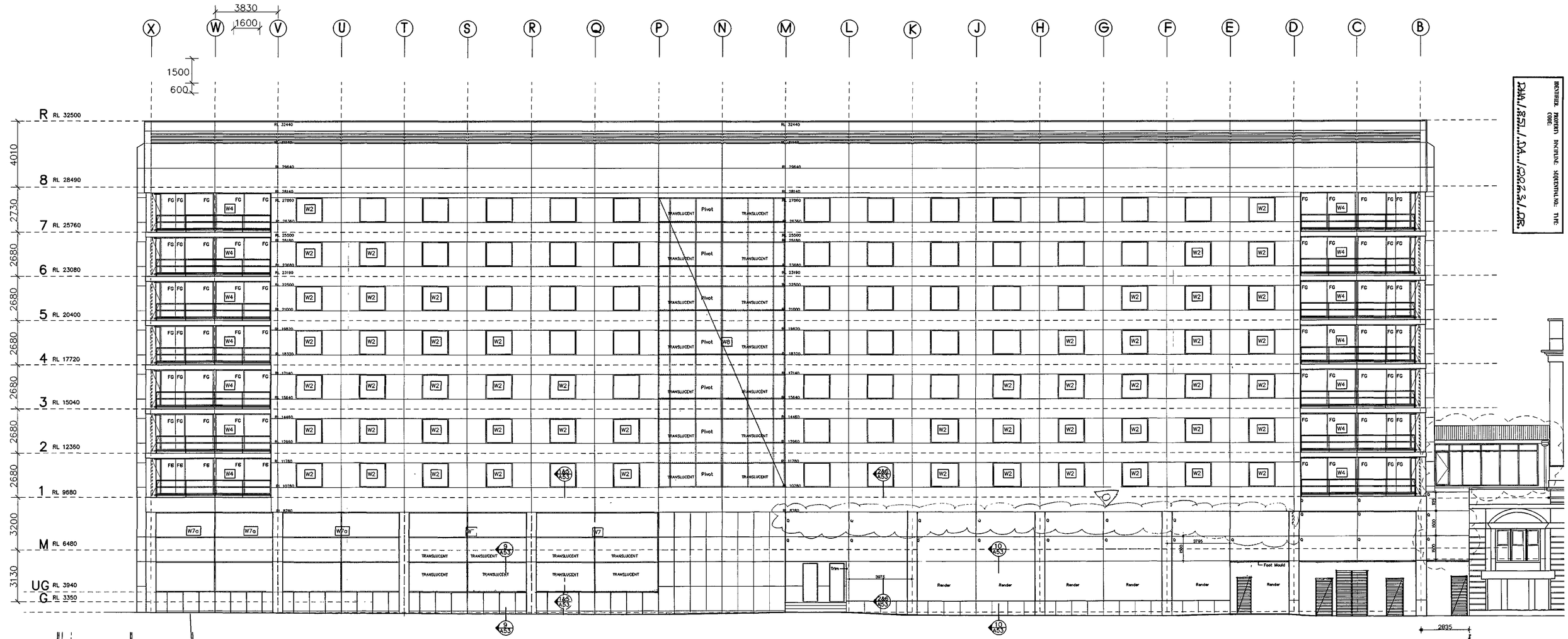
FIRST FLOOR PLAN

PROPOSED FLOOR INFILL PUMPHOUSE TAVERN DARLING HARBOUR, SYDNEY

SCALE : 1:100, 20
DATE : JULY 91

DWG. NO 91286/3A

BARRELLE PARTNERS
Architects
5 MYRTLE STREET CROWS NEST
2065 SYDNEY NSW AUSTRALIA
TEL (02) 9290899 FAX (02) 9297151



W1 Not Used

W2 1500h x 1600w x 10.38 Laminated, Pivot

W2a Not Used

W3 Not Used

W4 As per detail

W5 Not Used

W6 Not Used

W7 Shopfront: 10.38mm Laminated Fixed to Ground, Mezz & U/S Level 1

W7a Shopfront: 10.38 Laminated Fixed to Ground & U/S Level 1

W8 Curtain Wall with 1500h x 1600w x 10.38 Laminated Pivot

DRAWING REGISTERED PROPERTY INCLUDING SEQUENTIAL NO: TYPE: CODE: 98/1/A/0022

PA / DA No. 550
DARLING HARBOUR
Received Date 23 OCT 98

This drawing/~~specification~~ is the subject of Certification No. 7192/01
Dated 22 October 1999
AUSTRALIAN BUILDING REGULATIONS PTY. LTD.
Per: [signature]

Notes :

Rev	Date	Description
L	23/11/98	Windows to curtain wall infront of service corridors made translucent, balcony handrails shown. Glazed panels to this shown and also other panels of bathroom walls E & S removed, render added.
M	07/12/98	Curtain wall to entire tourist stepped to floor level.
N	21/12/98	Spelling amended.
O	12/10/99	RAMS ROOF/HIGHLIGHT WINDOW REMOVED

Connell Wagner
Engineers · Managers
Connell Wagner Pty Ltd
A.C.N. 005 139 873
116 Military Road
P.O. Box 538
Neutral Bay 2089
New South Wales, Australia
Telephone 02 9465 5599, Facsimile 02 9908 2044

BARRELLE PARTNERS Architects
6 LITTLE STREET CROWS NEST
ROAD SYDNEY NEW AUSTRALIA
TEL 02 9929 0900 FAX 02 9929 7121

MULPHA AUSTRALIA LIMITED
LEVEL 20
56 MARKET STREET
SYDNEY NSW 2000
AUSTRALIA
ACN 002 886 038
PHONE (02) 9268 5000
FAX (02) 9267 6132

Project :
Redevelopment of Pumphouse Hotel
Little Pier St, Darling Harbour
for
Tank Stream Darling Harbour, Pty. Ltd.

Dwg Name :
North Elevation (Developed)

For Construction

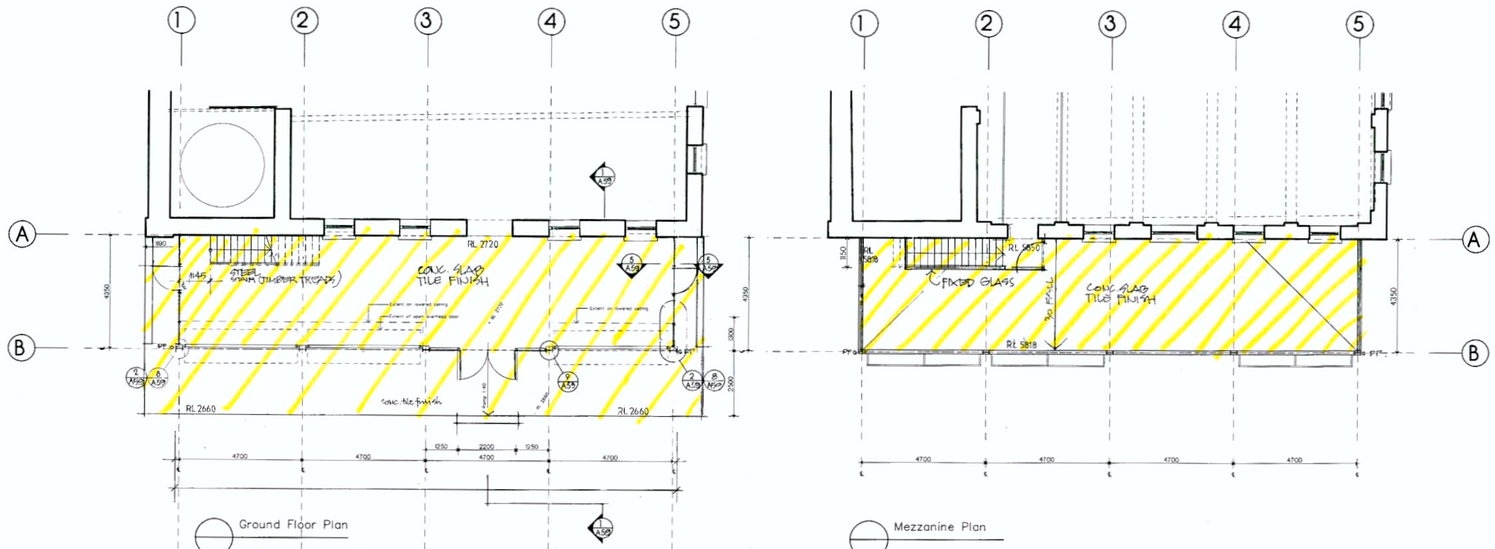
Drawing Number : EN A120

Date : 11/06/98

Scale : 1:100

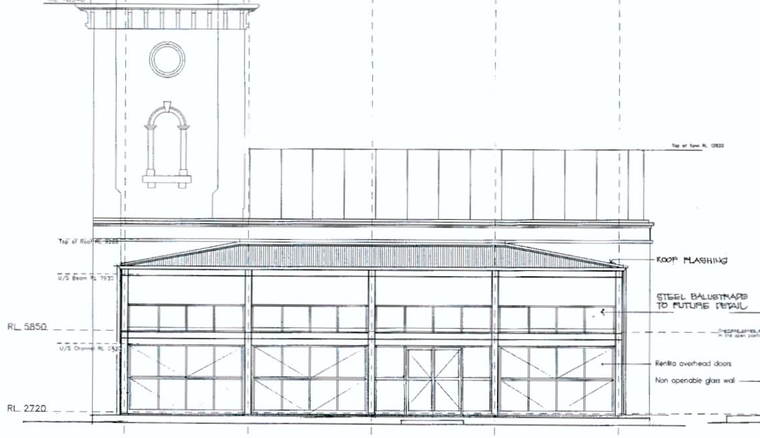
PRINTED 12 OCT 1999

RECEIVED 16 OCT 1999

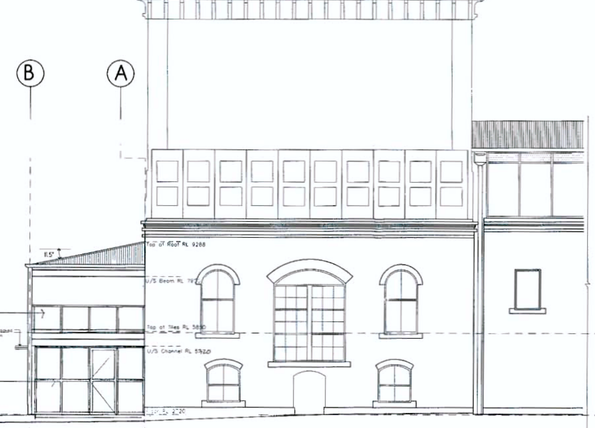


Ground Floor Plan

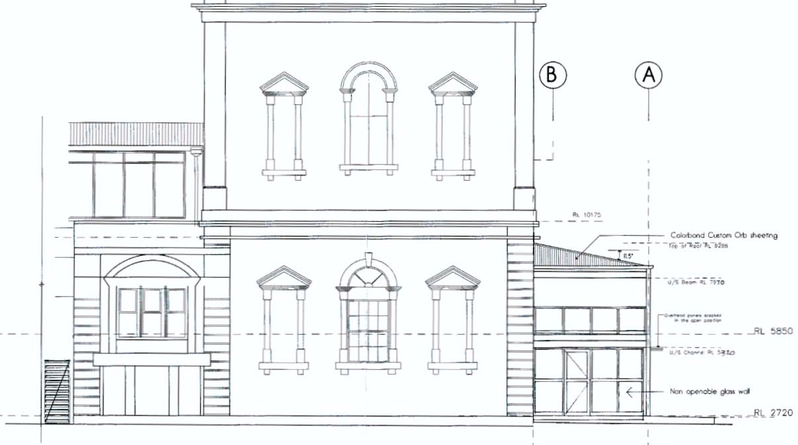
Mezzanine Plan



West Elevation



South Elevation



North Elevation

NOTE :
THIS DRAWING TO BE READ IN CONJUNCTION WITH DWG CD A59

Rev	Date	Description
C	11/10/99	N.A. VERANDAH LAUNDRY BOUNDARY - STEEL BALUSTRADE DOOR. MISTY LEVEL, REMOVE BLOCK ENCLOSURE ADDED
B	10.2.99	GAVE NEW CONCEPTS - DIRECTION REVERSED / NORTH + SOUTH ELEVATIONS ADDED / ROOF PLAN ADDED / NORTH ELEVATION - ENTRY SCREEN, STEPS & MORAL ADDED
A	27.1.99	FOR ISSUE TO SITE & CONSULTANTS.

