Appendix D

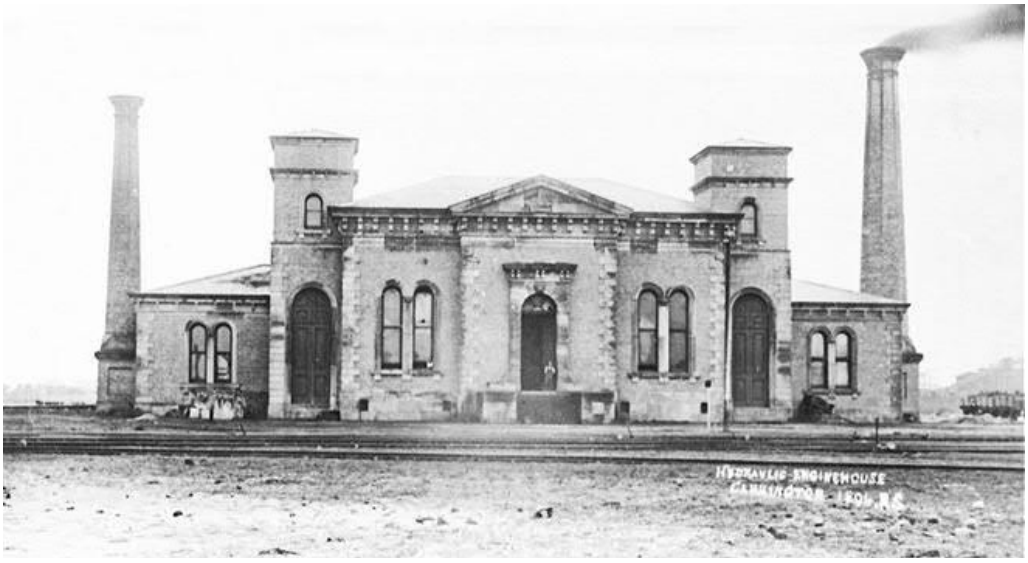
CONSERVATION MANAGEMENT PLAN (EJE HERITAGE)

CONSERVATION MANAGEMENT PLAN

Revision A

CARRINGTON HYDRAULIC ENGINE HOUSE
& CRANE BASES Nos. 7, 8, 9 & 10

THE PORT OF NEWCASTLE
106 BOURKE ST
CARRINGTON, NSW



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Cover Image: Hydraulic Engine House Carrington, NSW, 1894. Bert Lovett collection.
University of Newcastle Special Collections

0. INTRODUCTION

EXECUTIVE SUMMARY

Always more than a vernacular industrial building, the significance of the Carrington Hydraulic Engine House (CHEH) has been noted for over a century, with an 1891 news article describing the building in impassioned prose as “One of our Lions”.

The 145 year story of the Engine House (to date) involves technological innovation, a formative working life, adaptation and evolution, followed by decline and eventual redundancy. Not unlike many similar historic structures, a period of abandonment and dereliction saw dilapidation of the building’s fabric. In recent years however, a conservation campaign has begun to restore the building, with the goal of adaptive re-use and active celebration of the Heritage Item through use now closer than ever before.

The Carrington Hydraulic Engine House building was nominated to the Register of the National Estate in 1977, (gazetted in 1980) and identified as being of State Significance in Environmental Planning Instrument documents since the end of 1989, when it was included in the Hunter Regional Environmental Plan (Heritage), and again later in the Newcastle LEP in 2003. The building was formally nominated for the State Heritage Register in 2009, officially being listed in 2017. This is the first Conservation Management Plan (CMP) since that gazettal, prepared for the purpose of informing, guiding and assisting with the assessment of proposed conservation works, ongoing maintenance practices, as well as potential development or reuse proposals.

Two previous Conservation Management Plans for the Engine House have been accessed in production of this document, a 1993 edition prepared by John Carr working for the NSW Public Works Department (the 1993 CMP), and a 2005 edition produced by the NSW Department of Commerce (the 2005 CMP). The 1993 CMP covered the Engine House and the former 1915 Substation building, which has since been demolished. The 2005 CMP covered the Engine House and was expanded to cover the associated Crane Bases located along The Dyke.

EJE Heritage has been associated with work at the Carrington Hydraulic Engine House since 2013, and has recently been involved with two comprehensive stages of conservation work around the exterior and roof of the building, both approved under s60 of the Heritage Act 1977.

This CMP, prepared for the Port of Newcastle, draws on EJE’s working knowledge of the building, and updates the research and policies presented in the previous CMPs, bringing them up to date with the current conditions and context of the site and building, as well as the current legislative requirements.

STATEMENT OF PURPOSE

The purpose of this Conservation Management Plan is to provide a practical and philosophical framework for the long-term survival of the Carrington Hydraulic Engine House building, and associated historic crane bases (No’s 7,8,9 & 10).

This document provides guidelines and policies relating to the conservation, adaptive re-use, interpretation and management of the item, to ensure that its heritage values are maintained, and where appropriate, enhanced. It is intended to be comprehensive enough to cover all situations but flexible enough that each conservation situation that arises can be assessed individually.

The CMP constitutes a framework for the future management of the item, providing guidance for its activation, maintenance and care, in effort to support its heritage value, but also not to preclude reasonable development and use of the site and building. It should be used a first-reference document when considering any works to the building, temporary or permanent, and also be considered to be an evolving document that can be revised as context requires.

HERITAGE NSW REVIEW

The Port of Newcastle and EJE Heritage engaged in discussion with Heritage NSW regarding review of this CMP in its draft format, include a meeting (online teleconference) with Heritage NSW and Roads & Maritime NSW facilitated by Senior Heritage Officer Mr Isaac Clayton of Heritage NSW 18/05/2021. Heritage NSW provided feedback on this document by email to EJE Heritage 10/06/2021 requesting a number of revisions.

For ease of reference, the table following notes items of commentary from NSW Heritage's review of the Draft CMP, and identifies the main example of where in this current version of the report each item has been addressed.

HERITAGE NSW DRAFT CMP REVIEW	ADDRESSED WITHIN THIS CMP:
Include section which outlines how the Conservation Management Plan (CMP) has progressed since the last version. This should also include a table which shows what polices have been changed or removed from previous CMP.	Part 21 - PROGRESSION OF THE CONSERVATION MANAGEMENT PLAN Part 21.1 - PREVIOUS MANAGEMENT PLANS Part 21.2 - COMPARISON TABLE – CURRENT AND PREVIOUS CMP'S
Include a section which states the of purpose of the CMP and its conservation principles as part of the document's introduction.	Part 0 - INTRODUCTION – STATEMENT OF PURPOSE
Policy for asbestos needs to consider impacts to interpretation of original elements.	Part 19.1- INTEGRATION INTO THE MANAGEMENT OF THE SITE– (Policy 24).
Section 17.2 should include who the consent authority is. Also, this section is to provide an understanding that the State Environmental Planning Policy (Three Ports) 2013 SEPP does not override the provisions of the Heritage Act and this section should include refence to Part 3B – Heritage Agreements of the Heritage Act.	Part 0 - INTRODUCTION – SITE, OWNERSHIP & STAKEHOLDERS PART 17.2.2- Consent Authority Part 17.2.4 - Heritage Act 1977
Roads and Maritime Service need to be identified as an owner/stakeholder.	Part 0 - INTRODUCTION – SITE, OWNERSHIP & STAKEHOLDERS
CMP needs to consider polices that require induction/training for Port of Newcastle Authority and trades on how to use the CMP.	Part 19.1- INTEGRATION INTO THE MANAGEMENT OF THE SITE– (Policy 4).
Polices that are aimed at future tenants also need to be considered e.g., fit out and occupancy guidelines.	Part 19.10 - ADAPTIVE REUSE & TENANCY
The CMP's maintenance plan should also be supported by an implementation schedule which defines short, medium, and long-term conservation works objectives.	Part 20.3 - IMPLEMENTATION SCHEDULE
Interpretation The interpretation strategy should be developed for the whole site, including Crane bays 7,8,9 and 10. The strategy should also include guidelines and opportunities for future tenants and should be integrated with you CMP and any future tenancy guidelines. We recommend that you work with a design team who specialise in or have extensive experience developing interpretation strategies for large scale former industrial sites.	Part 19.9 - INTERPRETATION OF THE PLACE– (Policies 39, 40). APPENDIX 4: CHEH HERITAGE INTERPRETATION PLAN

SITE, OWNERSHIP AND STAKEHOLDERS

The CHEH site (being Lot 30 DP 1190075) is owned by NSW Treasury through a holding company named Port of Newcastle Lessor Pty Ltd (Port Lessor). Port Lessor has granted a 98-year lease of its land around the port of Newcastle, including the Engine House to the Port of Newcastle (PON). PON is responsible for its day-to-day operations and management.

The historical crane bases (7-10) sit within Lot 5 DP 1104199 which is 'wet' land forming part of the harbour channel. This land is owned by Transport for New South Wales (TfNSW), who have granted PON usage rights as the lessee of the adjoining port 'dry' land. PON may also sub-grant these usage rights.

Additional Stakeholders include:

- Heritage NSW, as the agency responsible for listings, declarations and approvals under the Heritage Act 1977.
- The NSW Minister for Planning and Public Spaces, as Consent Authority for the site under the Three Port SEPP 2013.

It is noted that the local government, the Council of the City of Newcastle, does not appear to have any planning authority over the site of the Item, although their councillors, heritage and planning departments would no doubt have a professional interest in the development of the significant historical building within their LGA.

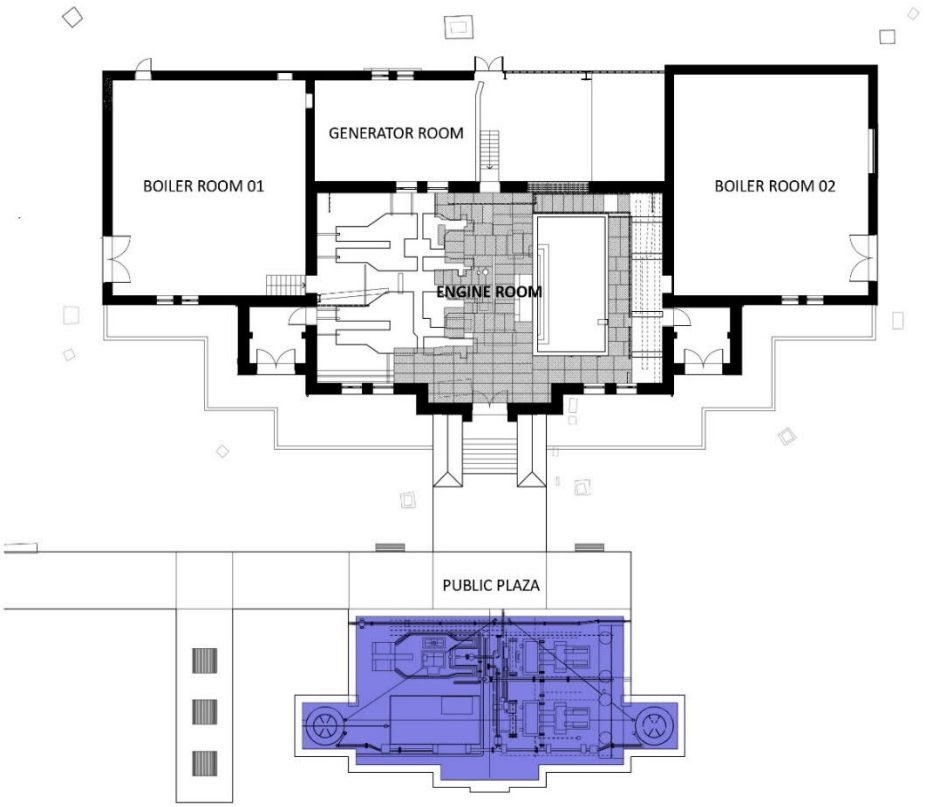

Figure 1. Existing Floor Plan – Carrington Hydraulic Engine House 2021.

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PART 1: INVESTIGATION AND HISTORY

1. GENERAL

1.1 ENGAGEMENT

EJE Heritage has been requested to develop an updated Conservation Management Plan (CMP) for the Carrington Hydraulic Engine House, Carrington NSW.

1.2 AUTHORSHIP

The Historical Context section of this report was prepared by Dominic Warland incorporating previous work by David Campbell. It has been edited and amended by Stephen Batey with information from the State Heritage Register listing, which was also compiled by David Campbell.

This Plan was prepared by EJE Heritage. The project team consisted of:

Barney Collins – (Director), Conservation Architect
Dominic Warland – Associate
Stephen Batey - Architect

Images are by EJE Heritage unless credited otherwise.

1.3 ACKNOWLEDGEMENTS

This Conservation Management Plan would not have been possible without the prior research, information and critical analysis by David Campbell and John Carr.

1.4 METHODOLOGY

This CMP provides details as to why a Heritage Item is considered to be of heritage significance. It outlines, also, policies for the maintenance of that significance, allowing for adaptive re-use, further development and ongoing management and maintenance.
The document has been prepared in accordance with the following:

- James Semple Kerr, The Conservation Plan (5th ed.). Sydney: National Trust of Australia (NSW), 2000.
- NSW Heritage Office Model Brief for the Preparation of a Conservation Management Plan or Other Documents;
- NSW Heritage Office, Assessing Heritage Significance. Sydney: Heritage Office, 2002;
- Australia ICOMOS, The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013. Burwood: Australia ICOMOS, 2013.
- Australia ICOMOS, Practice Note: Understanding and Assessing Cultural Significance;
- Australia ICOMOS, Practice Note: Developing Policy; and
- Australia ICOMOS, Practice Note: Preparing Studies and Reports – Contractual and Ethical Issues.

The Burra Charter, Article 26.1, states that:

> Work on a place should be preceded by studies to understand the place which should include analysis of physical, documentary, oral and other evidence, drawing on appropriate knowledge, skills and disciplines.

The heritage significance of the place is determined by the analysis and assessment of the documentary, oral and physical evidence. An understanding of this significance allows decisions to be made about the future management of the place. It is, however, important that these do not endanger the cultural significance of the place. Places and items of significance are those which allow an understanding of the past and enrich the present. Their survival will allow them to be re-interpreted by future generations.

1.5 SITE IDENTIFICATION

The CHEH building and crane bases are within the bounds of the Port of Newcastle. The CHEH building is identified as part of 106 Bourke St, Carrington, NSW, (Lot 30 DP 1190075) with the crane bases at 140 Bourke St, (Lot 5, DP 1104199).

The subject site is located within Newcastle Local Government Area. The lot is zoned Special Activities SP 1 under the State Environmental Planning Policy (Three Ports) 2013.

Figure 2. Aerial view of Newcastle.

The site is indicated with then red arrow at the top of "The Basin"

Spatial Information Exchange

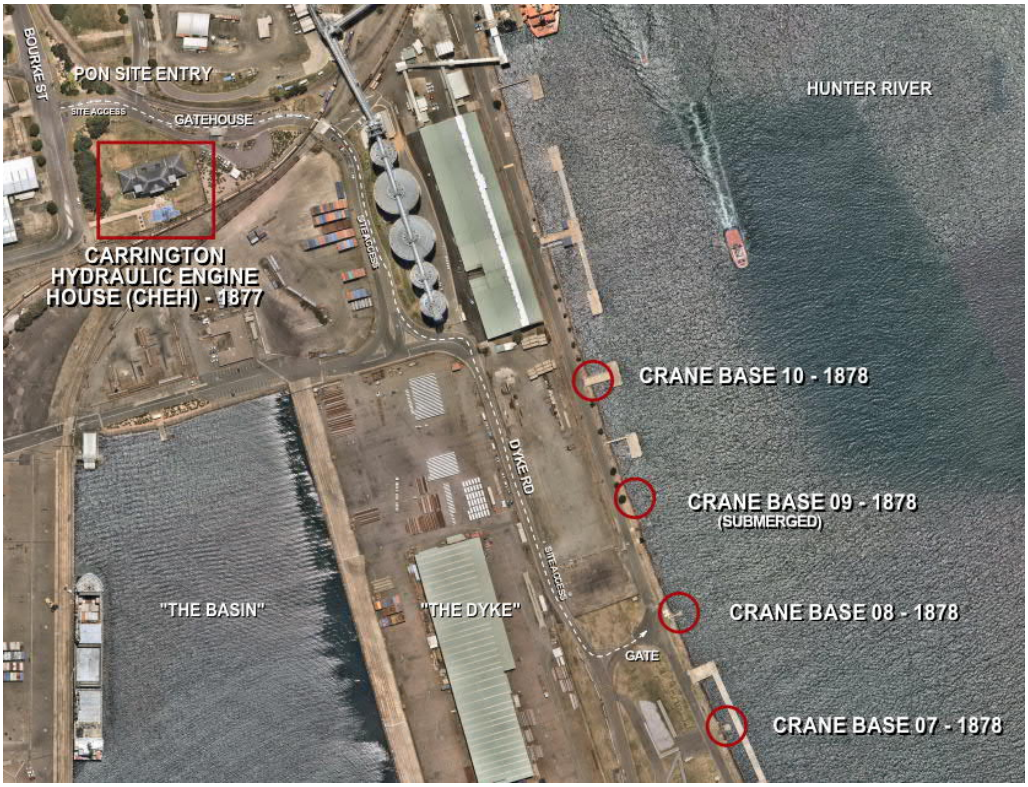


Figure 3. The CHEH site, in context with crane bases located along The Dyke.

Nearmap (by License) Edited.

Figure 4. The approximate lot boundary is bordered in red.

The Engine House faces slightly east of south, towards the basin and harbour.

Spatial Information Exchange

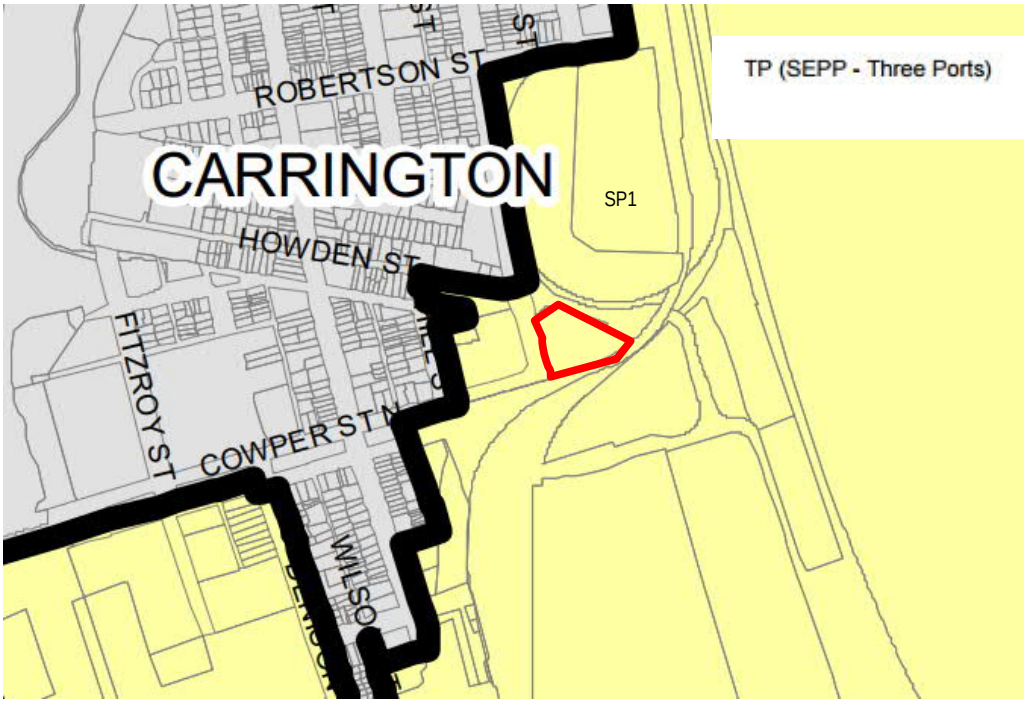


Figure 5. Detail of SEPP (Three Ports) Land Zoning Map LZN_003, the site is bordered in red.

Newcastle City Council LEP 2012

1.6 HERITAGE DATA

Data regarding the heritage item is listed below. Definitions of the Heritage Type are sourced from the State Heritage Inventory Appendix A - Heritage Branch, Office of Environment and Heritage 2009.

1.6.1 STATUTORY LISTINGS

1.6.1.1 State Heritage Register SHR:01987

Name of item:
Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10

Other name/s:
Carrington Hydraulic Power Station, Carrington Pumphouse

Type of item:
Built

Group/Collection:
Transport – Water

Category:
Harbour

Location:
Lat: -32.914948 Long: 151.769093

Primary address:
106 Bourke Street, Carrington, NSW 2294

Other Addresses
140 Bourke Street, Carrington, NSW 2294

Primary Lot
Lot 30, DP 1190075

Secondary Lot(s)
Lot 5, DP 1104199

Parish:
Newcastle

County:
Northumberland

Local govt. area:
Newcastle[1]

Local Aboriginal Land Council:
Awabakal

[1] The Item is encompassed by the Newcastle Local Government Area, though is not within its planning jurisdiction. The Newcastle LEP 2012 is not applicable to the property as the allotments are owned by the State of NSW and fall under the SEPP (Three Ports) 2013 document instead.

Figure 6: State Heritage Register Curtilage Diagram

1.6.1.2 SEPP (Three Ports) 2013

The following properties are listed as Heritage Items within Clause 31 of the SEPP

Suburb	Item Name	Address	Property Description
Carrington	Hydraulic Power Station	106 Bourke Street	Lot 30, DP 1190075
Carrington	Bullock Island Crane Bases	140 Bourke Street	Lot 5, DP 1104199
Carrington	Former McMyler Hoist	140 Bourke Street	Lot 6, DP 1187086

The "Hydraulic Power Station" (Hydraulic Engine House) and the earliest four of the Bullock Island Crane bases are included in the State Heritage Register listing and are covered in this Conservation Management Plan.

The location of the former McMyler Hoist is between Crane Bases 14 and 15 just north of the Robertson Street alignment and is not included in the listing or the CMP. It is also known as the Dyke 3 Coal Loader Base which is further described below.

General discussion of the other Crane Bases is given in the 'Associated Items' section of this CMP.

1.6.1.3 Newcastle Port Corporation Heritage and Conservation Register (S.170) Items

The following items are listed within the Newcastle Port Corporation Section 170 Register. Only the items within the vicinity of the Hydraulic Engine House have been included below. The Items marked in bold type are included in the State Heritage Register listing and covered by this CMP.

Item No.	Item Name	Address	Suburb	Level of Significance
3930003	Hydraulic Powerhouse	Bourke St	Carrington	State
3930019	Crane Base No.15		Carrington	Local
3930020	Crane Base No.14		Carrington	Local
3930021	Crane Base No.13		Carrington	Local
3930022	Crane Base No.10		Carrington	State
3930023	Crane Base No.8		Carrington	State
3930024	Crane Base No.7		Carrington	State
3930025	Crane Base No.6		Carrington	Local
3930026	Crane Base No.5		Carrington	Local
3930027	Crane Base No.4		Carrington	Local
3930028	Crane Base No.3		Carrington	Local
3930029	Crane Base No.2		Carrington	Local
3930030	Crane Base No.1		Carrington	Local
3930038	Dyke 3 Coal Loader Base	Dyke 3	Carrington	Local

Crane Base No.9 is not included in the S.170 Schedule, likely because its fabric has previously been demolished to below the waterline and the remnant structure is normally submerged.

The Dyke 3 Coal Loader Base contains the remnants of the former McMyler Hoist mentioned above.

1.6.2 NON-STATUTORY LISTINGS

1.6.2.1 National Trust

The Hydraulic Engine House is listed by the National Trust of Australia NSW branch. The listing number is 1639 which was gazetted as early as the 30th of May 1977. The listing is primarily focussed upon the Southern Facade of the building.

This listing is of persuasive value only, and has no legislative force. There is no statutory obligation for the applicant to notify the National Trust of proposed development of the site. However, inclusion of an item within the National Trust register generally indicates a high level of community support for the conservation of the item. Unsympathetic development or demolition would be expected to meet with opposition from the community.

1.6.2.2 Heritage Act – Icons Project Nomination for SHR Listing

The Icons Project was an initiative of the New South Wales Government in 2004 which called on communities to nominate places within their region which they considered to be important, but have not been formally recognised within the State Heritage Register. The project provided an opportunity for the wider community to be involved in the heritage process.

The Carrington Hydraulic Engine House was nominated along with a number of other items in the Newcastle area.

1.6.2.3 Register of National Estate (now defunct)

The now-defunct Register of the National Estate listed the Hydraulic Power Station (Hydraulic Engine House) as a Registered item, place ID 1293, place File No. 1/09/063/0017. The Register described the building as 'Carrington's most significant landmark' and 'of unusually high architectural standard considering its original purpose' also 'of considerable interest to industrial archaeologists.'[2]

The Register of the National Estate was closed in 2007 and thus no longer has statutory force, and is of persuasive value only. The Hydraulic Engine House is not included in its successor, the Australian National Heritage List.

1.6.2.4 Newcastle Local Environmental Plan 2003 (repealed)

The Newcastle LEP 2003 was repealed on the 14th of June 2012 when it was superseded by the Newcastle LEP 2012. When the Newcastle LEP 2003 was in force however, the Hydraulic Engine House, Crane Bases and Former McMyler Hoist were included in Schedule 6 Heritage Items and heritage conservation places as described hereunder.

Suburb	Item name	Address	Property description	Significance
Carrington	Hydraulic Power Station	106 Bourke Street	Lot 3 DP 834572	State
Carrington	Bullock Island Crane Bases	38 Robertson Street	Lot 1 DP 834572	Local
Carrington	Former McMyler Hoist	61 Robertson Street	Lot 2 DP 834572	Local

As the LEP has been repealed, it no longer retains any legislative force. Furthermore, the property itself is now under the jurisdiction of the State of New South Wales, not the Local Government Area of Newcastle.

[2] (Archived) Register of the National Estate. Accessed 8th January 2021: http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=town%3DCarrington%3Blist_code%3DRNE%3Bkeyword_PD%3Don%3Bkeyword_SS%3Don%3Bkeyword_PH%3Don%3Blatitude_1dir%3DS%3Blongitude_1dir%3DE%3Blongitude_2dir%3DE%3Blatitude_2dir%3DS%3Bin_region%3Dpart;place_id=1293

1.6.2.5 Newcastle City Wide Heritage Study 1996

The Newcastle City Wide Heritage Study compiled in 1996 by Suters Architects was the study which informed the Newcastle LEP 2003 Heritage Schedule. The study identified the Former McMyler Hoist (CARR.021) and the Bullock Island Crane Bases (CARR.022) and recommended them for inclusion in the upcoming LEP.

1.6.2.6 The Hunter Regional Environmental Plan 1989 (repealed)

When the Hunter Regional Environmental Plan (Heritage) was first gazetted in late 1989, the 'Hydraulic Pump Station' at Cowper Street Carrington was listed in Schedule 1 – Items of State Environmental Heritage. It was revised out of later amendments to this planning instrument as the document was utilised to focus on examples and properties further up the Hunter Valley than the port.

This Legislation was repealed on the 4th of August 2016 and thus is no longer enforceable.

1.7 SITE VISITS AND RECORDINGS

EJE Heritage first formerly inspected the site circa February 2007 and a number of the photographs in the Newcastle Port Corporation Section 170 Register date from this period. EJE has been directly involved in conservation works for the Hydraulic Engine House since mid-2013 when the Newcastle Port Corporation Section 170 Register was updated. Numerous site visits were undertaken in conjunction with these works.

EJE provided advice, design, documentation and site inspection services between 2018 and 2019 relating to the conservation works to the main South facade, roof, and the construction of the new public plaza / forecourt space. EJE are continuing similar involvement with works to the North, East and West facades from 2020 to the time of writing of this report. Design works by EJE associated with remediating an asbestos hazard in the Engine Room are also underway at the time of writing (August 2021).

External and internal 3D scanning of the building and sub-floor cavity in the Engine Room has been undertaken by Airsight Australia between 2018-2020. A detailed inspection, photography and 3D scan package by Airsight and EJE of Crane Bases 7, 8, 9 & 10 occurred on the 13th of November 2020.

1.8 CONSTRAINTS AND LIMITATIONS

EJE is not qualified to offer structural opinions. This report is not intended to convey any opinion as to the structural adequacy or integrity of the structure, nor should it be construed in any way as so doing. Similarly, observations are limited to the fabric only; no comment is made as to the capacity, adequacy, or statutory compliance of any building services.

2. HISTORICAL CONTEXT

2.1 PRE-COLONIAL INHABITATION

Prior to European exploration and settlement, Muloobinba (Newcastle), place of 'edible sea fern', and the Coquon (Hunter River) region hosted the traditional nations of the Awabakal and Worimi Aboriginal people. The river estuary at this time was considerably wider than the present-day harbour, consisting of shifting sands and moving channels, with the area of today's Carrington consisting of low tidal mudflats.[3] Coastal Banksia, otherwise known as Honeysuckle, flourished along the banks of the river, an area rich in food sources for the traditional occupants.

The site of the proposed work around today's Carrington Hydraulic Engine House is based on land reclaimed from the Harbour by European inhabitants from the 1860's onwards. Prior to European settlement, seafood such as fish, oysters and pippies would have been a prominent source of bush tucker sourced in the area, with evidence of shell middens, a campsite, and ceremonial ground discovered at Meekarlba (today's Honeysuckle Precinct). While not always confrontational in nature, European colonial occupation in the 19th century drastically affected the Aboriginal people; times of conflict, dispossession of hunting grounds, and the introduction of diseases such as small pox drastically reduced Aboriginal populations in the area. The first European census of aboriginal people in the area of Newcastle occurred in 1827, and counted only 140 individuals in receipt of government provisions.[4]

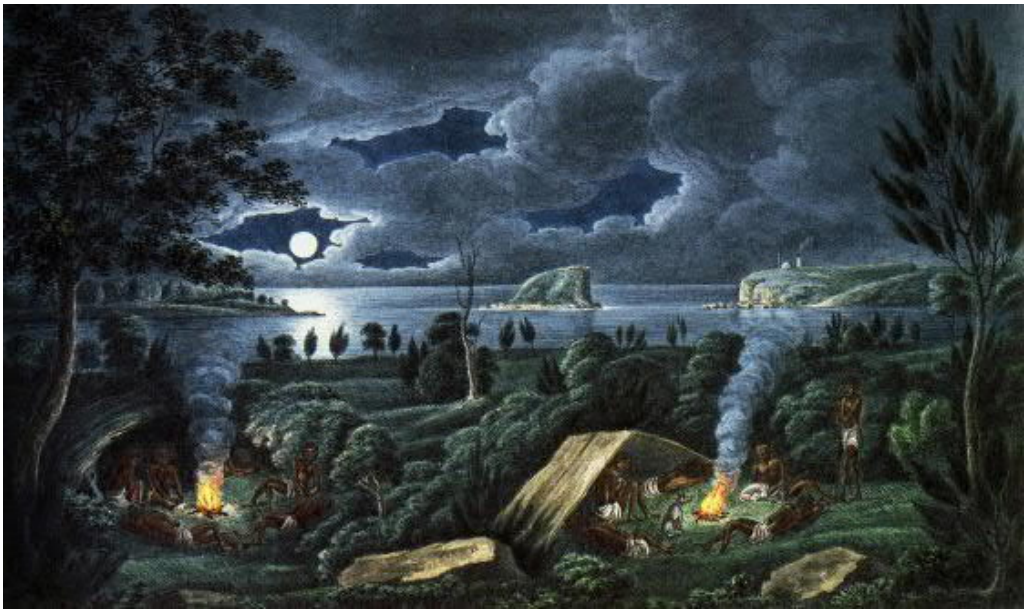


Figure 7. Lycett, Joseph (ca.1775 – 1828).

Aborigines resting by a Camp Fire near the Mouth of the Hunter River, Newcastle, NSW.

National Library of Australia

2.2 BULLOCK ISLAND

The Awabakal people who settled near the Hunter River referred to Bullock Island as "Onebygamba" (Onibygambah), meaning large mound. It was an appropriate moniker for the wide expanse of ground rising (albeit only marginally) above the water's surface between two arms of the Hunter River, where Throsby Creek entered the secondary flow. The area later achieved its colonial name of Bullock Island because of the cattle which would go there to graze when the low tide allowed them access. Bullock Island was swampy and isolated and as such was ignored by colonial settlers for many years while residential and industrial development occurred on firmer ground elsewhere, with Europeans first settling in the area in the 1860's.

[3] The Institute of Engineers, Australia, Newcastle Harbour, A National Engineering Landmark, 1989.
[4] NSW Government – Hunter Development Corporation, History of Ferries in Newcastle, n.d.

2.3 THE MORIARTY PLAN

E.O. Moriarty had broad engineering experience in breakwater construction, railway works, surveying, construction and shipbuilding. He had worked as a cadet engineer on the Isle of Portland breakwater in Ireland before emigrating to New South Wales with his family in 1843. After working as a consulting engineer and surveyor in Sydney for several years, he became an assistant in the Surveyor-General's Department. In 1853 he became Engineer-Surveyor of the Steam Navigation Board (which he later Chaired), followed by his appointment to Newcastle in 1855 as Engineer for Hunter River improvements.[5] After leaving Newcastle in 1858 he became Engineer in Chief, Harbours and Rivers for the Public Works Department.[6]

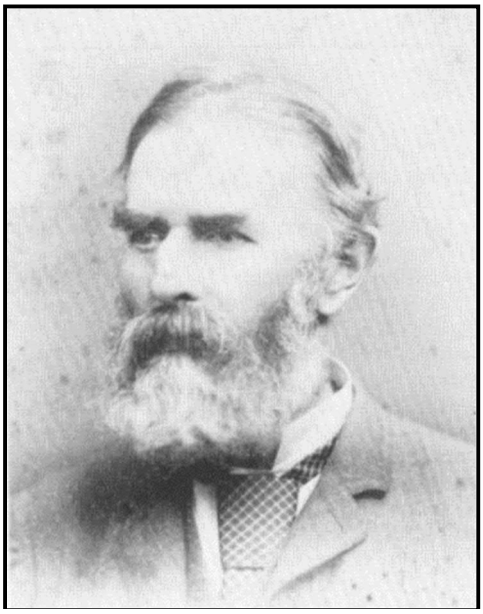


Figure 8. Edward Orpen Moriarty.

Shaping the Hunter

Proposing that public coal handling facilities should be centralised at Bullock Island, Moriarty produced a report on the navigation problems of the harbour, identifying "two natural drawbacks of the harbour": a rock ledge and unusual current at the entrance, and the extensive banks of sand within. He predicted the removal of the rock ledge, or the carving of a channel through it, "at some future time",[7] but laid down an ambitious three stage plan in 1858 to reduce the levels of silt and sand within the estuary and form a deep water harbour. These steps were summarised by maritime historian Terry Callen:

> The first stage was the "continuation of the river" plan and involved the building of a large stone dyke curving from Port Waratah to opposite the Australian Agricultural Company's wharf (Crown Street). The second stage was to build a similar stone wall from near Crown Street curving slightly until it met Macquarie Pier. The third stage was a small stone guidewall or breakwater on the northern side of the harbour at Pirate Point. All three features were planned to work together in concentrating the outgoing current into one stream which would scour out the harbour and the bar.[8]

For many years the government raised funds for Newcastle harbour improvements by levying of tonnage dues. This scheme operated from 1858 until the 1873 when the Repeal of Tonnage Dues Act was passed, following pressure from local politicians who resented the expenditure of locally raised funds in other areas.[9]

[5]Armstrong, Shaping the Hunter, p.15.
[6]ibid.,.
[7]Coltheart, Between Wind and Water, p.41.
[8] Callen, Bar Safe, p.26.
[9] N. Cushing, "Creating the Coalopolis: Perceptions of Newcastle 1770-1935", PhD Thesis, University of Newcastle, 1995, p.188.