Notes :

Connell Wagner
Engineers - Managers
Connell Wagner Pty Ltd
A.C.N. 005 139 873
116 Military Road
P.O. Box 538
Neutral Bay 2089
New South Wales, Australia
Telephone: 02 9909 5599, Facsimile: 02 9908 2044

BARRELLE PARTNERS Architects
6 MYRTLE STREET CROWS NEST 2065 SYDNEY NEW AUSTRALIA
TEL: 02 9929 0866 FAX: 02 9959 7151

MULPHA AUSTRALIA LIMITED
LEVEL 20
55 MARKET STREET
SYDNEY NSW 2000
AUSTRALIA
ACN 002 888 039
PHONE (02) 9268 5000
FAX (02) 9267 6132

Project :
Redevelopment of Pumphouse Hotel
Little Pier St, Darling Harbour
for
Tank Stream Darling Harbour, Pty. Ltd.

Dwg Name :
Verandah plans & Elevations

For Construction

Drawing Number :
CD A58 C

Date :
25/01/99

Scale :
1:100

BRANCH | PROPERTY | DISCIPLINE | SEQUENTIAL NO. | TATE CODE
DHA/ESU/DA/2025/PR

PA / DA No 559
DARLING HARBOUR
Received Date 25 OCT 99

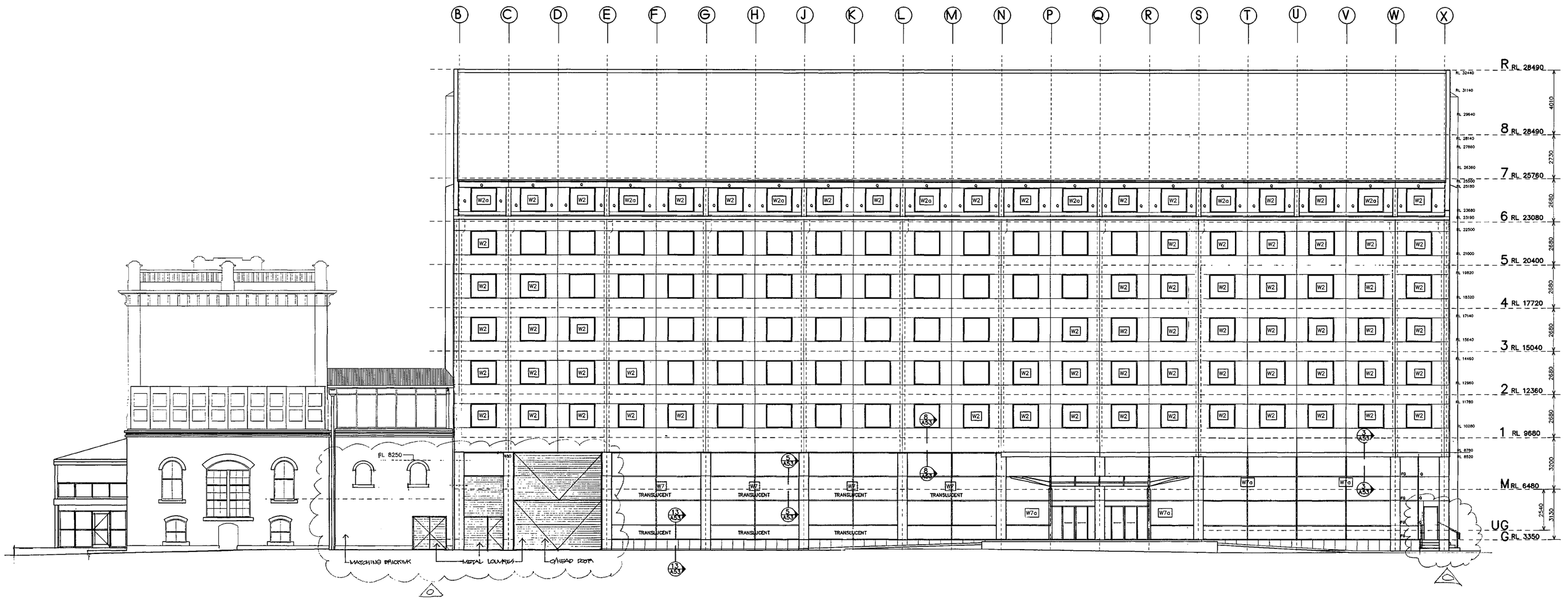
This drawing/~~specification~~ is the subject of Certification No. 7192/01
Dated 23 October 1999
AUSTRALIAN BUILDING REGULATIONS PTY. LTD.
Per: [illegible]

PRINTED 12 OCT

RECEIVED 16 OCT 1999

DISCIPLINE: PROPERTY DISCIPLINE: SEQUENTIAL NO: TYPE: CODE:

RHA/851/.../PA/0022/.../DES



W1 Not Used

W2 1500h x 1600w x 10.38 Laminated, Pivot

W2a 1500h x 1600w x 10.38 Laminated, Frosted pivot

W3 RUINS : 1500h x 10700 x 10.38 Laminated Pivot & Fixed (not used)

W4 Not Used

W5 Not Used

W6 Not Used

W7 Shopfront: 10.38mm Laminated Fixed to Ground, Mezz & U/S Level 1

W7a Shopfront: 10.38 Laminated Fixed to Ground & U/S Level 1

W8 Not Used

PA / DA No. 559
DARLING HARBOUR
Received Date 29 OCT 99

This drawing/specification is the subject of Certification No. 7142/00
Dated 23 October 1999
AUSTRALIAN BUILDING REGULATIONS PTY. LTD.
Per: [signature]

Notes :

Rev	Date	Description
O	11.10.99	AREAS ABOVE THIS LEVEL UNDERSIDED / MODIFIED
J	15/04/98	Entry D/A plans and plot amended as per plan.
K	22/04/98	Gutter level established, chickens on long windows added. Detail section markers
L	08/07/98	Entry door/ramp & steps, cladding over doors and tiles added, awning added. Windows and cladding to link ramp
M	02/11/98	Windows and shopfront to link amended. Front awning shortened. Strip windows replaced with W2a's
N	21/12/98	Cladding details at entrance shown

Connell Wagner
Engineers • Managers
Connell Wagner Pty Ltd
A.C.N. 005 139 873
116 Military Road
P.O. Box 538
Neutral Bay 2089
New South Wales, Australia
Telephone 02 9909 5599, Facsimile 02 9908 2044

BARRELLE PARTNERS Architects
6 MYRTLE STREET CROWS NEST 2065 SYDNEY NEW AUSTRALIA
TEL 02 9929 0999 FAX 02 9929 7181

MULPHA AUSTRALIA LIMITED
LEVEL 20
56 MARKET STREET
SYDNEY NSW 2000
AUSTRALIA
ACN 002 888 039
PHONE (02) 9268 5000
FAX (02) 9267 6132

Project :
Redevelopment of Pumphouse Hotel
Little Pier St, Darling Harbour
for
Tank Stream Darling Harbour, Pty. Ltd.

Dwg Name :
South Elevation

For Construction

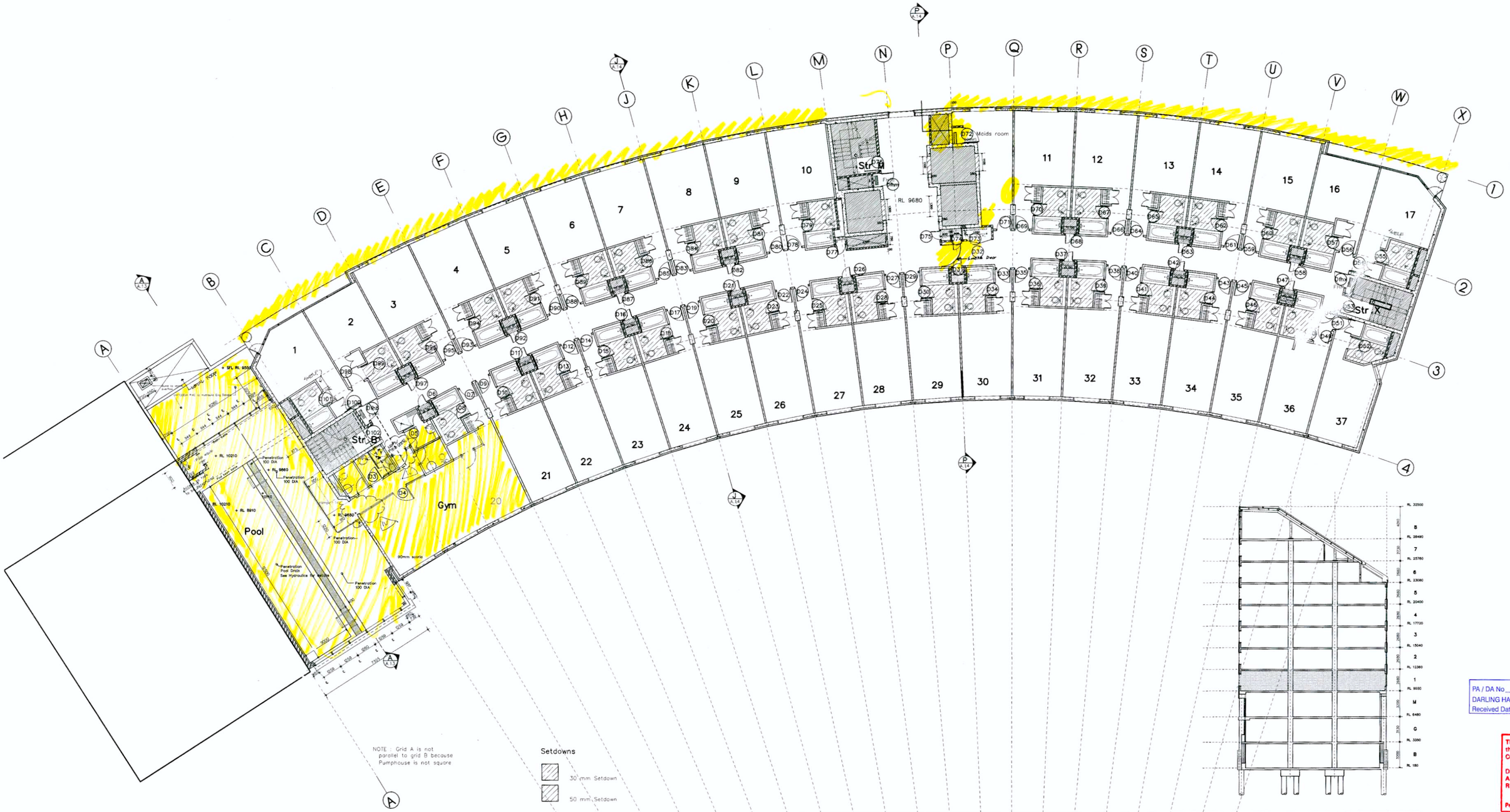
Drawing Number :
ES A110

Date :
09/07/98

Scale :
1:100

PRINTED
12 OCT 1999
BARRELLE PARTNERS ARCHITECTS

RECEIVED
16 OCT 1999



IDENTIFIER PROPERTY DESCRIPTION SEQUENTIAL NO. TYPE CODE

DHA/ 550 / DA / 2001 / DR

PA / DA No. 550
DARLING HARBOUR
Received Date 29 OCT 99

This drawing/specification is the subject of Certification No. 7192/21
Dated 23 October 1999
AUSTRALIAN BUILDING REGULATIONS PTY. LTD.
Per: [signature]

PRINTED
12 OCT 1999
BARRELLE PARTNERS ARCHITECTS

Notes :

Rev	Date	Description
S	03/12/98	RL on north pool deck increased by 100
T	10/12/98	200 block wall shown to west end of pool, pool equipment near added and ext ess to tank added to north west of pool
U	25/02/99	Penetration + Pool drain details on drawing
V	16.9.99	[illegible]
W	21.10.99	[illegible]

Connell Wagner
Engineers + Managers
Connell Wagner Pty Ltd
A.C.N. 005 139 873
116 Military Road
P.O. Box 538
Neutral Bay 2089
New South Wales, Australia
Telephone:02 9465 5599, Facsimile:02 9908 2044

BARRELLE PARTNERS
Architects
6 WYNYARD STREET CROWS NEST
2065 SYDNEY NSW AUSTRALIA
TEL 02 9439 0866 FAX 02 9439 7651

MULPHA AUSTRALIA LIMITED
LEVEL 20
55 MARKET STREET
SYDNEY NSW 2000
AUSTRALIA
ACN 002 888 039
PHONE (02) 9268 9000
FAX (02) 9267 6139

Project :
Redevelopment of Pumphouse Hotel
Little Pier St, Darling Harbour
for
Tank Stream Darling Harbour, Pty. Ltd.

Dwg Name :
Level 1 Plan

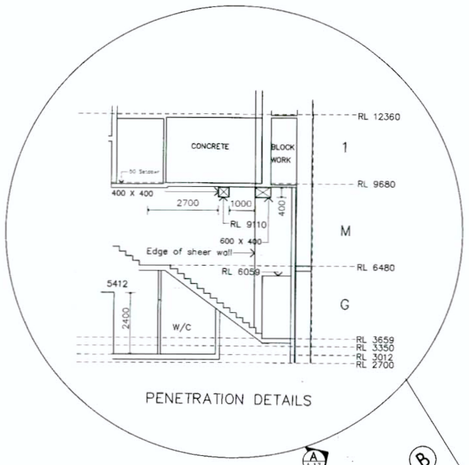
For Construction

Drawing Number :
PI A05 W

Date :
19/05/98

Scale :
1:100

RECEIVED
16 OCT 1999



PENETRATION DETAILS

LEGEND

- (99 D) = 99 people. D = Diners at 1m²
- ▶150 = Exit Capacity 150
- ▷30 = Direction of exit → for 30
- (120 @ 1.25) = 120 Diners at fine dining area of 1.25m/p

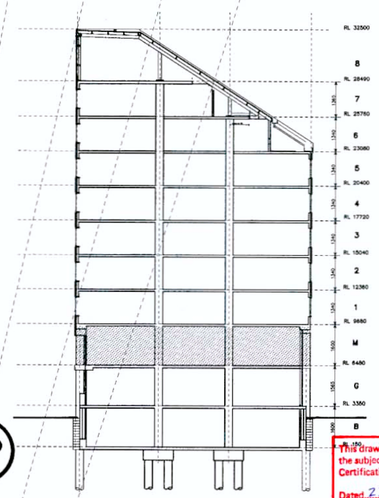
35 mm Setdown

50 mm Setdown

Door Schedule – Mezzanine Level

Door No.	Door Type
DW 1	Q
DW 2	T
DW 3	V
DW 4	U
DW 5	V
DW 6	S
DW 7	Ge
DW 8	Q
DW 9	R
DW 10	Q
DW 11	Q
DW 12	R
DW 13	Q
DW 14	X
DW 15	W
DW 16	X
DW 17	Q
DW 18	Q1
DW 19	Q1
DW 20	S
DW 21	S

Door No.	Door Type



PA / DA No. 559
DARLING HARBOUR
Received Date 29 OCT 99

PRINTED
12 OCT 1999

AB

This drawing/~~specification~~ is the subject of Certification No. 7192/01
Dated 23 October 1999
AUSTRALIAN BUILDING REGULATIONS PTY. LTD.
Per: [illegible]

RECEIVED
16 OCT 1999

DA/851/DA/2001/6/PR

BRUNTHER PROPERTY CODE INCOMING SEQUENTIAL NO. TYPE

Notes :

Rev	Date	Description
AN	14/04/99	Furniture Layout shown
Ao	2/7/99	Exit widths, paths, deck door
AP	22/9/99	Areas shown thus [illegible] UPGRADED
AQ	12/10/99	AREAS SHOWN THUS (AQ) UPGRADED OR MODIFIED
AL	18/01/99	PA Mezzanine deck extended to rear outdoor verandah

Connell Wagner
Engineers • Managers
Connell Wagner Pty Ltd
A.C.N. 005 139 873
116 Military Road
P.O. Box 538
Neutral Bay 2089
New South Wales, Australia
Telephone 02 9465 5599, Facsimile 02 9908 2044

BARRELLE PARTNERS
Architects
5 MYRTLE STREET, CROWS NEST 2065, SYDNEY, NSW, AUSTRALIA
TEL 02 9439 5988 FAX 02 9439 7181

MULPHA AUSTRALIA LIMITED
LEVEL 10
65 MARKET STREET
SYDNEY NSW 2000
AUSTRALIA
ACN 002 888 038
PHONE (02) 9258 5300
FAX (02) 9267 4120

Project :
Redevelopment of Pumphouse Hotel
Little Pier St, Darling Harbour
for
Tank Stream Darling Harbour, Pty. Ltd.

Dwg Name :
Mezzanine Plan

Drawing Number
PM A04ad

Date :
25/06/98

Scale :
1:100

For Construction

DEVELOPMENT APPLICATION
PROPERTY BOUNDARY
SQUARE METRES
TYPE
DA/851/DA/1999/APR

STREET

EDGE OF PIER

BARRIER

ELEC. PIT

BITUMEN

FOOTPATH

TELSTRA PIT

STREET

Store

Female WC

Male WC

Fold Up Slab

For Kitchen detail layout see International Restaurant Design Dwgs.

Lounge (50 @ 2m²)

150 Capacity 75 load

Stair 1

Fire Stair X

Fresh air plenur

Lobby 100m² @ 3m²/pp

Lounge (30 @ 2m²)

Main Lobby Population 115 incl staff + 75 from Mezz = 190

Exit Availability = 300 = 110 Exit Excess

Beer & Wine Store

Dry Store

Dry Waste

Fire stair E

Avail exit width but corridor 1300 :: ← 100 people

Luggage 1

Safe boxes

Fax Printer Copy

Storage

Reserv

Reserv

Tel

Exec Sec

General Manager

Front office Manager

Duty Manager

Jr Sec

Staff (25 by 2m²)

F & B Manager

Service Office

Service Office

Meeting Room

Meeting Room

Conference and Training room

Glass Door

Fire Stair B

Energy Australia standard substation Design Ref 34 Option 4

Cool Room

FREEZER

Cool Room

Kitchen

Fit Kitchen detail layout see International Restaurant Design Dwgs.

Chef Station Elect

Dry Store

Cooking

Washup

Garbage

Female WC

50mm setdown

Dock HEAVY DUTY ROLLER SHUTTER

OVERHEAD DOOR

Hydrant Pump Room

Hydrant Booster Valve

Male WC

STEEL STAIR TIMBER TREADS

TIMBER FLOOR

Exit Capacity 71 in excess of population

PAVING

BRICK PAVING

TRACHYTE

DARLING HARBOUR ELECTRICITY

BITUMEN

KERB

TRACHYTE

KERB

STREET

PIER

RUBBISH BIN

DRAINAGE PITS

INV. 1.62

INV. 1.22

50 mm Setdown

100 mm Setdown

175 mm Setdown

LEGEND

(50 D) = 50 people D = Diners at 1m² pp

▶150 = Exit Capacity 150

▷30 = Direction of exit → for 30

(100 @ 1.25) = 100 Diners at fine dining area of 1.25m²/pp

PA / DA No. 559
DARLING HARBOUR
Received Date 29 OCT 99

PRINTED
12 OCT 1999

This drawing/specification is the subject of Certification No. 7142/01 dated 23 October 1999 AUSTRALIAN BUILDING REGULATIONS PTY. LTD.

Noted:

Rev	Date	Description
AV	15/02/99	Fire stairs to rise in lobby between PH and 5th
AW	09/03/99	Front entry/egress to Harbour access amended
AX	14/04/99	Ramps added
Y	2/07/99	Exit Dimensions, paths, Deck door, East door
Z	15/07/99	AREAS SHOWN THUS (DDD) UNGRADED
AS	11/12/99	Wall between to eastern face of PH replaced with highlights & P.C. extract of consolidations in east wall of PH above, 50th wall of Bar Wharf to be set into embankment.

Connell Wagner
Engineers Managers
Connell Wagner Pty Ltd
A.C.N. 005 139 873
116 Military Road
P.O. Box 538
Neutral Bay 2089
New South Wales, Australia
Telephone 02 9465 5599, Facsimile 02 9908 2044

BARRELLE PARTNERS Architects
6 WYNDLE STREET CROWS NEST 2065 SYDNEY NEW SOUTH WALES
TEL 02 9929 0000 FAX 02 9929 7151

MULPHA AUSTRALIA LIMITED
LEVEL 20
55 MARKET STREET
SYDNEY NEW SOUTH WALES
AUSTRALIA
ACN 002 888 036
PHONE (02) 9266 5000
FAX (02) 9267 6232

Project :
Redevelopment of Pumphouse Hotel
Little Pier St, Darling Harbour
for
Tank Stream Darling Harbour, Pty. Ltd.

Dwg Name :
Ground Floor Plan

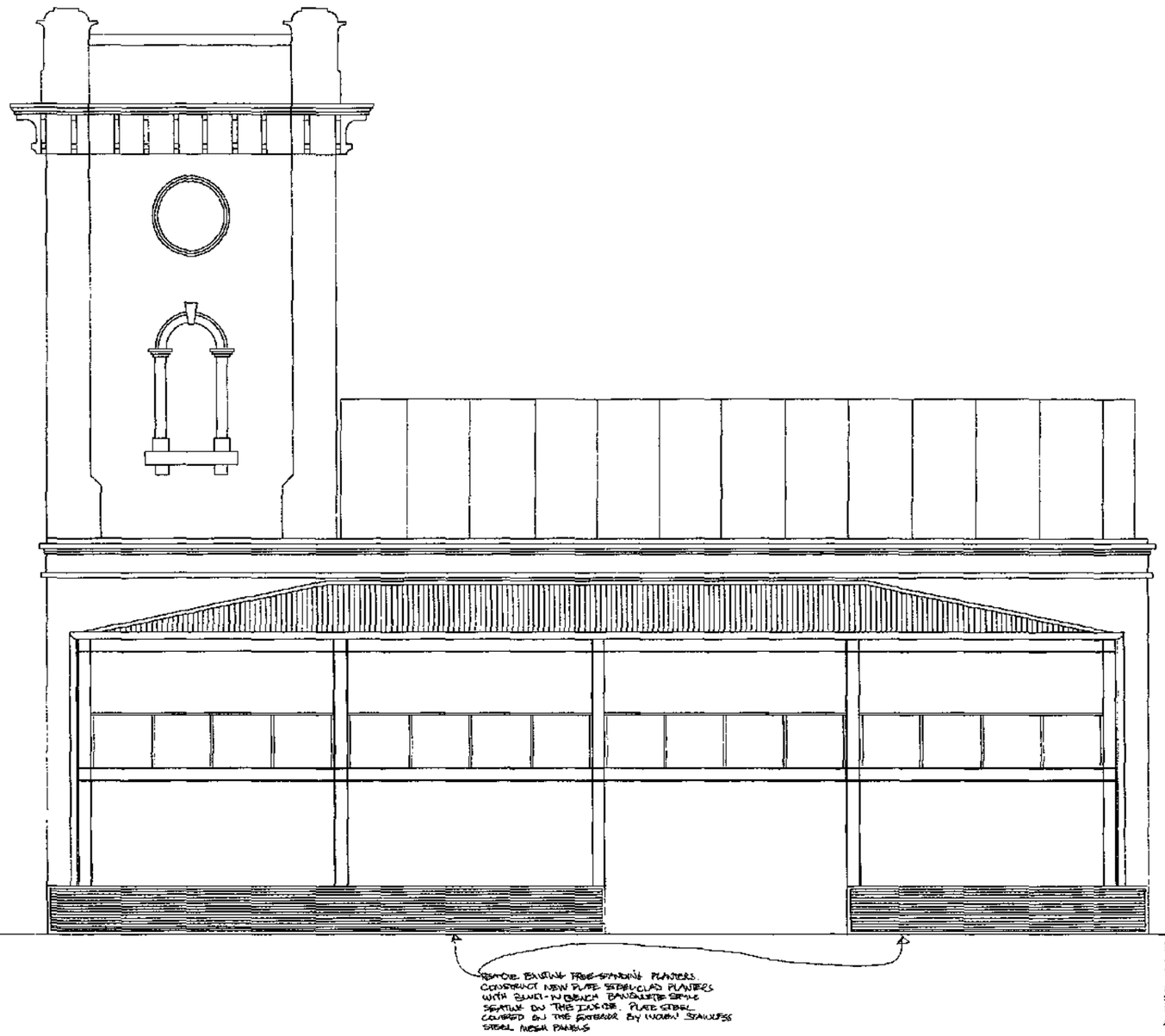
For Construction

Drawing Number :
PGF A03 ba

Date :
25/06/98

Scale :
1:100

RECEIVED
16 OCT 1999



DREAMTIME

Creative Concepts, Interior Design, Development and Operational Services for the International Hospitality Industry

Dreamtime Australia Group
Suite 9, 8 Mandolina Road
Darling Point
New South Wales 2027
Australia
Telephone (612) 9326 5588
Facsimile (612) 9328 5549
Mobile 0408 274 113