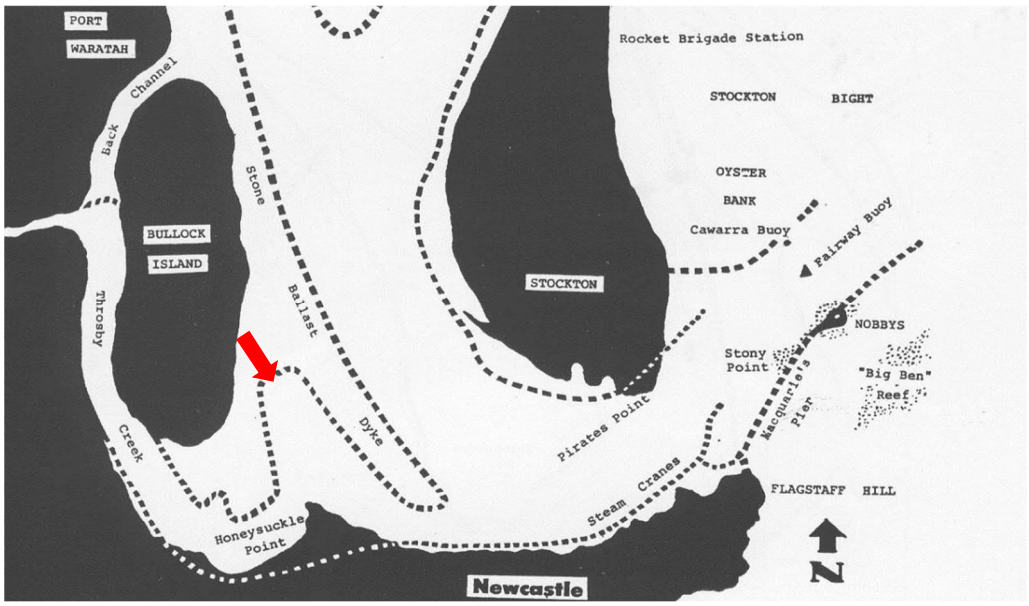


Figure 9. Plan of Newcastle Harbour with manmade foreshores shown in broken lines.

The approximate location of today's Hydraulic Engine House indicated by the red arrow.

T. Callen, Bar Dangerous.

2.4 STAGE 1: THE DYKE

First known as the Ballast Dyke, then later, "The Dyke" construction of reclaimed rock wall at Bullock Island served a dual purpose in Moriarty's plan. While its eastern face would improve the flow of the river, it would also support a line of wharves for coal loading purposes. Reclamation work behind The Dyke would create an area of land which could be devoted to loading activities.

A sand bank of about 650 hectares ran north-south on the east of the Bullock Island, and Moriarty proposed depositing a layer of ballast along the margin of the bank to prevent it flooding at high tide and to divert the flow of the river to scour a channel to the east of the Dyke. In 1862, two ballast jetties were built and ships began depositing ballast heaps on the line of the embankment, while sand dredged from the harbour was pumped behind the newly created wall.

The diverse nature of the ground on the man-made island was highlighted by a local newspaper:

> Here we have geological specimens from every part of the world. The whole expanse of ground has been built up of ballast from the ships that come to our harbour. In one place we tread upon a layer of London flint, next a collection of stones from the shores of the sunny Mediterranean. These are succeeded by a rocky mound from Scandinavian coasts and these in turn give place to blue stone from Melbourne, green trap from New Zealand, limestone from Singapore and even the sun burnt bricks and glazed uncouth carvings from a dismantled village in far off China.[10]

By 1874 the stone bank was complete, enabling contracts to be let for the construction of wharves. Reclamation work continued on Bullock Island and by 1890, a series of mudflats had been transformed into 121 acres of usable land.

Enlargement of the basin behind The Dyke in 1892 involved pumping sand through a pipe laid under the main railway line to swampy land north of the hydraulic engine house. Rock at the entrance to the new basin was removed by drilling and blasting, using a specially built rockbreaker, Posiedon.[11]

[10]Newcastle Morning Herald and Miners Advocate, 7 November 1877.
[11] Coltheart, Between Wind and Water, p.92.

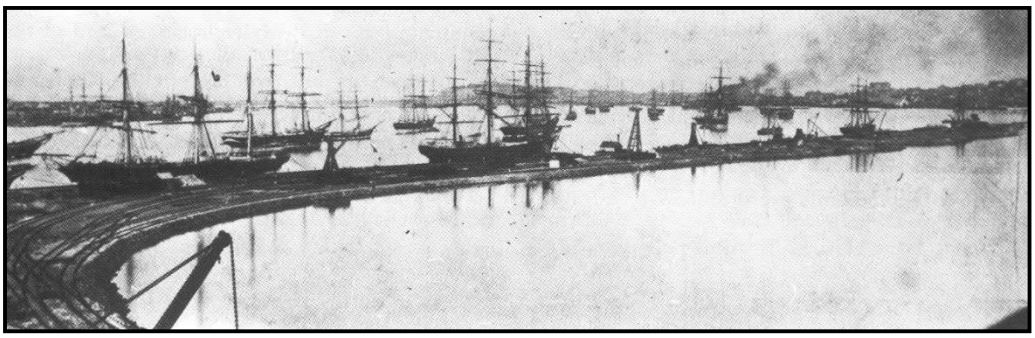


Figure 10. The Dyke during construction phase, looking towards Nobbys.

T. Callen, Bar Dangerous

2.5 COAL LOADING MOVES TO THE DYKE

Contracts were let in 1874 for the construction of wharves on the eastern side of Bullock Island, in preparation for the transfer of coal loading activities from the southern side of the harbour. Moriarty and associate Cecil West Darley had by this time agreed that the most appropriate way to load coal at these wharfs was with the use of hydraulic cranes erected on masonry bases, to be powered by a central engine house.[12]

2.6 HYDRAULIC CRANES & THE ENGINE HOUSE

Tenders were called for "the erection of the engine house, boiler house, smoke stack and hydraulic towers" in April 1876, and the New South Wales Parliamentary Papers of 1877 refer to the expenditure of £20,000 for 'Newcastle wharf, cranes, hydraulic engine house & c.'[13] Archaeologist, Damaris Bairstow, has documented the development of these wharves between 1875 and 1877:

> Along the Dyke, wharves were built in 30 metre sections, 60 metres apart starting about 230 metres from the southern end. Seventeen were built in 1875, the same year as the branch railway crossed Throsby's Creek on the east side of the island. By 1876, including all sidings, some eleven kilometres of single track had been laid, all in steel, designed to last six times as long as the iron rails normally used. In 1876-7, concrete foundations for the first four hydraulic cranes were laid at Berths 4,5,6 and 7, ninety metres apart. [These bases supported the cranes which later became known as Nos.7, 8, 9 and 10] In the course of the latter year, the first ten wharves were connected to form a continuous timber-built wharf 838 metres long.[14]

The engine house building was erected and fitted out by private contractor William H. Jennings, employed by Harbours and Rivers section of the Public Works Department. Design of the building is not formally attributed, but has at times been attributed to the prolific Government Architect, James Barnet, his assistant Edmund Spencer and or Government Engineers Edward Moriarty & John Whitton,[15] or perhaps even as a template design from the UK.[16]

The building features the same yellow bricks from local brickmaker, Jospeh Bowtell of The Glebe (now Merewether), which had been used in the Customs House at Newcastle. Interestingly, Customs House had also been designed by Barnett and Spencer around the same time as the Engine House, and was constructed by the same contractor, and perhaps even the same workmen.[17]

[12] Cockbain, 1998, p.173; Gibson, 2009, 2 in; SHR Listing.

[13] Department of Commerce,2005: 3.6-3.7

[14] D. Bairstow, "The Bullock Island Hydraulic Power House", unpublished manuscript in possession of the author. Identification of cranes in relation to surviving bases was carried out by B. Collins and R. Melville following close study of documentary and physical evidence.

[15] SHR Listing: http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5055925

[16] Refer SHR Listing for a more detailed discussion on the origins of the CHEH building's design.

[17] Bridges and McDonald, 1988, 89; Hunter Design, 1992, p.10 in; SHR Listing.

Built on "huge blocks of shining white sandstone" (now grey in colour), the building drew favourable comment:

> On heavy foundations, then thought essential for any major building on reclaimed land, this Classic Revival edifice is of yellow, compressed brick, with Sydney sandstone quoins, architrave, frieze and pediment. The roof was boarded and slated. The overall length was 43.9 metres, the depth 26.9 metres. The engine room measured 21.3 by 12.3 metres.[18]
>
> (and)
>
> A magnificent structure of solid handsome masonry, being built of white glistening sandstone blocks, beautifully dressed, from Sydney quarries, relieved by yellow brick masonry neatly pointed, and well and truly laid.[19]

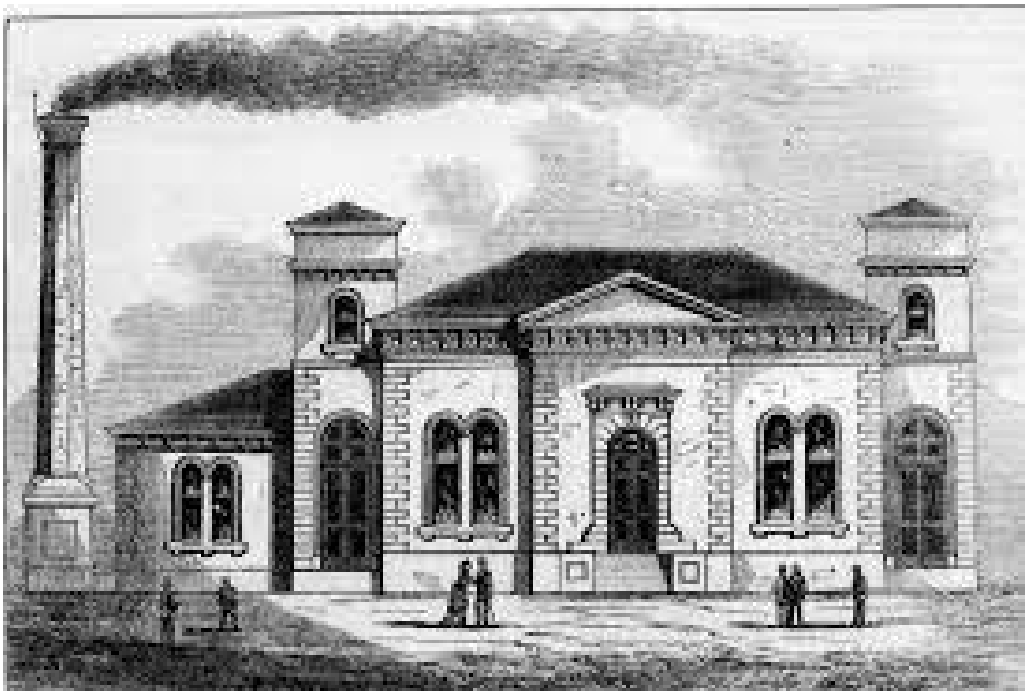


Figure 11. Early drawing of the Hydraulic Engine House.

Engineers Australia

Within the two flanking 20m towers, the Armstrong "hydraulic accumulators" consisted of a large cast iron cylinder within which a 120-ton slag-filled ram compressed water reservoirs, accumulating 800psi water pressure. Water was supplied to the site via gravity fed pipeline from Wickham, contained in tanks in the engine room, and pumped by steam engine into the accumulators. The 100 horsepower engines with 18-inch cylinders also provided the base load of lifting power to the cranes developing 90psi. The engines were mounted on large mass concrete foundations surrounded by open cast iron floor grates above a deep service cavity.[20]

Contracts for the hydraulic pumps and associated hydraulic loading cranes had been awarded to the Armstrong Hydraulic Machinery Co., Elswick, England,[21] and a Hydraulic Engineer from the UK travelled out to supervise their erection, under Moriarty. Pressurised water from the Engine House was directed to the cranes along 10-inch pipes linked with bolted junctions, reticulating through the crane itself in 6-inch pipes. Water was then recirculated back to the engine house for re-use.

[18]Suters Architects, "Macquarie Pier and Nobbys Head Conservation Management Plan", p.11.

[19] Newcastle Morning Herald, 7 November 1877, p2.

[20] SHR Listing.

[21]For a detailed description of this equipment see P. Cockbain, "The Engineering Heritage Associated with Coal Shipment from Newcastle 1877 to 1967, paper presented to National Engineering Heritage Conference, 1997.

The crane bases were constructed on mass concrete building foundations 10 feet 6 inches deep, resting on the shoreline inside iron caissons (supplied by Davy and Co. of Sydney) sunk 40 feet into the river bed. A similar construction method of cofferdams and mass concrete was also used for the footings of the accumulator towers at the Engine House.[22] The red face bricks of the crane bases were also supplied by Bowtell, and the sandstone blocks, varying from 1-9 tonnes in size, were transported to the site by sea from Pyrmont.[23] In February 1878, Moriarty witnessed a test lift and on 19th March, 1878 the first shipment of coal loaded by hydraulic cranes left Newcastle Harbour aboard the Downiemount, which had brought the cranes from Britain on her previous voyage.

Physical operation of the cranes was controlled by an operator opening and closing cocks from the high-pressure pipelines to actuate hydraulic rams with two levers, one for hoisting and the other for slewing.[24] The cranes were described in the Town and Country Journal in March 1879 as "the chief glory of Newcastle":

> These beautiful pieces of mechanism … represent the last achievements of mechanical science in hydraulic machinery. They could be manipulated by a child. The wagons of coal are brought into position by a rope worked by an hydraulic windlass. The man in charge has simply to press his foot on the treadle, while he draws in the rope, and the irresistible water pressure does the rest. The wagon being in position, the hooks of the chains are fastened in it, and the man standing on the platform of the hydraulic crane moves a lever, and the giant lifts the top of the truck as easily as a mother would lift her child, without a sound swings it over the ship's hatchway, where the lumpers knock out the pins which fasten the bottom of the truck, and then the coal disappears into the hold of the vessel. The whole process takes only a minute and a half.[25]

Figure 12. Fixed Hydraulic Cranes at Carrington.

Newcastle University Cultural Collections

[22] Maitland Mercury, 22 January 1876, p.10, 6 June 1876, p.7 In: SHR Listing.
[23] Ibid, 11 September 1877, p7. In: SHR Listing.
[24] Bairstow, 1986, in; SHR Listing.
[25] cited in D. Bairstow, archaeological report on various industrial sites in Newcastle, unpublished manuscript in possession of author.

The hydraulic cranes installed at the Carrington Hydraulic Engine House were the first employed in the entire country. They predated any similar machines in Sydney (at the Pump House in Ultimo) by more than a decade. The Sydney machines drove a great diversity of warehouse and commercial equipment across the CBD, while those at Carrington were constructed exclusively to drive the largest coal loading facility in the State. That this new and expensive technology was first employed in Newcastle demonstrates the acknowledged importance of Newcastle harbour in the NSW economy at that time. J C Docherty records that the northern coal fields, of which Newcastle was the port, accounted for about 70 per cent of all coal production in New South Wales between 1880 and 1930.[26]

To keep up with the demand for coal, the Carrington Hydraulic Engine House was soon upgraded and expanded. Its original four cranes were added to with four more commencing service from 1880, four additional smaller units in 1888 and three cranes were transferred from Queens Wharf on the south of the harbour in 1889. Driving all the cranes night and day for over a decade had obviously taxed the original engines and plans were put in place to install a new, more powerful engine which would not only power the hydraulic cranes but generate electricity.

To accommodate the larger equipment and third steam pumping engine required, in 1891, a second boiler room and smokestack were constructed on the east side of the pump house by contractor E.J. King. These structures were almost symmetrical with the equivalent on the western side, although the boiler room was made slightly deeper in plan (perhaps to accommodate the newer Babcock and Wilcox boilers) and the new chimney taller. In the same year, King also constructed an addition known as the Auxiliary Engine House on the northern side of the building (later known as the dynamo room). This room housed Westinghouse engines and dynamos to power new electric lighting for the building and the wharfs. The existing gas lights were decommissioned when the electric lights went on 2nd of September 1891 and by February 1892 all the new machinery was operating.

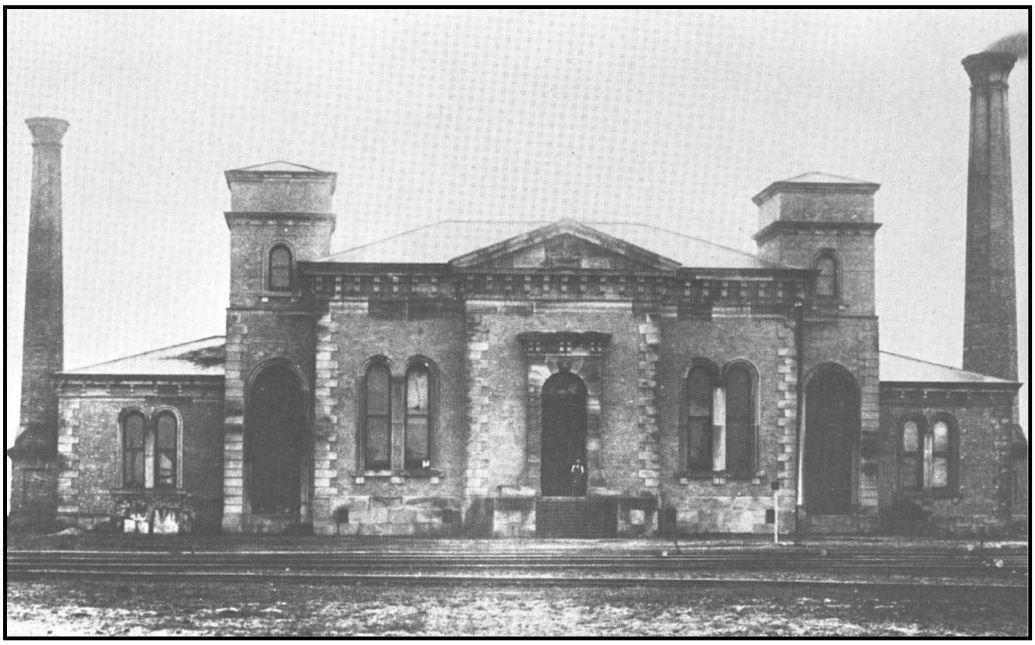


Figure 13. Hydraulic Engine House showing the added boiler room (on the right).

The two asymmetrically sized chimneys have since been demolished.

Newcastle Region Public Library.

[26] J.C, Docherty; Newcastle: The Making of an Australian City, 1983 p8

2.7 ONE OF OUR LIONS

In the Christmas day edition of the Newcastle Morning Herald in 1891, there was recorded high praise for the additions to the building, the new equipment and the Engineer who enabled it all to come together.

> We give it as our opinion that our experienced and energetic Engineer for Harbours and Rivers will not permit avoidable delay to retard this important addition to the loading and discharging capabilities of the port. Another important improvement in an economic direction has been recently effected by the above-named official at THE HYDRAULIC ENGINE HOUSE, the' exterior of which, since the completion of the new wing during this year, presents a more uniform and imposing appearance.
>
> The interior, especially when lit up at night by means of the arc and incandescent lights, with the ponderous and well-kept machinery in rapid motion, is a most pleasing sight. A stranger visiting the port and leaving without having paid a visit to the hydraulic and electric engine house will have missed seeing what the citizens of Newcastle may be justly pardoned for terming "one of our lions," From this building, the machinery in which is going almost incessantly from midnight on the Sunday, to the same hour on the Saturday following the year round (may it still continue its almost ceaseless revolutions) is worked the 13 hydraulic cranes extending for over three quarters of a mile north and south along the dyke, each one of which is capable, should necessity require, of loading a vessel from 2000 to 8000 tons burden, well within twenty four hours.[27]

Figure 14. The Lions Head keystone, CHEH South Façade (2020).

Terras Landscape Architects

The progressive influence of electricity made its mark at the coal loading facilities in more than just the lighting. Between 1903 and 1907, new Armstrong hydraulic cranes were mounted along the eastern side of The Basin, with these cranes featuring electric motors which enabled them to be moved short distances along rails.[28]

[27] Harbour Improvements, Newcastle Morning Herald 25th December 1891 p2
[28] The Newcastle Morning Herald, 9 December 1903, p6.

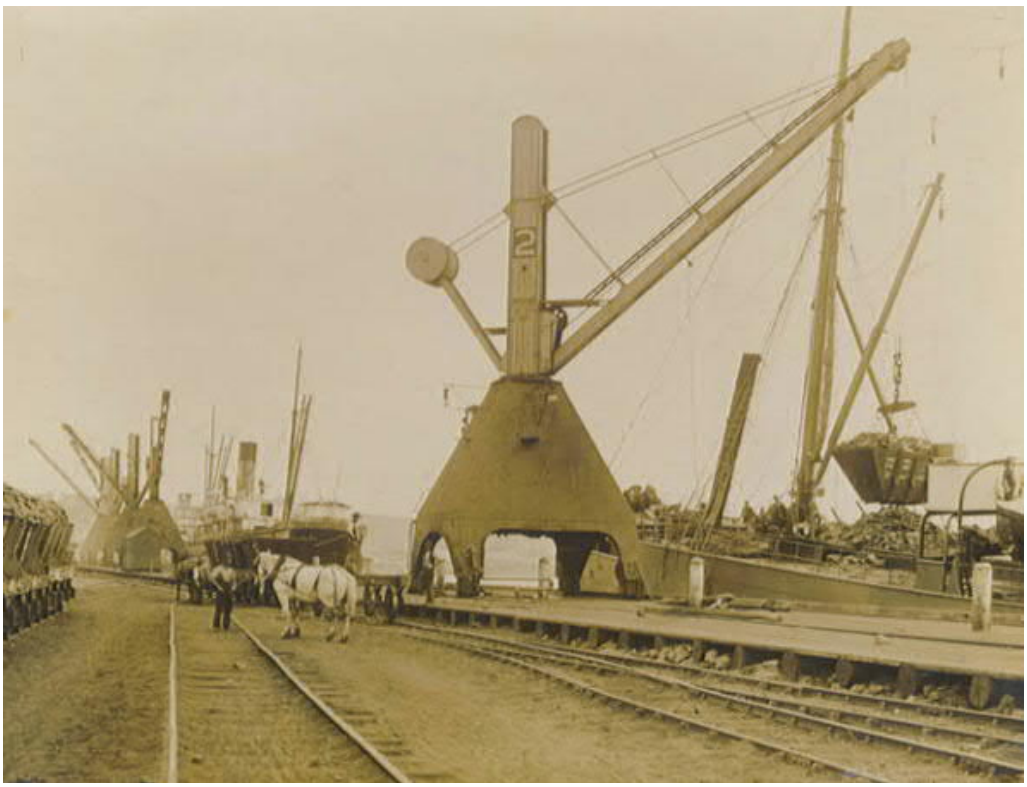


Figure 15. Mobile Hydraulic Cranes at the Basin.

Newcastle University Cultural Collections

Between May 1916 an April 1917 six new Cowans, Sheldon and Co. moveable electric cranes were brought into service at the Port which quickly overtook the bulk of the coal loading duties. These were designed by Percy Allan, Public Works Department district engineer and assisted by Orlando Brain, NSWGR Chief Electrical Engineer. The Auxiliary Engine Room was reappropriated as a condenser (battery) room at this time, and a freestanding substation building was erected just north of the Engine House, foreshadowing the complete replacement of hydraulic power at the cranes. The moveable electric cranes were powered by a temporary power plant at the Eastern end of railway land until power was provided by submarine cable from the Zaara Street Substation, completed in 1920.

The moveable and fixed Hydraulic cranes were progressively decommissioned from the 1930's though with some still utilised up until the 1960's. Maintenance on remnant units was increasingly neglected and many were left derelict when they ceased to function. Crane Base 9 was demolished to below the low water mark in the 1950's. A report sent from the Waterfront Group of Unions to the Minister for Transport in 1957 stated that one of the travelling cranes had been out of action for more than two years, two for six months and others for lesser periods.[29]

After World War II, Japan turned their request to Australia to supply the coal needed to power the reconstruction of their country and their industry. This contributed greatly to the increase in demand for coal coming through the Port of Newcastle. The cranes that remained in operation at the port were no longer able to keep up and started to attract derision.

> '...the port has been brought into such chaos as to make it almost unworkable... All in all it is lamentable and tragic picture. There is not a port in Australia or elsewhere in the world, which could possibly present such an example of ineptitude and neglect.'[30]

It is a tragedy that "the chief glory of Newcastle" could become "such an example of ineptitude and neglect" in only 75 years.

[29]Cited in Department of Commerce,2005: 3.14
[30] Ibid.

To remedy the situation, the Newstan coal loader came into operation in 1958, its completion having been assisted by private enterprise. It provided immediate relief to the coal loading pressure. Federal Government Funding assisted the next phase of the Port upgrade. Commencing in 1964 and completed in 1967, The Basin Coal Loader replaced all the Hydraulic cranes and the now outdated electric cranes.

In 1967, the last coal loaded by the moveable hydraulic cranes was landed in its vessel, the pipe runs noted no longer to be watertight.[31] With the last of the hydraulic cranes decommissioned, work commenced on stripping out the now redundant equipment from the Hydraulic Engine House. The accumulators had to be cut into pieces to remove them from their towers. Between 2007-2009, the north side additions to the building including the substation were demolished.

Crane bases No. 7 and 8 were fitted with ship's bollards in the 1980's, along with a concrete roadway bridge spanning over base No. 10. Crane base No. 7 was also later surrounded by a concrete "Dolphin" berth as a temporary cruise ship terminal.

Currently standing empty, there is only a small fraction of the original equipment still extant in the Carrington Hydraulic Engine House to date, with one small remnant motor in the generator room, some metal fixtures, gangways and ladders etc mounted to the internal walls, and various pipework and fragments of industrial archaeology extant in the engine room sub-floor cavity.

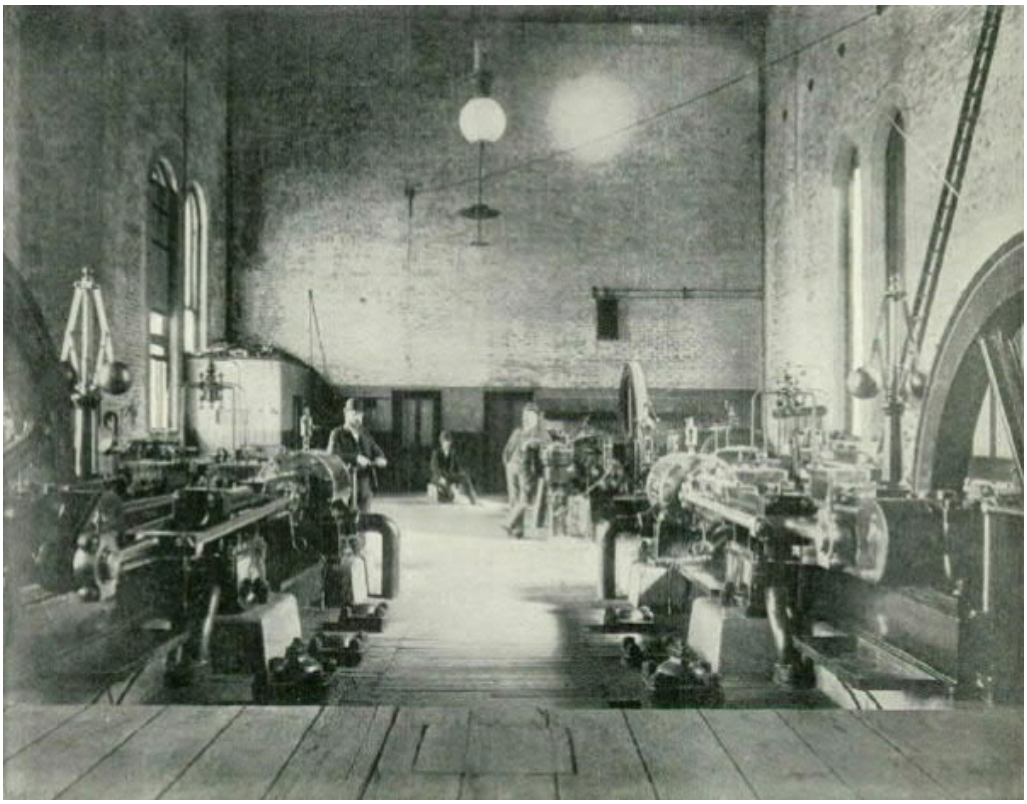


Figure 16. The CHEH Engine Room, complete with its machinery, 1895.

The Town and Country Journal, 18 May 1895, p31.

[31] Damaris Bairstow, 'Hydraulic Power and Coal Loading', p65 in; SHR Listing.

2.8 CONTEMPORARY CONSERVATION

In 1995, the roof of the building was conserved and recovered in Penrhyn slate, removing earlier asbestos sheeting. Windows, the main doors and some ceiling timbers, originally of red cedar, were conserved or reconstructed in Douglas Fir at this time. The timber roof monitors are conserved and reconstructed; the ceiling of the Auxiliary Engine House is later replaced in plywood after a fire. Protective Perspex covers to the south side windows were also installed around this time.

Development Approval DA 07/1496 associated with the demolition of the substation building also introduced the idea of adaptive re-use of the building. The concept was preliminary in nature, and did not proceed at the time, but slowly began some momentum for the building's ongoing conservation.

A large-scale masonry conservation, repair and reconstruction works package was undertaken to the south façade and accumulator towers in 2018-2020, along with the creation of a public plaza to the south side of the building. The building works were designed and documented by EJE Architecture, the landscape and Plaza by Terras Landscape Architects, and the head contractor for the project was Stone Mason and Artist of Sydney. Work included masonry conservation, repair and reconstruction, reconstruction of the accumulator tower roofs and upper brickwork, reconstruction to original details of boiler room windows, removal of termite damaged beams to accumulator towers, plant growth removal and limited cleaning of the facade, repointing, stone repair and addition of lead cappings to the pediment, some cornices and stone details. The design of the public plaza on the south side of the building represented the full scale "blueprint" of the original engine room machinery. Internal and external 3D scanning and archival recording of the building was also undertaken by Airsight Australia. Underpinning of the north-east corner of the building was also undertaken in 2019 to resolve localised settlement in this area.

In 2020, the Port of Newcastle undertook extensive asbestos removal works internally, with all parts of the building (at the time of writing) now clear of asbestos hazard, except for the main engine room. The engine room has been cleaned of asbestos from the ceiling down to the level of the floor grates, but with remnant asbestos material present in the openings of the floor grates and embedded within the sub-floor cavity fabric itself. Discussion has been opened with Heritage NSW about options for asbestos remediation in this room, and design works are underway in October 2021.

In early 2021, a new stage of masonry conservation works to the north, east and west facades has begun, aiming to make the shell of the building weathertight and vermin proof so that future stages of conservation work can be completed on the internal spaces. The 2021 works package has been designed and documented by EJE Architecture, with contractors Murphys Remedial Builders of Sydney. The project includes reconstruction of the north generator room window to original details, repointing, stone repair and replacement, addition of lead cappings, lead paint removal and general masonry cleaning. Repair of termite damage to western boiler room roof timbers is presently being undertaken, with further termite treatment planned. Other works include protective paint treatment to the existing structural steel in the non-original north side opening, and construction of a lightweight CFC clad infill wall with interpretive artwork to this north façade. This works package is currently due to be completed in November 2021.

3. HISTORICAL THEMES

3.1 NATIONAL, STATE AND LOCAL HISTORICAL THEMES

The following list of historical themes is sourced directly from the State Heritage Register listing which was compiled in 2017.

	NATIONAL	NSW	LOCAL
1	Tracing the evolution of a continent's special environments	Environment, naturally evolved – Activities associated with the physical surroundings that support human life and influence or shape human cultures.	River flats -
			Cultural Rivers and water bodies important to humans
			Cultural – Coasts and coastal features supporting human activities
			Changing the environment -
2	Peopling Australia	N/A	N/A
3	Developing local, regional and national economies	Commerce – Activities relating to buying, selling and exchanging goods and services.	Developing commercial enterprise -
			Transport -
			Maritime industry shipyards timberyards -
		Environment, cultural landscape – Activities associated with the interactions between humans, human societies and the shaping of their physical surroundings.	Developing local, regional and national economies – National Theme 3
			Landscapes of industrial production.
		Mining-Activities associated with the identification, extraction, processing and distribution of mineral ores, precious stones and other such inorganic substances	Commencement and evolution of a coal shipping port-
		Technology-Activities and processes associated with the knowledge or use of mechanical arts and applied sciences.	Technologies for reticulated water supply-
			Technologies for adapting rail transport to serve maritime trade-
			Using hydraulic power-
		Transport-Activities associated with the moving of people and goods from one place to another, and systems for the provision of such movements	Wharf and shipping history-
			River Transport-
4	Building settlements, towns and cities	Utilities-Activities associated with the provision of services, especially on a communal basis	Water and drainage-
			Changes from the provision of electricity.
			Ports and shipping infrastructure-
			Building wharves and wharfside services-
			(none)-
5	Working	N/A	N/A
6	Educating	N/A	N/A
7	Governing	N/A	N/A
8	Developing Australia's cultural life	N/A	N/A
9	Marking the phases of life	Persons-Activities of, and associations with, identifiable individuals, families and communal groups	Associations with Edward Orpen Moriarty, surveyor, Engineer in Chief for Harbours and Rivers-
			Associations with John Whitton, Chief Engineer, NSW Government Railways-
			Associations with James Barnet, Colonial (Government) Architect 1862-90-

4. DESCRIPTION

4.1 DESIGNER

The identity of the designer of the Engine House remains unconfirmed. Some have suggested that the building might have been designed in the UK to a standard plan; others consider that it may have been designed by the Colonial Architect's Branch of the PWD under James Barnet who was Colonial Architect at the time. If so, it may have been designed in association with Edmund Spencer, one of Barnet's assistants. The two had collaborated together on Customs House at the northern end of Watt Street which used a very similar selection of materials.

Given the similarities between the two buildings, it is fair to say that the Public Works Department likely had significant involvement in the realisation of the building even if they do not warrant the design credit.

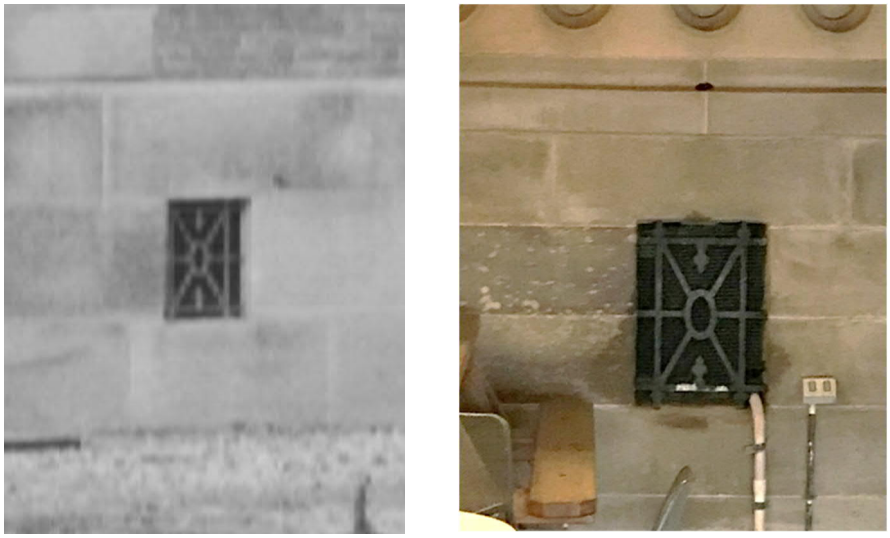


Figure 17. Sub floor vents.