Offices in Australia and Mexico

project

PUMPHOUSE

LITTLE PIER STREET
DARLING HARBOUR, SYDNEY

client

NOVOTEL CENTURY SYDNEY

drawing

ELEVATION - EAST EXTERNAL

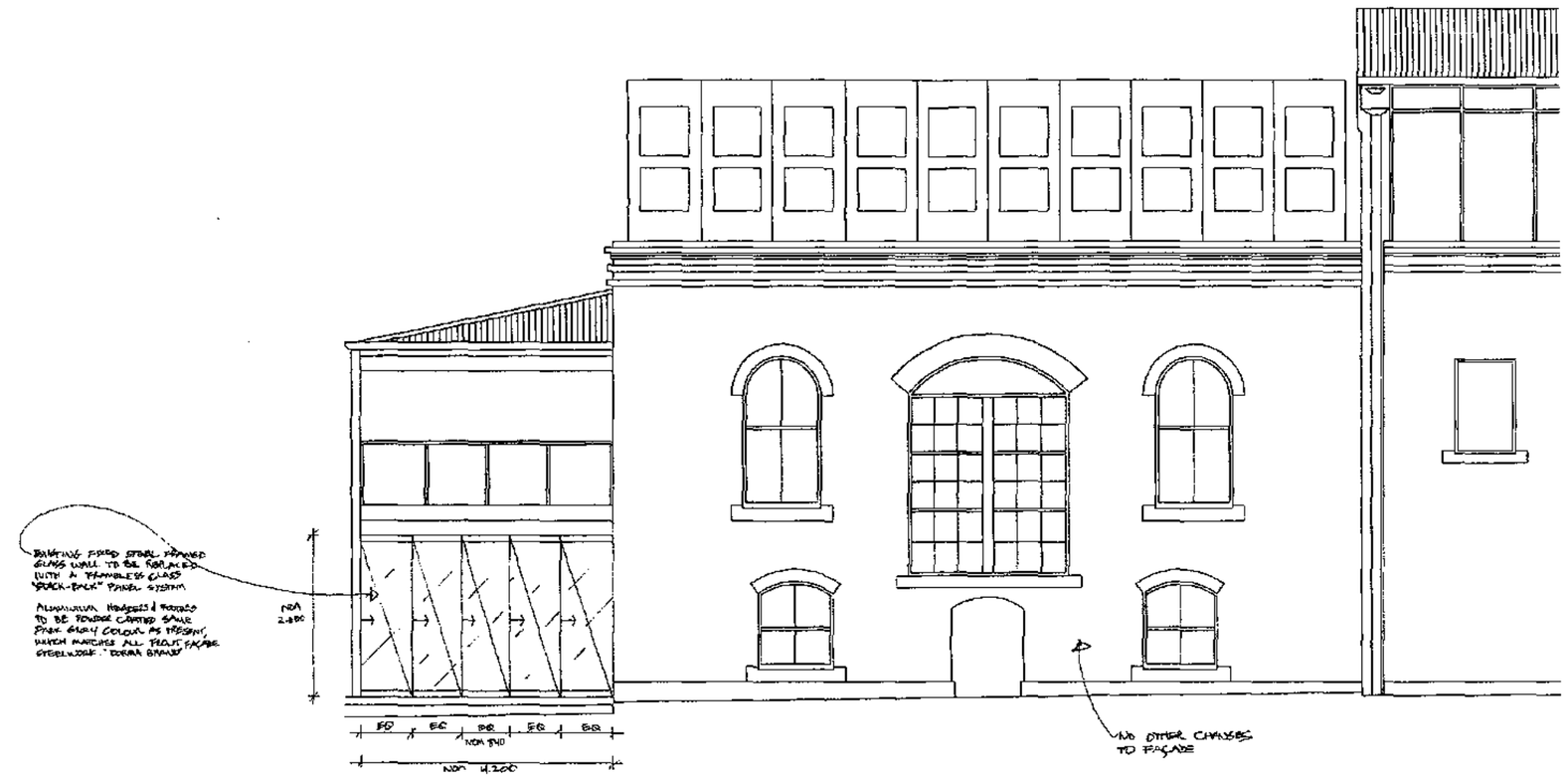
ISSUED 01 - 04 - 03

scale	date	drawn by	drawing	project no
1:50	Apr-03	M Mc	EL - 04	08 - 02

THIS DRAWING, COPYRIGHT AND MAY NOT BE USED WITHOUT WRITTEN CONSENT. DO NOT SCALE OFF THIS DRAWING USE FIGURED DIMENSIONS ONLY.
CONTRACTOR SHOULD NOT PROCEED WITH ANY DISCREPANCIES OR ERRORS TO THE DESIGN PRIOR TO PROCEEDING. SEE CONSULTANTS STRUCTURAL ENGINEERS DRAWINGS FOR ALL STRUCTURAL DETAILS AND METHODS THAT ARE NOT SHOWN IN CONJUNCTION WITH ANY OTHER PUBLISHED DOCUMENTS.

revision		
A	DEVELOPMENT APPLICATION	01. 04. 03

Sydney Harbour Foreshore Authority
This forms part of development consent:
DA No.: 410 - 08 - 03
Date: 16/9/03 Officer:



NORTHERN EXTERNAL ELEVATION
SCALE 1:50

DREAMTIME

CREATIVE CONCEPTS, INTERIOR DESIGN, DEVELOPMENTAL AND OPERATIONAL SERVICES FOR THE INTERNATIONAL RESTAURANT INDUSTRY

DREAMTIME AUSTRALIA GROUP

Suite 9, 1 Marathon Road

Darling Point
New South Wales 2027
Australia
Telephone (612) 9328 5548
Facsimile (612) 9328 5549
Mobile: 0400 775 855

OFFICES IN AUSTRALIA AND ASIA

PUMPHOUSE

LITTLE PIER STREET
DARLING HARBOUR, SYDNEY

CLIENT
NOVOTEL CENTURY SYDNEY

DRAWING
ELEVATION - NORTH EXTERNAL

ISSUED 01 - 04 - 03

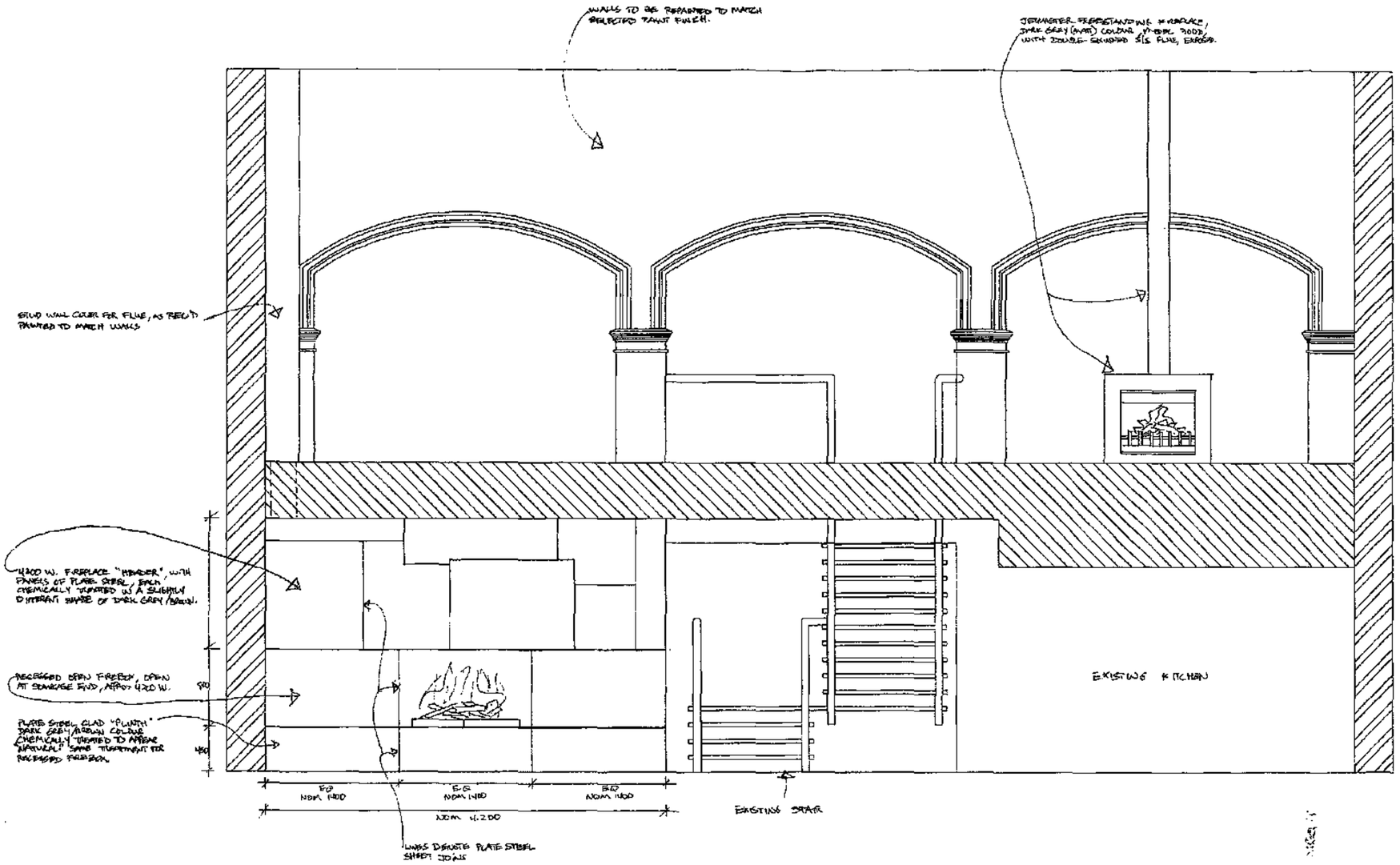
SCALE	DATE	DRAWN BY	DRAWING	PROJECT NO
1:50	Apr-03	M Mc	EL - 02	08 - 02

© COPYRIGHT OF THIS DESIGN AND WORK IS VESTED IN DREAMTIME AUSTRALIA GROUP AND MAY NOT BE USED WITHOUT THEIR CONSENT. DO NOT SCALE FROM DRAWING. USE FIGURED DIMENSIONS ONLY.
VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE DESIGNER PRIOR TO PROCEEDING. SEE CONSULTING STRUCTURAL ENGINEERS DRAWINGS FOR ALL STRUCTURAL DETAILS AND DIMENSIONS.
READ DRAWINGS IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS.

ISSUED FOR

A. DEVELOPMENT APPLICATION 01. 04. 03

Sydney Harbour Foreshore Authority
This forms part of development consent:
DA No.: 410 - 08 - 03
Date: 16/9/03 Officer:



DREAMTIME

Creative Concepts, Interior Design, Developmental and Operational Services for the International Restaurant Industry

Dreamtime Australia Group

Suite 9 6 Marathon Road

Darling Point
New South Wales 2027
Australia
Telephone (61-2) 9328 5548
Facsimile (61-2) 9328 5549
Mobile: 0400-775-015

Enquiries to Anderson and Marco

PROJECT

PUMPHOUSE

LITTLE PIER STREET
DARLING HARBOUR, SYDNEY

CLIENT

NOVOTEL CENTURY SYDNEY

DRAWING

SECTION - INTERNAL NORTH ELEVATION

ISSUED 01 - 04 - 03

SCALE	DATE	DRAWN BY	DRAWING	PROJECT NO
1:25	Apr-03	M Mc	EL - 01	08 - 02

THIS DRAWING IS COPYRIGHT AND MAY NOT BE REPRODUCED WITHOUT WRITTEN CONSENT BEYOND SCOPE OF THIS PROJECT AND USE INTENDED UNDER DA ONLY

CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION AND FABRICATION OF ANY ITEMS