CHEH Original sub-floor vent grille (left) and identical grille used at Customs House (right), evidence of similarity in design of the two buildings.

University of Newcastle Special Collections (Left) / EJE Heritage (Right)

4.2 BUILDER

The Engine House and hydraulic crane bases were erected by William H. Jennings of Sydney, who also fitted out the Engine House. Plant and cranes were supplied by Sir W.G. Armstrong and Co. of Elswick, Newcastle-upon-Tyne.

In 1891 contractor E.J. King erected a second boiler room on the western side of the central engine room. This housed Babcock and Wilcox boilers for a third steam pumping engine.[32] In 1891 King completed another addition, called the Auxiliary Engine House (later known as the dynamo room or generator room), on the northern elevation.

4.3 PHYSICAL DESCRIPTION

The Carrington Hydraulic Engine House, constructed by William H Jennings 1877-78, is massive brick and sandstone structure built originally to house hydraulic engines and machinery used to operate cranes on the adjacent wharfs. The building is monumental in stature, effectively three stories in height although only encompassing a single void internally.

[32] Article: "The Hydraulic Engine House – Important Improvements". Newcastle Morning Herald 22nd November 1890 page 7

The main facade addresses the south, breakfront and symmetrical in appearance, with a central projecting pedimented portico with stone quoins and detailing. The height of the building is strengthened visually on the south facade with over height window and door openings in painted timber (originally Australian Red Cedar).

The central volume of the building (the Engine Room), is flanked by two tall accumulator towers, square in plan, and set back slightly from the main facade. To the eastern and western ends of the building sit the boiler rooms, built sequentially after initial construction of the building. The building also originally featured two tall square chimney stacks set aside and back from the boiler rooms; these were demolished due to safety concerns in the 1960's. Between the projections of the boiler rooms as the rear, a substantial lean-to addition known variously as the Auxiliary Engine House/ Dynamo Room/ Generator Room was also later constructed.

The rear facade of the building shows evidence of where additional lean-to additions have been constructed and removed. These included a battery room and an electrical substation building and workshop (linked to the main building by a covered walkway).

Internally, the original engines and hydraulic machinery of the building have long since been removed from the site, although the substantial footings of the equipment still remain.

Figure 18. The Carrington Hydraulic Engine House interpretive public plaza, January 2020.

Terras Landscape Architects

5. ERAS OF CONSTRUCTION

5.1 CONSTRUCTION YEARS

1875-1876: Railway tracks in steel linking to the Great Northern Railway at Hamilton were laid across Throsby Creek to reach the Bullock Island site. Seventeen individual timber wharves were constructed along the length of the Dyke each 100ft (30m) long and 200ft (60m) apart.

1876-1877: Concrete foundations for the first four hydraulic cranes were laid. The first ten timber wharves were connected together creating a continuous timber wharf 2750ft (838m) long.

1877-1878: The first stage of the Hydraulic Engine House, consisting of an engine room with two pumping engines, two accumulator towers and one (western) boiler room with a prominent brick chimney stack, is completed. Armstrong hydraulic cranes are mounted on crane bases No. 7, 8, 9 & 10.

5.2 MODIFICATIONS AND DATES

1878-1880s: Additional hydraulic cranes are erected.

1881: The Engine House and cranes are lit with gas which allowed loading at night.

1883: The railway was extended from the Hydraulic Engine House to the Dyke.

1890-1891: The second stage of the Engine House, including an eastern boiler room with a chimney considerably higher than the first, is constructed; a third pumping engine is installed. (Westinghouse). This was to power an additional 7 cranes which had been ordered.

1891: A rear addition, the Auxiliary Engine House, is constructed, generating electricity to replace gas lighting. It is later known as the Dynamo Room or Generator Room befitting of its electricity generation.

1890s-1930s: Small-scale additions, such as a battery room and electrical workshop are made. Sections of masonry are removed to provide improved fuelling arrangements for the boiler rooms; these are later infilled in common brick (western boiler house) and steel bars (eastern boiler house).

1900: Moveable Armstrong hydraulic cranes are installed at The Basin (east); the fourth pumping engine is provided. (Armstrong, Whitworth & Co.)

1906: Babcock and Wilcox Boilers replaced the Cornish Boilers in the eastern Boiler Room.

1908 Three McMyler Hoists were ordered to supplement the Armstrong Cranes but only one was installed.

1914: Plans for Babcock and Wilcox Boilers to replace those in the Eastern Boiler Room were produced. It is uncertain if they were acted upon.

1915: The first stage of a free-standing electrical substation, to power Cowans, Sheldon and Co. electric cranes being introduced at The Basin (west), is constructed.

1916: The first travelling electric crane in the Basin came into operation.

1930s: Engine House boilers and some steam pumping engines are replaced with electric plant. Crane numbers 4-9 went out of commission.

Post-1945: A new electric pumping engine is provided. This is the reason for the indented floor in the eastern half of the Engine Room.

1930s-1967: The stationary and moveable hydraulic cranes are progressively decommissioned and scrapped as required. Cranes No. 6-10 were removed by 1956 to make way for a belt loader. The last crane was demolished in 1964. The slate Engine House roof is replaced with asbestos sheeting. Crane Base No. 9 is demolished to below low water. At some stage a large aperture is opened in the wall between the Engine House engine room and the Auxiliary Engine House, replacing one of the northern windows with a steel joist. The timber wharf is left to rot.

1960s: The Engine House plant is removed to create storage space for the Maritime Services Board Supply Branch. Both chimneys are demolished; the arched boiler room flue apertures are infilled. Windows are let into the eastern wall of the eastern boiler room, where a cantilever awning is provided above the entry.

1960s-1970s: The Dyke wharf is progressively demolished.

1970s-1980s: Crane Base Nos. 7 and 8 are fitted with heavy-duty steel tying-up bollards; a concrete catwalk is built over Crane Base No. 10.

1990s: Crane Base No. 7 is surrounded by a concrete catwalk for the Newcastle cruise terminal. The eastern end of the workshop building attached to the 1915 substation is demolished back to around the centre of the building and the facade reconstructed at the new alignment.

1995: The Engine House roof is re-covered in Penrhyn slate. Windows, doors and some ceiling timbers, originally of red cedar, were conserved or reconstructed in Douglas Fir. The timber roof monitors are conserved and reconstructed; the ceiling of the Auxiliary Engine House is later replaced in plywood after a fire.

2009: The substation is demolished, together with all Hydraulic Engine House lean-to additions apart from the Auxiliary Engine House under Development Approval No. 07/1496. This DA also included the first concept discussion around adaptive re-use of the building.

2017: The Carrington Hydraulic Engine House was listed on the State Heritage Register. Standard Exemptions as well as Site Specific Exemptions were gazetted.

2018-9: Conservation works to the exterior of the building were carried out with consent from the NSW Heritage Office under Section 60 (S60/2017/219). These works were to prevent further degradation by making the building weatherproof and secure. Works included restoration of the south façade, maintenance work on the roof and some fenestration. The construction of a new public plaza/forecourt space and surrounding landscape works within the curtilage of the item on its southern side is undertaken.

2020: Asbestos removal campaign undertaken, with all rooms cleaned and cleared of asbestos except the engine room, with hazardous material unable to be extracted in the apertures of the original cast iron floor grates and base material of the sub-floor cavity.

2021 – Present: Conservation works undertaken to the North, east and west facades. Design works underway on Asbestos remediation strategy to Engine Room.

5.3 DIAGRAMS OF BUILDING AND SITE DEVELOPMENT

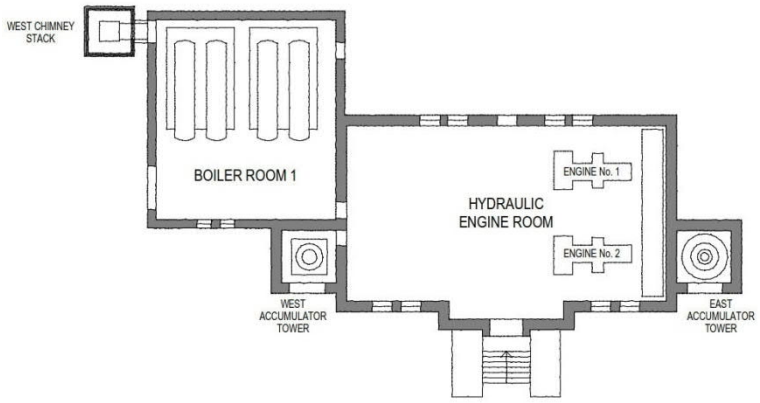


Figure 19: 1877 Plan Diagram of original building configuration

Adapted from D. Bairstow.

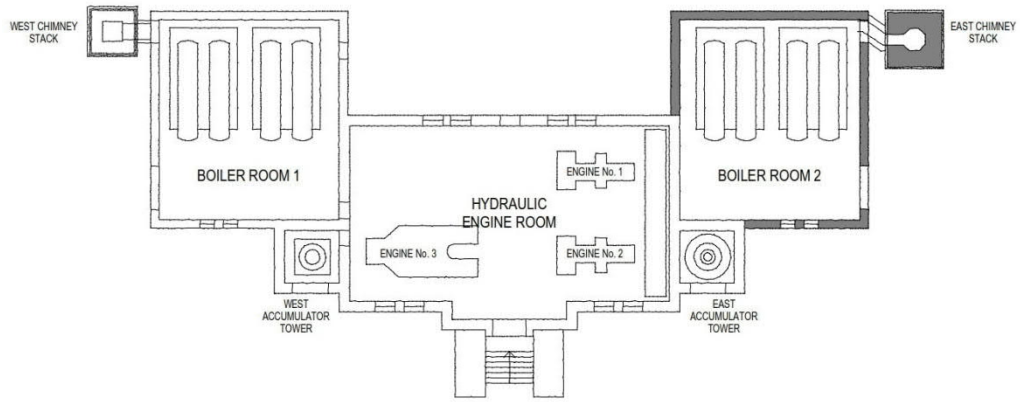


Figure 20: 1890 Plan Diagram

Second (Eastern) Boiler Room and Chimney Stack is added
Adapted from D. Bairstow.

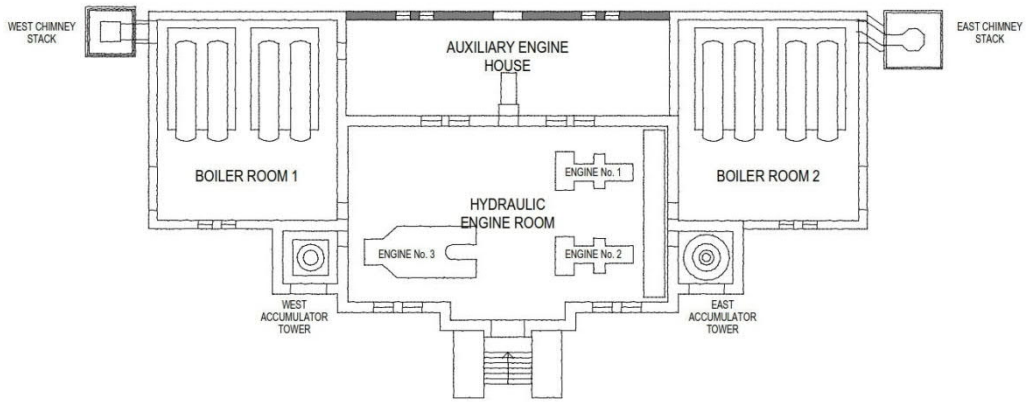


Figure 21: 1891 Plan Diagram

Auxiliary Engine House is added
Adapted from D. Bairstow.

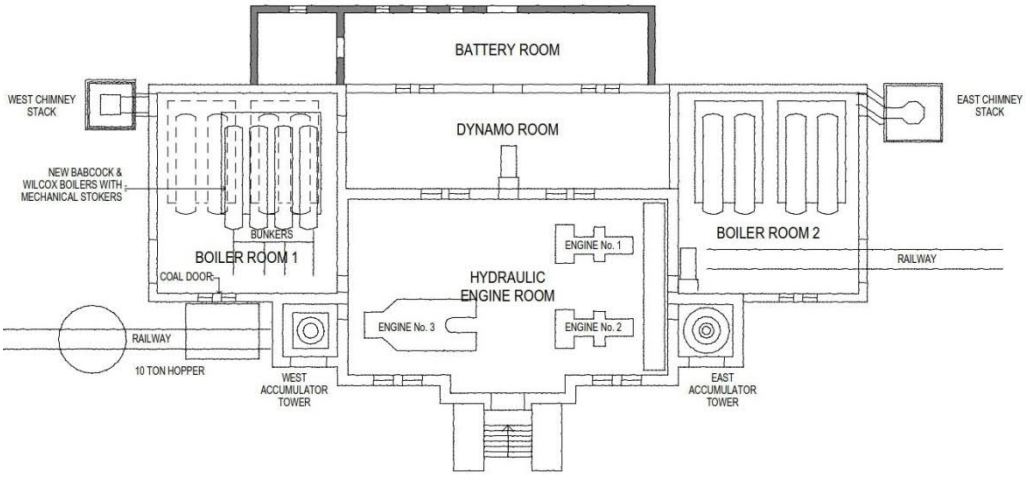


Figure 22: 1908 Plan Diagram

Battery Room addition, new boilers and rail infrastructure
Adapted from D. Bairstow.

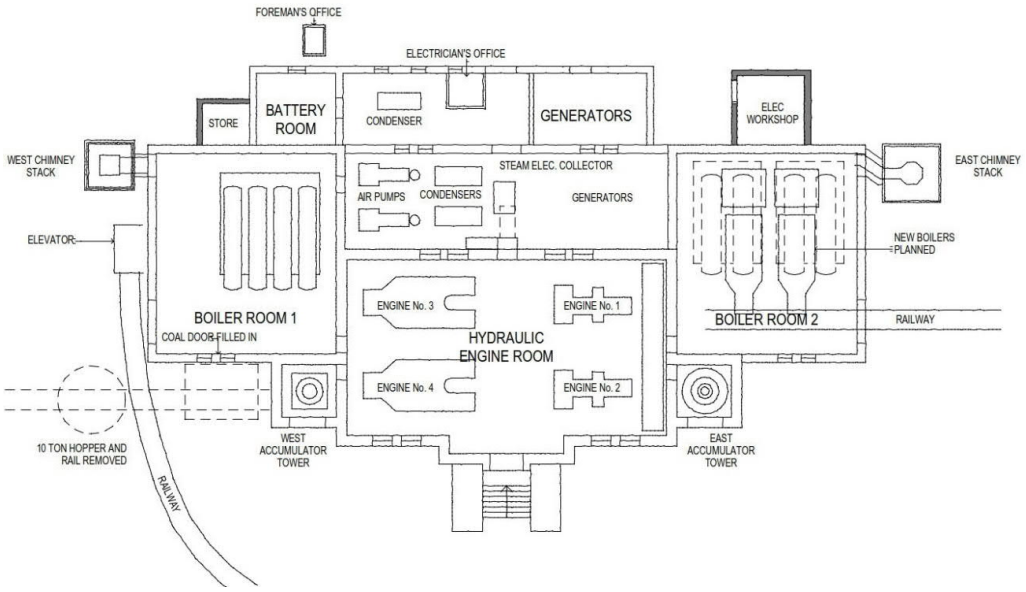


Figure 23: 1914 Plan Diagram

Electrical Infrastructure added to, rail infrastructure altered and new boilers planned.
Adapted from D. Bairstow.

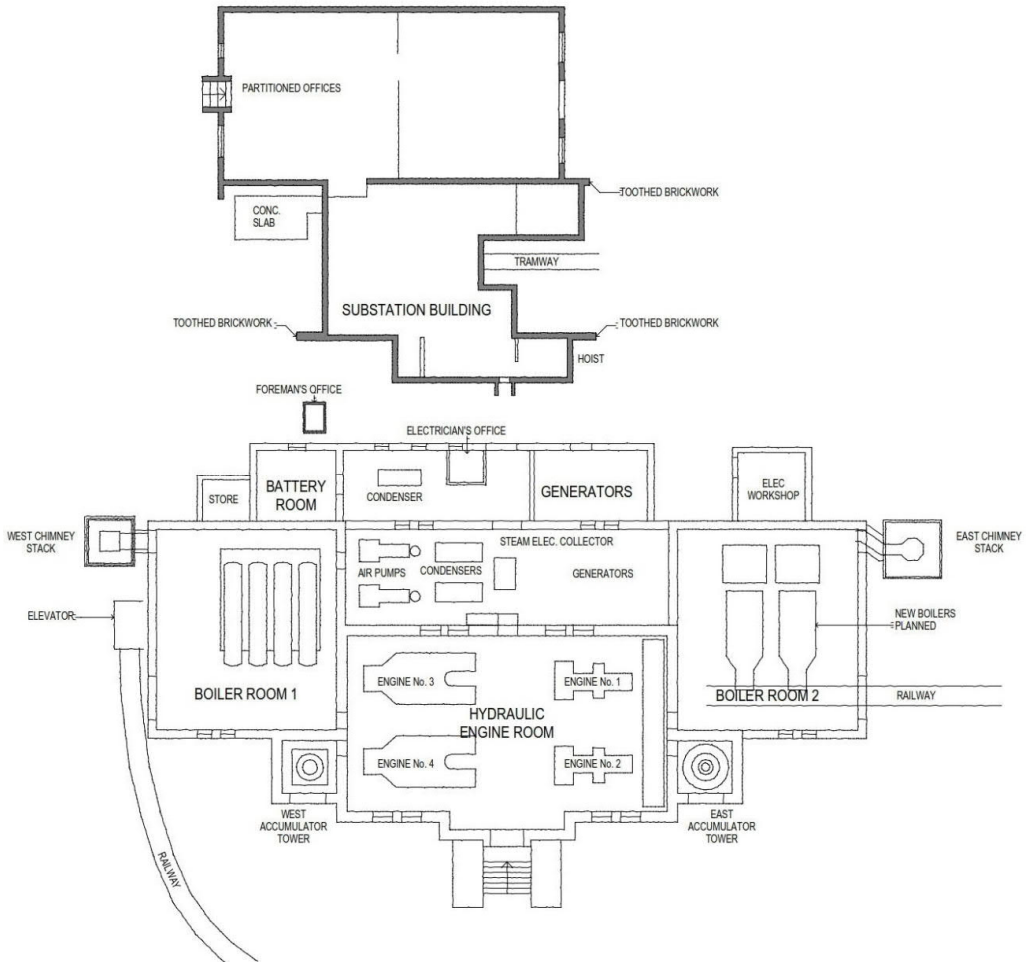


Figure 24: 1915 Plan Diagram

Substation (first stage) added to rear.

Adapted from later drawings.

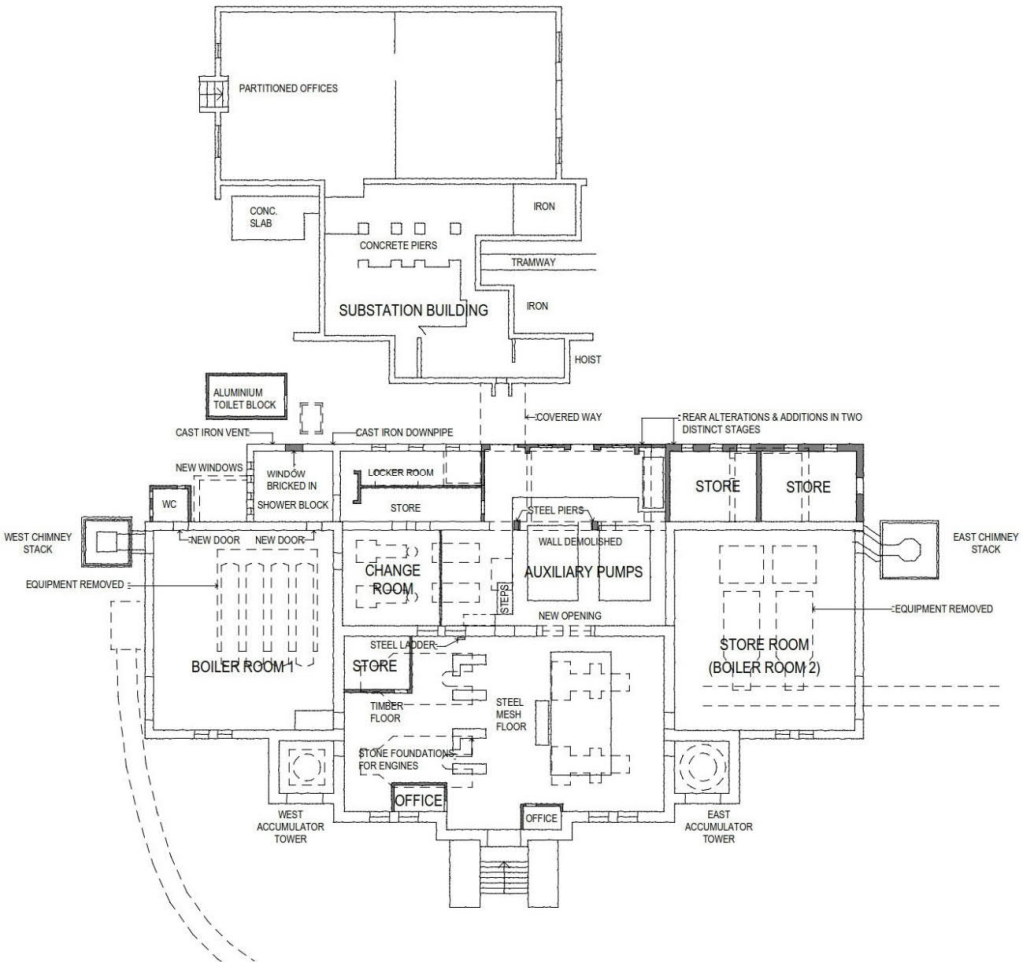


Figure 25: 1963 Plan Diagram

Internal alterations to changing and showering facilities. Older coal fired machinery has been removed, Auxiliary electric powered pumps installed. Openings for pumps created in rear and middle walls. Small partitioned rooms added into Engine Room.
Adapted from J. Guy, W. Kostyrko, J. Lott & B. Rodd Thesis 1963

Figure 26. East Elevation, (chimney stacks not shown).

NSW Department of Commerce. (2005)

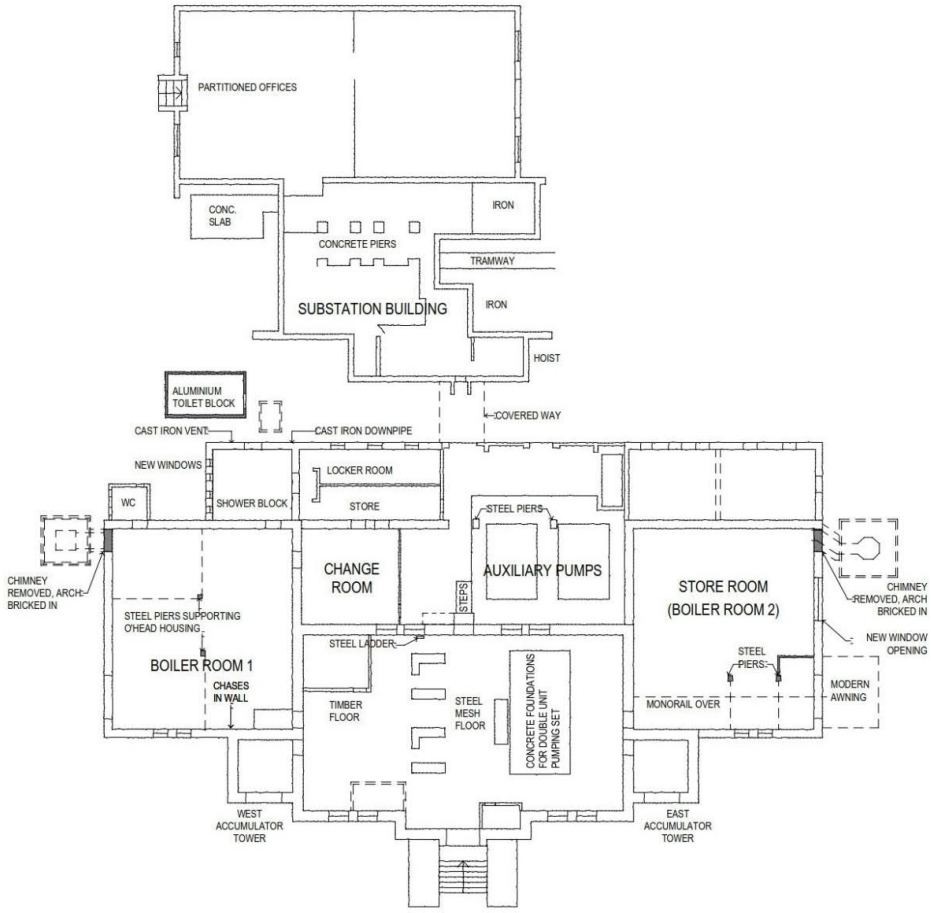


Figure 27: 1979 Plan Diagram

Chimney Stacks demolished and arches bricked in. New steel structures added to former Boiler Rooms.
Adapted from D. Bairstow

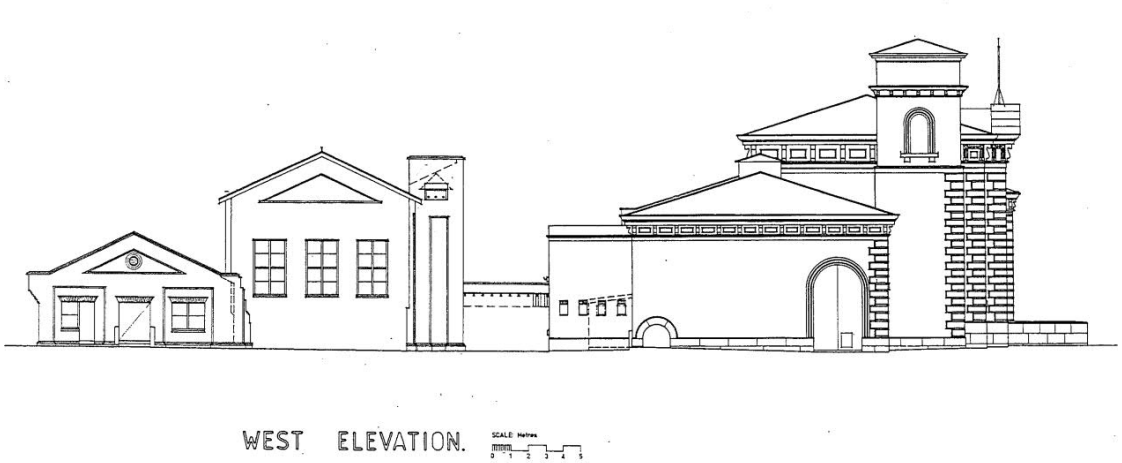


Figure 28. West Elevation, following removal of chimney stacks.

NSW Department of Commerce. (2005)

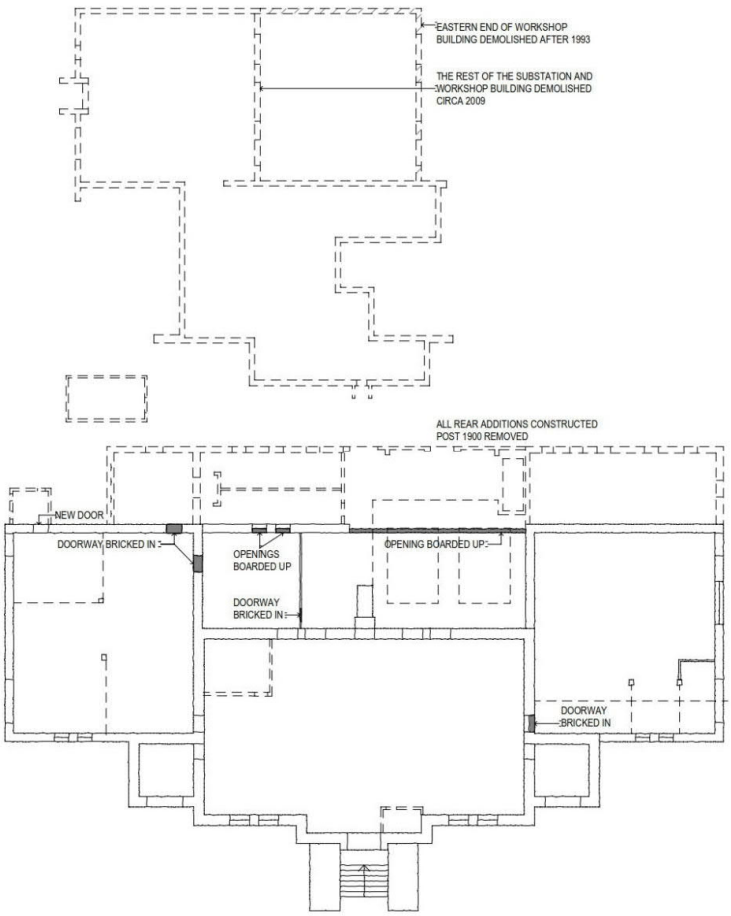


Figure 29: 2009 Plan Diagram

Substation building demolished in stages. Rear skillion additions post 1900 demolished. Redundant openings secured against entry.
Adapted from NSW Dept of Commerce 2005 Conservation Management Plan

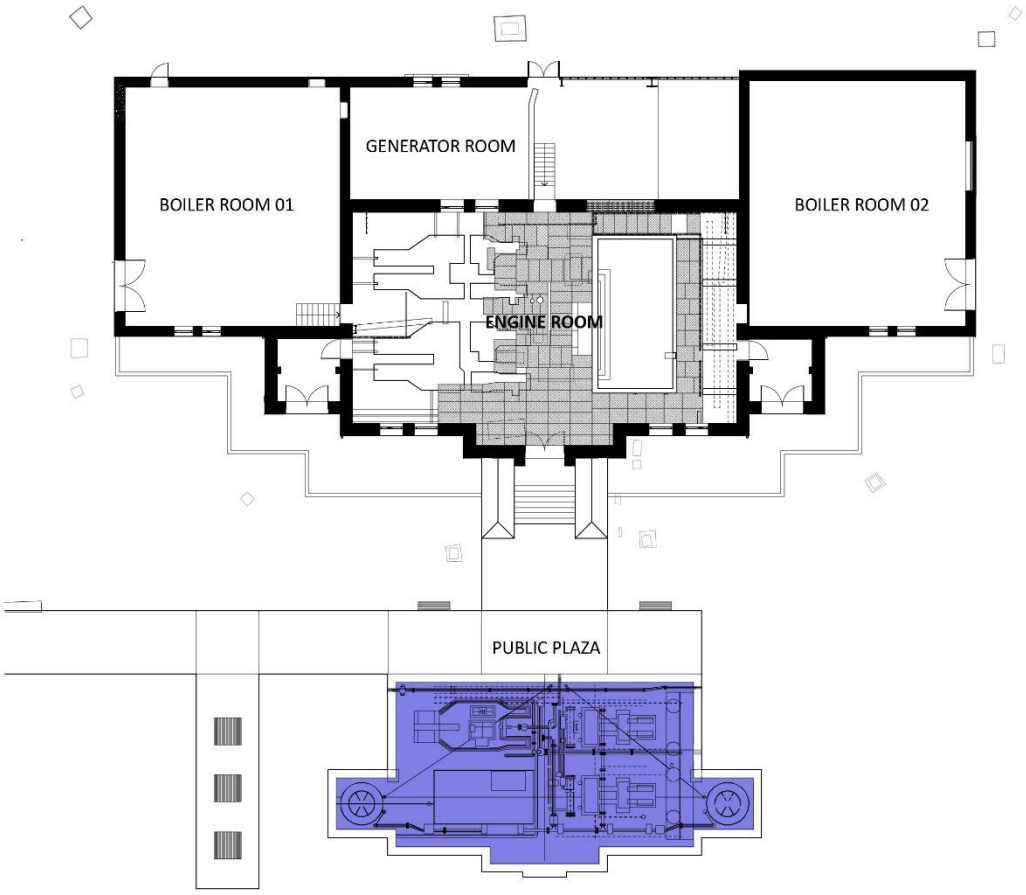


Figure 30. 2021 Plan Diagram

The 2019 installation of the public plaza to the south side of the building interprets the layout of the engine room and accumulator towers. Following 3D scanning of the internal spaces of the building, the remnant floor grates and machinery footings in the engine room have been accurately mapped out.

6. SITE PHOTOGRAPHS: HISTORICAL

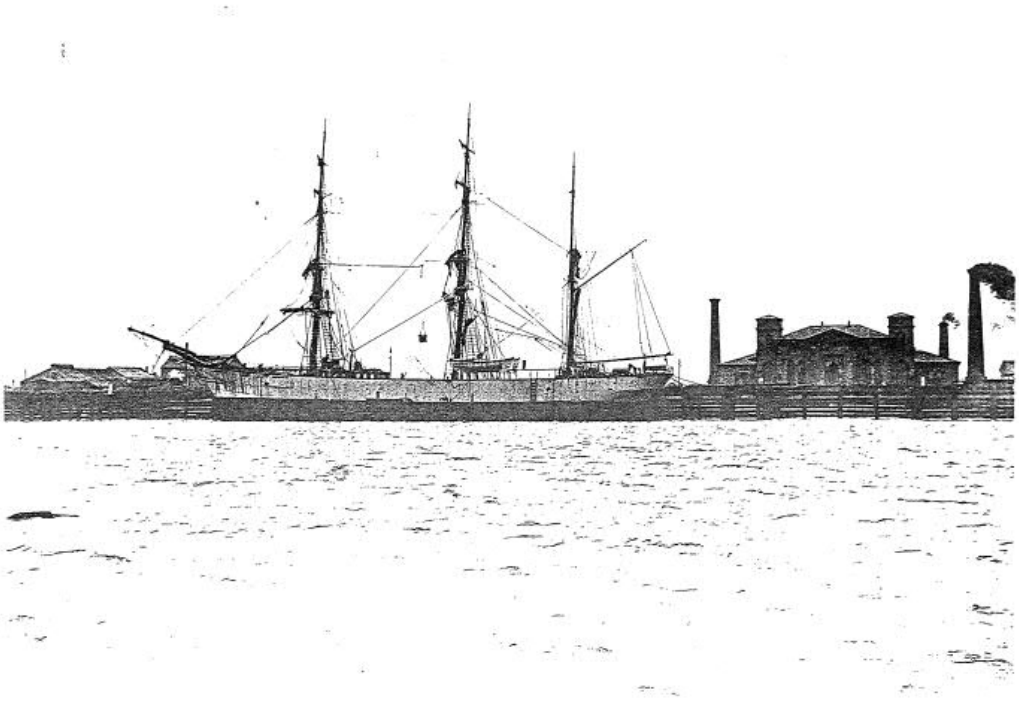


Figure 31. CHEH from The Basin, date unknown.

Newcastle Local Studies Library, in Hunter Design (1992)

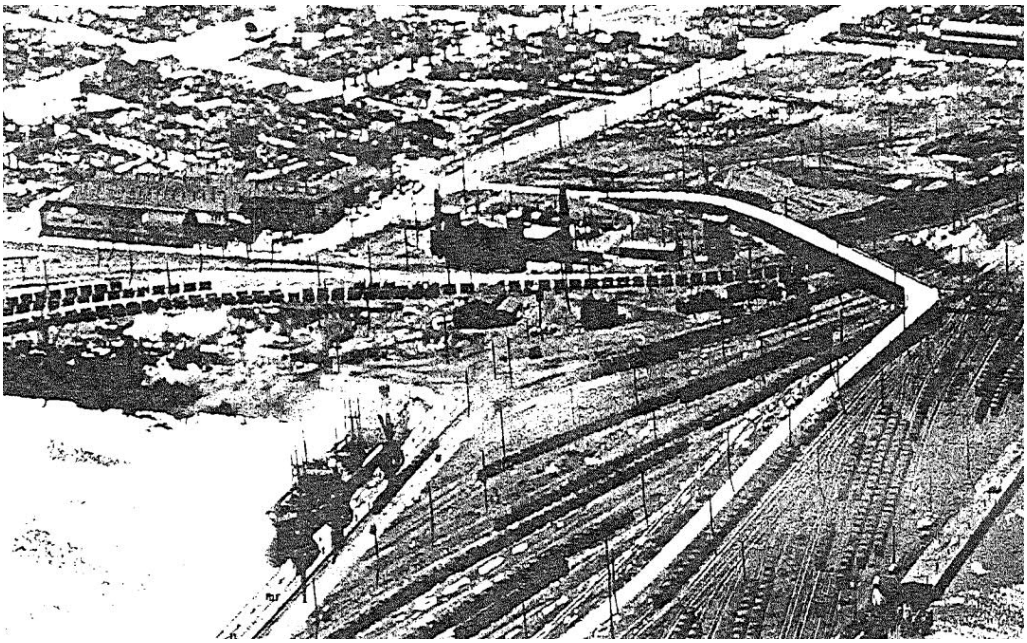


Figure 32. CHEH from the air, 22.4.1960

Hunter Design (1992).

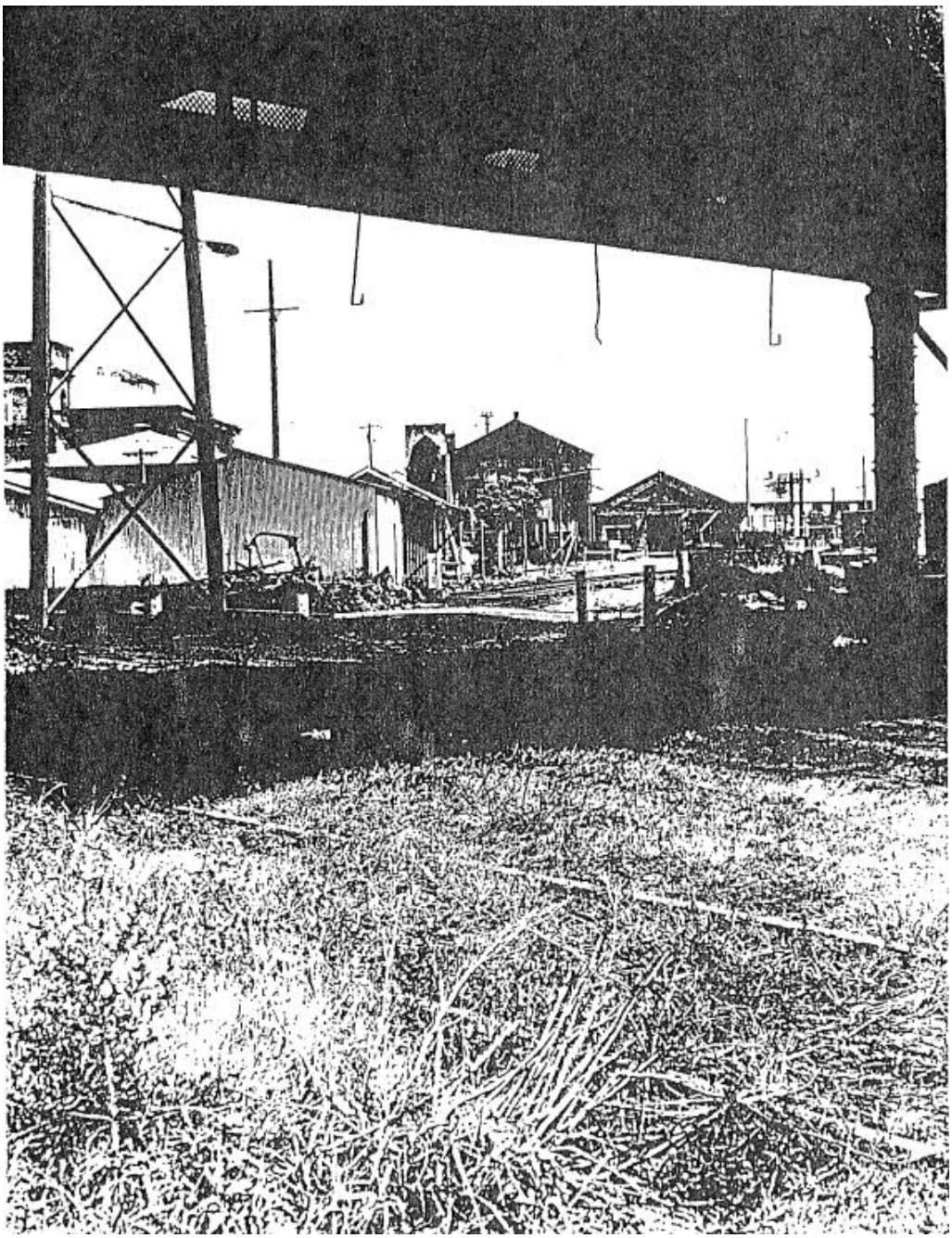


Figure 33. Rear Additions, looking west (c.1960's).

Hunter Design (1992).

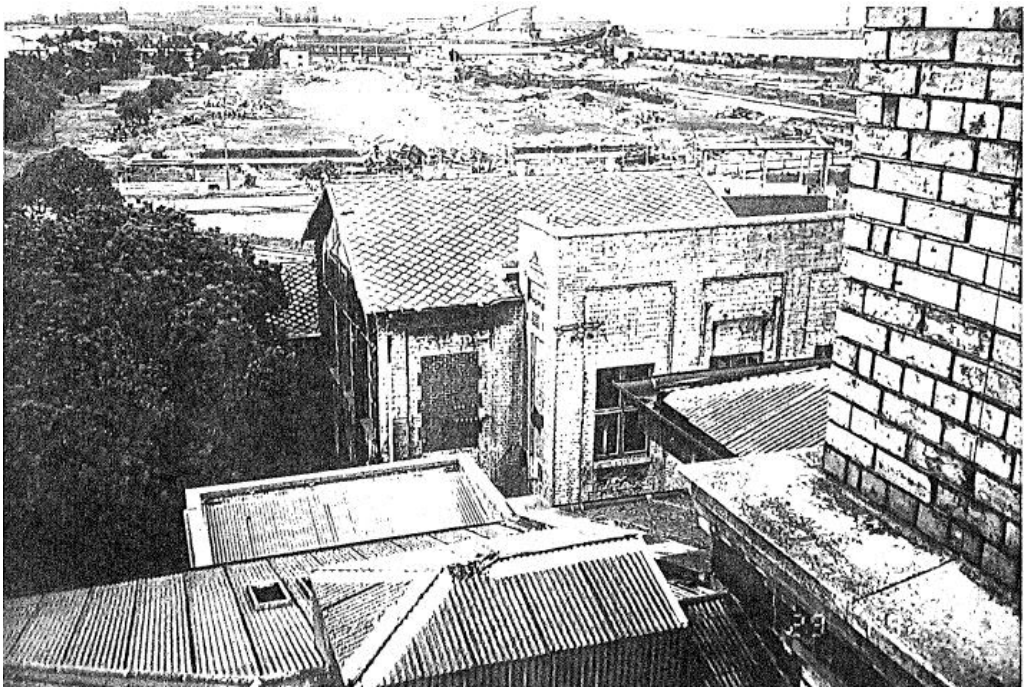


Figure 34. Rear additions, looking north from CHEH roof.

Hunter Design (1992).

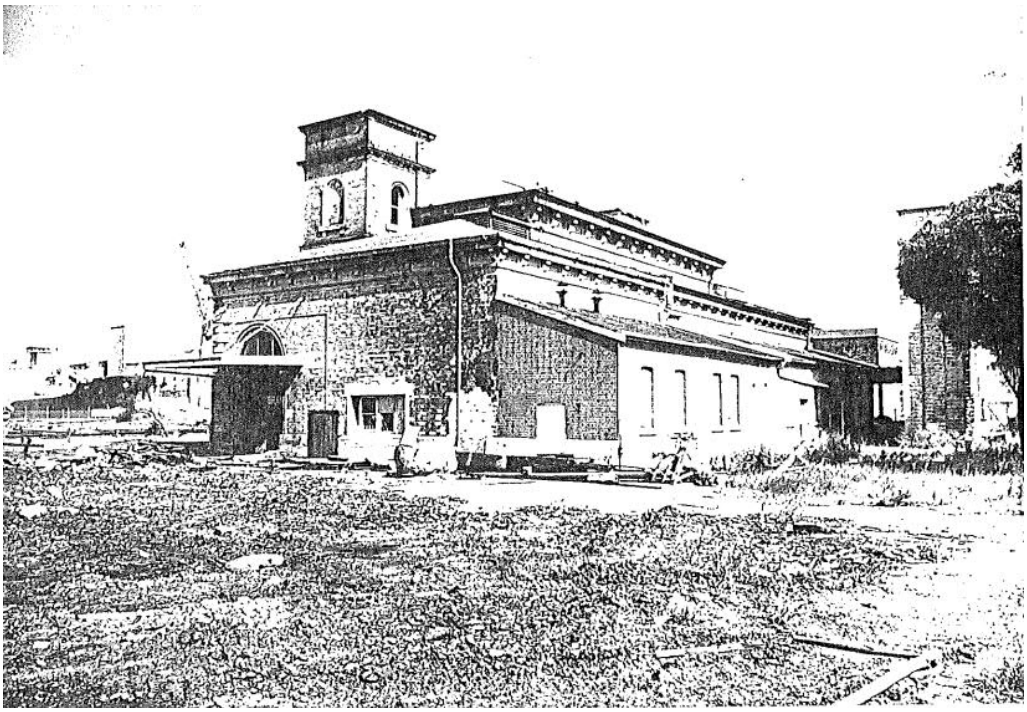


Figure 35. Lean-to additions, looking west.

Hunter Design (1992).

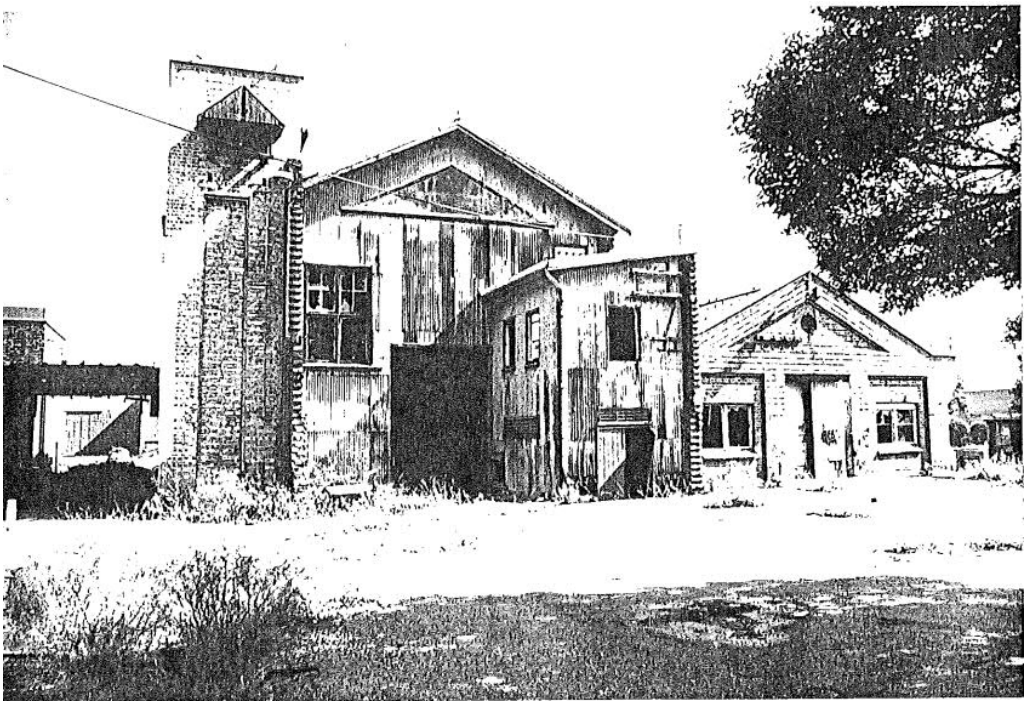


Figure 36. "East Aspect of the 1915 Building"

Hunter Design (1992).

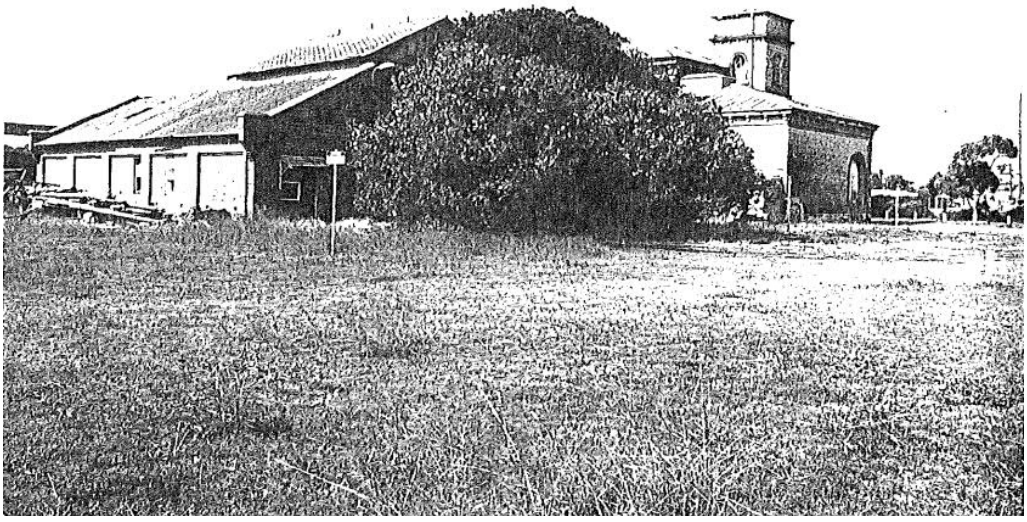


Figure 37. Rear additions, looking south-east.

Hunter Design (1992).

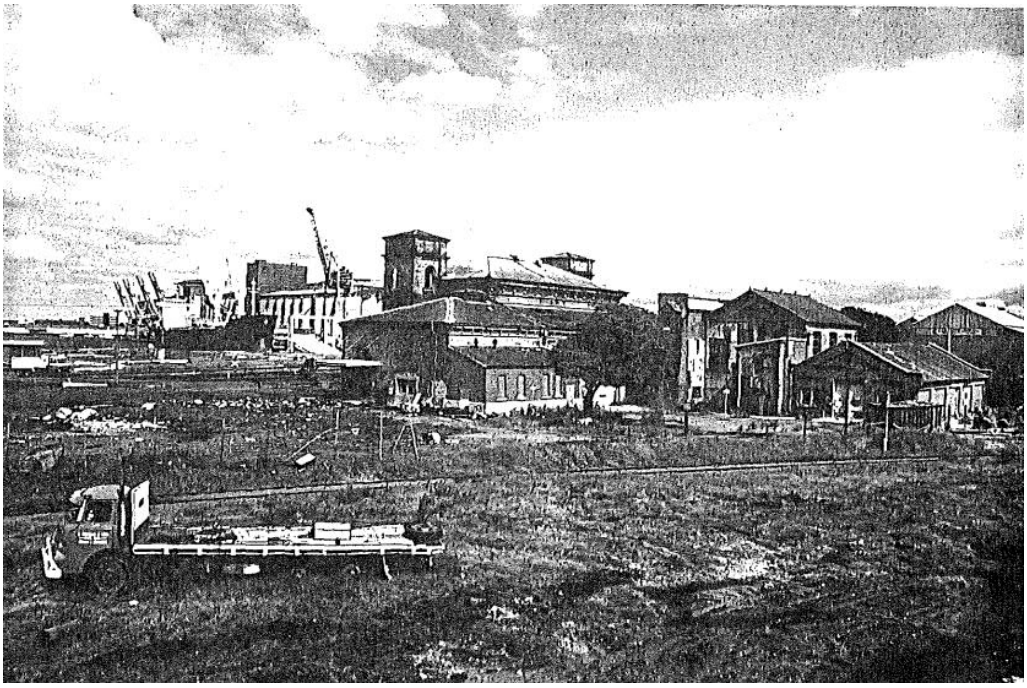


Figure 38. Rear additions, looking south-west.

Hunter Design (1992).

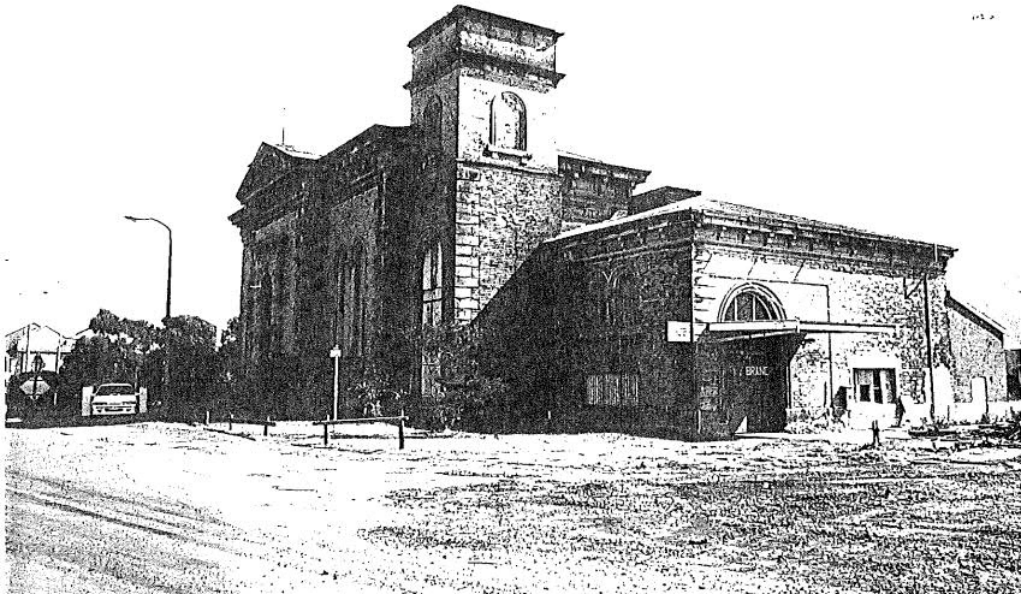


Figure 39. Southern and eastern facades, date unknown.

Hunter Design (1992).

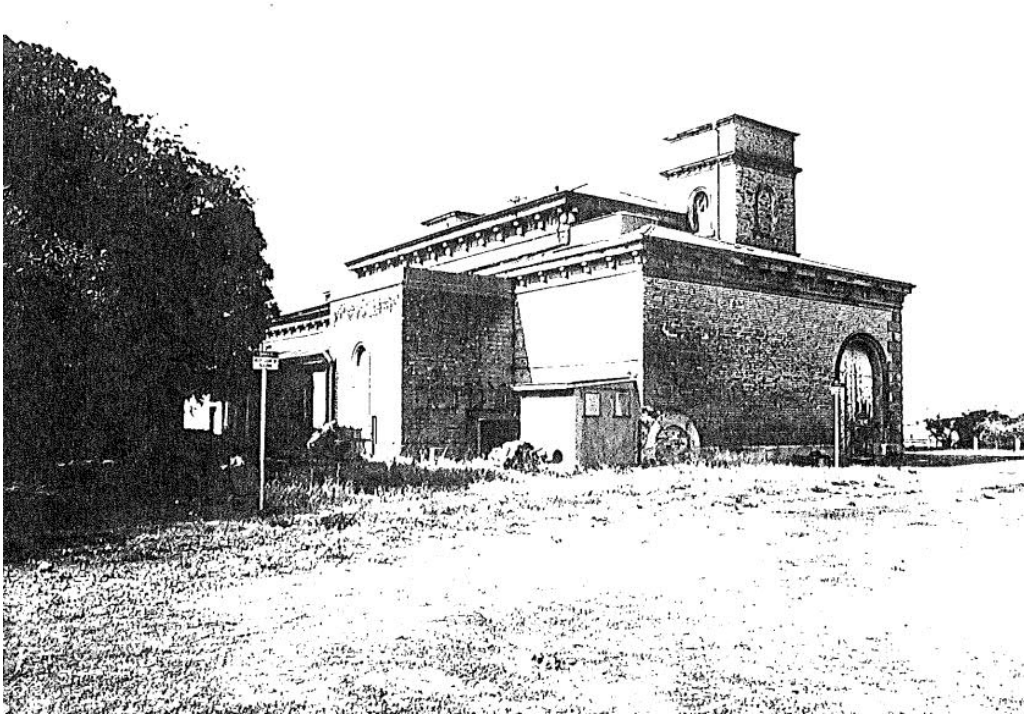


Figure 40. North-west corner, date unknown.

Hunter Design (1992).

Figure 41. Weathervane with crane motif, 1992.

Hunter Design (1992).

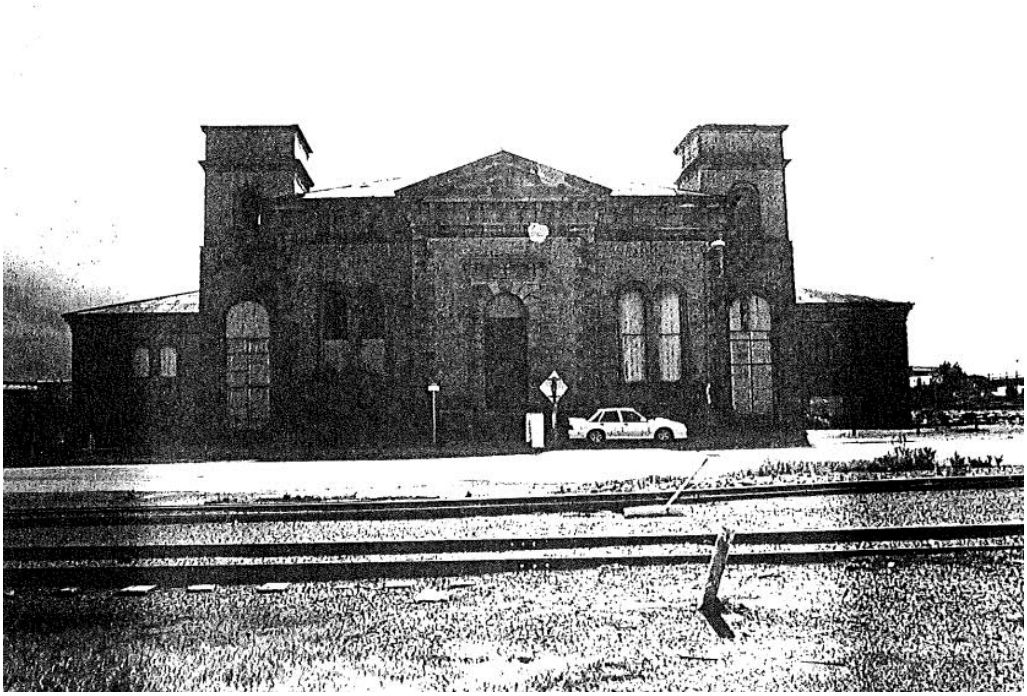


Figure 42. South façade, assumed 1992.

Hunter Design (1992).

Figure 43. CHEH and rear additions from the air.

NSW Department of Commerce. (2005)

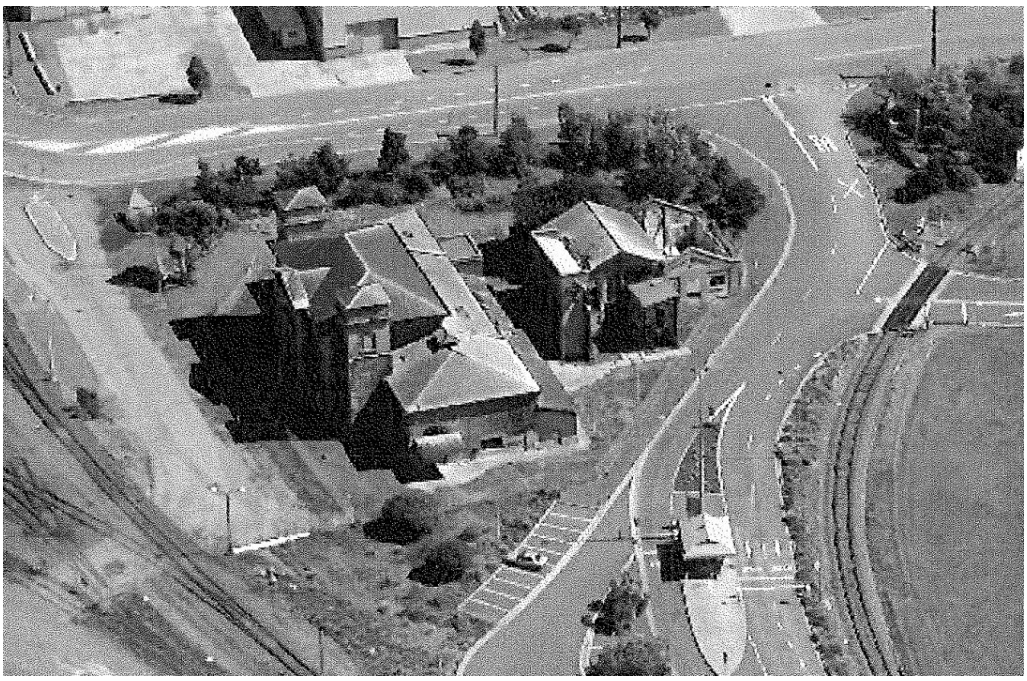


Figure 44. CHEH and rear additions from the air, looking west.

NSW Department of Commerce. (2005)

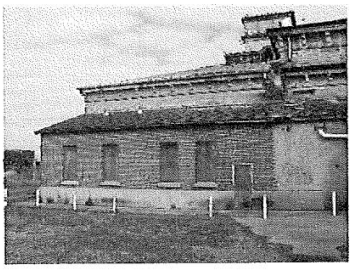


Plate 4.11: East (third)

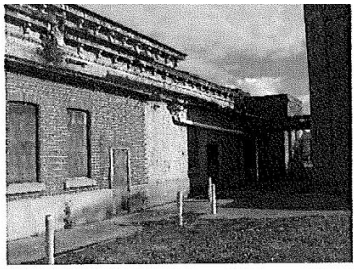


Plate 4.12: Middle (first)

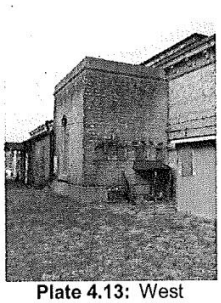


Plate 4.13: West (second)

Figure 45. "Lean-To Additions"

NSW Department of Commerce. (2005)

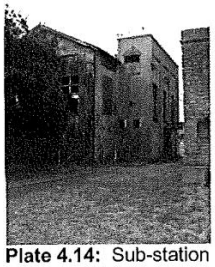


Plate 4.14: Sub-station from Burke Street

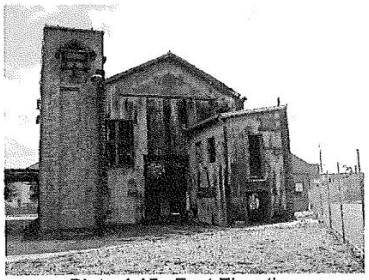


Plate 4.15: East Elevation

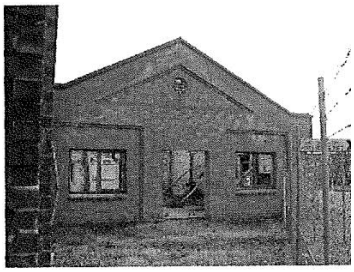


Plate 4.16: View of reconstructed eastern wall to Workshop.

Figure 46. "Electrical Sub-Station Building"

NSW Department of Commerce. (2005).

7. SITE PHOTOGRAPHS: CONTEMPORARY (2018 - 2021)

7.1 EXTERNAL

Figure 47. CHEH South Facade & Plaza.

Terras Landscape Architects

Figure 48. Aerial view, south side interpretive Plaza.

Terras Landscape Architects

Figure 49. Detail – "1877" Sandstone motif to pediment.

Figure 50. Detail – Lion's Head sandstone keystone above doorway.

Figure 51. CHEH Aerial view, looking east into industrial landscape of the Port of Newcastle.
Terras Landscape Architects

Figure 52. CHEH, looking east from pedestrian entry pathway.

Figure 53. South side front stairway.

Figure 54. Front stairs, looking east.

Figure 55. Plan view, interpretive plaza.

Terras Landscape Architects

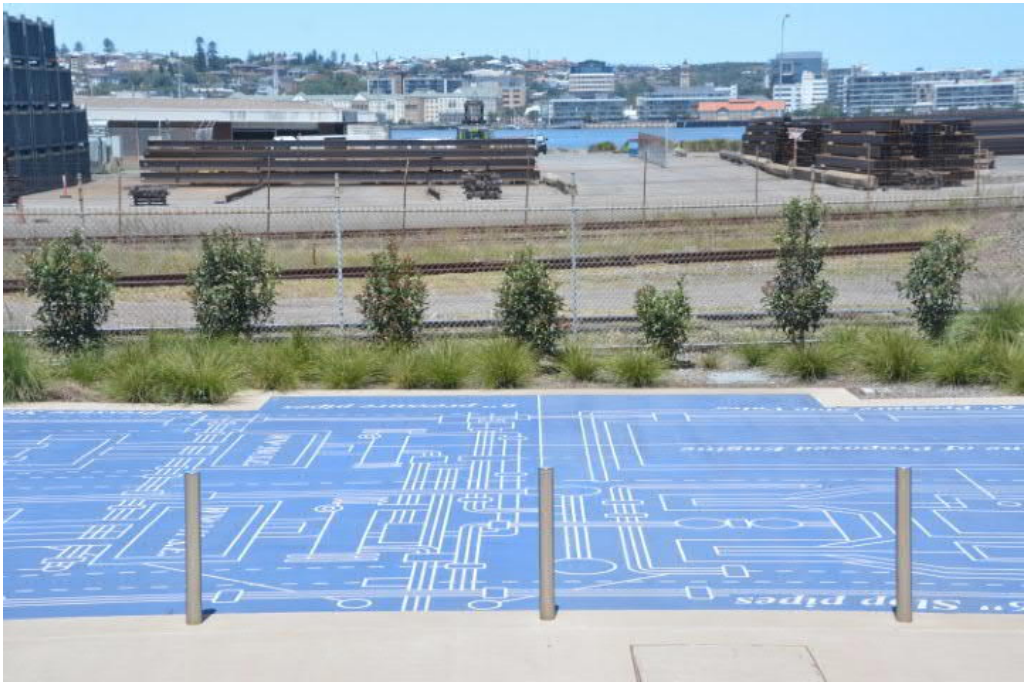


Figure 56. View from front stairs, looking south.

Figure 57. Detail, south side boiler room windows.

Figure 58. CHEH North façade (October 2021, part way through Stage 2 Conservation works).

Figure 59. CHEH North façade west end (October 2021, part way through Stage 2 Conservation works).

Figure 60. CHEH North façade Generator Room windows, leaves and stonework reconstructed late 2021.

Figure 61. CHEH East façade (October 2021, part way through Stage 2 Conservation works).

Figure 62. East façade non-original window (enclosed). The CFC cladding has been painted to represent the remnant steel bars within the wall.

Figure 63. CHEH West façade (October 2021, part way through Stage 2 Conservation works).

Figure 64. CHEH West boiler room door, following installation and painting of the leaves.

Figure 65. West façade, former chimney vent opening, sandstone repair during 2021 conservation works, (missing brick to be repaired shortly).

Figure 66. Eastern Accumulator Tower, north side aerial view.

Figure 67. Generator Room non-original skylight.

Figure 68. Typical Cast-Iron Gutter profile.

7.2 INTERNAL

7.2.1 Engine Room

Figure 69. Engine Room, looking west.

Airsight Australia

Figure 70. Engine Room, looking south across lowered floor section.

Airsight Australia

Figure 71. Engine Room, looking north east, large opening through to generator room.

Airsight Australia

Figure 72. Engine Room, looking north, large concrete engine footings extant.

Airsight Australia

Figure 73. Engine Room, looking North.

Airsight Australia

Figure 74. Engine Room, looking east.

Airsight Australia

Figure 75. Engine Room – looking South.

Airsight Australia

Figure 76. Engine Room – Detail, Cast Iron Floor grates.

7.2.2 Generator Room

Figure 77. Generator Room, looking west, (2021).

Figure 78. Generator Room, looking North at the west end (during works 2021)

Figure 79. Generator Room, operable windows reconstructed late 2021.

Figure 80. Generator Room, looking east (during works 2021).

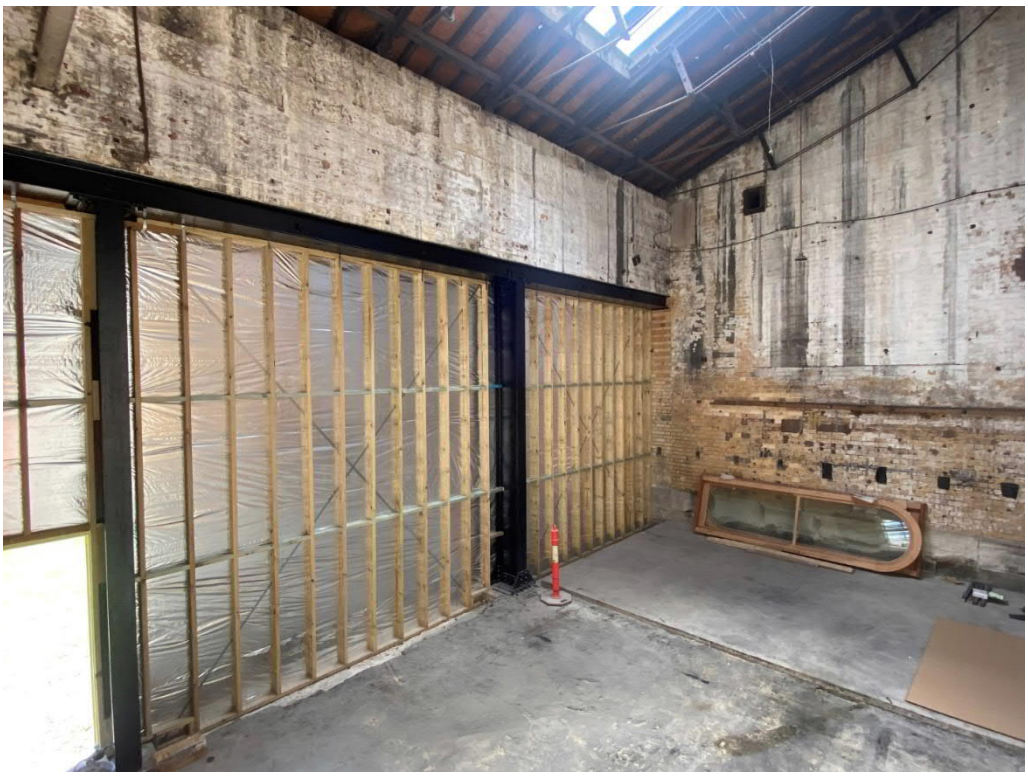


Figure 81. Generator Room, lightweight infill wall and treated steelwork. Operable windows ready for installation.