DO NOT SCALE OFF THE DRAWING REFER TO FIGURED DIMENSIONS ONLY

ALL DISCREPANCIES TO BE REPORTED TO THE DESIGNER PRIOR TO PROCEEDING SEE LEGISLATION

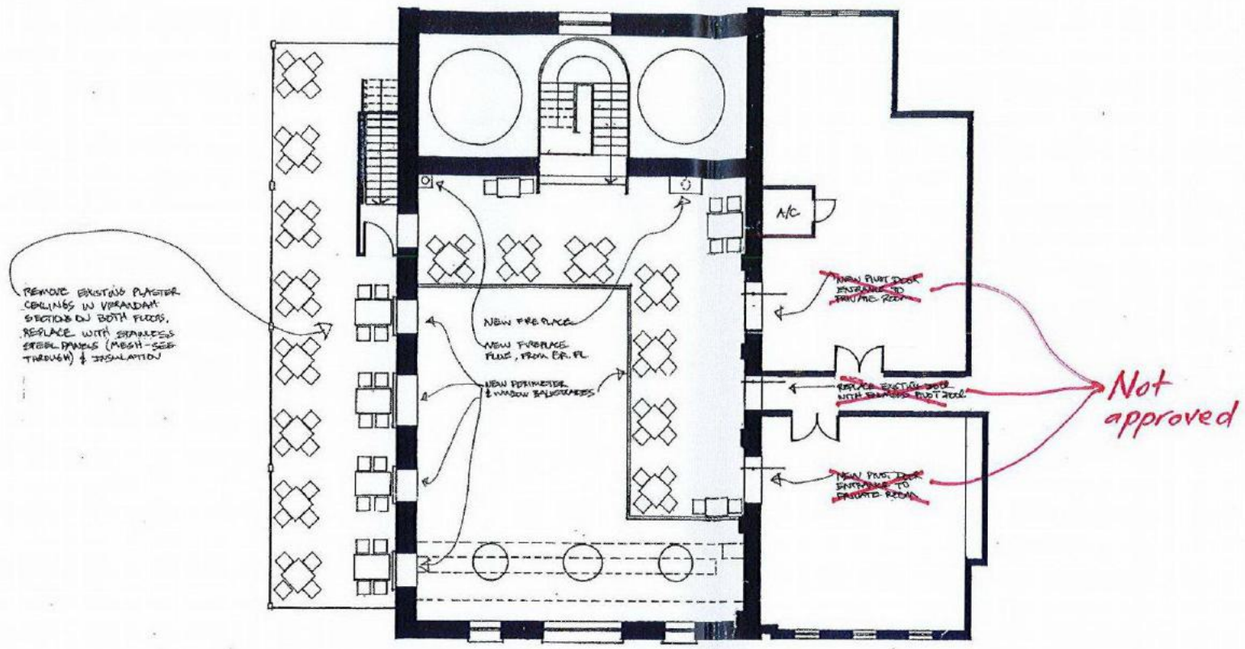
STRUCTURAL ENGINEERS DRAWINGS FOR ALL STRUCTURAL DETAILS AND DIMENSIONS

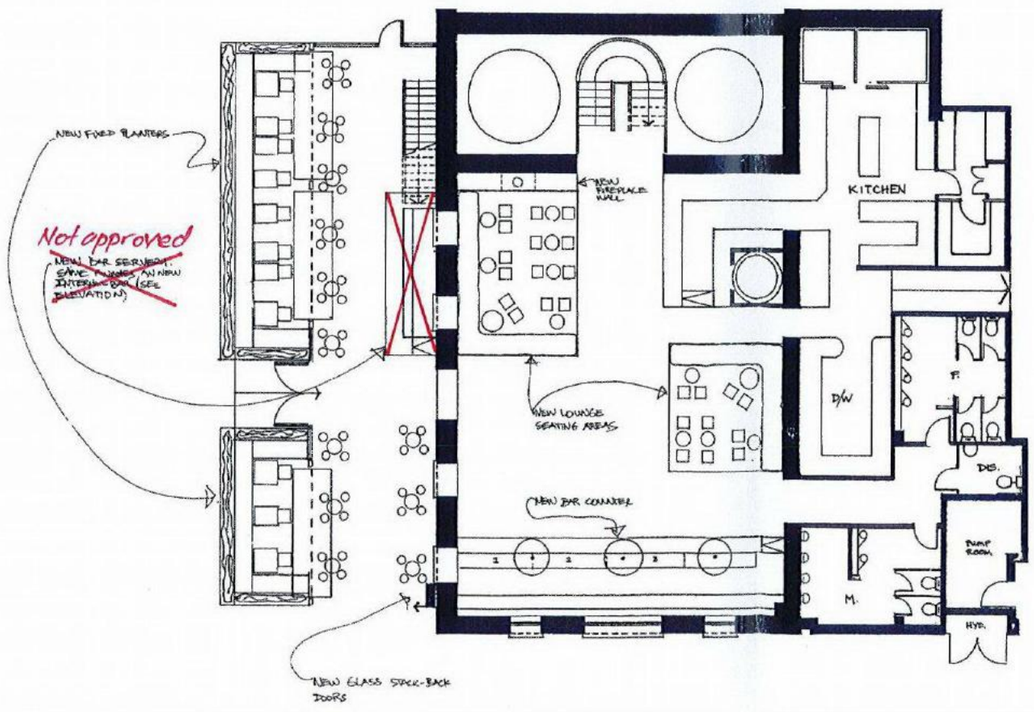
THESE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS

AMENDMENTS

A DEVELOPMENT APPLICATION 01. 04. 03

Harbour Foreshore Authority
This forms part of development consent
DA No.: 410 - 08 - 03
Date: 16/9/03 Officer: MM





DREAMTIME

Creative Concepts, Interior Design, Developmental and Operational Services for The International Restaurant Industry

Dreamtime Australia Group

Suite 9 8 Marathon Road

Darling Point
New South Wales 2027
Australia
Telephone (612)9328 5546
Facsimile (612)9328 5549
Mobile: 0400-775-015

Offices in Australia and Mexico

PROJECT

PUMPHOUSE

LITTLE PIER STREET
DARLING HARBOUR, SYDNEY

CLIENT

NOVOTEL CENTURY SYDNEY

DRAWING

FLOOR PLANS

ISSUED 01 - 02 - 03

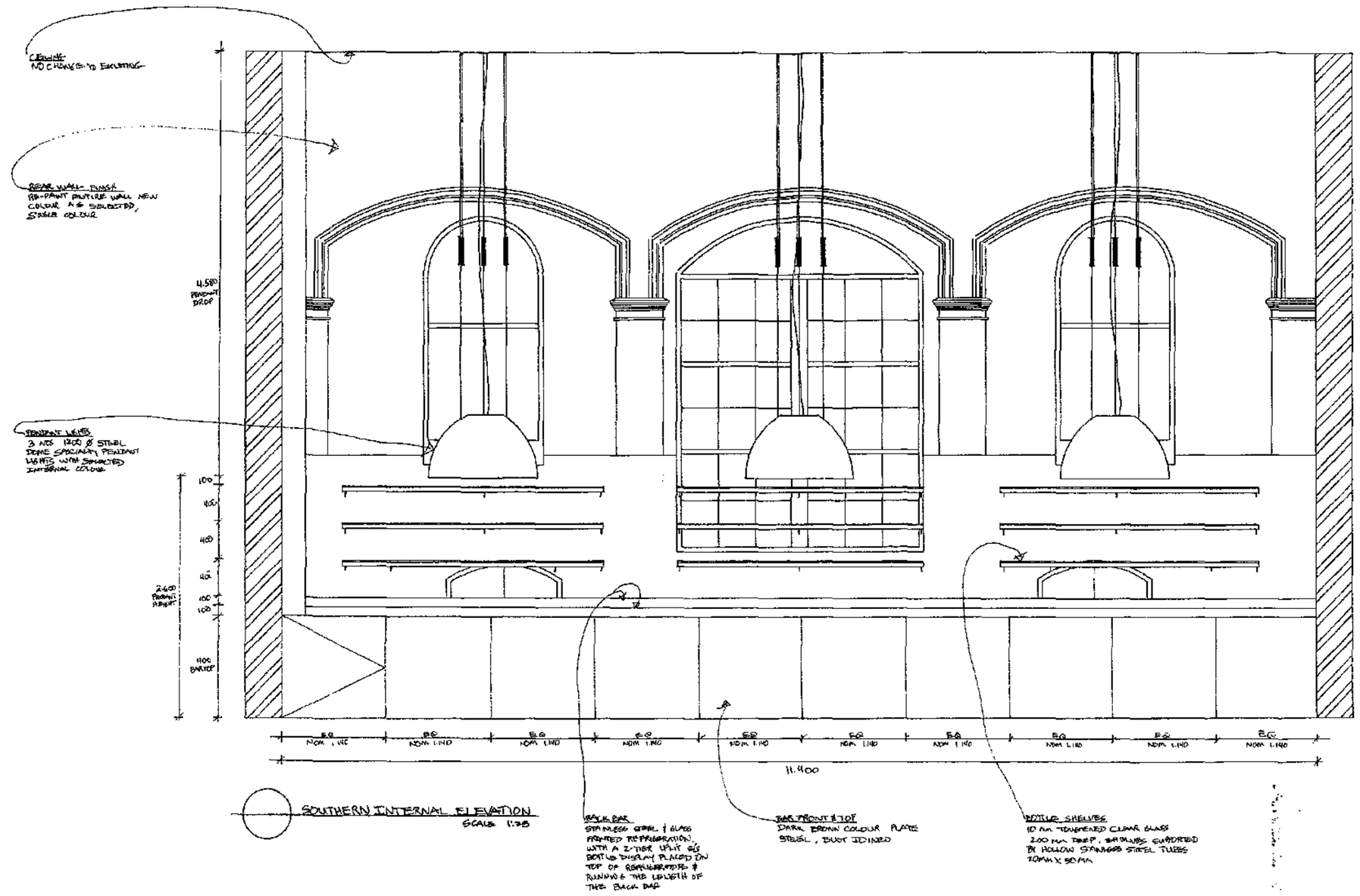
SCALE	DATE	DRAWN BY	DRAWING	PROJECT NO.
1:100	Apr-02	M Mc	FP - 01	08 - 02

THIS DRAWING IS COPYRIGHT AND MAY NOT BE USED WITHOUT WRITTEN CONSENT
DO NOT SCALE OFF THIS DRAWING. USE FIXED DIMENSIONS ONLY
VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE DESIGNER PRIOR TO PROCEEDING. SEE CONSULTING STRUCTURAL ENGINEERS' DRAWINGS FOR ALL STRUCTURAL DETAILS AND DIMENSIONS
READ DRAWINGS IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS

AMENDMENTS

A: DEVELOPMENT APPLICATION 01. 04. 03

Harbour Foreshore Authority
This forms part of development consent:
DA No.: 410 - 08 - 03
Date: 16/4/03 Officer:



SOUTHERN INTERNAL ELEVATION
SCALE 1:25

DREAMTIME

Creative Concept, Interior Design, Developmental and Operational Skills for The International Restaurant Industry

Dreamtime Australia Group
Suite 5 - 8 Marathon Road
Darling Point
New South Wales 2027
Australia
Telephone (612) 9328 5544
Facsimile (612) 9328 5549
Mobile 0408 274 013

Offices in Australia and Mexico

PUMPHOUSE

LITTLE PIER STREET
DARLING HARBOUR, SYDNEY

NOVOTEL CENTURY SYDNEY

SECTION - INTERNAL SOUTH ELEVATION

ISSUED 01 - 04 - 03

1:25	Apr-03	M Mc	SEC - 02	08 - 02

A DEVELOPMENT APPLICATION 01. 04. 03

Harbour Foreshore Authority
This forms part of development consent:
DA No.: 410 - 08 - 03
Date: 16/9/03 Officer:

EXISTING CEILING/STEEL TRUSSES, NO CHANGE.

RE-PAINT WALLS TO MATCH SELECTED COLOUR.

NEW GYPROCK PLASTERBOARD ENCASED FLUE.

1,000

2100

750

600

450

600

~~REMOVE WINDOWS & WINDOW FRAMES TO ALL OPENINGS IN THIS ELEVATION. INSERT NEW PAINTED TIMBER FRAME TO BRIDGE THE 2 DIFFERENT SILL LEVELS INSIDE & OUT.~~

Not

~~ENLARGE 1ST FLOOR WINDOWS. DEMOLISH SEGMENT OF 1ST FLOOR WALL UNDER EACH EXISTING WINDOW TO MATCH SIZE OF DOORWAY. EXISTING LOWER SILL LEVEL SHOWN DOTTED~~

Approved

~~INSERT NEW STAINLESS STEEL MESH BALUSTRADES WITH S/S HANDRAIL & PAINTED STEEL FRAMES TO MATCH BALUSTRADES ENCLOSING THE VOID, TO COMPLY WITH BCA REQUIREMENTS~~

CONSTRUCT GAS FIREPLUS WITHIN WALL-TO-WALL PLATE STEEL INSTALLATION. 'JETMASTER' BRAND CUSTOM FIREPLACE DESIGN

DREAMTIME

CREATIVE CONCEPTS, INTERIOR DESIGN, DEVELOPMENTAL AND OPERATIONAL STRATEGIES FOR THE INTERNATIONAL RESTAURANT INDUSTRY

DREAMTIME AUSTRALIA GROUP
Suite 9, 8 Marathon Road
Darling Point
New South Wales 2027
Australia
Telephone (61 2) 9328 5546
Facsimile (61 2) 9328 5549
Mobile: 0408 775 015
OFFICES IN AUSTRALIA AND MEXICO

PROJECT

PUMPHOUSE

LITTLE PIER STREET
DARLING HARBOUR, SYDNEY

CLIENT

NOVOTEL CENTURY SYDNEY

DRAWING

SECTION - INTERNAL WESTERN ELEVATION

ISSUED 01 - 04 - 03

SCALE	DATE	DRAWN BY	DRAWING	PROJECT NO
1:25	Apr-03	M Mc	SEC - 03	08 - 02

THIS DRAWING IS COPYRIGHT AND MUST BE USED WITHOUT WRITTEN CONSENT.
DO NOT SCALE OFF THIS DRAWING, USE FIGURED DIMENSIONS ONLY.
VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE DESIGNER PRIOR TO PROCEEDING. SEE CONSULTING STRUCTURAL ENGINEERS DRAWINGS FOR ALL STRUCTURAL DETAILS AND DIMENSIONS.
READ DRAWINGS IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS.