Figure 82. Generator Room, looking East (during works 2021).

Figure 83. Generator Room, looking South (during works 2021).

Figure 84. Generator Room, looking north-west (during works 2021).

Figure 85. Generator Room, detail – sandstone base course decayed condition.

Figure 86. Generator Room, extant machinery. (2019, prior to conservation works).

The equipment is sealed in an enclosure as an asbestos risk is present within some of the componentry. The brick wall behind has since been demolished.

7.2.3 Boiler Room 1

Figure 87. Boiler Room 1 – Looking south, (during works 2021).

Figure 88. Boiler Room 1 – Looking west, (during works 2021).

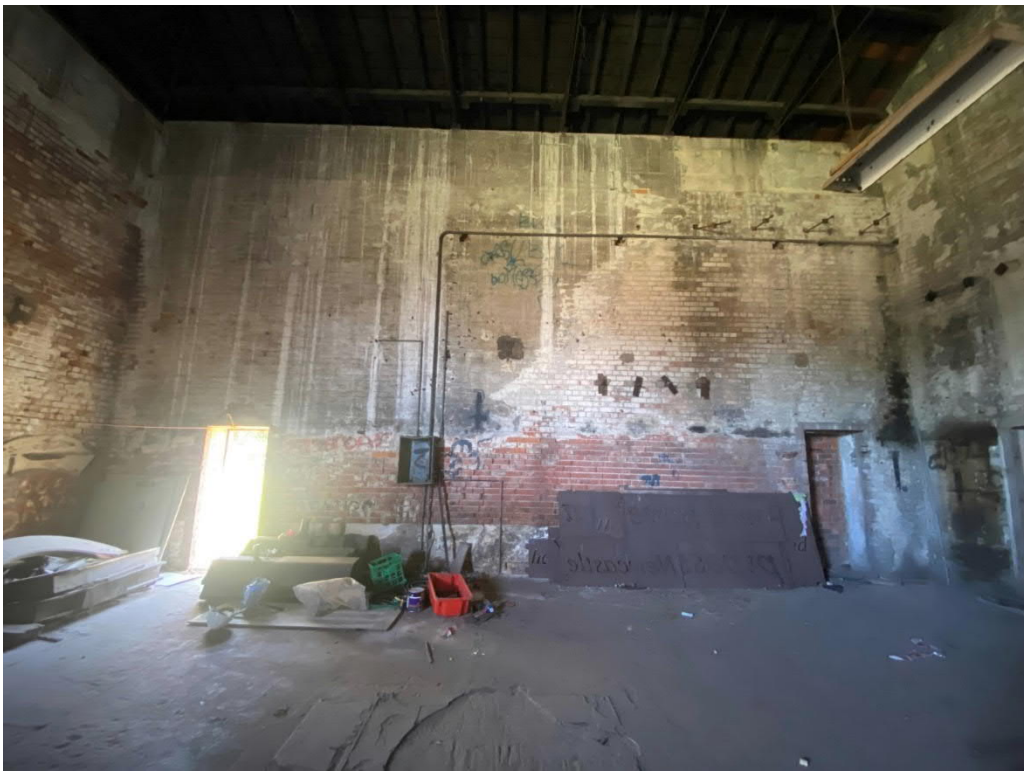


Figure 89. Boiler Room 1 – Looking north, (during works 2021).

Figure 90. Boiler Room 1 – Looking east, (during works 2021).

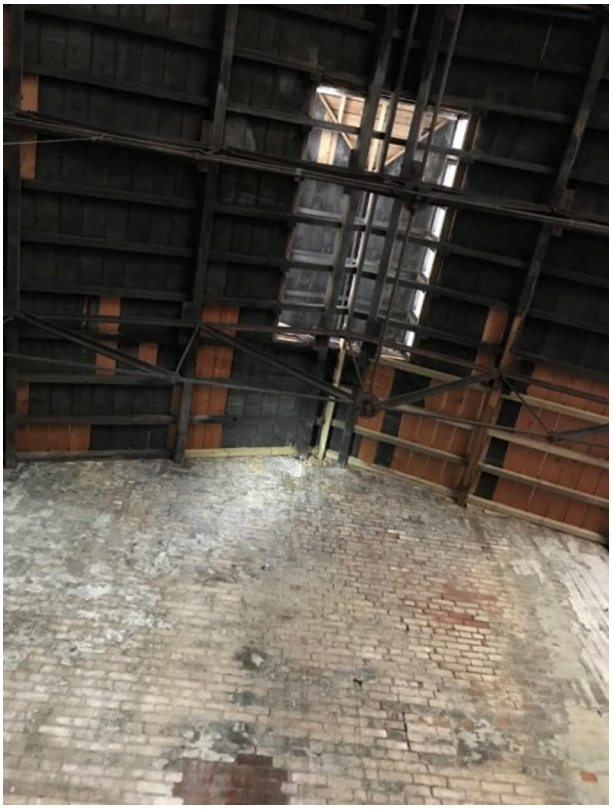


Figure 91. Boiler Room 1 – Looking east to ceiling apex and roof vent.

Figure 92. Boiler Room 1 – North-east corner, bricked up doorways on east and north walls.

7.2.4 Boiler Room 2

Figure 93. Boiler Room 2 – Looking north, (during works 2021).

Figure 94. Boiler Room 2 – Looking east to window, (during works 2021).

Figure 95, Boiler Room 2 – Looking south, (during works 2021).

Figure 96. Boiler Room 2 – Looking north, (during works 2021).

Figure 97. Original door hinge brackets, being re-used in 2021 conservation works.

Figure 98. Boiler Room 2 – original door hinge treated and reinstated in new stonework.

7.3 SUBFLOOR

Figure 99. Engine Room sub-floor cavity.

Note the significant corrosion to the column base (typical to all columns).

Figure 100. Engine Room sub-floor cavity. Column and framing to cast iron floor grates.

Figure 101. Engine Room sub-floor cavity. Central sump pit with drains to exterior.

Figure 102. Engine Room sub-floor cavity. File embedded within floor substrate.

7.4 CRANE BASES (NOVEMBER 2020)

7.4.1 Crane Base 7

Figure 103. Crane Base 7 – Aerial View (facing South).

Figure 104. Crane Base 7 - Aerial View (facing North).

Figure 105. Crane Base 7 – Context with surrounding “dolphin” berth.

Figure 106. Crane base 7 – South side.

Figure 107. Crane base 7 – East side.

Figure 108. Crane base 7 – North side.

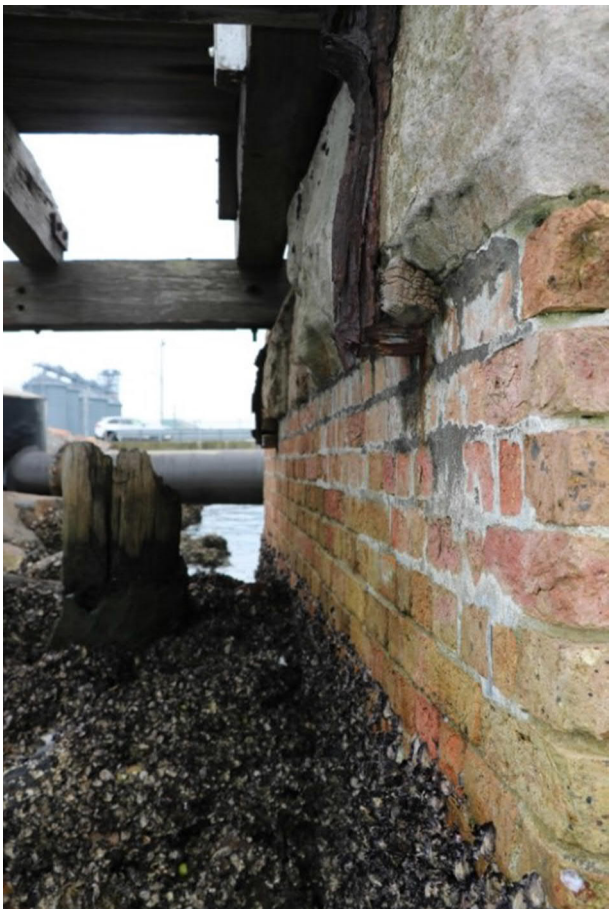


Figure 109. Crane base 7 – West side, looking north.

Figure 110. Crane Base 7 – Timber gangway, looking north.

Figure 111. Crane Base 7 – Remnant timber piles and retaining wall below gangway.
Note copper wrapping to lower horizontal timber beam.

Figure 112. Crane Base 7 – Remnant timber piles with copper cladding.

7.4.2 Crane Base 8

Figure 113. Crane Base 8 – Aerial View (facing South).

Figure 114. Crane Base 8 - Aerial View (facing North).

Figure 115. Crane Base 8 – Context with harbour, looking south-east.

Figure 116. Crane Base 8 – Contemporary decking to top, looking east.

Figure 117. Crane Base 8 – South side.

Figure 118. Crane Base 8 – East side.

Figure 119. Crane Base 8 – West side. Timber pile and copper cladding extant.

Figure 120. Crane Base 8 – North side.

7.4.3 Crane Base 9

Figure 121. Crane Base 9 – Aerial Photo, low tide, (West up).

Figure 122. Crane Base 9 – Aerial Photo, low tide, (North up).

Figure 123. Crane Base 9 – Looking East.

Figure 124. Crane Base 9 – The structure is submerged except at very low tides.

7.4.4 Crane Base 10

Figure 125. Crane Base 10 – Aerial Photo, located below a contemporary concrete bridge, (South up).

Figure 126. Crane Base 10 – Aerial Photo, (North up).

Figure 127. Crane Base 10 – Context with concrete roadway and shipping berth behind, looking north.

Figure 128. Crane Base 10 – South side, below concrete roadway.

Figure 129. Crane Base 10 – East side, below concrete roadway.

Figure 130. Crane Base 10 – North side, below concrete roadway.

Figure 131. Crane Base 10 – West side, below concrete roadway.

Figure 132. Crane Base 10 – Remnant timber pile and copper cladding.

8. PHYSICAL CONDITION AND ARCHAEOLOGICAL POTENTIAL

A more refined description of the fabric is given in Section 8 Physical Assessment following. The overall condition of the fabric is variable.

8.1 PHYSICAL CONDITION SUMMARY OF HYDRAULIC ENGINE HOUSE

The CHEH building was used for heavy industrial processes for many decades, and thus it's fabric, despite being appropriately constructed, was subject to significant wear and tear while the building was operating. Numerous alterations and additions to the building were accompanied with repair works but also resulted in compromises to the fabric at junctions and intersections where potential cracks and leaks have manifested.

The building ceased to be used in the 1960s and subsequent to that time, break ins and weather conditions have caused weak points in the structure where pests or water have penetrated the building envelope and caused structural damage. Vandals have painted their tags on numerous walls internally also.

Pigeons have roosted and small rodents have nested in multiple parts of the building and termites have attacked some of the structural timbers. It is noted that conservation works from 2018 to date have largely alleviated the ingress of vermin and the asbestos cleaning processes in 2020 have also removed most vermin debris. Rust corrosion is occurring in some of the structural steel members, with particularly bad examples in the column structure of the engine room floor grates. The concrete foundations are understood to be Mass Concrete, not reinforced, and as such no Concrete Cancer or spalling is evident or expected.

The re-roofing of the building with new slate in 1995 was a positive achievement for the condition of the building. Slate is a long-lasting material and aside from a select few places where breakages have admitted water the roof has protected much of the rest of the building.

New works to rectify damage to the main facade, roof, Accumulator Tower roofs and reconstruct the Boiler Room Windows were completed in 2019 and have been another positive impact to the condition of the building. The new works have addressed damp, eroding masonry and pointing, structural gaps and cracks (where evident), and securing of facade openings.

Further works to shore up the security and weather tightness of the building focussed on the east, north and west facades are approved under Section 60 of the Heritage Act and are being undertaken currently (August 2021).

8.2 PHYSICAL CONDITION SUMMARY OF CRANE BASES 7 TO 10

The crane bases were constructed of heavy-duty materials which were designed to withstand the marine environment of being in the harbour water; constantly inundated, and supporting a heavy mechanical crane which would be luffing heavy cargo. Visually, the crane bases appear to be in good condition with a very reasonable amount of deterioration in the masonry fabric or mortar. The condition of the bases around the water line is not possible to discern due to a substantial encrustation of oysters. Below the water level, the condition of the bases would need to be ascertained by an engineer and an underwater inspection.

The tops of the crane bases vary in condition due to the additions to the top surfaces which are typically fairly recent concrete elements with tie-down points. Crane Base 7 has a concrete beam attached to the top with a single tie-down. Crane Base 8 has a timber framed platform with a grid-mesh surface attached to the top. Crane Base 9 remains submerged underwater except at low tide. Crane Base 10 is almost entirely concealed by a new concrete wharf structure constructed over the top of it.

8.3 INDUSTRIAL ARCHAEOLOGICAL POTENTIAL

The site containing the Hydraulic Engine House is reclaimed land having been built up using fill material sourced from various places. The Southern and Western sides of the Stockton Peninsula contain listed Archaeological sites called "The Ballast Ground" which are known to contain remnants of rubble from the San Francisco Earthquake of 1906. The practice of the ships at that time was to offload the ballast on the Stockton side of the river before loading on the Carrington side. The potential for archaeological finds from ship's ballast at the CHEH site is expected to be low.

There is potential for remnants of previous structures to be found such as the foundations for the former chimney stacks which may be unearthed to the sides of the building. There may also be remnants of the former rail infrastructure which brought coal to the building to fuel the boilers.

There is potential to find remnants of the hydraulic pipes which pressurised the cranes on their bases. These pipes would have emerged from the Engine house and Accumulator towers and spread to the wharves of The Basin and The Dyke where the cranes were located.

At the Crane Bases, there is the potential to find remnants of the hydraulic pressure piping which would have actuated the cranes.

There are standard requirements should there be any excavation proposed in areas known to have archaeological potential upon the site. An excavation permit and/or an application for an exception to a permit will be required for all work in the area of demolished buildings and other items. The following clause applies for all work requiring excavation:

> 139 Excavation permit required in certain circumstances
> (1) A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.
> (2) A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.
> (3) This section does not apply to a relic that is subject to an interim heritage order made by the Minister or a listing on the State Heritage Register.
> (4) The Heritage Council may by order published in the Gazette create exceptions to this section, either unconditionally or subject to conditions, in respect of any of the following:
> (a) any relic of a specified kind or description,
> (b) any disturbance or excavation of a specified kind or description,
> (c) any disturbance or excavation of land in a specified location or having specified features or attributes,
> (d) any disturbance or excavation of land in respect of which an archaeological assessment approved by the Heritage Council indicates that there is little likelihood of there being any relics in the land.

The Heritage Act 1977 (NSW), s.146, mandates that any historical relic unearthed during site excavations be immediately reported to the Heritage Council of NSW:

> 146 Notification of discovery of relic
> A person who is aware or believes that he or she has discovered or located a relic (in any circumstances, and whether or not the person has been issued with a permit) must:
> (a) within a reasonable time after he or she first becomes aware or believes that he or she has discovered or located that relic, notify the Heritage Council of the location of the relic, unless he or she believes on reasonable grounds that the Heritage Council is aware of the location of the relic, and

> (b) within the period required by the Heritage Council, furnish the Heritage Council with such information concerning the relic as the Heritage Council may reasonably require.

The Heritage Act 1977 (NSW), s. 4(1) defines a relic as follows:

> relic means any deposit, artefact, object or material evidence that:
> (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and
> (b) is of State or local heritage significance.

Should such a relic be discovered, the Heritage Council of NSW should be immediately contacted via the Heritage Division of the NSW Office of Environment and Heritage, Level 6, 10 Valentine Avenue, Parramatta NSW 2150, telephone: 02 9873 8500, and by email at heritage@heritage.nsw.gov.au

8.4 INDIGENOUS ARCHAEOLOGICAL POTENTIAL

The site on which the Hydraulic Engine House is located was previously the mud flats on the southern edge of Bullock Island. The mud flats would not have supported indigenous encampments but may have had some small interest for food gathering. If there were any remnants of Indigenous passage though and across the site, which could only be small, it is expected that they have been obliterated by the wholesale reclamation of the site using ship's ballast and other filling materials.

Several metres depth of fill would have been applied to the site to create the stable ground which now exists there. The potential for Indigenous Archaeology is considered to be nil.

The positions of the Crane Bases are in the middle of what was the flow of the river before the bank was firmed up by the reclamation works. The potential for Indigenous Archaeology around the Crane bases is also considered to be nil.

PART 2: ASSESSMENT OF SIGNIFICANCE

9. APPLICATION OF HERITAGE SIGNIFICANCE CRITERIA

The NSW heritage assessment criteria encompass four generic values in The Burra Charter: the Australia ICOMOS Charter for Places of Heritage Significance, 2013: historical; aesthetic; scientific; and social significance.

An item will be considered to be of State or local heritage significance if it meets one or more of the assessment criteria listed in the Heritage Act 1977 (NSW).

These criteria will be used in assessing heritage significance of the property/site.

9.1 HERITAGE SIGNIFICANCE CRITERIA

Listed below are the relevant Heritage Assessment Criteria as identified in the Heritage Act 1977 (NSW):

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

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

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

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

Criterion (e) An item has the 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).

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

Criterion (g) An item is important in demonstrating the principle 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 places; or cultural or natural environments).

An Assessment of Significance requires that a level of significance be determined for the place. The detailed analysis uses the levels of significance below:

LOCAL	Of significance to the local government area.
STATE	Of significance to the people of NSW.
NATIONAL	Exhibiting a high degree of significance, interpretability to the people of Australia.

9.2 GRADINGS OF SIGNIFICANCE

An item may demonstrate significance under any combination of the criteria listed above, or potentially all criteria, within the context that it exists. The context may be regarded as Local, State or National as described above.

The relative contribution of an item to the significance of its context; or how important in item may be to its context can be graded using the following outline which is given in the NSW Heritage Council publication 'Assessing Heritage Significance.'

The same outline for grading may also be applied to the individual components of an item to determine how each element of the item contributes to the assessed significance of that item.

GRADING	JUSTIFICATION	STATUS
EXCEPTIONAL	Rare or outstanding item of local or State significance High degree of intactness Item can be interpreted relatively easily	Fulfils criteria for local or State listing
HIGH	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance	Fulfils criteria for local or State listing
MODERATE	Altered or modified elements. Elements with little heritage value, but contribute to the overall significance of the item	Fulfils criteria for local or State listing
LITTLE	Alterations detract from significance. Difficult to interpret	Does not fulfil criteria for local or State listing
INTRUSIVE	Damaging to the item's significance.	

10. PHYSICAL ASSESSMENT OF FABRIC

Sections 10.1 to 10.11 refer specifically to the Hydraulic Engine House building. Sections 10.12 onward refer to the Crane Bases which need to deal with their own unique environment.

Since 2018, two stages of conservation works have already been approved by the Heritage Council and undertaken using the ideal to 'do as much as is necessary, but as little as possible'[33] to ensure the overall building is weatherproof and secure.

Works undertaken to secure the main southern facade and the roof structure were undertaken under Section 60 Application No. S60/2017/219 and similar works to the north, east and west facades is currently being undertaken under Section 60 application no. S60/2020/167.

Works to the interior spaces to prepare the building for reuse are the prime focus of the CMP moving forward.

10.1 SUB-FLOOR

The Hydraulic Engine House is only a single storey building, however it has a substantial sub-floor space. The Engine Room is elevated to the top of the entrance stairs due to the machinery having been elevated on tall foundations which allowed maintenance access to all sides including underneath. The Boiler Rooms and the Auxiliary Engine House at the rear have their floors at ground level.

10.1.1 SPACES AND CORRIDORS

The spaces around corridors around the foundations are tall enough to stand or crouch in. A substantial layer of debris had accumulated in the base of the sub-floor cavity, which was cleaned during 2020 asbestos remediation works. The accumulation contained organic material which has been walked or blown in, vermin waste (pigeon droppings etc), industrial grime and material from the machinery processes and fuel burning, and other matter such as metal offcuts and mechanics tools which were used to service the machinery. Physical industrial objects encountered during the sub-floor cleaning process were left in situ, whilst general debris/grime was removed.

Drainage sumps or pits are located on the ground and some demonstrate evidence that they once had lids. Piping for services runs either along the ground or hard to the underside of the suspended floor.

Despite cleaning of waste material, traces of Asbestos are remnant within this vicinity as described in the buildings in a hazardous materials report.

[33] Burra Charter Article 3. Cautious approach 3.1 Conservation is based on a respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible.

Figure 133: Sub Floor 001.

General view of the sub-floor space. The steel floor structure above is the general floor level of the Engine Room. The walking surface below has a large accumulation of debris and matter.

Figure 134: Sub Floor 002.

In the accumulated matter are a number of lost objects such as this large file which would have been dropped by a maintenance person.

Figure 135: Sub Floor 003.

One of the sumps dropped into the floor. This sump has a pipe penetration in the far side which looks to have drained liquid from the sump.

10.1.2 CONCRETE BASES / FOUNDATIONS FOR MACHINERY

The concrete bases for the machinery still demonstrate the board shuttering used in their formwork. The bases rise to be flush with the floor level where the machinery was previously installed. The bases appear to be in good condition. The surfaces should be inspected for air pockets or hairline cracks which might admit moisture into the structure. If the bases are proposed to be used to support anything more than basic commercial floor loads, they should be fully inspected by a structural engineer.

Figure 136: Sub Floor 004.

Concrete base is visible to the right.

Figure 137: Sub Floor 005.

Concrete base is visible to the left.

Figure 138: Sub Floor 006.

The top surface of the bases is level with the Engine Room floor.

10.1.3 PIERS FOR SUSPENDED FLOOR

Other portions of the subfloor space contain brick piers and walls which supported the floor structure over or process pipework. Other piers include steel H section posts which support the floor structure.

The brickwork appears to generally be in good condition with nothing more than staining from water, oil or cement having occurred over the years. Almost all of the steel posts have the bottom portion of the member seriously corroded to the point that very little is left supporting the floor structure above, with approximately 90% section loss. The floor above is not currently trafficable given this dangerous condition. The steel piers will need to be repaired by propping the floor and welding in compatible steel plate to allow it to support the required loads again.

Similar to the bases above, should the piers be expected to support any more than typical commercial floor loadings, they should be assessed by a structural engineer.

Figure 139: Sub Floor 007.

Steel pier has lost the majority of its material near the base and will need to be repaired.

Figure 140: Sub Floor 008.

Combination of brick and steel piers support the floor above and the equipment at this sub-floor level.

Figure 141: Sub Floor 009.

Another steel pier missing most of its fabric near the base. The brick pier looks to have previously supported a pipe.

10.1.4 STEPS AND THRESHOLDS

The front steps leading up to the main central doors of the building are flanked by two plinths, one on each side. The plinths and stairs have been recently cleaned of moss and staining and polished metal handrails have been installed to both sides of the stair flight. The plinths are generally in good condition with only minor points of mechanical damage to the surface of the stone. There is no obvious cracking or opening up of joint lines.

The stairs themselves are partly worn down on the trafficable surface and have more obvious points of damage having been done to them. The polished metal handrails have been affixed to the surface of the top landing, one step halfway down and to the new concrete paving at the bottom.

Thresholds are generally in good and straight condition except to the external doors to the Accumulator towers which both display damage to the edges of the stonework.

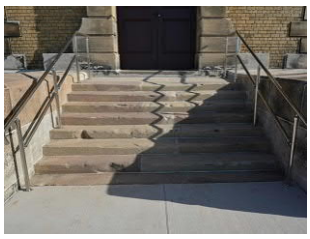


Figure 142: Sub Floor 010.

Main entrance stairs and landing with new handrails. Steps show damage to treads and risers.

Figure 143: Sub Floor 011.

Side door to boiler room. Boiler room concrete floor extends to threshold and is in good condition.

Figure 144: Sub Floor 012.

Accumulator tower doorway. Threshold is of stone and has some damage apparent.

10.2 FLOORS

10.2.1 SLAB ON GROUND FLOORS

The slabs on the ground level in the boiler rooms and the Auxiliary Engine House appear to be in good condition with no pronounced cracking or shrinkage gaps. Steel hoops embedded into the floor in the western end of the Auxiliary Engine House suspended bench seating when the area was for a time re-used as a locker room.

Figure 145: Slab-on-ground 001

In the western boiler room. The slab is in good order with tooled joints.

Figure 146: Slab-on-ground 002

In the Auxiliary Engine House central section. Slab is in good order.

Figure 147: Slab-on-ground 003

Auxiliary Engine House west section. Slab is in good order. Metal hoops supported change benches.

10.2.2 SUSPENDED FLOORS

There are two types of suspended floor within the Engine Room. The first is “sunken” concrete floor which is located toward the east side of the room. The second is a metal grid mesh floor made up of individual cast iron grid plates which fit snugly into a frame of steel members.

The sunken concrete floor is in good condition with the only visible holes those created for plumbing the machinery. Metal plates cover apertures through into the cavity below.

The metal grid floor varies in condition. Some is in good order and remains in its position. Some of the cast grid plates have been removed, some have cracked or broken and have fallen through to the subfloor space. A temporary timber gangway has been constructed relatively recently to bridge over some of the worst deficiencies in the mesh floor for foot traffic.

Figure 148: Suspended Floor 001

The cast metal grate floor in the engine room fits neatly between the foundations for the machinery.

Figure 149: Suspended Floor 002

The sunken section of floor is a later element at the eastern end of the engine room.

Figure 150: Suspended Floor 003

Openings where metal grates have been removed. A temporary walkway visible to the right.

10.3 STONE MASONRY IN WALLS

Cut sandstone blocks form a substantial part of the external walling both in the base of the building and in the details around the upper edges of the facades. There are Quoins at the corners of the southern facade, cut stone surrounds around all early windows and doors, carved stone entablature to the entire perimeter of the roof, stone string lines near the top of the accumulator towers and a cut stone pediment to the top of the main southern facade.

10.3.1 STONE BASES

Some areas of the building continue to suffer from rising damp. The use of cement-rich mortar to repoint areas formerly pointed in lime mortar is exacerbating this problem through capillary action. As salt-laden moisture absorbed into the comparatively porous stonework evaporates from the weather side of the masonry, the crystals remaining on the face bricks after evaporation is causing the bricks to fret, which will ultimately lead to their depletion and/or eventual failure.

Prior to 2021 conservation works, stone depletion was obvious in some locations particularly the northern and eastern facades which are exposed to more direct sunlight which causes quicker evaporation of the rising damp. Cement repointing had been applied to parts of the base on the eastern facade which sat proud of the face of the stone blocks which have receded around the pointing. These issues were largely remediated during 2021 construction works.

The worst stone depletion is now located internally at the base of the wall between the Engine Room and the Auxiliary Engine House. In some places, individual blocks have weathered back past the surface of the brickwork above them and gaps have opened up so that the sub floor space is visible through the wall. Remnants of the weathered stone has accumulated in piles and drifts across the floor of the Auxiliary Engine House.

Just east of the main door to the building, a number of pipes penetrate the stone base and the penetration is partly sealed by a galvanised metal plate affixed to the stonework. Three similar metal plates are fixed to the building base. The result is one each, either side of the front windows, either side of the main entry door. These four covered positions were the locations of former subfloor vents which had cast metal grates in them. The former grates were the same as those which still exist in the Customs House building on the south side of the harbour.

Figure 151: Stone Base 001.

Image showing general weathering or depletion of stone surface and joints prior to 2021 repair works.

Figure 152: Stone Base 002.

Image showing where cement pointing has accelerated deterioration around it prior to 2021 repair works.

Figure 153: Stone Base 003.

Image showing base wall between Engine Room and Auxiliary Engine House where worst depletion is evident.

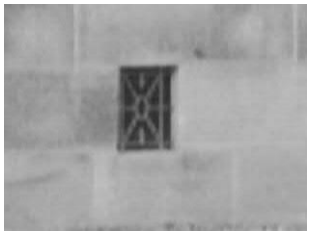


Figure 154: Stone Base 004.

Detail of subfloor vent from 1880s photo of Hydraulic Engine House

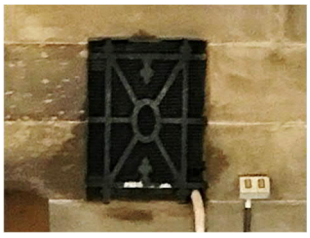


Figure 155: Stone Base 005.

Subfloor vent located on the northern facade of Customs House, Watt Street Newcastle

Figure 156: Stone Base 006.

Location of subfloor vent hole currently covered over at Carrington Hydraulic Engine House

10.3.2 QUOINING

Stone cut quoins are located to the southern corners of the Boiler Rooms, Accumulator Towers and Engine Room which punctuate every visible corner on the main facade. The quoins are cut with smooth faces and pronounced square-cut grooves at the edges which highlight the joints in the stonework. Each quoin is toothed into the brickwork beside being typically five brick courses high except for the top two quoins at each corner which are six brick courses high.

The quoins are typically in good condition. Repairs to the quoins were undertaken in 2019 to repair depleted edges and surfaces which had cracked. There remains some amount of water staining evident on the surface of the quoins.

Figure 157: Quoins 001

Some edges of the quoins remain depleted, but are not affecting the weather-tightness of the building so far.

Figure 158: Quoins 002

Some quoins have been cleaned and their surfaces dressed.

Figure 159: Quoins 003

The quoins in this location had cracked due to a badly fitted bracket and have been resurfaced.

10.3.3 STONE ENTABLATURE AND STRING LINES

At the upper limit of all the walls, a carved stone entablature consisting of Architrave, Frieze and Cornice sits just below the cast iron segmental gutter. All parts of the entablature are typically in good condition with the carved detail still crisp and readily apparent. Only a handful of places show degraded stone and these have been located on the drawings. The joint lines between the blocks which make up the entablature had opened up in some positions but these have been repointed as part of the approved works.

String lines above the level of the entablature line around the Accumulator towers display a similar detail to the frieze of the entablature only in a more squat proportion. The edges of these string lines are more weathered, softer, less crisp than the entablature because they are not protected by eaves therefore are exposed to more weather.

The cornice line at the top of the accumulator towers has been the subject of recent repairs and some of the stone has been replaced as part of the approved works.

Figure 160: Entablature 001.

The entablature around the southern facade of the engine room has the most elaborate architrave and frieze. Each section displays elaborate carving in the surface.

Figure 161: Entablature 002.

The entablature around the boiler room has slightly less detail in the architrave. The frieze has fewer, smaller and less ornate bracket blocks resulting in horizontal rectangular panels between the brackets.

Figure 162: Entablature 003.

The entablature around the rear of the Engine Room has the same height as the southern side but simpler architrave, simpler and fewer bracket blocks in the frieze.

Figure 163: Entablature 004.

Detail of the southern facade to the Engine Room.

Figure 164: Entablature 005.

Detail of the Boiler Room entablatures.

Figure 165: Entablature 006.

Detail of the entablature to the northern side of the Engine Room.

Figure 166: String Line 001.

The string line around the accumulator towers is a similar profile to the rear of the Engine Room albeit a smaller scale.

Figure 167: String Line 002.

The string line is cut in wide blocks in which the brackets and panels are integral not separate.

Figure 168: String Line 003.

A folded lead flashing has been applied to the top of the string line to reduce the weathering of the stone and prolong the life of the original fabric.

10.3.4 WINDOW AND DOOR DETAILS

Each of the early windows and doors has carved stone surrounding the opening with a scallop shape architrave extending from the sill level to the arch over the top of each opening. The sill of each window has a smooth faced projecting sill with smooth faced stone brackets underneath. The paired window groups have a smooth faced central mullion with a basket shaped carved element at the junction of the two arches.

The main central door is different to the typical facade openings having a projecting architrave with the same groove pattern as the corner quoins. At the arched top of the doorway, the stones are cut to follow the arch with a central keystone on which a carved lion's head is located. Above the arch, a scaled down version of the entablature caps the top of this primary entrance.

Figure 169: Window 001.

One of the reconstructed Boiler Room windows with new stone and brickwork to the lower half. The window opening is filled in with a plain hoarding for the time being.

Figure 170: Window 002.

The inside view of the same window also shows the new stone and brickwork and timber hoarding.

Figure 171: Window 003.

A combination of glazed and blind windows exist at the top of the accumulator towers.

Figure 172: Window 004.

Detail of the carving between a pair of windows to Engine Room and Boiler Room.

Figure 173: Window 005.

Stone sills with brackets are typical. The stone for this bracket has been replaced due to deterioration

Figure 174: Window 006.

Fairly simple carved window surrounds are continuous for window jambs and arched heads.

Figure 175: Front Door 001.

A projecting portico with joint lines that match the corner quoins surrounds the main central door.

Figure 176: Front Door 002.

The carved stone follows the arch of the door head to a key stone carved with a lion's head.

Figure 177: Front Door 003.

A view from underneath the keystone.

10.3.5 STONE PEDIMENT

At the top centre of the facade, marking the axis of symmetry and the main entrance to the building, a classical pointed pediment of carved stone exists. The shape of the carving follows the exact line of the entablature on either side of it. The architrave and frieze section of the entablature continue horizontally forming the base of the pediment. The shape of the cornice, which is the cast iron gutter for most of the perimeter of the building, is turned upwards in carved stone to form the top edge of the pediment. In the centre panel of the pediment, the construction date of the building 1877 is carved.

Figure 178: Pediment 001.

The classical pointed pediment sits on axis and directly above the main entrance door.

Figure 179: Pediment 002.

The construction date for the building is carved into the central panel.

Figure 180: Pediment 003.

A new lead capping has been applied to conserve the stonework and shed water onto the roof.

10.4 FACE BRICKWORK IN WALLS (EXTERNAL AND INTERNAL)

The yellow sandstock brick facework used for the majority of the building uses bricks from Joseph Bowtell's Steam Brick & Tile Works. These yellow bricks are expected to be the same as those used in Customs House on the southern side of the harbour which was being built concurrently by the same contractor and possibly by some of the same workmen.

While the solid brick walls are generally in fair condition, the use of cement mortar in place of lime mortar may lead to the fretting of face bricks. Some areas of lime mortar are degrading. Some bricks have had their surface fretted away. Some bricks may require turning or replacement, pending the advice of a suitably qualified bricklayer.

The number of previous alterations to the building as described previously in Parts 2 and 5 has resulted in sections of wall which have had new walls attached or have had new penetrations opened up, or have had previous penetrations closed up. Many of these alterations were executed in bricks which are not a perfect match for the originals. This means that original and/ or previous openings can be interpreted from the difference in material, however the qualities and performance of the different bricks and mortar can in some situations cause the accelerated deterioration of the original bricks.

Places of particular note where non-matching bricks were utilised are:
1. at the base of the windows of the western boiler room where a coal scuttle chute was opened and then later closed again. The bricks used to refill this hole were a dark red-brown colour but the brick bond matched the original; and
2. at the previous connection points where the chimney stacks were connected to the sides of the boiler rooms. The previous openings have been bricked-in using bricks that are much more orange than the originals and in a standard stretcher bond pattern.

The openings below the windows in both Boiler Rooms were reconstructed in 2019 and the window openings were returned to their original dimensions. The bricks used to reconstruct the openings were selected to match the colour and properties of the original cream brick and have returned the original proportions and appearance of the facade design.

The internal brick walls are constructed of orange / red coloured common bricks which appear to have been painted at some point in their history. They have received graffiti over the years and some of it has already been removed. The steam powered engines have created an environment which has eroded the surface of some of the brickwork nearby to their positions and left a very rough effect to parts of the walls. Internal doorways to Boiler Rooms and Accumulator Towers have arched brick heads but also flat timber lintels under which new door frames and door leaves have been fitted.

Figure 181: 2019 brick repair

Discoloration of the original brickwork in good condition was intentionally not remediated to interpret the building's industrial history.

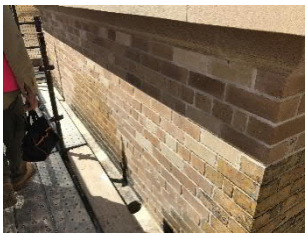


Figure 182: Accumulator tower

Brick replacement to the highest level of both accumulator towers made in 2019.

Figure 183: Interior brickwork

A particularly poorly constructed area of brickwork exists in Boiler Room 02 on the north wall.

10.5 EXTERNAL LIGHT WEIGHT WALLING

A lightweight plywood clad wall has until recently closed off the large opening that was created to join the generator rooms together on the north façade sometime between the 1940s and 1960s. The recently approved Section 60 has granted consent to demolish this wall, and re-construct it with a cfc cladding and painted interpretive artwork representing the original layout of doors and windows on this façade. Window openings in the Boiler Rooms are currently blocked off with hoardings of timber frames with plywood sheeting.

Figure 184. The CHEH north façade.

2021 works currently underway have enclosed the large opening in the north façade in lightweight structure with CFC cladding, and an interpretive artwork included to show the original fenestration.

10.6 GUTTERS AND DOWNPIPES

Encircling the main roofs of the building are the original cast iron gutter installed in segments with gaskets between. There is a heavy patina of surface rust to the gutter which has caused some staining to the stone cornice in places. A small number of the gutter segments have been replaced with new matching profile cast iron segments. The bedding to the gutter has been replaced with new lime-based mortar.

At the top of the Accumulator Towers, a new galvanised Ogee profile gutter was installed in 2019 when the rooves to the towers were replaced. Similar new galvanised Ogee profile gutters have been installed on the roof ventilators under the currently approved works.

At four positions around the building, original cast iron rainwater heads remain though those at the rear of the Engine Room (upper roof) have been removed previously. Where the rainwater heads have been removed, there is still evidence in the shape of the carving of the stone of their original position and shape.

All downpipes have been replaced at some stage in the life of the building. Some are circular section galvanised metal pipe, though most are circular section PVC.

Figure 185: Cast Iron Gutter

Joints of the original Cast Iron gutters are being re-sealed in 2021 works currently underway.

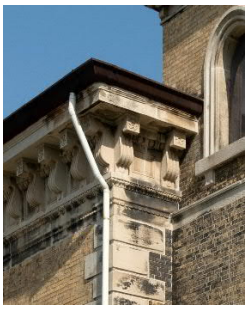


Figure 186: Pediment 002.

PVC downpipes currently exist on the south side of the building. The original downpipe path travelled internally into the engine room from the back of the gutter.

Figure 187: Accumulator roof

New galvanised Ogee gutters and downpipes were installed to the accumulator tower roofs in 2019.

10.7 WINDOWS

The large windows in their frames remain in the southern facade to the Engine Room and are in their original configuration. It is expected that some amount of repair work has been undertaken on these windows. Polycarbonate sheets have been installed in the openings in front of the windows to protect the glazing from vandals.

The window openings to the Boiler Rooms are currently horded up with timber frames and plywood sheeting. Remnants of the earlier (non-original or severely modified original) window frames are stored on site. Portions may be able to be used to reconstruct windows for these rooms, subject to the condition of the fabric.

Windows in the accumulator towers were replaced in 2019 as the earlier widow frames had completely failed. New window frames and sashes were inserted and protective polycarbonate sheeting was installed in front of the window frames to protect them against vandalism.

The windows to the rear of the Auxiliary Engine house had been hoarded up with a timber frame and plywood sheeting for many years. Works are currently underway to be reconstruct their original configuration with a protective polycarbonate sheet installed in front of the window frame to protect it against vandalism.

Figure 188: 2019 windows

Reconstruction of timber window frames in 2019, with protective polycarbonate shields.

Figure 189: Boiler room window

Reconstruction to original sizing of the south façade boiler room windows in 2019.

Figure 190: Engine room window.

Large windows extant to the engine room.

10.8 EXTERNAL DOORS

The main entrance door leaves and the door leaves to the Accumulator Towers have been replaced at least once historically. It is believed that some of the original hardware may be present still. Repairs to the main entrance doors were undertaken in 2019 to rectify damage caused by rot and vandals.

The doors to the Boiler Rooms on the east and west facades currently show evidence of rot and have been broken in by vandals previously, damaging the leaves. The existing doors are thought to be partially the original timber, with modifications and ad-hoc repairs having been made over time, and with substantial modifications having been made to the east boiler room door in particular.

Works are currently underway, as granted in the recent Section 60 approval to reconstruct the Boiler Room doors to their original detail.

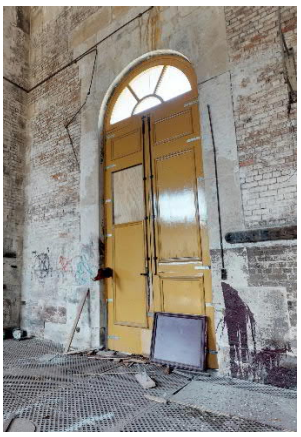


Figure 191: Engine Rm Door internal

Internal view of the main engine room doors, facing south.

Figure 192: Engine Rm Door external

External view of the engine room front doors, with lion's head keystone above.

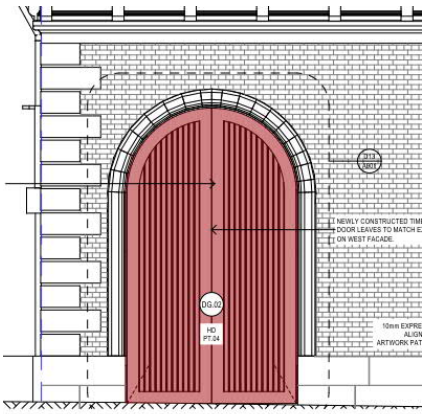


Figure 193: Boiler room timber doors.

Reconstruction of the boiler room timber doors under construction in 2021.

10.9 ROOF

10.9.1 ROOF COVERING

The roof covering, originally of slate, was replaced with asbestos sheeting sometime around the 1960s. The sheeting was then replaced in 1995 when, through significant expenditure, Penrhyn slate was installed to all roofs except the Accumulator Towers. The slate suffered damage in a select few places to the point where it was admitting water into the building. These damaged sections were repaired in 2019 in works approved under Section 60 of the Heritage Act.

The roofs of the Accumulator Towers were in parlous condition until 2019 when they were removed and reconstructed to the original details. The roof covering to the Accumulator Towers is thought to have always been sheeted in corrugated profile metal sheeting, and thus has been replaced with the same sheeting.

Cappings and Flashings to the roof were all photographed in detail prior to the works in 2019. They are a mixture of Galvanised metal cappings and / or lead flashings to be compatible with the galvanised roof sheeting and Penrhyn slate. All cappings and flashings have been checked and repaired if necessary during the recent approved works.

Figure 194: Slate repair

Roof repair undertaken to spot area in 2019.

Figure 195: Slate roof

Slate roof with lead cappings.

Figure 196: Accumulator Tower

Galvanised steel roofs installed to the accumulator towers in 2019.

10.9.2 ROOF STRUCTURE

Termite damage was discovered in all of the beams at the top of the accumulator towers in 2019, and more termite damage discovered to the western Boiler Room roof in 2021. Metal Bowstring trusses form the main roof structure in the Auxiliary Engine House and the Boiler Rooms. They appear to be in fair condition though inspection by a structural Engineer with experience in Conservation and Heritage would be recommended. There may be corrosion to the mounting brackets of the trusses against eastern accumulator tower.

Figure 197: Accumulator Tower Roof

Timber beams to the tops of the accumulator towers were essentially destroyed by Termite activity when inspected in 2019. They have since been removed and termites treated.

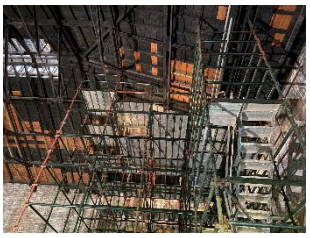


Figure 198: 2021 Termite Repair

Termite damage repair to boiler room 01 roof underway in February 2021.

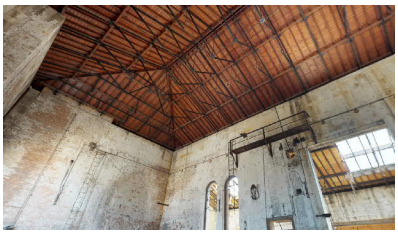


Figure 199: Engine Room Roof.

Timber lining boards and metal trusses to the engine room roof appear to be in good condition visually.

10.10 INTERNAL ELEMENTS

Substantial repair works have been undertaken upon the external envelope of the building; the facades and the roof, to secure it against the ingress of weather, rainwater, vermin and vandals. The extent of the works is outlined in the appended Section 60 approvals. The Internal Elements of the building have so far been minimally affected, and the bulk of further works required will therefore be focussed internally.

What has occurred so far is the removal of Asbestos contaminated material from the Boiler Rooms, Accumulator Towers and the Auxiliary Engine House. The Engine Room and especially the subfloor space within it is still nominated as an Asbestos Risk Area.

10.10.1 REMNANT MACHINERY

None of the original pumps or boilers remain as they were all superseded by electric equipment in the 1930s. What does remain to reference the original equipment is the foundations and mounting points for the machines and their hydraulic servicing. Angle guides rise vertically on the east and west walls of the two Accumulator Towers which would have maintained the alignment of the ram which pressurised the water in the accumulators.

The last pieces of remnant machinery within the building is a small electric powered pump in the Auxiliary Engine House which is likely to date from the 1960s or 70s.

Figure 200. Remnant machinery to the generator room.

Components of the machinery are noted to present an Asbestos hazard in HAZMAT reports, hence the Perspex enclosure.

10.10.2 REMNANT PLATFORMS AND LADDERS

A number of platforms and ladders remain throughout the building which were used to operate or supervise the machinery. Some of these platforms and ladders may date back to the 1870s or the 1890s. Others are more obviously new and are related to later uses of the building spaces following the redundancy of the coal fired infrastructure.

Ladders in Accumulator towers may be original to the building having served the working equipment in these areas. Ladders and the high level platform on the northern wall of the Engine Room do not appear in the earliest photo of the interior of the building and are believed to have been added later. Brackets and clips have been removed and added to the walls in conjunction with the various services changes and it is difficult to interpret the age of the many various types.

Timber platform in corner of Auxillary Engine House may have held a water tank, possibly a hot water tank for the showers as the platform is located above the change room. The platform has an odd mix of square and hex-headed nuts holding it together. Perhaps it employed some recycled parts from an earlier structure.

Figure 201: Engine Room Balcony

Fixed metal balcony to the north wall of the engine room, with ladder access and remnant fixings surrounding.

Figure 202: Ladder

Wall ladders are present in the accumulator towers.

Figure 203: Platform

Timber balcony platform extant in the generator room. The structure is in poor condition.

10.10.3 REMNANT SERVICING

The first lighting system to be installed in the Hydraulic Engine House was a gas lamp system dated to 1881 or 3 years after construction of the building. In one historic photo a large central globe is visible illuminating the Engine Room space. Electric light fittings were first provided in 1891 following the construction of the Auxiliary Engine House (Dynamo Room). There are remnant wall mounted electric light fittings throughout the Engine Room, but it is uncertain how old they are.

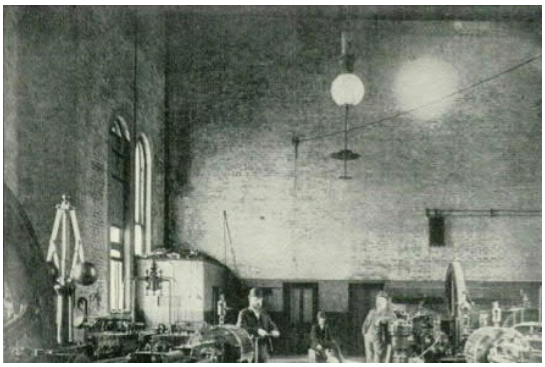


Figure 204: Engine Room Lighting

Historic photo of globe light to the centre of the engine room.

Figure 205: Extant Lighting

Remnant wall lighting in the engine room today.

10.10.4 PREVIOUS ALTERATIONS

The numerous previous lean-to additions to the north facade of the building were all demolished circa 2009. What additions remain are the 1890 Eastern Boiler Room and the 1891 Auxiliary Engine House. Numerous alterations which occurred during updates of services and equipment remain evident in the fabric of the building. These are notably new openings in the walls or infilled openings in the walls. New openings can be recognised by flat steel or concrete lintels instead of arches and simple detailing to the jambs and heads. Infilled openings can be recognised by partly or poorly matched brickwork as compared to that which surrounds it. The shape of the original opening can often be visually determined.

Figure 206. CHEH North Façade openings (2020, prior to conservation works).

The large non-original opening in the north façade showed the previous connection point through to extensions at the rear of the building.

10.11 PESTS

The presence of termite activity was discovered in the beams and roof structure above the Accumulator Towers, with the issue remediated during 2019 construction works. Termite activity detected in Boiler Room 1 during 2021 works is currently being treated.

Pigeons have previously roosted in the upper parts of the building having been able to enter through gaps around the roof or through broken window glazing. Deposits on the floors and wall surfaces of debris, droppings and feathers have occurred. Repair works in recent years to seal off the openings have been carried out through the approved works and this has prevented further pigeon access to the building. Furthermore, the majority of the building has been cleaned out of debris and deposits, removing much of the pigeon evidence.

Rats and Mice have not been noted to be a problem but may still be present in the building. Further work to repair the facades will continue to discourage the nesting of such vermin.

10.12 CRANE BASES

10.12.1 CRANE BASE No. 07

A large independent “Dolphin” berth structure has been constructed around this crane base, but does not connect to it. The base itself is connected to the shore by a timber walkway. It retains it brickwork and sandstone capping, but a layer of Portland cement rich concrete has been applied across the top of the structure. A single mooring bollard has been inserted into the centre of the base. The brickwork is typically in good condition with only minor mortar joint depletion. The sandstone has weathered worse and is showing depletion on one corner ad cracking in a number of blocks. There is a substantial build-up of oysters around the water line on all sides of the base.

Figure 207. Crane base 07, 2021.

A large concrete “Dolphin” berth has been built around the structure, but does not connect to it.

10.12.2 CRANE BASE No.8

This Crane Base has a platform of timber, metal and polymer grid mesh decking attached to the top of it. This is in addition to prior insertions of concrete structure and two mooring bollards for ships. The platform attached is not much larger than the crane base itself so access to view all sides of this base is relatively easy. The Crane base retains its brickwork and the majority of the sandstone capping which covered its top surface. The brickwork is generally in good condition with only minor cracking or mortar depletion. The sandstone has suffered more weathering than the bricks and is degraded at a few distinct points. There is a substantial deposit of oysters growing around the water line in all sides of the base.

Figure 208. Crane base 08, 2021.

A contemporary platform has been added over the top of the structure.

10.12.3 CRANE BASE No.9

This Crane Base is more often submerged than not as it was cut down to below the typical sea level somewhere between the 1930s and 1960s. In addition to the limited access to view the condition of the crane base, it is also substantially covered in oysters around the upper surfaces.

Figure 209. Crane base 09, 2021.

Photographed here at a 0.9m low tide, the structure is completely submerged.

10.12.4 CRANE BASE No.10

This Crane Base has had a larger wharf structure constructed in concrete over the top of the original base. To enable this to occur, a Steel pier was sunk adjacent to the crane base and a concrete beam partly set into the brickwork by removing some of the brick base. A layer of Portland Cement rich mortar has been applied right across the top surface of the Crane Base.

Covering the Crane Base over with a new impervious structure has not succeeded in protecting the Crane Base from deterioration. There are a number of visible cracks in the brick masonry which extend through several courses. There are some places where the pointing of the brickwork has deteriorated. There is a substantial deposit of oysters on the sides of the masonry also.

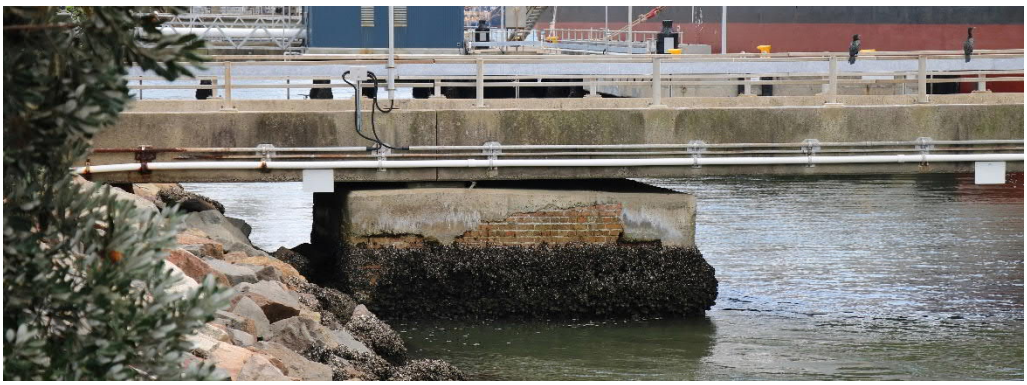


Figure 210. Crane Base 10, 2021.

A large concrete road bridge spans from the crane base across to a contemporary shipping berth.

11. ASSOCIATED ITEMS

11.1 THE DYKE & THE BASIN

Both elements of the 1858 Moriarty Plan, there is a clear association in the landscape development of The Dyke and The Basin with the Carrington Hydraulic Engine House. As man-made elements of industrial port infrastructure, the development of The Dyke, The Basin and The Engine house are fully interlinked in their operational connectivity and cultural significance.

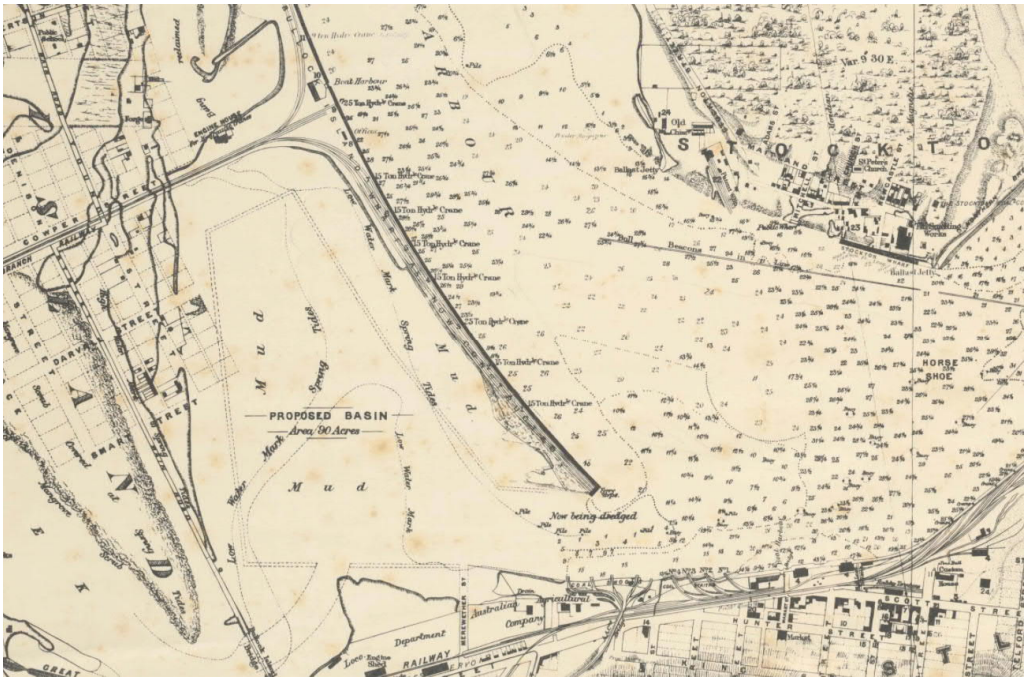


Figure 211. The Knaggs Map, 1887.

The formation of the alignment between the Carrington Engine House and The Basin, sheltered by the Dyke is clear.

The National Library of Australia

11.2 SUBSEQUENT CRANE BASES & THE FORMER MCMYLER HOIST

Remnant fabric of numerous stages of ship-loading technology remain along the length of The Dyke. The Hydraulic Crane Bases of 1878 are the oldest pieces of infrastructure, but remnant examples of historical steam and electric crane structures built in the 19th and 20th centuries are still visible, alongside contemporary bulk-loading facilities and silos. In context, this variety of infrastructure presents a fairly comprehensive set of wharf-side crane technology as used in the Port of Newcastle, and perhaps it's development generally in the country, although it is noted that generally only the bases of the structures are extant in situ.

In 1888 for example, four new 9-tonne hydraulic cranes were installed along The Dyke, numbered 12-15, and these were powered by the Hydraulic Engine House. An immediate change from the original crane bases, these units were circular in plan, though featuring similar construction in concrete, stone and masonry to the original 1878 crane bases. Not included within the State Heritage Register listing, these structures still maintain historical relevance in connection with the Engine House and its development, especially in considering that the engine house itself was completed in stages over many years.

Figure 212. Crane Base remnants.

Former “Newcastle Port Corporation” Plan of Historic Crane bases and coal loading structures along The Dyke.

Figure 213. Crane Base 15, photographed 2007.

Some remnant base fabric of the 1909 McMyler Hoist is also extant along the Dyke's foreshore. The structure operated for a short period of time before being closed in 1916, as it was considered ineffective and unsuitable for the conditions of the port. The number 7-10 hydraulic cranes were in fact modified at this time to accommodate larger vessels to accommodate the failure of the MvMyler Hoist.

Figure 214. The McMyler Hoist in operation.

University of Newcastle, Cultural Collections.

12. LANDSCAPE ASSESSMENT

As a working element of the Port, the Engine House has historically been situated in a heavily industrial landscape, which is by its nature devoid of any (intentionally) aesthetic design features. The planning of the Engine House's landscape context has purely been, from the time it was first reclaimed from the harbour in 1862, through to the working Port today, a process of functional needs-based design which responded to the requirements of the Port's technical infrastructure at the time. As such, it is noted that the 'heritage landscape' of the Item, including the crane bases, is that of a working shipping port. It would be inappropriate for the CMP to make any suggestion of requirements regarding the use or conservation of this landscape, given that it will necessarily change and be developed by the proponent over time. Refer to Part 16 CURTILAGE ASSESSMENT for further discussion.

It is noted however that introduction of the south-side public plaza in 2019 has added a contributory component to the site's landscape, that being unencumbered public access to view the Engine House's south facade, and large elements of heritage Interpretation. These elements increase viewer understanding of the significance of the building, while still maintaining an appropriate connection to the Industrial heritage landscape of the site. It is commendable that the Proponent has invested in this experience for the public on its own property with no obligation to do so, and it is noted that the Heritage Significance of the site is raised because of it. Anecdotally, we understand that the plaza is the largest thermoplastic artwork in the southern hemisphere, a notable landscape feature in its own right.

Figure 215. Historical Panorama of the Industrial Site.

Newcastle Weekly

Figure 216. 2019 Aerial View.

The landscape of the public plaza maintains connection to the site's industrial context, and promotes understanding of the building's heritage and history.

13. COMPARATIVE ANALYSIS

13.1 SWANSEA, U.K.[34]

Figure 217. The Pumphouse, Swansea, United Kingdom

www.geograph.org.uk

Conjecture about the original Architect of the Carrington Hydraulic Engine House has led some researchers to believe that the design of the building may have been imported from England, along with the original machinery.

Located in Swansea (U.K)'s maritime quarter, "The Pumphouse" bore similarity to its Carrington equivalent at the time of its construction in 1901, using similar machinery, boilers and a large accumulator tower to create hydraulic pressure. In difference to Carrington, the Swansea Pumphouse powered a range of port related machinery, not just coal loading cranes, including notably a rotating swing bridge (part shown in blue in the above image) and lock gates through the port canals.

Following a similar pattern of development to Carrington, the steam machinery of the Swansea Pumphouse was replaced by electric equivalents in the 1950's, and the building decommissioned in the 1971, not long after Carrington. In difference to Carrington however, an adaptive re-use of the building came about early, with conversion to a pub in the 1980's along with gentrification of the surrounding docklands.

Architecturally, the fenestration of the two buildings is dissimilar, with Swansea's windows clearly interpreting its design as two storeys (where Carrington's over-sized windows and door ways likely reflected the intention for the building to be viewed at a long distance across the harbour). Many other design details between the two buildings bear similarity, apart from the masonry type and colour, which clearly reflects the local product available in each location.

[34] Sourced generally from: https://www.geograph.org.uk/photo/3954543

13.2 GLASGOW, U.K.[35]

Figure 218. Queen's Dock Pumping Station, Glasgow, United Kingdom

Ashley Coombes, www.epicscotland.com

Figure 219. The Clydeside Whiskey Distillery contemporary extension.

Ashley Coombes, www.epicscotland.com

Constructed for the Clyde Navigation Trust contemporaneously to Carrington in 1877, the Queen's Dock Pumping Station provided hydraulic power to the machinery of the adjacent docks, including a swing bridge controlled by the Customs and Excise Master, capstans and hydraulic cranes. The 60-tonne swing bridge was built by Sir William Armstong and Co, supplier of the engines at Carrington Hydraulic Engine House the same year.[36]

[35] Sourced Generally from: https://www.glasgowlive.co.uk/news/glasgow-news/say-hello-glasgows-new-distillery-11751129 and https://www.epicscotland.com/glasgow-whisky-distillery-opens/
[36] https://www.theglasgowstory.com/image/?inum=TGSA01506

The building was designed by Glasgow's first City Architect, John Carrick (1819-90)[37] in an Italianate style, with pedimented gables and arched windows. Carrick disguised the function of the accumulator tower in the style of an Italian Campanile bell tower, complete with clock face, giving the building a strong civic presence.[38]

The Queen's dock swing bridge was dismantled in the 1950's, and the pumping station building decommissioned in 1969. It was used as a restaurant from 1988 and then from 2001 as a visitor centre and maritime museum.[39] The building is today adaptively re-used as the "Clydeside" whiskey distillery, visitor and function centre, with a £10.5m refit and contemporary extension completed in 2017, attracting 65,000 visitors yearly. Tim Morrison, the great grandson of the original builder John Morrison of Morrison and Mason, owns the facility today.

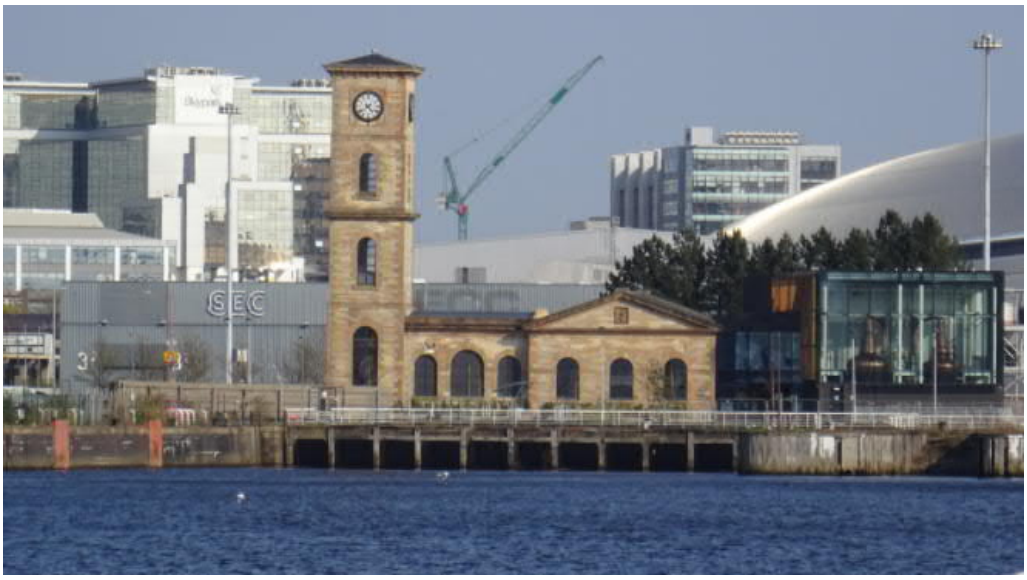


Figure 220. The Queen's Dock Pumping Station, across the River Clyde, 2019.

The building bears a striking resemblance to the Carrington Hydraulic Engine House in colour, form and relationship to the harbour.

Rosser1954, Wikimedia.

Figure 221. Carrington Hydraulic Engine House, 2020, in comparison to the above.

[37] http://www.glasgowsculpture.com/pg_biography.php?sub=carrick_j
[38] https://canmore.org.uk/site/171660/glasgow-stobcross-queens-dock-entrance-hydraulic-power-station
[39] https://www.scottish-places.info/features/featurefirst9281.html

13.3 WALKA WATER WORKS, EAST MAITLAND NSW[40]

Figure 222. Walka Water Works

https://www.flickr.com/photos/torkn2u/12623418513/

The Walka Water works building supplied drinking water to the towns of the Lower Hunter Valley, including Newcastle, between 1886 and 1931. Commissioned in 1882 by the Public Works Department, the complex was designed by English Engineer Sir William Clark, and built by contractors M. Parkhill and Hames Russell at a cost of £170,000. In difference to the Carrington Engine House, the facility did not create any form of "power", but was purely a pumping station, moving water from the Hunter River up through reservoirs where it could be gravitationally distributed to the various towns it served. Nonetheless noteworthy, the facility represented an industrial marvel of the time, being the largest industrial Hunter Valley at the time.

Following redundancy as a pumping station, the building was reopened in 1951 as a temporary power station, operating until closure in 1976. It is today re-used as a public reserve and function centre.

Despite being utilitarian industrial buildings in function, the care in architectural detailing of both buildings is remarkable. The design of the Water Works is Italianate, and ornamented in polychromatic brickwork (more similar to Customs House in Newcastle than the Carrington Hydraulic Engine House). Iron columns and decorative grills internally are a uniform feature between the two structures, along with the use of masonry and arched fenestration. The design of the surviving chimney stack is notable, given it very similar square based / octagonal shaft form to those of Carrington's original drawings. The Walka chimney stacks have carefully detailed ornamentation patterned into their base plinths.

[40] Sourced Generally from: https://en.wikipedia.org/wiki/Walka_Water_Works and https://www.maitlandlibrary.com.au/discover/local-history/civic-and-community-history/industry-and-business/walka-water-works

13.4 FURTHER REFERENCE - HYDRAULIC POWER IN SYDNEY

Several examples of Hydraulic Power engines remain extant in Sydney, with a variety of scales from small size private engines to more significant urban/commercial scale systems. No large scale specifically industrial examples precisely similar to the Carrington Engine House are extant.

J.W. Gibson of Heritech Consulting identifies the following as elements of Hydraulic Power systems remaining in Sydney in 2010. Refer link in footnote for further analysis.[41]

Describing the public use of Hydraulic Power in Sydney, Gibson describes that:

Records suggest that the peak period for hydraulic power, under threat from diesel and electrical power, was in the mid-1930s and that the profit and loss break-even point was reached in 1965. By 1968 there were no more than 150 customers on the system which ceased operation in 1975.[42]

- Naval Stores on Garden Island (1893)

Figure 223. Naval Stores Building, Garden Island.

Wikipedia.

- Royal Edward Victualling Stores, Pyrmont.
- Pyrmont Argyle Stores in The Rocks (1878)
- Walsh Bay System Railway Workshops, Eveleigh (1886)
- Railway Workshops, Chullora
- Dockyard, Cockatoo Island. (1915-1918)
- Birt's Wharf, Pyrmont
- Sydney and Suburban Hydraulic Power Company (SHPC) (1891)

[41] Refer: Heritech Consulting, J.W.. Gibson (2010). Gone but not forgotten, Hydraulic Power in Sydney 1890-97, Pt 1. Available at http://www.hevac-heritage.org/links/SYDNEY-HYDRAULIC-POWER.pdf
[42] Heritech Consulting, J.W.. Gibson (2010). Gone but not forgotten, Hydraulic Power in Sydney 1890-97, Pt 2. Available at http://www.hevac-heritage.org/links/SYDNEY-HYDRAULIC-POWER.pdf

Figure 224. Sydney & Suburban Hydraulic Power Company, Pumping Station No. 1 (1891).
https://www.flickr.com/photos/sydneyhistory/6899898373/

14. ANALYSIS OF SIGNIFICANCE

The following Analysis of Significance is quoted directly from the State Heritage Register. It was prepared when the Carrington Hydraulic Engine House and Crane Bases 7, 8, 9 & 10 were placed on the register as recently as 2017 and is the product of extensive research and effort. EJE Heritage considers it to be an accurate and reliable summary of the significance of the combined item.

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 Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance for their historical values. As relics of an industrial wonder of their age, they demonstrate ninety years of the development of port infrastructure in support of coal exports, one of the trades upon which the economic development of NSW depends. The first of their kind in Australia, they demonstrate the significance of the port of Newcastle to the colonial economy. They are intimately associated with the nineteenth century Public Works Department scheme for the transformation of Port Hunter from a swampy estuary into the largest coal port of the Southern Hemisphere, and a mainstay of the NSW coal mining industry. While the Engine House has been altered through the removal of plant, and three of the crane bases have been reused, they otherwise remain sufficiently intact to be fully legible to diverse audiences. The crane bases are associated with the original order for four hydraulic cranes, and are readily distinguished by their square shape.

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 Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance in providing evidence as to the progress of the architectural and engineering professions in NSW between the 1870s and the 1960s. In demonstrating the introduction into NSW of hydraulic coal loading technology they are strongly associated with engineers Edward Orpen Moriarty and Cecil Darley, and the Harbours and Rivers Branch of the Department of Public Works; with engineer John Whitton of the NSWGR; with Harbours and Rivers engineer Percy Allan and NSWGR Chief Electrical Engineer Orlando Brain; potentially with James Barnet and Edmund Spencer of the Colonial Architect's Branch of the PWD; and especially with Sir W.G. Armstrong and Co. Ltd (Engine House and Crane Bases) and Cowans, Sheldon and Co. Ltd (Auxiliary Engine House/dynamo room), engineering companies of world importance. They also have a special association with the public and private sector workers who constructed, operated and maintained the Bullock Island coal handling complex.

Aesthetic And 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 Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance for their aesthetic and technical values. They are associated with high levels of creative and technical achievement, both in their ability to house the state-of-the art machinery and equipment necessary for the development and transmission of hydraulic (and later electric) power and in their built form. Although the Engine House now lacks its chimneys it remains aesthetically distinctive, particularly with regard to its architectural elements, size and materials. It exemplifies an industrial application of the Victorian Academic Free Classical style of architecture with some Victorian Romanesque features. Situated near the apex of The Basin and visible across a wide area, the Engine House is a landmark of the second-largest city in NSW. Despite their re-use for other port-related purposes, Crane Bases Nos. 7, 8, 9 and 10 remain aesthetically and technically distinctive in a NSW context, and with one exception are also highly visible.

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.

Not Applicable

Research Significance

Criterion (e) An item has the 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 Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance for their potential to yield further scientific and archaeological information as to Armstrong hydraulic plant in a maritime setting. Information concerning the siting and operation of engines, chimneys and boilers is provided by footings, sub-floor voids, underground pipe runs and the like. The design and fabric of the building includes substantial load-bearing masonry and long-span metal trusses, and illustrates design techniques for the housing of nineteenth century hydraulic machinery and engines. The Engine House is of state heritage significance, also, in its size and setting, and in the esteem in which it is held by contemporary NSW engineers. The design and fabric of Crane Bases Nos. 7, 8, 9 and 10 demonstrate the nature and application of nineteenth century hydraulic crane technology, and are of state heritage significance because of their unusual square shape. Both the Engine House and Crane Bases Nos. 7, 8, 9 and 10, which along with the railway complex and The Dyke demonstrate the nineteenth century transformation of Port Hunter by the public sector, and constitute benchmarks for understanding the generation and application of hydraulic power in colonial NSW.