AMENDMENT

A. DEVELOPMENT APPLICATION 01.04.03

= DEMOLITION

Harbour Foreshore Authority
This forms part of development consent:
DA No.: 410-08-03
Date: 16/9/03 Officer:

Not approved

Harbour Foreshore Authority
This forms part of development consent:
DA No.: 410-08-03
Date: 16/9/03 Officer:

REPAINT WALLS TO MATCH SELECTED COLOUR

~~DEMOLISH WALL SECTIONS AS SHOWN TO ACCOMODATE NEW STEEL FRAMED SLIDING/PIVOT STYLE DOORS WITH A 1100/400 PIVOT PANEL. STEEL FRAME/MULLIONS DARK GREY FLAT MATT COLOUR~~

~~DEMOLISH EXISTING DOOR & PLASTERBOARD SURROUND TO CREATE DOUBLE SIZED OPENING TO THE OTHER SIDE. INSTALL SAME STYLE DOOR~~

CEILING / STEEL TRUSSES (NOT CHANGED)

225

1.500 | 400 PIVOT | 1.100 | 1.500 | 1.500

200

2100 OVERALL DOORS

1.900

EXTERNAL FREESTANDING FIREPLACE, DARK GREY (MM) COLOUR, MODEL 700D, DOUBLE SKINNED S/S FLUE, POLISHED

911

440

CONCEALED FLUE

580

2.100

800

460 PLINTH

600

CONSTRUCT GAS FIREPLACE WITHIN WALL TO WALL PLATE STEEL INSTALLATION. "JETMASTER" BUILT FIREPLACE (CUSTOM) DESIGN.

RE-CLAD WOOD FIRED OVEN, REMOVING COLOURED TILES & CLADDING WITH ARCHITECTURAL STAINLESS STEEL MESH & LOUVERS, WITH CLEAR FLOAT GLASS (TEMPERED) - ABOVE COUNTER ONLY, FRAMELESS

REMOVE EXISTING BAR FRONT & BACK WALL INSTALLATIONS. WALL MAKE GOOD, RE-PLASTER & RE-PAINT SELECTED COLOUR

EXISTING BACK-OF-HOUSE FLOORING BEHIND BAR REMOVED & RE-CYCLED PLANK FLOORING INSTALLED TO MATCH EXISTING WOOD FLOOR. ENTIRE WOOD FLOOR SANDED BACK & RE-STAINED AN EBEN JAPX UP/MUT COLOUR

REMOVE HORIZONTAL STEEL RODS IN EXISTING BALUSTRADE, LEAVING STAINLESS STEEL HANDRAIL, VERTICAL BALUSTERS IN PLACE. (GROUND FLOOR)

INSERT NEW INDUSTRIAL EXPANDED STEEL MESH PANELS WITHIN EXISTING BALUSTRADE FRAME.

500 | 500

1.100

100 | 880 | 1.000 | 700

400 | 400 | 600 | 1.100

PLATE STEEL BARCOUNTER

STAINLESS STEEL WORK COUNTER

WALKSPACE

REAR BARCOUNTER (S/S, Glass)

COUNTERTOP UP-LIT 8-TIER BOTTLE DISPLAY

CLEAR GLASS BOTTLE SHELVES, S/S SUPPORTS & INCORPORATING A S/S BOX WITH 12 FILAMENTS TO UPLIGHT BOTTLES

1/5
Sect no. 1 of 1 sheet
Rev 5

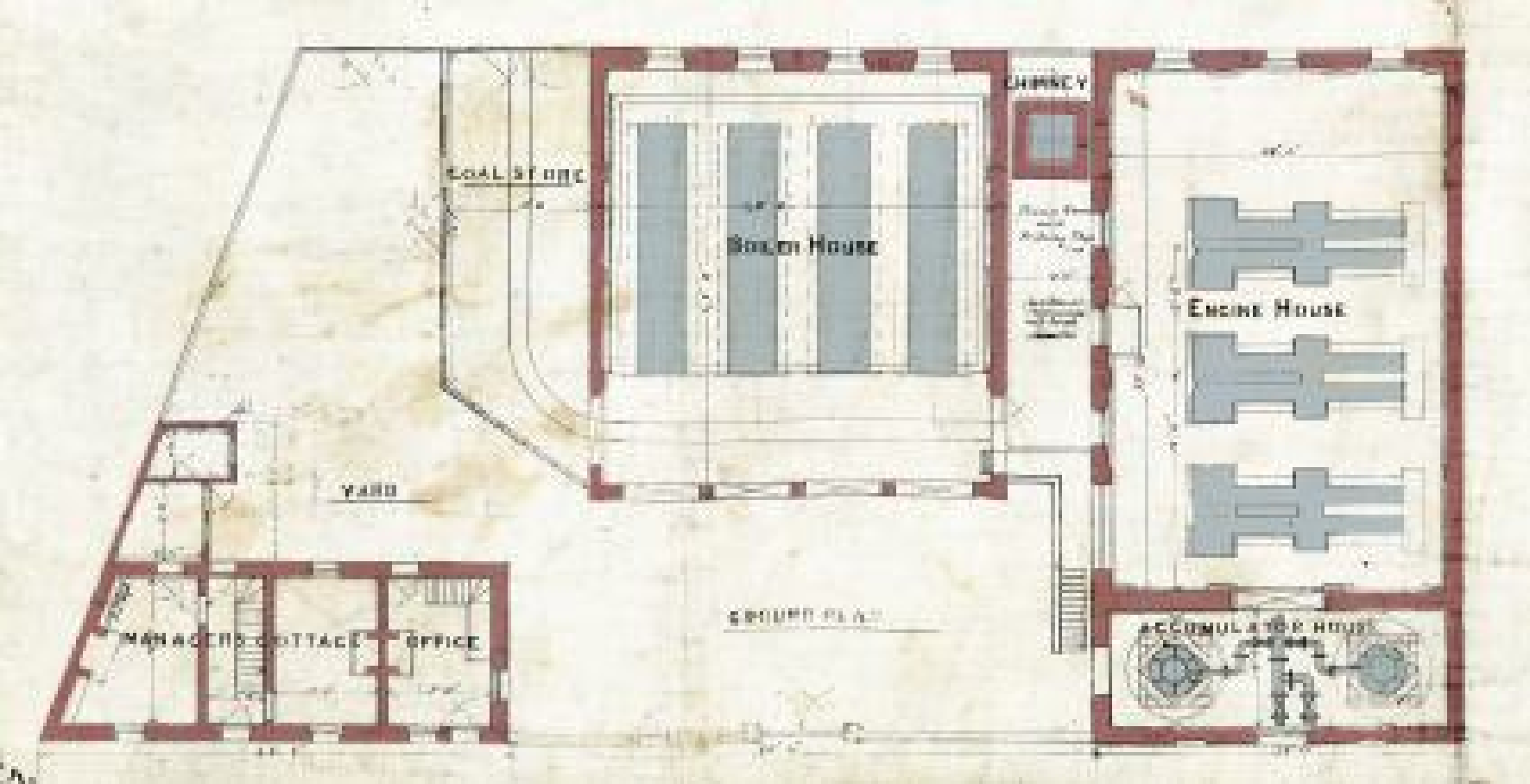
DREAMTIME AUSTRALIA DESIGN	SUITE 9, 8 MARATHON ROAD DARLING POINT NEW SOUTH WALES 2027 AUSTRALIA T (61 02) 9328-5548 F (61 02) 9328-5549 M (61) 400-775-015	CLIENT: NOVOTEL CENTURY SYDNEY PROJECT: PUMPHOUSE LITTLE PIER STREET DARLING HARBOUR PROJECT NO.	NOTES: THIS DRAWING IS COPYRIGHT AND MAY NOT BE USED WITHOUT WRITTEN CONSENT. DO NOT SCALE OFF THIS DRAWING. USE FIGURED DIMENSIONS ONLY. VERIFY ALL DIMENSIONS ON SITE PRIOR TO CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE DESIGNER PRIOR TO PROCEEDING. THIS DRAWING HAS BEEN PRODUCED TO ILLUSTRATE DESIGN INTENT. ALL SHOP DRAWINGS ARE TO BE SUBMITTED TO AND SANCTIONED BY DREAMTIME AUSTRALIA GROUP PRIOR TO MANUFACTURE OR

ISSUE	DATE	INITIALS	REVISION DETAILS
SEC - 1	1/4/03	M Mc	

DRAWING: ELEVATION - EAST INTERNAL
DRAWING NO.: SEC - 01
SCALE: 1 : 50
DRAWN BY: M Mc
CHECKED BY: M Mc
CLIENT APPROVAL:
APPROVAL DATE:

= DEMOLITION

Not approved


COAL STORE
BOILER HOUSE
CHIMNEY
ENGINE HOUSE
YARD
MANAGERS COTTAGE
OFFICE
GROUND PLAN
ACCUMULATOR HOUSE

SYDNEY AND SUBURBAN HYDRAULIC POWER COMPANY

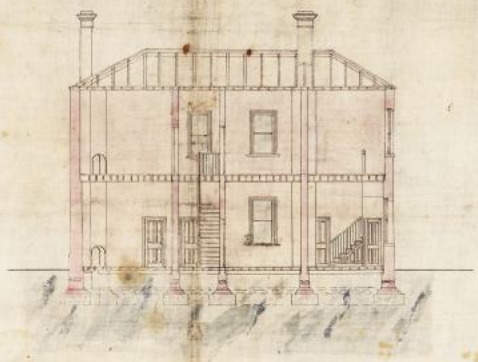
PUMPING STATION AT PIER STREET

DRAWING No 1

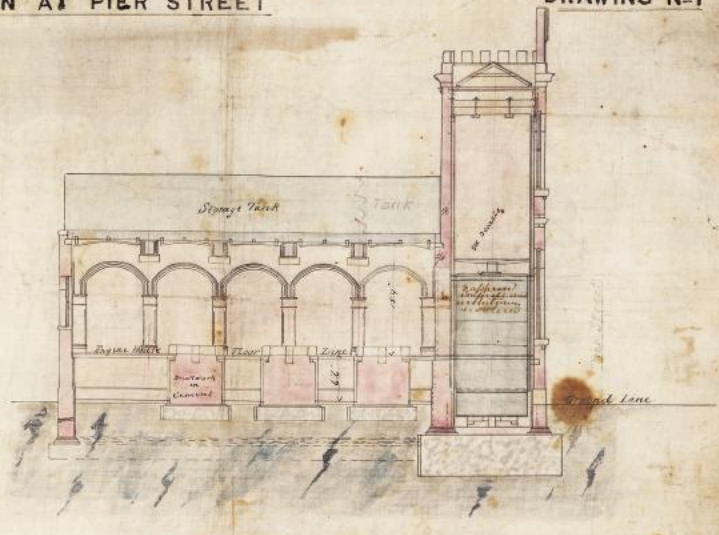
Scale 1/8 Inch to one Foot



FRONT ELEVATION OF COTTAGE & MANAGERS OFFICE



LONGITUDINAL SECTION OF COTTAGE ON LINE

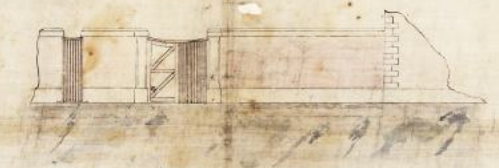


LONGITUDINAL SECTION OF ENGINE & ACCUMULATOR HOUSE ON LINE A A

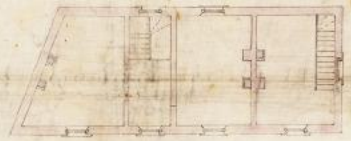


FRONT ELEVATION OF SCULLERY & BATH ROOM

END ELEVATION OF BATH ROOM & VERANDAH

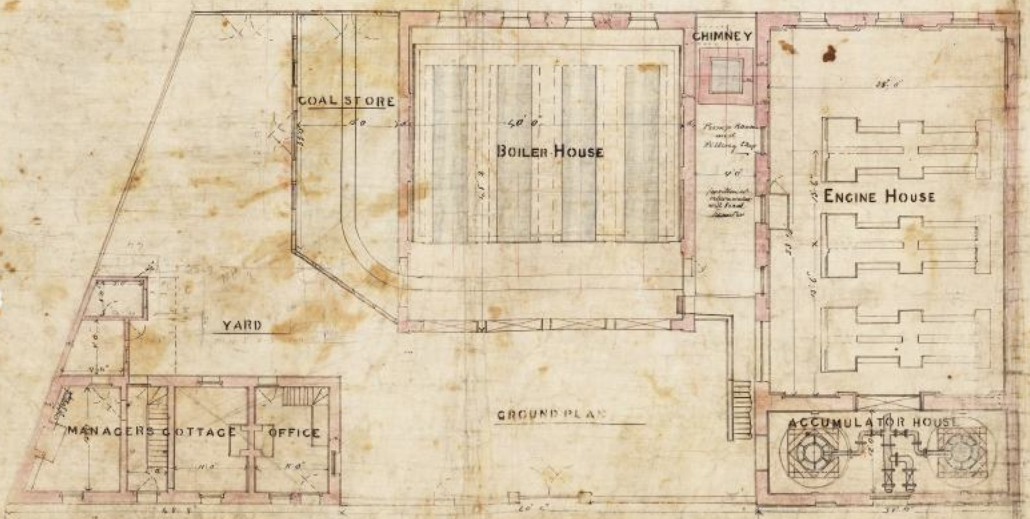


ELEVATION OF FRONT BOUNDARY WALL

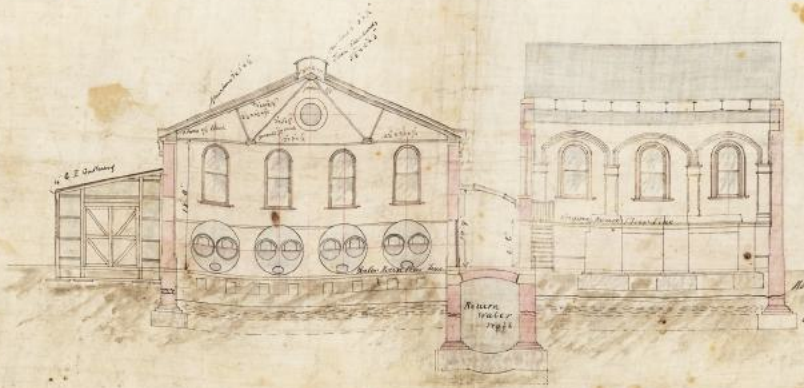


FIRST FLOOR PLAN

JOHN COATES & Co
Engineers.

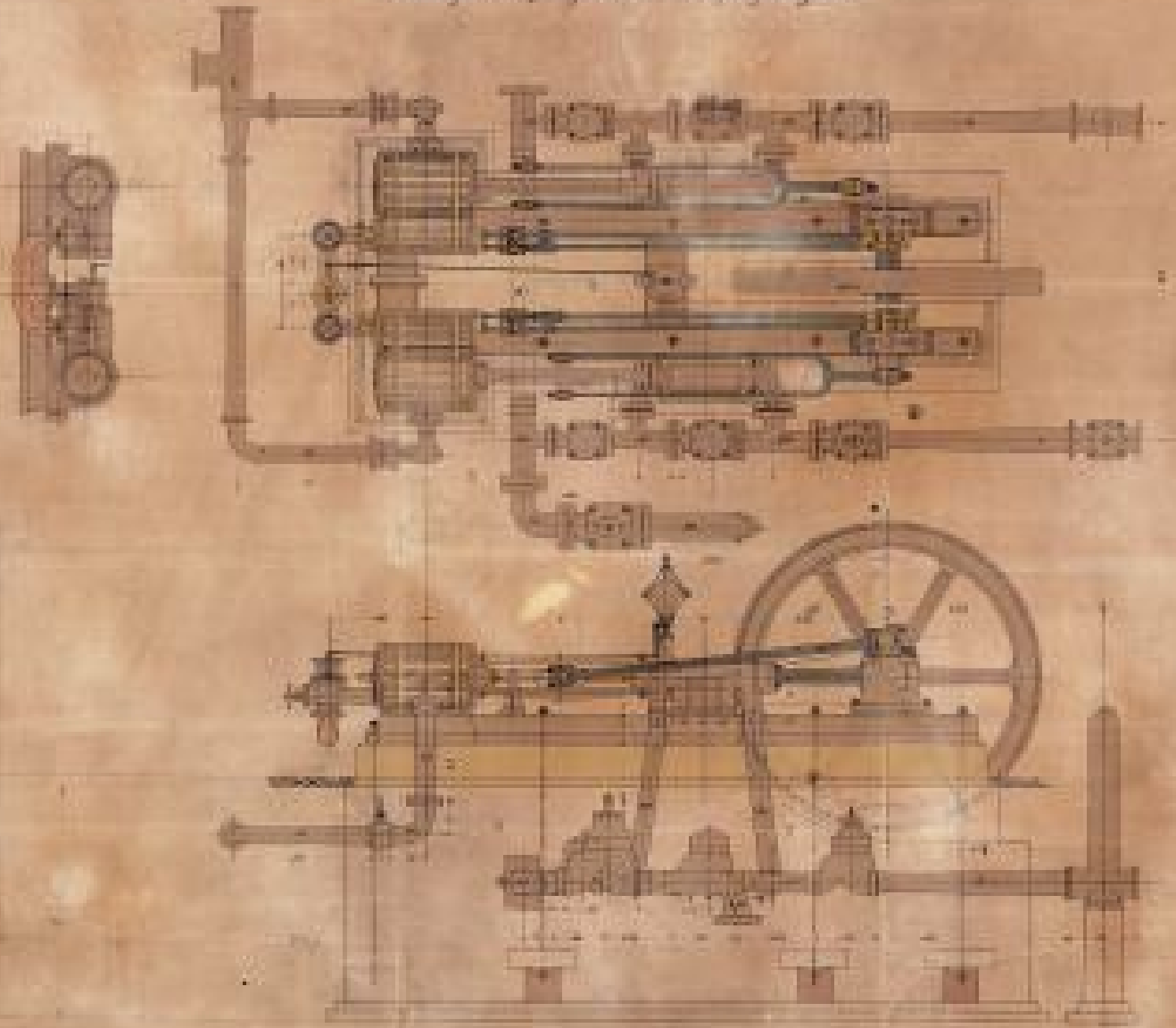


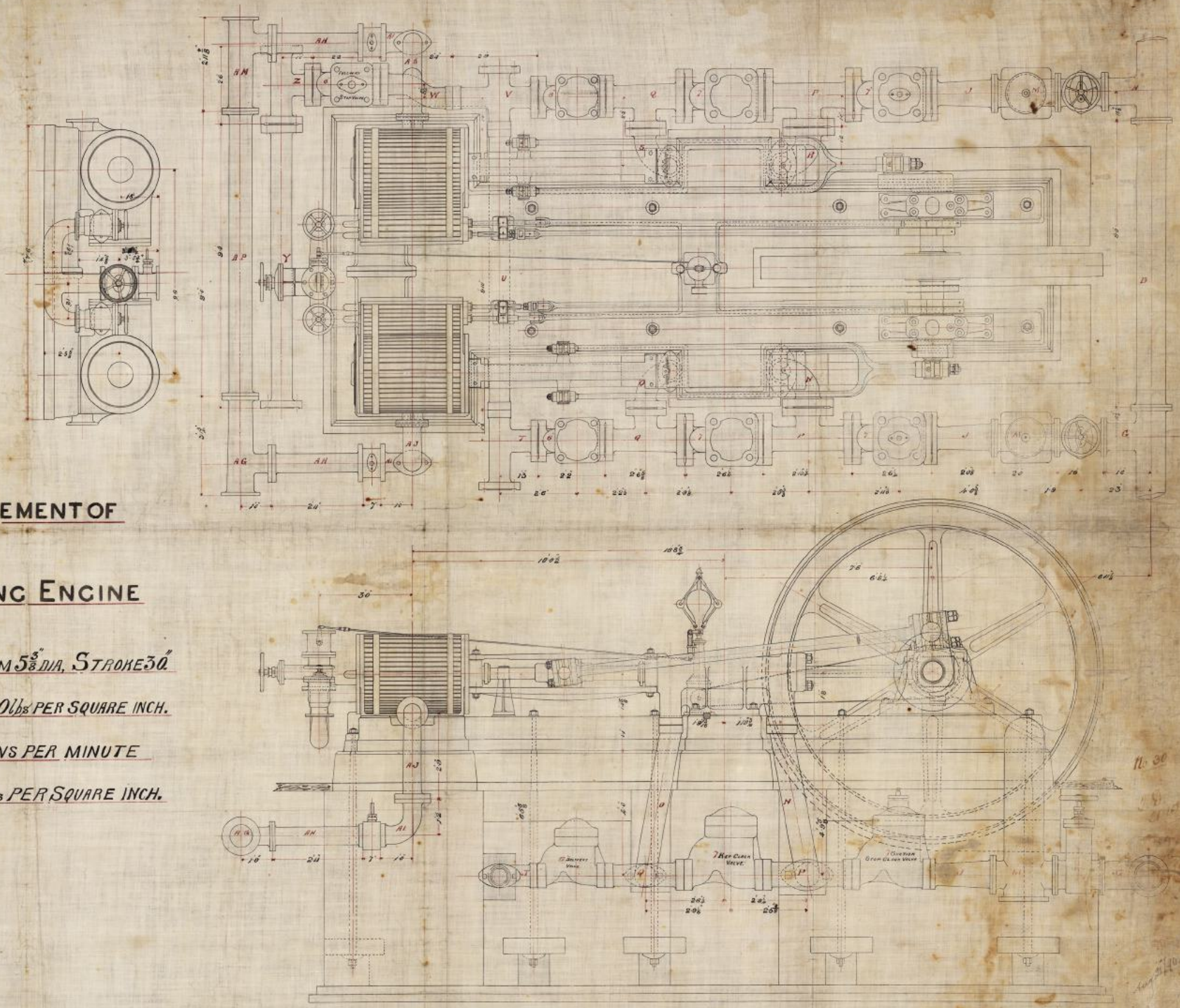
GROUND PLAN



TRANSVERSE SECTION OF ENGINE & BOILER HOUSE & COAL STORE ON LINE BB

Plan No. 1 of Reclamation as executed by the Engineering Office





GENERAL ARRANGEMENT OF
24" X 30"
HYDRAULIC PUMPING ENGINE

Scale $\frac{3}{4}$" Inch to one Foot

FORCE PUMP PISTON 7½" DIA. RAM 5⅝" DIA. STROKE 30"

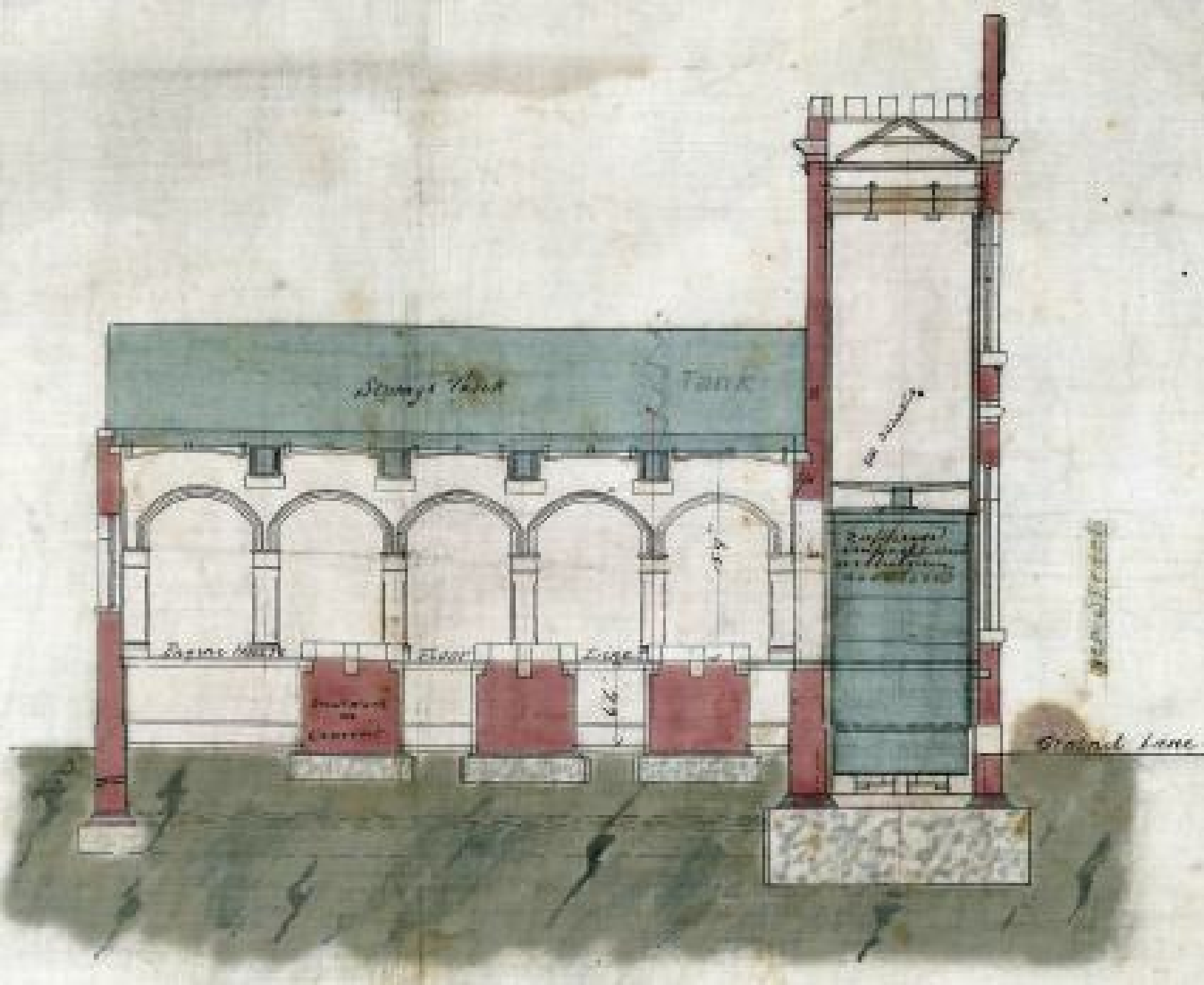
ACCUMULATOR PRESSURE 750 lbs PER SQUARE INCH.

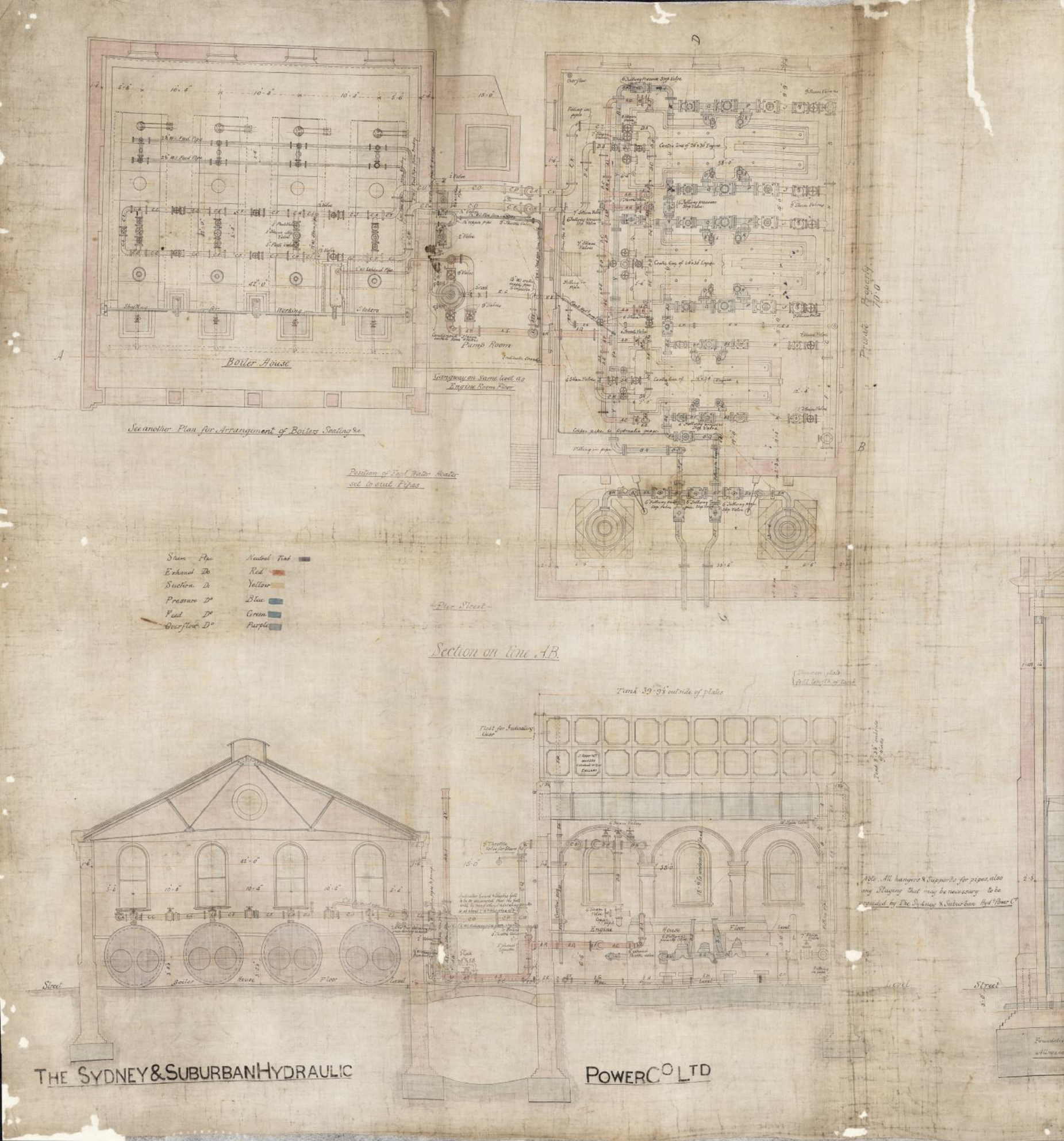
ENGINE AT 50 REVOLUTIONS PER MINUTE

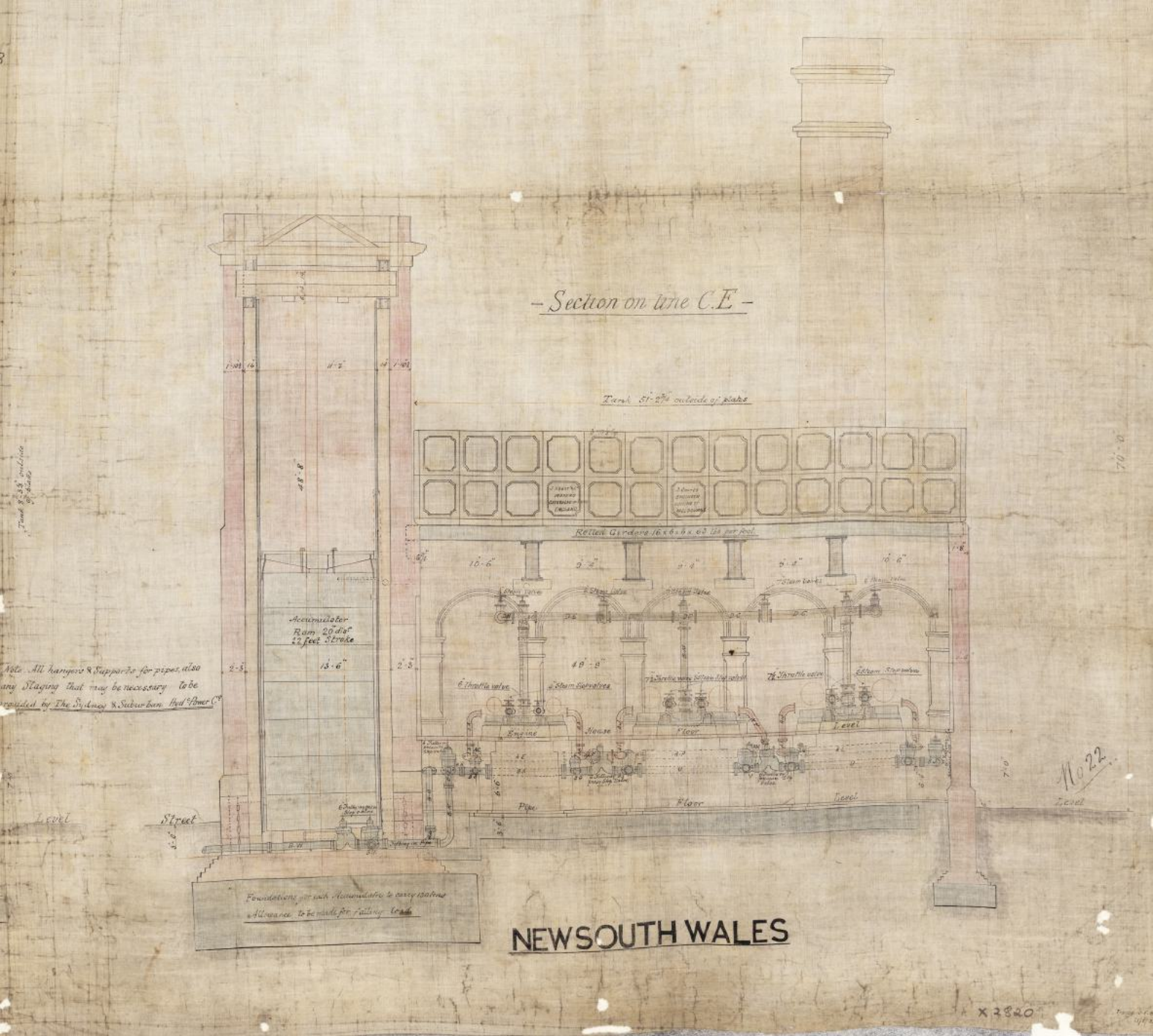
BOILER PRESSURE 100 lbs PER SQUARE INCH.

SYDNEY & SUBURBAN HYDRAULIC POWER CO LTD

ORDER No. 7341


Tank
Engine House
Stoker
Forge
Ground Line


Boiler House
Pump Room
Gangway on Same level as Engine Room Floor
See another Plan for Arrangement of Boilers Seating &c
Position of Feed Water Heater set to suit Pipes
Steam Pipes Neutral Tint
Exhaust Do Red
Suction Do Yellow
Pressure Do Blue
Feed Do Green
Overflow Do Purple
Pier Street
Section on line AB.
Tank 39'-3" outside of plates
Boiler House
Engine House
Floor Level
Street
Note. All hangers & Supports for pipes, also any Staging that may be necessary to be provided by The Sydney & Suburban Hyd. Power Co.
THE SYDNEY & SUBURBAN HYDRAULIC POWER CO LTD


– Section on line C.E. –
Tank 51-2¾ outside of plates
Rolled Girders 16 x 6 x 5/8 x 60 lbs per foot
Accumulator
Ram 20 dia°
22 feet Stroke
48'-8"
15'-6"
16'-6"
9'-2"
7'-8"
Engine House Floor Level
Pipe Floor Level
Street Level
Foundations for each Accumulator to carry 150 tons
Allowance to be made for Filling Ground
Note All hangers & Supports for pipes, also any Staging that may be necessary to be provided by The Sydney & Suburban Hyd. Power Co.
NEW SOUTH WALES
X2820

10.7 APPENDIX G

10.7.1 Inventory of Moveable Heritage Items

Former HPS No. 1

Item	Significance	Current Location	Works	Policies	Specific Guidelines	General Guidelines
Salvaged cast iron panels (x4)	Exceptional	Original cast iron panels from tank salvaged and stacked at the north west corner of the tank **Final Location** To be identified.	Store on roof until approval to form part of interpretation – Short Term – display – carefully lift (225kg each) due to brittleness – do not permit cracking – Medium Term	• Intact features, fixtures and moveable heritage associated with the site's historic use as the former HPS No.1 should be retained and preserved. • Maintaining a minimum staff presence during opening hours should continue as well as the current security provided by the Novotel Rockford Hotel and security guards that are present around Darling Harbour. This is to ensure the protection of significant fabric and moveable objects from damage or destruction.	Four loose cast iron panels on the roof, and perhaps more elsewhere on the site need to be placed where they will not be damaged long term	• Moveable heritage fabric is to remain on site. • Moveable heritage fabric is to be stored securely in a location that does not threaten damage to the fabric. • Moveable heritage fabric is not to be altered or damaged. • Moveable heritage may be used in Interpretation. • Items of Movable heritage fabric are to be documented and the records kept by the site owners in an accessible location, with a copy sent to the Heritage Branch.
Accumulator Weights	Exceptional	Original Accumulator weights in the Original Engine House, view looking towards West wall. Weights placed on ledges of lower level openings **Final Location** To be identified.	Store in Former Engine House until approval to form part of interpretation Short Term – display – careful handling and lifting due to weight. Care for correctly.		Accumulator weights on the site need to be cared for correctly.	