Rarity Significance

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 Hydraulic Engine House is of state heritage significance as one of only two nineteenth century hydraulic power facilities extant in NSW, and as the only one related to coal handling. As the only example of its type in NSW, it demonstrates defunct processes and techniques of exceptional historical and technical interest. Hydraulic Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance as the only examples of their type in NSW, and provide rare evidence of nineteenth century coal handling via Armstrong hydraulic cranes. Their square bases, the result of their being supported by similarly-shaped caissons, are unusual. They are intimately associated with the establishment of the Engine House, and demonstrate a defunct process formerly of great importance to the economy and society of NSW. The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 constitute at both state and national levels the most complete example of a coal loading system predating the introduction of conveyor belt-based loading technology.

Representative Significance

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

The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance as fine examples of their type, exemplifying the principal characteristics of hydraulic and electric coal loading technology as developed and applied by Sir W.G. Armstrong and Co. Ltd, and Cowans, Sheldon and Co. Ltd, companies of world importance. As unique examples of their type in a NSW and Australian context, they are representative of diverse applications of the hydraulic system, and are outstanding in their setting and size. Situated near The Dyke and The Basin, they demonstrate the nineteenth century transformation of Port Hunter from a swampy estuary into the largest coal port of the Southern Hemisphere. They are of state heritage significance in representing a significant variation in hydraulic crane technology as applied in NSW, and form part of a group collectively illustrating the early application and progress of hydraulic technology.

14.1 ASSESSMENT OF GRADING OF SIGNIFICANCE

An item may demonstrate significance under any combination of the criteria listed above, or potentially all criteria, and individual components of an item will contribute to the significance of that item under individual criteria. The relative contribution of a component to the overall significance of an item can be graded using the following outline. By grading the significance of components, it gives clarity about which components of an item are able to withstand change without impacting the significance of the item, but also which components of the building cannot be changed without impacting significance.

The grading system which was described in Part 9.2 GRADINGS OF SIGNIFICANCE is reiterated and expanded upon here. The system establishes a grading of various elements of fabric associated with the building and vicinity. Grading of significance assists greatly in the development of approaches to the treatment of the building.

The process of grading relative significance examines a number of factors including:

- Relative age
- Original quality
- Degree of intactness
- Extent of subsequent change
- Association with important people of events
- Ability to demonstrate a rare quality, craft or construction process

The gradings of significance include ‘exceptional’, ‘high’, ‘moderate’, ‘little’, and ‘intrusive’.

The Carrington Hydraulic Engine House has been assessed as being of State significance. As such, it should be noted that the gradings presented below are assessed for significance which is demonstrated in a State setting.

Exceptional Significance

Elements which make a direct and irreplaceable contribution to the overall heritage significance of the item being graded. These elements will exhibit a high degree of integrity with any alterations of a minor nature and generally reversible.

Demolition / removal or inappropriate alteration of elements graded as being of Exceptional Significance would substantially diminish the heritage significance of the item.

High Significance

Elements which make a substantial contribution to the overall heritage significance of the item being graded. These elements may have alterations that do not detract from their significance.

Demolition / removal or inappropriate alteration of elements graded as being of High Significance would diminish the heritage significance of the item.

Moderate Significance

Elements which make a moderate contribution to the overall heritage significance of the item being graded. These elements have undergone alterations which detract from the item’s heritage significance but they still contribute to the overall significance of the place.

Demolition / removal or inappropriate alteration of elements graded as being of Moderate Significance may diminish the heritage significance of the item.

Little Significance

Elements which make only a minor contribution to the overall heritage significance of the item being graded. These elements have undergone substantial and irreversible alteration and cause difficulty in interpreting the significance of the item.

Demolition / removal of elements graded as being of Little Significance would not diminish the heritage significance of the item.

Intrusive

Elements (or a component of an element) that adversely impacts on the overall heritage significance of the item being graded.

Demolition / removal of elements (or components of elements) graded as being Intrusive would enhance the heritage significance of the item.

14.2 DIAGRAMS OF GRADING OF SIGNIFICANCE

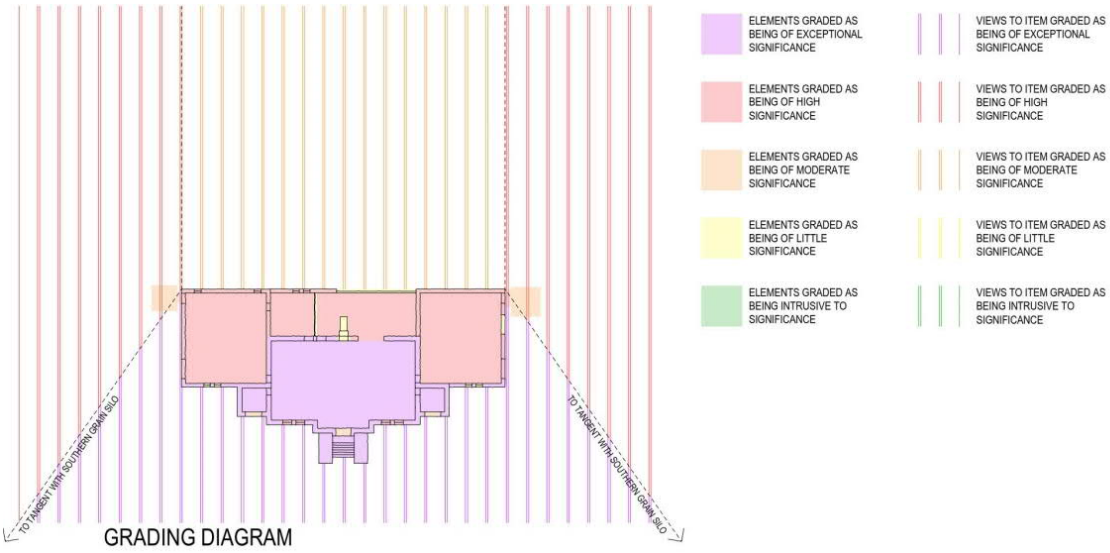


Figure 225: Grading of significance for Engine House and surrounding site.

Views to the south facade are of prime significance. There is more scope for alterations and additions behind the building where new structures will be less visible. Sight lines for visibility to the south facade should be drawn to the tangent points of the wheat silos on the Dyke and west side of the Basin.

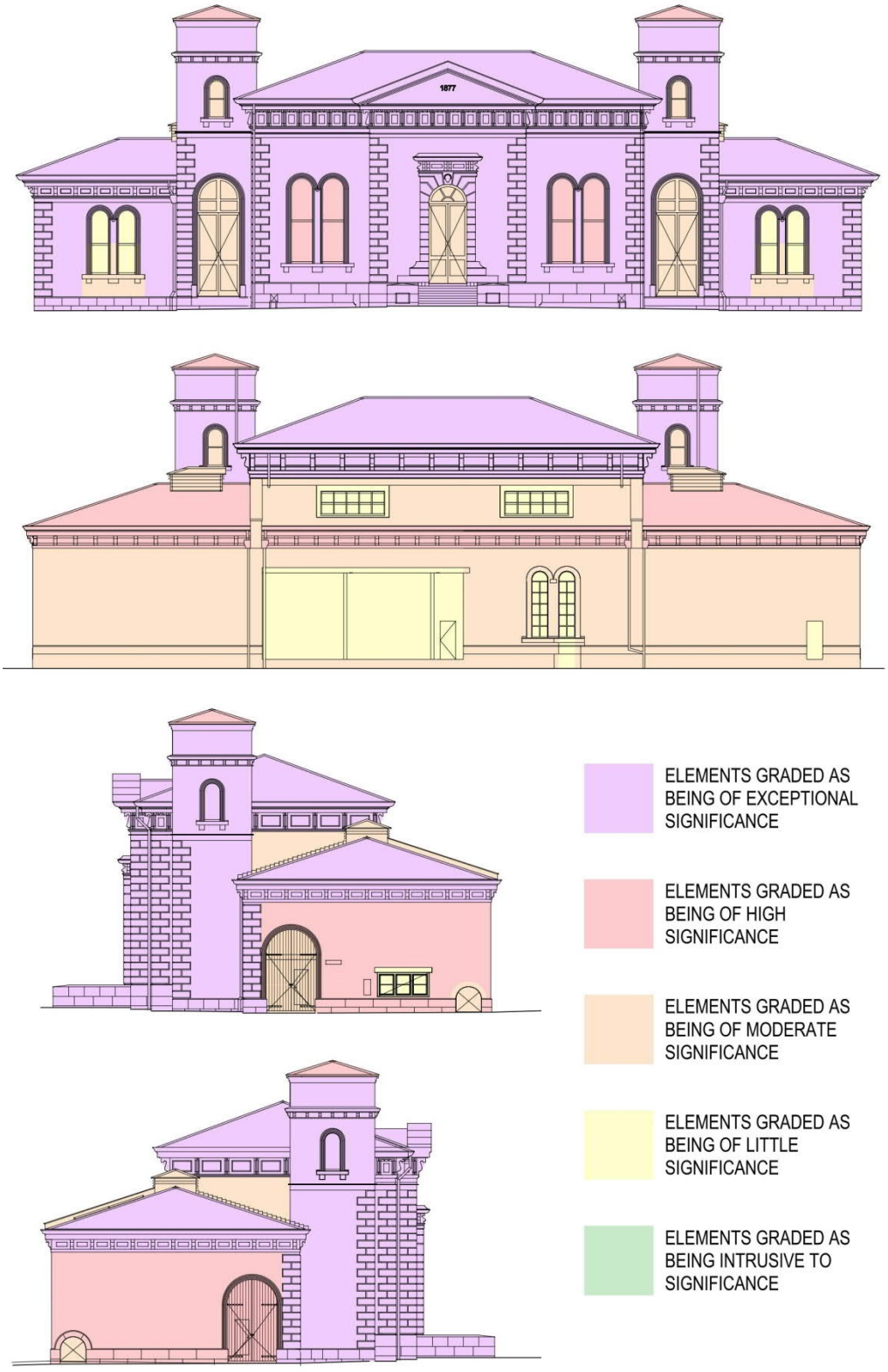


Figure 226: Grading of Significance Elevation Diagrams for Hydraulic Engine House

15. STATEMENT OF SIGNIFICANCE

The following Statement of Significance is quoted directly from the State Heritage Register. It was prepared when the Carrington Hydraulic Engine House and Crane Bases 7, 8, 9 & 10 were placed on the register as recently as 2017 and is the product of extensive research and effort. EJE consider it to be an accurate and reliable summary of the significance of the combined structures that constitute the item.

The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10, Carrington, are of state heritage significance for their strong association with the port-related application of hydraulic and electrical power in NSW. As relics of an industrial wonder of their age, the Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 form part of a group collectively illustrating the early application and progress of technologies historically important in the economic development of NSW. They are specially associated with the development of coal handling in Port Hunter, the largest coal port in the Southern Hemisphere and one of great importance in the development of the NSW coal industry. The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are the only examples of their type in NSW, and at both state and national levels constitute the most complete example of a coal loading system predating the introduction of conveyor belt-based loading technology.

The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance for their association with Sir W.G. Armstrong and Company Ltd. and Cowans, Sheldon and Co. Ltd, engineering companies of world importance; with NSW government engineers Edward Orpen Moriarty; Cecil Darley; John Whitton; Percy Allan and Orlando Brain, and potentially with NSW government architect James Barnet and Edmund Spencer, one of his assistants; and with the public and private sector workers who constructed, operated and maintained the Bullock Island coal handling complex. Although some of the fabric has been depleted or removed over time, both the Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance for their design, materials and setting. They may also be of state heritage significance as constituting landmarks of the public sector-driven transformation of Port Hunter from a swampy estuary to a deep water harbour of national importance. The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance in yielding scientific and archaeological information as to the nineteenth century transfer of hydraulic technology from the UK to NSW.

Date significance updated: 21 Aug 17

16. CURTILAGE ASSESSMENT

This Heritage Curtilage Assessment has been compiled in accordance with NSW Heritage Division guidelines as set out in Heritage Curtilages and in Australia ICOMOS, The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013.

The NSW Heritage Division defines a heritage curtilage 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. It 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 setting.[43]

It is further stated that:

> The heritage curtilage should contain all elements contributing to the heritage significance, conservation and interpretation of a heritage item. The curtilage is defined by a line on a map, which will not necessarily coincide with the property boundary.[44]

In summary, the heritage curtilage should encompass all of the elements that contribute to the heritage significance, conservation and interpretation of a heritage item.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013, states that:

> Conservation requires the retention of an appropriate visual setting and other relationships that contribute to the cultural significance of the place. New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.[45]

The relevant explanatory note asserts that:

> Setting may include: structures, spaces, land, water and sky; the visual setting including views to and from the place, and along a cultural route and other sensory aspects of the setting such as smells and sounds. Setting may also include historical and contemporary relationships, such as use and activities, social and spiritual practices, and relationships with other places, both tangible and intangible..[46]

16.1 TYPES

There are four types of heritage curtilage:

- lot boundary heritage curtilage;
- reduced heritage curtilage;
- expanded heritage curtilage; and
- composite heritage curtilage.

These are discussed below.

[43] Heritage Office, Department of Urban Affairs and Planning, Heritage Curtilages, p.3. The name of the Heritage Office, originally the Heritage Branch, reverted to Heritage Branch before its recent re-naming as the Heritage Division.
[44] Ibid., p. 5
[45] Article 8 (Setting).
[46] Explanatory Note to Article 1.12 (Definitions).

16.1.1 Lot Boundary Heritage Curtilage

This is the most common such curtilage, comprising the boundary of the lot encompassing the property containing the heritage item and other associated or significant features, as defined in the Deposited Plan.

16.1.2 Reduced Heritage Curtilage

This encompasses an area less than the lot boundary in which the item is situated. It applies in circumstances where the significance of the item relates not to the total lot, but to a lesser area, and is often defined when development occurs. This includes cases such as the subdivision of a large estate in which a Heritage Item is located, or when a second dwelling is proposed on land containing such an item. In such cases, a heritage curtilage less than the property boundary, but sufficient to maintain the significance of the Heritage Item, must be identified.

16.1.3 Expanded Heritage Curtilage

This provides an area larger than the property boundary in which the item is situated. This may be required for the protection of the landscape setting or visual catchment within which the significant item can be viewed, interpreted and appreciated. This might, as appropriate, encompass:

- views to and from the item;
- the possible need for a physical buffer between the curtilage and the adjoining land; and
- the visual and historical relationship between the item and its environs.

This may also meet a need for an open space foreground setting in which the heritage item is set, or from which it may be fully appreciated.

16.1.4 Composite Heritage Curtilage

This applies to places, such as heritage conservation areas, where it is important to define the land needed to identify and maintain the heritage significance of a particular area, such as a district, village or suburban precinct, having a homogeneous character. The curtilage is based on the perimeter of the precinct, not on the individual lot boundaries. This responds to the fact that many suburban buildings derive their significance from their contribution to a group or cluster of similar structures.

The boundaries of such a curtilage should be arrived at only after consideration of several potential factors, some of which might not sit easily together. These include:

- the boundaries of the original settlement, grant or subdivision;
- edges suggested by a concentration of early buildings and sites;
- edges cartographically defined;
- the overall significance of proximal heritage items;
- the quality of the major public spaces;
- the landscape setting; and
- the heritage significance of individual items and their situation in the area.

In general, the establishment of the appropriate heritage curtilage demands the investigation of the heritage significance of the item, taking into account factors such as:

- historic land subdivision patterns;
- archaeological features;
- visual, physical, historical and functional links with important features in the area; and
- setting, views and landmark qualities.[47]

[47] NSW Heritage Office, Heritage Curtilages. Paramatta: Heritage Office, 1996, p. 9

The parameters of the curtilage can then be developed. It should, save in the case of lot boundary heritage curtilage, ensure:

- the conservation of the original relationship of the heritage item to its site and locality;
- the provision of a setting for the heritage item adequate for the maintenance of its heritage significance;
- the provision of adequate visual catchments or corridors from major viewing points to the heritage item, and from it to outside elements with which it has important visual or functional relationships; and
- the provision, if necessary, of buffer areas as a screen providing protection from unsympathetic development; vibration; traffic noise; pollution; or vandalism.[48]

16.2 APPLICATION TO THE SUBJECT LAND

There is a Reduced Heritage Curtilage which is gazetted for the item in the State Heritage Register. This reduced curtilage is sufficient to protect the fabric of the building though does not necessarily secure protection for the long-distance views to the item which have existed historically and remain to date.

The Carrington Hydraulic Engine House is visible from a number of positions through the Honeysuckle Precinct on the south side of the harbour. The Lee Wharf Development has been positioned so that views to the Hydraulic Engine House are maintained at a number of the street intersections and pedestrian paths. As far as this CMP is able to accomplish it, it is recommended that these viewpoints be maintained in any new development of the Honeysuckle precinct.

View to the Carrington Hydraulic Engine House from Honeysuckle Drive near Worth Place.

Google Streetview captured September 2020

View to the Carrington Hydraulic Engine House from Honeysuckle Drive at intersection with Settlement Lane.

Google Streetview captured September 2020

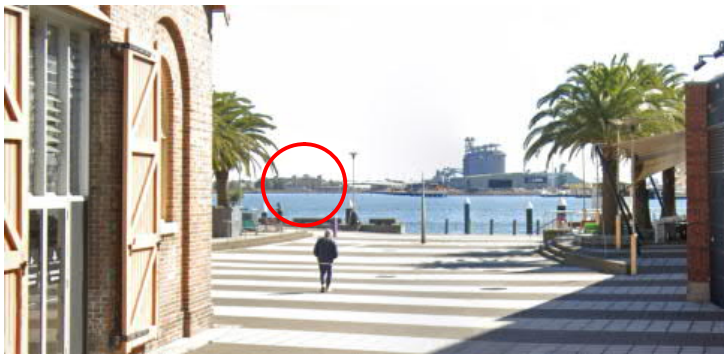
[48] Ibid., p. 10.

View to the Carrington Hydraulic Engine House from Honeysuckle Drive between two waterfront buildings and opposite the walkway through the larger rear building.

Google Streetview captured September 2020

View to the Carrington Hydraulic Engine House from Honeysuckle Drive just west of the former Maritime Museum

Google Streetview captured September 2020



View to the Carrington Hydraulic Engine House from Workshop Way near Merewether Street

Google Streetview captured September 2020

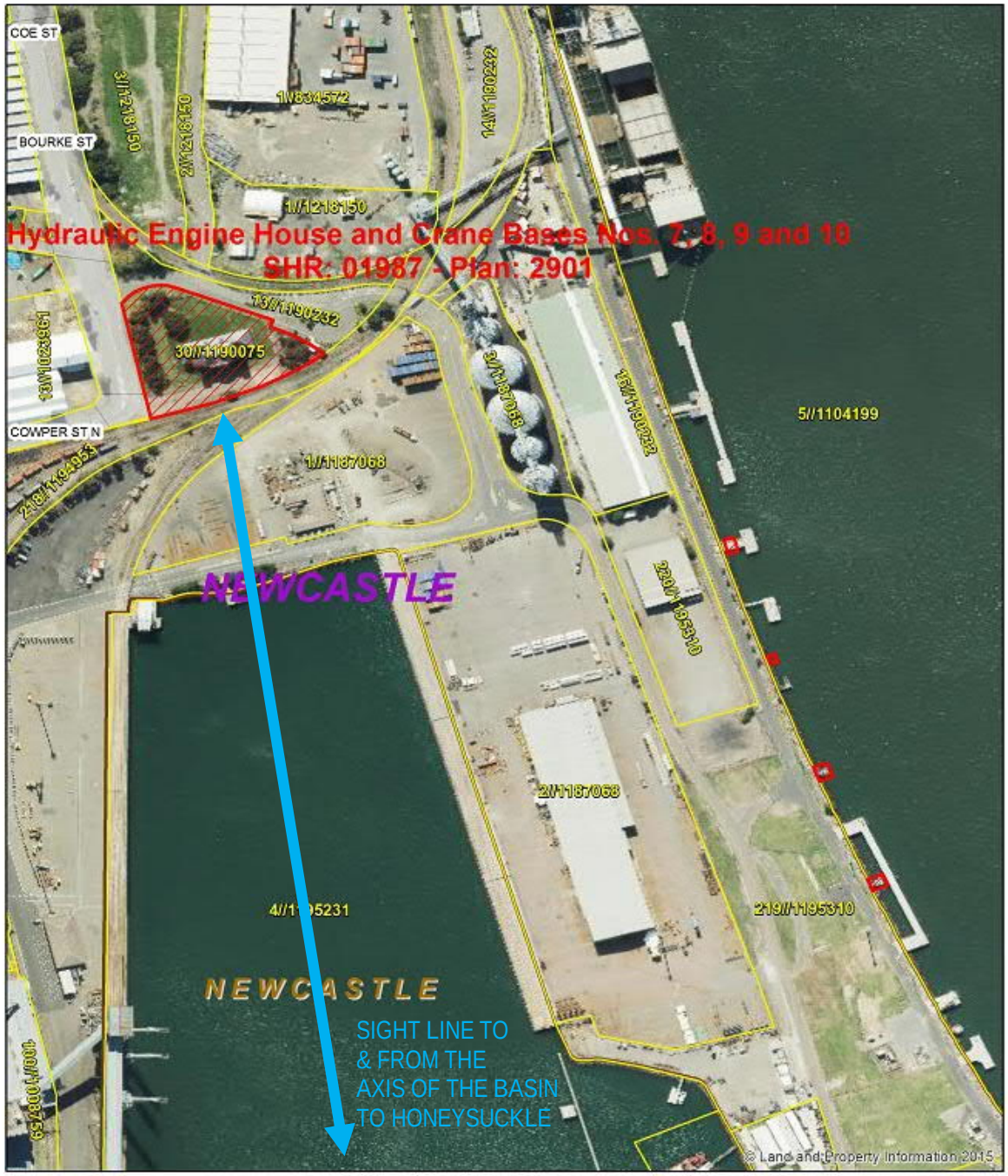
Figure 227. Views to CHEH – Lee Wharf & Honeysuckle Precincts.

Google Streetview.

The Reduced Heritage Curtilage is deemed as the most appropriate for the subject site for the following reasons:

- the boundary of the curtilage is already established in State Legislation along with the requirements attached to that listing
- the extension of the curtilage to the shore-line to the north could potentially restrict the use of the land for wharf operations which include temporary storage of items
- an increase to the curtilage would still not necessarily protect the view lines from the south side of the Hunter River

The view lines identified here in this Conservation Management Plan are also described in its conservation policies with the aim to protecting those long-range historic views into the future.



State Heritage Register - SHR:01987 - Plan:2901
Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10
Carrington, Newcastle

SHR Curtilage
Land Parcels

Figure 228: Diagram of application to State Heritage Register Curtilage

Base map is the State Heritage Curtilage diagram SHR:01987. Sight lines to the south of the Hydraulic Engine House building are indicated by EJE.

16.3 LANDMARK VISTAS

The monumental two-storey façade of the Engine House, centred symmetrically at the head of The Basin, was likely originally designed as such with the thought of it being viewed at a distance from the harbour and its south shore (in what is today's Honeysuckle Precinct). The Architects at the time perhaps did not envisage the 21st century urban form of Newcastle in their design strategy, but with contemporary development in the city, two key vistas to the building are newly apparent.

16.3.1 Kingsley Hotel

Opening in June 2021, Kingsley by Crystalbrook Collection is Newcastle's first 5-star hotel. The building is an adaptive re-use of the city's former Council Administration Centre, with the works being designed by EJE Architecture, the authors of this report and Architects of the conservation works at CHEH. The rooftop restaurant level of the building, an addition above the previous roof of the building, features expensive cityscape views, but with the main bar area aligned specifically towards The Basin. The Engine House sits clearly centred within this view, surrounded by the industrial landscape of the Port of Newcastle.

Figure 229. Kingsley Hotel, 2021.

An adaptive re-use project in the former Newcastle City Council City Administration Centre, opened June 2021. Viewline to CHEH indicated in red.

Figure 230. CHEH at the head of The Basin, viewed from Kingsley's rooftop /Restaurant.

Figure 231. CHEH As viewed from Kingsley,

The building sits within the industrial Landscape of Carrington and the Port of Newcastle.

16.3.2 NUspace – The University of Newcastle

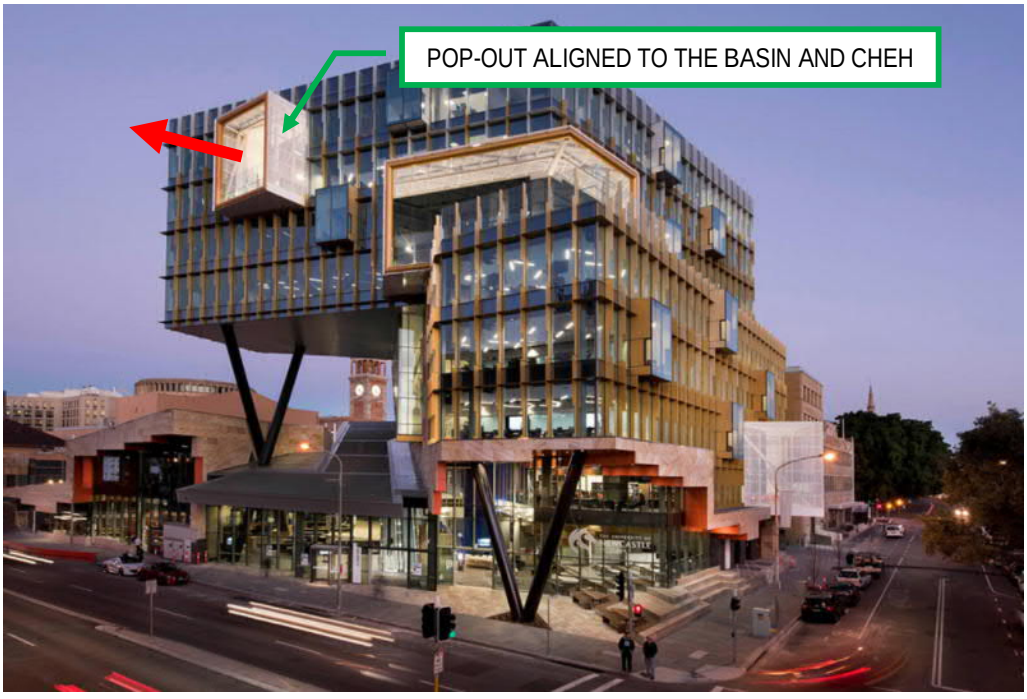


Figure 232. NUspace, a city campus building of the University of Newcastle.

Framed view to The Basin indicated in red.

Opening in 2017, Newcastle University's NUspace building is the largest of the University's city campus buildings. Designed by Melbourne Architecture firm Lyons in association with EJE Architecture, the form of the building features a series of pop-out "Urban Rooms", which are specifically aligned to key elements of the Newcastle's landscape, such as Nobby's head, the Town Hall clock tower, Shepherds Hill and Throsby Creek. The highest of these pop-out balconies, facing north on Levels 6 & 7, literally frames a view directly up The Basin, with an unencumbered view to the Engine House at its centre.

Figure 233. NUspace, Panoramic View out.

The structure of the balcony literally frames the Carrington Hydraulic Engine House centrally within the view from this “Urban Room”.

Figure 234. CHEH as viewed from NUspace Level 7.

16.3.3 EJE Architecture

The continuity of EJE Architecture working on the projects at Carrington Hydraulic Engine House, Kingsley and NUspace strengthens the connection of these significant pieces of urban fabric across the city, and interestingly encompasses an almost full spectrum of the city’s architectural fabric, with the Engine House as a 19th century building, The Council Administration Centre originally a 20th century building (opened 1977), and NUspace as a 21st century building.

This connection has helped to reinforces the significant and far-reaching viewscape of the Engine House which was intended to be viewed from the city across the harbour from it’s outset. The height at which views to the Engine House can be attained from NUspace and Kingsley helps protect views to the Engine House’s south façade from future development at ground level.

17. CONSTRAINTS AND OPPORTUNITIES

Preamble

The development of a conservation policy (this CMP) is an essential requirement for making decisions about the future of the place (Australia ICOMOS, Guidelines to the Burra Charter: Conservation Policy, 2013, section 1.3.) Future development of the place is dependent upon the permissible uses and changes as determined by statutory regulations and current heritage management principles, in consultation with stakeholders. Each of these avenues of consideration will open up constraints affecting the future potential of the place. On balance however, many of these avenues; regulations, principles and stakeholder's requirements may open up opportunities which might not otherwise have been available.

Policies should provide practical guidelines for the future management and conservation of the place for the short and long term. Policies must also take into account the identified opportunities and constraints to draw out the most appropriate treatment of the site in realising its future potential.

17.1 THE SIGNIFICANCE OF THE ITEM

The site and structures, being listed in the State Heritage Register and the Port of Newcastle Section 170 Register mean that they possess cultural significance to the people of Newcastle and the people of the State of New South Wales. The significance of the site and structures warrants protection and conservation for future generations. The protection of this significance gives rise to both constraints and opportunities, examples of which are given below.

Constraints:

The significance of the item is predominantly demonstrated by the physical fabric of the structures within the item. Retaining and conserving the significance of an item means retaining and conserving the fabric of the item. Removal of significant fabric is likely to impact the significance of the item. Therefore the potential to alter the physical fabric of the item is naturally constrained and limited so as to limit potential impact to significance.

Retention and conservation of the physical fabric often requires outmoded techniques and materials which are now considered to be rare or specialist in nature. Repairs and Maintenance of the fabric to retain and conserve significance can often involve additional time and cost constraints through the use of appropriate tradespeople. Retention and conservation of the physical spaces of the buildings defined by the fabric may be considered a constraint as well. The dimensions and proportions of the original spaces were designed for a specific purpose and altering or subdividing those spaces to accommodate a new use will increase the difficulty of understanding the original purpose of the space thus impacting on the significance.

Continuing the original purpose and use of a heritage item is the best method to conserve many aspects of significance. Many heritage items however are no longer economically feasible to operate for their original purpose and an adaptive reuse becomes the only viable option to conserve the building. This is most certainly the case with the Carrington Hydraulic Engine House and the Crane Bases.

Opportunities:

In contrast to the constraints above, each of these situations provides its own opportunity as well. In retaining and conserving the intact fabric of the item, there is opportunity for people to understand and interpret the majority of the significance of the item. People are able to see the fabric in person, not just a representation of how it was by viewing on a screen or in a book.

The saying 'they don't make them like they used to' is true of many things including heritage structures. Retention and Conservation of the significant fabric through appropriate and historically correct techniques and materials and methods creates opportunities for people who use the building to understand and interpret the historic construction methods which were utilised.

A brand-new building built-for-purpose will provide good experiences for those who utilise the building. However, conserving the significant original spaces of a heritage item and using them for a new purpose is able to provide a unique experience unavailable elsewhere.

The original purpose of many buildings may preclude the ability for the public to experience them. In the case of the Carrington Hydraulic Engine House and most Industrial purposed sites, it would be far too dangerous for the public to access them. Adaptive reuse of these items provides opportunities for the general public to access previously off-limits buildings and areas, and therefore opportunities to understand and interpret the former use of the item.

17.2 CONSENT AUTHORITY - PERMISSIBLE USES

17.2.1 Zoning

The site is zoned SP1: Special Activities under the State Environmental Planning Policy (Three Ports) 2013. The objectives of this zoning, as defined by the SEPP Land Use Table are as follows:

- To provide for special land uses that are not provided for in other zones.
- To provide for sites with special natural characteristics that are not provided for in other zones.
- To facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land.
- To maximise the use of waterfront areas to accommodate port facilities and industrial, maritime industrial, freight and bulk storage premises that benefit from being located close to port facilities.
- To enable the efficient movement and operation of commercial shipping and to provide for the efficient handling and distribution of freight from port areas through the provision of transport infrastructure.
- To provide for port related facilities and development that support the operations of Port Botany, Port Kembla and the Port of Newcastle.
- To facilitate development that by its nature or scale requires separation from residential areas and other sensitive land uses.
- To encourage employment opportunities.

The SP1 zoning permits without Authority consent, a range of appropriate uses, including:

(2) Jetties, Moorings and Roads

And with Authority consent, a range of appropriate uses, including:

(3) Capital dredging; Environmental facilities; Environmental protection works; Maintenance dredging; Navigation and emergency response facilities; Neighbourhood shops; Port facilities; Wharf or boating facilities; Any other development not specified in item 2 or 4

Uses which are prohibited within the SP1 zoning under the SEPP are:

(4) Artisan food and drink industries; Business premises; Caravan parks; Cemeteries; Centre-based child care facilities; Crematoria; Educational establishments; Entertainment facilities; Function centres; Funeral homes; Garden centres; Hardware and building supplies; Medical centres; Office premises; Places of public worship; Recreation facilities (indoor); Registered clubs; Residential accommodation; Respite day care centres; Restricted premises; Shops; Specialised retail premises; Tourist and visitor accommodation; Vehicle sales or hire premises

Despite these prohibitions, it is open to the Consent Authority to approve other uses in accordance with SEPP (Three Ports) 2013, Cl. 31(7): Conservation Incentives:

(7) Conservation incentives The consent authority may grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, even though development for that purpose would otherwise not be allowed by this Policy, if the consent authority is satisfied that—

a) the conservation of the heritage item is facilitated by the granting of consent, and
b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and
c) the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and
d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, and
e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area.

This may potentially allow a use not otherwise permissible provided that it meets the criteria of the Conservation Incentives and the Objectives of the SP1 zoning. In practical terms on our subject site, the granting of consent for a use outside that which is normally permissible in the zoning would also need to be able to be safely accessed and used by members of the public and not interfere with the operation of the Port.

17.2.2 Consent Authority

In accordance with SEPP (Three Ports) 2013, Cl. 8: Consent Authority, the Consent Authority for the purposes of the policy, for development on land within the Lease Area of the Port, is The NSW Minister for Planning and Public Spaces.

It is noted that the local government, the Council of the City of Newcastle, does not (at this time) have any planning authority over the site of the Item, although their councillors, heritage and planning departments would no doubt have a professional interest in the development of the significant historical building within their LGA.

17.2.3 Development Approval No. 07/1496

Despite the above, Development Approval No. 07/1496 was granted by Newcastle City Council on 13 February 2008 for "Concept approval including the adaptive reuse of the Carrington Hydraulic Engine House including re-roofing and demolition of the electrical substation." The circumstances of the Council's role as consent authority in this approval is not fully understood by the present authors, but it is noted that the State Listing of the Item and updates to Newcastle's Local Environment plan have occurred subsequent to this time, which has likely to have changed the chain of authority regarding development on the site.

Within Development Approval No. 07/1496 the Heritage Office (now Heritage NSW) issued General Terms of Approval (GTAs) to Council which were incorporated in the Notice of Determination, with condition 4.3 requiring the preparation of a CMP as follows:

4.3 Given the preliminary nature of the concept plan, particularly in relation to new development, any new development proposals should be guided by an endorsed Conservation Management Plan rather than the Concept Plan submitted. Accordingly, the applicant is requested to formally submit a Conservation Management Plan for endorsement to the Heritage Council.

This request has furthered the requirement for production of this updated CMP prior to the Port of Newcastle considering any future adaptive re-use of the site, however it is noted that the specific condition of the Development Approval is likely no longer enforceable, given that a) the Council of the City of Newcastle is not the consent authority for the site and b), as of July 2020 Heritage NSW no longer offers the endorsement of CMP's under the Heritage Act 1977.
The production of this updated CMP however does support the objectives of the control, including Heritage NSW's input and review of the document (in lieu of endorsement).

17.2.4 Heritage Act 1977

It is noted that the State Environmental Planning Policy (Three Ports) 2013 SEPP does not override the provisions of the Heritage Act 1977, which also applies to the subject site. Heritage NSW, as the agency responsible for listings, declarations and approvals under the Heritage Act 1977, is as such a stakeholder in the approvals process in reference to any potential uses and consent for development of the site.

Further stakeholders include The Heritage Council of New South Wales as constituted under this Act, and the Minister responsible for the Act, The NSW Special Minister of State, Minister for the Public Service and Employee Relations, Aboriginal Affairs and the Arts.

Special reference is made to the Heritage Act 1977 Part 3B: Heritage Agreements. This section provides a mechanism for the Minister to make agreement with the owner of Heritage item on various items, considering advice from the Heritage Council, with details as follows:

(39) Minister can enter into heritage agreements

The Minister may enter into a heritage agreement with the owner of an item that is listed on the State Heritage Register with respect to the conservation of the item. The Minister is to obtain and consider the advice of the Heritage Council before entering into a heritage agreement.

(40) What heritage agreement can provide for

A heritage agreement in respect of an item can include provisions relating to all or any of the following—

(a) the conservation of the item,
(b) the financial, technical or other professional advice or assistance required for the conservation of the item,
(c) the review of the valuation of the item or the land on which it is situated,
(d) the restriction on the use of the item or the land on which it is situated,
(e) requirements for the carrying out of specified works or works of a specified kind,
(f) the standards in accordance with which the works are to be carried out,
(g) the restriction on the kind of works that may be carried out,
(h) the exemption of specified activities or activities of a specified kind from Part 4 (Effect of interim heritage orders and listing on State Heritage Register),
(i) the repayment of money advanced or loaned by the Minister under section 45 (Financial and other assistance),
(j) the public appreciation of the State heritage significance of the item,
(k) the availability of the item for public inspection,
(l) the charges made for admission,
(m) such other matters as the Minister considers, on the advice of the Heritage Council, will assist in the conservation of the item,
(n) such other matters as may be prescribed by the regulations.

In practical terms, this mechanism could allow the proponent some further flexibility in the use of the site, if the proposal is seen as positive and agreed to be the Heritage Council and Minister.

17.3 FEASIBLE USES

Constraints

The Crane Bases do not have the same opportunities for feasible use as the Engine House. They are located within the course of the Hunter River adjacent to berths used by large container and cruise ships. They are separated from Carrington by Heavy Rail Infrastructure and Port of Newcastle security gates. When ships are berthed, the Crane Bases are often within an exclusion zone which limits access and permissible activities by the Port personnel as well as the public.

There are therefore very few feasible uses to which the Crane Bases may be put to use except for Jetties and Moorings. They are already in use for these purposes and this is considered appropriate for the bases. Conservation issues in regards to the amount of modification of the

fabric that would be appropriate for these structures will govern how these existing uses may be expanded feasibly in the future.

Opportunities

The Hydraulic Engine House building is located in the suburb or Carrington and only a matter of metres from the publicly accessible road network. The heavy rail infrastructure for the wharves does not cut off the Hydraulic Engine House from the public roads.

The suburb of Carrington has a range of uses from Residential, to Commercial (shops, businesses, restaurants), to Light Industrial all of which are represented within three hundred metres of the Engine House building. This gives scope to a range of uses which may be feasible upon the site. The building is only five minutes drive from the Newcastle Interchange / seven minutes drive from the Civic Precinct of Newcastle itself which also substantially increases the catchment of people who could enable a feasible use for the building.

Uses which are able to make use of a large volume of space such as an Entertainment Facility, Function Centre, Place of Public Worship or Sport/Recreational Facility could be feasible within the large volume of the Engine Room were they able to gain Authority Consent. Other uses which could benefit from a large foyer such as Hotel Accommodation or Office Premises could also be feasible with a successful adaptive reuse of the building combined with additions were they to be given consent by the Planning Authority.

17.4 STATUTORY CONSTRAINTS & OPPORTUNITIES

As the site is located within the leased are of the Port of Newcastle, it is not encumbered by the regular planning controls of the Newcastle Local Government Area, the consent authority being the NSW Minister for Planning and Public Spaces as described.

17.4.1 STATE ENVIRONMENTAL PLANNING POLICY (THREE PORTS) 2013

This piece of legislation is directly applicable to the site and is where the permissible and prohibited uses of the site are sourced from in Part 17.2 above. This legislation provides Development Standards for proposals within the land to which the SEPP applies. It also provides details of what constitutes Exempt or Complying Development upon the land to which the SEPP applies.

Opportunities

The following activities may be able to be considered as Exempt Development under the Act provided they meet the descriptive clauses in the SEPP (Three Ports) Schedule 1.

> Building Alterations; Bulk Liquid Storage Tanks; Car Parks (at grade); Demolition; Driveways; Emergency Works; Fences or Gates; Flagpoles; Fuel Storage Tanks; Hail Netting; Investigations; Landscaping; Lighting; Liquefied Petroleum Gas Storage Tanks; Minor Works for securing, accessing or protecting wharves and vessels; Paving; Pedestrian Ramps, Paths and Mechanical and Non-mechanical Stairways; Movable Plant and Equipment; Pollution Control Facilities; Port Facilities – Change of Use; Railway Tracks; Reefer Points; Retaining Walls (not including Sea Walls); Road and Rail Infrastructure; Roads; Safety or Security Barriers; Satellite Dishes; Scaffolding; Security and Monitoring Cameras; Shipping Container Storage; Signage; Subdivision by Port Operator or Port Corporation; Switch Rooms and Security Booths; Temporary Structures; Temporary Uses of Land; Truck Marshalling Area; Truck or Train Weighbridges; Utilities and Service Facilities; Washbays; Water Tanks.

If any of the above activities are proposed and they do meet the clauses of Schedule 1 in the SEPP, they may be carried out without the need for development consent under the Environmental Planning and Assessment Act. They may still require assessment under the Heritage Act however (see below)

The following activities may be able to be considered as Complying Development under the Act if the clauses the SEPP (Three Ports) Schedule 2.

> New Port Facility or Wharf Boating Facility Buildings; Awnings or Canopies; Bridges used for purposes other than roads; Conveyor Systems; Cranes; Demolition of Certain Structures; Dry Bulk Storage Silos; Emergency Services Equipment; Food and Drink Premises; Road and Rail Terminal Facilities; Port Facilities; Ship Loaders; Stacker-Reclaimers; Retaining Walls; Wharves and Berthing Infrastructure.

17.4.2 STATE ENVIRONMENTAL PLANNING POLICY (STATE AND REGIONAL DEVELOPMENT) 2011

Due to the Crown ownership of the land, some development proposals may be assessed through a Review of Environmental Factors process. Development proposals over $30 Million in value will be Regionally Significant development. Further details and definitions in regards to State and Regionally Significant development proposals are given in Schedules 1 and 7 of the SEPP (State and Regional Development) 2011.

17.4.3 HERITAGE ACT

Constraints:
It is expected that the owners of items contained within the State Heritage Register will comply with the Minimum Standards of Maintenance and Repair. The standards relate to the weatherproofing, fire protection, security and essential maintenance of the item. This of course has ramifications in terms of cost, time and necessary approvals.

Applications for development need to be made under Section 60 of the Heritage Act. Section 60 Applications typically accompany the assessment process by the Consent Authority as described above. Conditions provided by the Heritage Council are appended to any other conditions of consent. Section 60 Applications can be expected to take 40 to 60 days to assess depending on whether the application is publicly advertised or not. Further application requirements are necessary for proposals which involve excavation of the site. Permits under the Heritage Act 1977 will be required. These are described in Section 6.3 above.

Opportunities:
Every two years funding is available for Conservation Works to Items on the State Heritage Register. The funds are available through the 'Caring for State Heritage Grants'. Up to $20,000 is available to co-fund a Conservation Management Document. Between $20,000 and $150,000 is available to co-fund a Works Project. (Co-funded projects mean that for every dollar received in a grant, an owner would need to match or exceed that figure in their contribution). Grant funding between $10,000 and $40,000 is available for interpretation projects and in this case the grant contribution does not need to be matched by the owner.

Minor works for maintenance or conservation may be undertaken under Section 57 of the Heritage Act. Standard exemptions apply as follows and Site-Specific exemptions have also been gazetted for the site which are recorded below.

17.4.3.1 STANDARD EXEMPTIONS

Section of Act	57(2)
Description	Exemption to allow work
Title	Standard Exemptions

Comments SCHEDULE OF STANDARD EXEMPTIONS
ORDER UNDER SECTION 57(2) OF THE HERITAGE ACT 1977

Standard exemptions for engaging in or carrying out activities / works otherwise prohibited by section 57(1) of the Heritage Act 1977.

I, Donald Harwin, the Special Minister of State pursuant to subsection 57(2) of the Heritage Act 1977, on the recommendation of the Heritage Council of New South Wales do by this Order, effective 1 December 2020:

1. revoke the order made on 11 July 2008 and published on pages 91177 to 9182 of Government Gazette Number 110 of 5 September 2008 and varied by notice published in the Government Gazette on 5 March 2015; and

2. grant the exemptions from subsection 57(1) of the Heritage Act 1977 that are described in the attached Schedule.

Donald Harwin
Special Minister of State
Signed this 9th Day of November 2020.

Action Date Dec 01 2020

17.4.3.2 SITE SPECIFIC EXEMPTIONS

Section of Act 57(2)

Description Exemption to allow work

Title Heritage Act - Site Specific Exemptions

Comments ORDER UNDER SECTION 57(2)
TO GRANT SITE SPECIFIC EXEMPTION FROM APPROVAL
Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10, Carrington
106 Bourke Street, Carrington and 140 Bourke Street, Carrington

SHR No. 01987
I, the Minister for Heritage, on the recommendation of the Heritage Council of New South Wales, in pursuance of section 57(2) of the Heritage Act 1977, do, by this my order, grant an exemption from section 57(1) of that Act in respect of the engaging in or carrying out of any activities described in Schedule "C" by the owner described in Schedule "B" on the item described in Schedule "A".

The Hon Gabrielle Upton MP
Minister for Heritage
Sydney, Day of 2017

SCHEDULE "A"
The item known as Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10, Carrington, situated on the land described in Schedule "B".

SCHEDULE "B"
All those pieces or parcels of land known as Lot 30 of Deposited Plan 1190075 and Lot 5 of Deposited Plan 1104199, Parish of Newcastle, County of Northumberland shown on the plan catalogued HC 2901 in the office of the Heritage Council of New South Wales.

SCHEDULE "C"
All works and activities in accordance with a current and valid development consent from Newcastle City Council, the Department of Planning and Environment or the Land and Environment Court of NSW in force at the date of gazettal for listing the

Carrington Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 on the State Heritage Register (including DA 07/1496).

Such minor development as is specifically identified as Exempt or Complying Development in State Environmental Planning Policy (Three Ports) 2013, and any successor planning instrument, that does not materially affect the heritage significance of the Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10.

All works and activities pertaining to existing access catwalks, navigational aids, maritime support structures and mooring infrastructure associated with Crane Bases Nos. 7, 8, 9 and 10.

The undertaking within the heritage curtilage of Crane Bases Nos. 7, 8, 9 and 10 of all works associated with the development and operation of port infrastructure, including the Channel Berth and Newcastle Cruise Terminal that do not impact on original fabric associated with the Crane Bases.

The removal or alteration of non-original fabric with regard to Crane Bases Nos. 7, 8, 9 and 10 as may be necessary to facilitate the development and operation of port infrastructure, including the Channel Berth and Newcastle Cruise Terminal.

Action Date Aug 29 2017

17.4.4 NEWCASTLE LEP 2012

The site is located outside the jurisdiction of the City of Newcastle and is not bound by this planning instrument.

17.4.5 NEWCASTLE DCP

The site is located outside the jurisdiction of the City of Newcastle and is not bound by this planning instrument.

17.4.6 NATIONAL CONSTRUCTION CODE / BUILDING CODE OF AUSTRALIA

The National Construction Code (NCC) was first created in 2011 as a consolidation of all the on-site construction requirements into a single code. The NCC comprises of the Building Code of Australia (BCA), Volumes One and Two; and the Plumbing Code of Australia (PCA), Volume Three.

The Building Code of Australia (BCA) contains technical provisions for the design and construction of buildings and other structures, covering such matters as structure, fire resistance, access and egress, services and equipment, and certain aspects of health and amenity. It sets out minimum construction standards for all new building work undertaken in Australia and specifies the requirements for building constructions issued under the Local Government Act.

It is not uncommon for the requirement of the National Construction Code / Building Code of Australia to be in conflict with the heritage and conservation requirements of the item. This is especially noticeable in terms of the deemed-to-satisfy requirements for Fire Safety, Energy Efficiency, Servicing and Equitable Access. Alternate solutions based on performance outcomes are possibilities for investigation in these cases so as to avoid impacting upon fabric of high significance. Professional advice should always be sought in these events.

No specific works are proposed within this Conservation Management Plan and therefore an assessment of compliance was not part of the scope of this Plan. An assessment of compliance for any proposed future works will need to be undertaken for BCA requirements in terms of fire resistance, access and egress (including provisions for people with disabilities), services and equipment and health and amenities as part of the future adaptive reuses of the site and its built elements individually.

In general, when considering the BCA for new works within the heritage buildings, proposals must ensure that significant fabric and spatial qualities are not compromised while full BCA compliance is achieved and users' safety is assured.

The buildings may require changes for compliance with the requirements of the current version and amendment of the NCC / BCA and the Disability Discrimination Act depending on its future use.

17.4.7 DISABILITY DISCRIMINATION ACT

Access to premises for people with disabilities, as well as being covered by the National Construction Code, is also controlled by the Commonwealth Disability Discrimination Act 1992 (DDA 1992). Compliance with the NCC does not necessarily signify compliance with DDA 1992, the operation of which is 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 which is intended to meet the requirements of the Act.

Heritage buildings are not exempt from the requirements of DDA 1992. The preparation of an action plan for access assists in preventing or defending a complaint under the Act. A defence of unjustifiable hardship is also available, and the Australian Human Rights Commission has advised that heritage significance may be taken into account when considering unjustifiable hardship. In NSW, the Building Professionals Board has established an Access Advisory Committee to consider referred applications for exemptions to the Premises Code on the basis of unjustifiable hardship.

The Commonwealth Disability Discrimination Act 1992 makes it illegal to discriminate on the basis of a person's disability. The Act applies to buildings that are expected to be used by the general public.

The Carrington Hydraulic Engine House and the Crane Bases were not designed, nor intended, for wheelchair access and thus are expected to pose difficulties in this regard. The Engine Room, which is both the Main Entrance and primary space of the building is raised several steps above the ground level. As it is the main entrance, it is the point to which equitable access is likely to be expected. This will not be easily achieved without the use of lengthy ramps which in turn would compromise the aesthetic significance of the primary facade of the building. It is cases such as these that alternative solutions and expert reporting would be necessary to strike a balance between the requirements of all relevant legislation.

17.5 NON STATUTORY CONSTRAINTS & OPPORTUNITIES

17.5.1 THE BURRA CHARTER 2013

The Burra Charter, recently re-issued in a new edition, codifies best practice conservation processes, as well as the principles and procedures that should be followed in looking after important places. The nature and import of this document is as earlier explained.

The conservation policy contained in the previous CMPs and this revised CMP includes detailed recommendations on conservation of the place and the fabric as well as for the adaptive reuse of the building while maintaining cultural significance. These policies are based on the Burra Charter 2013. The Burra Charter 2013, Article 1, provides the following definitions:

- Conservation means all the processes of looking after a place so as to retain its cultural significance.
- Maintenance means the continuous protective care of a place, and its setting. Maintenance is to be distinguished from repair which involves restoration and reconstruction.
- Preservation means maintaining a place in its existing State and retarding deterioration.

- Restoration means returning a place to a known earlier State by removing accretions or by reassembling existing elements without the introduction of new material.
- Reconstruction means returning a place to a known earlier State and is distinguished from restoration by the introduction of new material.
- Adaptation means changing a place to suit the existing use or a proposed use.

Adaptation is further defined in the Burra Charter 2013, Article 21:

- Adaptation is acceptable only where the adaption has minimal impact on the cultural significance of the place. Adaptation should involve minimal change to significant fabric, achieved only after considering alternatives.
- Setting means the immediate and extended environment of a place that is part of or contributes to its cultural significance and distinctive character.
- Interpretation means all the ways of presenting the cultural significance of a place.

17.5.2 THE NATIONAL TRUST OF AUSTRALIA (NSW)

The National Trust of Australia is a community-based, non-government organisation, committed to promoting and conserving Australia's indigenous, natural and historic heritage through its advocacy work and its custodianship of heritage places and objects. The Trust's register performs an advisory and educational function. The listing of a place on the register as 'classification', has no legal force, nevertheless it is generally accepted as an authoritative declaration of the cultural heritage significance of a place.

The Carrington Hydraulic Engine House is included in the schedule of the National Trust. The listing is primarily focussed on the classically designed Southern facade. The other facades and the interior of the building are not given the same regard. Crane Bases 7, 8, 9 & 10 are not included in the National Trust listing.

17.5.3 THE HUNTER REP (HERITAGE) 1989

The Plan was repealed in October 2014 and is no longer enforceable upon the site. There are no opportunities or constraints arising from this legislation anymore.

17.5.4 REGISTER OF NATIONAL ESTATE

The Register of the National Estate was closed in 2007 and is no longer applicable to the site. The Register is able to provide information about the item but does not imply any constraints or opportunities in regards to the item.

17.5.5 OWNERS REQUIREMENTS

Other than the above obligations required by legislation, the owner of the Carrington Hydraulic Engine House and the Crane Bases 7, 8, 9 & 10 would be well advised to secure a long-term use for the Engine House. By securing a use for the building, the outlays necessary for its maintenance and upkeep would be offset by income derived from rent or production occurring in the building. The constant presence of occupants will also reduce the lead times to which maintenance is applied to the building and that will in turn reduce the cost of maintenance when it is necessary.

PART 3: CONSERVATION POLICY AND MANAGEMENT

18. GENERAL STATEMENT AS TO CONSERVATION APPROACH

This report is based on observations and recordings carried site visits by EJE between 2018 and 2021. The works are documented based on a visual survey of the building fabric only as observed from ground level. No invasive exploration of the building structure was undertaken as part of the observations. Concealed structure, ceiling cavities, and other inaccessible spaces such as secured rooms were not able to be inspected and documented.

EJE is not qualified to offer structural opinions. This report is not intended to convey any opinion as to the structural adequacy or integrity of the structure, nor should it be construed in any way as so doing. Similarly, observations are limited to the fabric only, no comment is made as to the capacity, adequacy, or statutory compliance of any building services.

Technical advice concerning maintenance of heritage buildings can be obtained at http://www.environment.nsw.gov.au/Heritage/publications/index.htm. This provides access to the Heritage Division Heritage Maintenance Series of publications.

19. CONSERVATION POLICIES

This Conservation Management Plan draws on and is informed by previous 1993 and 2005 Conservation Management documents and assesses that information in regards to the current context (physical as well as legislative) that the building is situated in. This CMP re-evaluates the cultural significance of the Carrington Hydraulic Engine House, and should be used as a basis for decision making to ensure that future planning is done with due regard to the identified significance of the place. Discussion of the development of the CMP from the previous 2005 and preceding 1993 versions, and analysis of changes in this edition, including policies, is included in Part 21 at the end of the document.

This CMP is intended to be used by:

- The owner of the building, NSW Treasury, and the long-term lessee, The Port of Newcastle, as a guide for the ongoing conservation and maintenance of the buildings, and for guidance as to the future development of the building, the site and the adjacent sites to the building.
- Any future tenants of the building as a guide for the future uses of rooms and appropriate activities.
- Any consultants undertaking work on the site to guide the appropriate level of intervention into each room for the provision of tenant specific joinery, services and equipment which might affect the base building.
- Approval Authorities and other Government Agencies for the purpose of assisting with the assessment any proposals which are received.

This section of the CMP contains the Conservation Management Policies. Each policy is aimed at ensuring that all proposed changes to the fabric of the Carrington Hydraulic Engine House are designed, proposed and carried out in a manner that either:

- Enhances the cultural significance or ease of interpretation of the item; or
- Has no impact upon the cultural significance of the item; or
- If impact is inevitable due to the circumstances encountered, that all impacts are minimised ideally to a negligible level.

19.1 INTEGRATION INTO THE MANAGEMENT OF THE SITE

The effectiveness of any Conservation Management Plan is dependent on it being implemented by the parties for which it is written. This CMP should be made available for reference to all consultants planning work upon the item, authorities assessing proposals for work upon the item, all contractors and sub-contractors undertaking work upon the item, all owner's representatives and future lessees of the building who might be using the building.

It is essential that all these parties are aware of the approach to take as well as the processes of undertaking any maintenance or modification works within and near the building so as to treat it with the sympathy that it is due to protect its significance.

Policy 1
The Port of Newcastle Pty Ltd should formally adopt this Conservation Management Plan, superseding the previous CMP, as the basis for the future management of the place and the significant buildings and structures.

Reason:
The current CMP has been updated with current available research, but also a more up-to-date assessment of the condition of the building. Conservation Policies have thus been developed to address the building at this point in time and into the future.

Policy 2
The Port of Newcastle should implement a management structure for the Item which:

- Encourages the long-term use of the building by a private or public entity;
- Allows public access to the forecourt of the building where it can be best appreciated;
- Integrates conservation into the overall management of the site;
- Provides for the long-term conservation of the significant fabric;
- Makes the responsible people aware of the aims and intentions of the CMP;
- Makes the CMP an attachment to future lease agreements for the building and grounds;
- Makes the Minimum Standards of Maintenance and Repair produced by NSW Heritage the starting point for future maintenance plans for the building and grounds.

Reason:
The active use of a building has many benefits including the passive security surveillance which will prevent break-ins with their resultant damage, but also items for repair and maintenance will be identified more readily in a building which is in use. Repairs and Maintenance can therefore be addressed much more readily and before they escalate into larger issues.

Policy 3
Ensure that all conservation and associated development works are undertaken:

- In accordance with the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter);
- In accordance with the aims and intentions of this Conservation Management Plan;
- In accordance with the 'How to Carry Out Work on Heritage Buildings & Sites', 'Altering Heritage Assets' and 'Design in Context' documents produced by the NSW Heritage Office
- In such a manner that respects the cultural significance of the place.

Reason:
The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter) has been widely accepted across Australia as the underlying methodology by which all works to buildings, which have national or state significance, be undertaken. The other documents listed have all been prepared in reference with the Burra Charter. The Burra Charter remains the 'first principles' document to fall back on if there is a perceived conflict between the other guiding documents.

Policy 4
Ensure that all parties involved in the management, usage, maintenance, and conservation of the Item are aware of the intention, aims and policies of this CMP. Such parties may include for example, but are not limited to:

- Port of Newcastle Staff in varying sectors, e.g. Assets & Infrastructure, Planning, Grounds Maintenance, Finance etc.
- Users/tenants of the building, temporary and/or permanent.
- Design consultants involved in development of the site, e.g. Architects, Engineers etc
- Building contractors and trades involved in work on the site.
- Specialist contractors involved in work on the site, e.g. pest control etc.

The Port of Newcastle should make this CMP available to all such parties. If a site induction is relevant for a specific party as per the Port of Newcastle's management policies, a simple testing procedure should be integrated in this induction to ensure that the relevant party is aware of the significance of the Item and the intention, aims and policies of this CMP.

Reason:
The effectiveness of this CMP is highly dependent on its dissemination to, and understanding by, relevant parties involved in the management, development, care and use of the Item.

Policy 5
Ensure this Conservation Management Plan becomes a publicly available document. Copies should be held at:

- Port of Newcastle Head Office
- Port of Newcastle Local Office
- Building Management Office
- NSW Heritage Office Library
- State Library of NSW
- Newcastle City Library Local Studies section

Reason:
Information available in the Conservation Management Plan is useful for research, for understanding of the place as well as for the conservation information necessary to maintain the building. Conservation Management Plans are a means of allowing community access and participation in places of cultural importance. They can be valuable in encouraging community support for the ongoing conservation and use of the place.

Policy 6
The Conservation Management Plan should be reviewed every five years, or whenever critical information is discovered, major changes in condition of the structures or grounds occur (e.g. accident or natural disaster), or significant changes to the management of the place occur (e.g. new ownership, legislation or planning controls)

Reason:
A Conservation Management Plan can only be as accurate and relevant as the information it was prepared with. Major changes in information, ownership, condition or legislation open or close conservation or development opportunities and constraints which may not have been foreseen by the CMP or they would have been dealt with differently.

19.2 USE OF THE SITE

The site of the Hydraulic Engine House and the Crane Bases is owned by the NSW Government and is both occupied and managed by the Port of Newcastle Pty Ltd. The site maintains its historical use for shipping and wharfage. Project cargo such as machinery and equipment, bulk liquid cargo, and general cargo such as product of Agriculture and Industry are all processed on the site. The Channel Berth near Dyke Point was commissioned in 2010 as the Port of Newcastle's Cruise berth and has catered for international travellers since that time. The Channel Berth, with its deep water capability, was selected due to the increasing size and draft of Cruise Ships.

Policy 7
Any change of use for the site or any portion of the site should be accompanied by a strategy for the ongoing protection for the significant fabric within that portion of the site.

Reason:
An active use of the buildings and structures on the site provides the optimum conditions for the conservation of the fabric of the building. Varying uses of a building place correspondingly varying potential for impacts upon its fabric depending on the intensity of the use. Identifying the potential for impacts and thus instating the appropriate protections will benefit the ongoing conservation of the place.

Policy 8
If a temporary use is proposed, it should only be proposed for ancillary structures and buildings and for a defined period of time.

Reason:
Temporary uses may be encouraged to procure a presence on the site for the passive protection of the place. A temporary use will still not engender the same respect for significance as that of a permanent use. The primary building, should therefore be set aside specifically for a long-term use. Temporary uses should ideally not extend past five years duration.

Policy 9
Conservation Works should be undertaken with the aim of attracting a future tenant to occupy the Hydraulic Engine House building. The Hydraulic Engine House should not remain vacant for an undefined period of time once conservation works are complete. If an undefined vacant period is unavoidable, provide security.

Reason:
The building, if left unoccupied and unattended will invite damage from vandals. This is especially undesirable if a significant investment in conservation has already been expended.

Policy 10
Any future use for the Carrington Hydraulic Engine House and its site should not adversely impact the cultural significance of the place.

Reason:
It is fully acknowledged that reinstating the coal-fired boilers and machinery of the original use of the Hydraulic Engine House is not practical, economical or even desirable given the current setting of the place. A future use needs to acknowledge, respect and not work against the cultural significance of the place. Further policies which describe how the setting, spaces and fabric can be managed so as to mitigate the impact of any future use are given following.

Policy 11
Sale, disposal or Governmental acquisition of the site must follow the procedures set down under Section 170A of the NSW Heritage Act 1977.

Reason:
The responsibility for care of a significant item must be upheld by its owner and the NSW Heritage Act 1977 is the legislation which describes that requirement.

19.3 PROCESS FOR APPROVALS

The State Heritage Register listing covering the Hydraulic Engine House & Crane Bases Nos. 7, 8, 9 & 10 along with the site's ownership by the NSW Government are the primary points to which consent must be sought. This would involve applications to the NSW Heritage Council under Section 60 or Section 57 of the Heritage Act 1977 for Heritage Approvals, and applications to the NSW Department of Planning for Planning Approvals.

A number of changes were made in December 2020 which affect the process for undertaking repair and maintenance works under Section 57 of the NSW Heritage Act 1977. Many of these 'Standard Exemptions' works are able to be undertaken without lodging prior applications, however comprehensive and detailed records must be kept of the works so executed.

Policy 12
Applications for Consent for development works are to be lodged as required by legislation.

Reason:
The owner of a Heritage Item is recognised as the legal title holder, however in essence is the legal custodian of an item the greater public is also invested in. The Consent Authority is a representative of the greater public who gives consent to developments which take into consideration the views of the owner as well as the greater public thus benefiting the locality.

Policy 13
The policies in this Conservation Management Plan which are applicable to the areas to be developed are to be used to assess the proposed development for appropriateness of design and potential impact to (or enhancement of) significance.

Reason:
The policies in this CMP have been written specifically to respond to the significance of the place and the condition of the fabric, thus are the best possible guides for the conservation of significance of the item.

19.4 CONTEXT

The Classical, symmetrical, Palladian composition of the Hydraulic Engine House and its position at the centre of The Basin were always intended to create a grand and striking vision of this building from the southern side of the harbour and Hunter River. Numerous people have had their first encounter with the Hydraulic Engine House by marvelling at its facade from the south. Such people include Margret Doring, who wrote an article describing said encounter in 'Engineering Heritage Australia Magazine' April 2016 issue. The author of this CMP also had a similar encounter and was compelled to travel across to Carrington to attempt to find a closer vantage point for the Hydraulic Engine House.

Architects, Planners and Designers even up to the present day have recognised the impressiveness of the Southern facade and created vantage points on the south side of the harbour from which the Hydraulic Engine House is able to be seen.

The Industrial silos and heavy equipment which surrounds the Hydraulic Engine House, whilst large and imposing, is appropriate for the long-term wharfing and shipping use pattern of the greater site.

Policy 14
The southern facade of the Hydraulic Engine House must remain visible from the southern bank of the Hunter River. Sight lines from this direction should not be impeded by new development.

Reason:
The Hydraulic Engine House was literally the engine which empowered the cranes and enabled the wharfing operations of loading and unloading. Its importance in the understanding of the history of the site as well as the grand landmark qualities of its facade design are some of the critical elements of its significance which need to be interpreted.

Policy 15
Future development between the southern facade of the Hydraulic Engine House and the basin should only be at low level such as paving and low landscaping to maintain views to and from the building.

Reason:
The previous policy envisages a long-distance view. This policy ensures that the long-distance views are not compromised by development that is in the immediate vicinity of the building also. In addition, the designation of space in a forecourt in front of the building will allow excellent space to view the building from up close where the scale of it can be used to full effect.

Policy 16
Future development of the Hydraulic Engine House site should maintain visual links with the harbour, wharves and wharf storage structures.

Reason:
The Hydraulic Engine House was created to enable the process of harbour operations by actuating the cranes loading and unloading ships. To divorce the Engine House from the harbourside activity would remove a very significant aspect of its context.

Policy 17
The Crane Bases should be visible from the shore and the water sides. They should not be cut down to below water level, nor encapsulated in new construction, nor covered entirely with a new structure.

Reason:
While the Crane bases were originally surrounded by timber wharves, they did previously have an immobile crane fastened to the top of them which luffed cargo between the shore and the ships in berth. An understanding of the context of those locations, ship to shore and the distances between the cranes will assist with the interpretation of the historic use of the site.

19.5 INTEGRITY OF THE DESIGN

The buildings on the site were developed in distinct stages, from coal fired boilers pressurising hydraulically actuated machinery, through to full electrically powered hydraulic actuation, to full electric actuation. Even in the servicing and lighting of the building, there is a distinct shift between gas-lighting and electric lighting.

Policy 18
The various stages of the building's construction and adaptation should be conserved in proportion to their relative significance. The hydraulic and early electrical stages are more significant than the later all-electric stage.

Reason:
The original stage is considered the most significant as it governed the design of the original building and provided the reason for the structures in the first instance. The introduction of the electrical stage, beginning with the Auxiliary Engine House (Dynamo Room) occurred very quickly after the construction of the eastern Boiler Room is also significant as the two systems were working in tandem. The third stage where electricity powered all operations, involving the construction of the substation and workshop in 1916 is less significant as the Engine House became neglected and the Crane Bases outmoded.

Policy 19
Demolition of less significant stages of the building may only be considered, but only if there are clear advantages for the conservation of more significant parts of the structures.

Reason:
Demolition of later alterations and additions may enable the reconstruction of original detail of the earlier parts. This could have the benefit of clarifying interpretation of the original building configuration and design.

Policy 20
Where a stage of the building of Exceptional or High significance has lost original fabric or detail, consideration should be given as to the reconstruction of that missing fabric or detail.

Reason:
The earliest stages of highest significance are able to demonstrate information that is essential to the understanding of the origins of the building itself. Having that information as complete as possible will assist in the accuracy of interpretation.

Policy 21
Reconstruction of missing detail, where proposed, shall be based on clear evidence such as remnant fabric or historic photographs and drawings.

Reason:
Accuracy of information is necessary for accurate interpretation. Misinterpretation is to be avoided

Policy 22
Alterations to fabric should be carried out in spaces and positions of moderate or lesser significance or in previously altered spaces. Additions to form should be carried out in spaces and places of moderate or lesser significance.

Reason:
Fabric and spaces of moderate or lesser significance are less original or contribute less to the overall significance of an item. They are therefore more able to undergo change without impacting that significance.

Policy 23
Alterations and additions which are intrusive to the building or structures should be removed and the fabric returned to an earlier state or condition.

Reason:
By definition, fabric which is graded as intrusive to an item is causing impact to its significance. Removing the intrusive fabric will remove that element of impact and restore significance.

Policy 24
Works related to the making-safe of Asbestos contaminated or other Hazardous materials should be undertaken with consideration of their impact on the interpretation of original fabric.

Reason:
The proponent has an obligation to remove hazards from the site in order to make it fit for occupancy. Where possible, options analysis for works relating to hazardous materials should assess a variety of methodologies for such works, such as encapsulation rather than removal for example, to minimise impact on historic components of the item.

19.6 ARCHAEOLOGY

The Hydraulic Engine House propelled pressurised water through subterranean pipes to the crane bases. The pressurised water provided the motive power for the cranes. There is clear potential for these pipes to be discovered when excavation within the site is carried out. Remnants of former structures are also potential discoveries; particularly the foundations of the former Chimney Stacks which are believed to lie just below the ground level on either side of the building. There is also potential to find evidence of the heavy work which was carried out at the site such as tools, broken machinery, or remnants of packing cases.

Policy 25
Excavation works which may damage or disturb archaeological relics is to be carried out in compliance with the current Heritage Act Legislation and with the appropriate excavation permits.

Reason:
Discovery of a relic during excavations can bring a work site to a halt while the relic is investigated. If all the information, advice and permits are in place before the excavation occurs, there is less likelihood of progress on site being halted.

Policy 26
Ensure that Archaeological advice is sought and provided for any works which involve excavation within the heritage curtilage. An Archaeology report is to be submitted with the documents for any works applications within the heritage curtilage which require excavation.

Reason:
It is fully expected that the Heritage Council will require an archaeological report to enable their assessment of the works. The advice of an Archaeologist should be sought prior to an application where it will be able to inform the design and not merely justify the outcome.

Policy 27
Crane Bases 7, 8, 9 & 10 should be preserved as relics. Repairs should be made as needed to slow the rate of deterioration of the bases. Reconstruction of the bases to pristine condition is not considered necessary and, depending on a potential re-use, unlikely to be warranted.

Reason: While the retention of the historic fabric of the crane bases is important for their interpretation, a patina of age and weathering is desirable also.

19.7 CONSERVATION APPROACH

Policy 28
The fabric of the Hydraulic Engine House internally and externally, and the Crane Bases in general, is to be conserved as appropriate to its grading of significance.

Reason:
It is important that the fabric of highest significance is treated with the most respect and care.

Policy 29
Records and documentation of any conservation decisions, recommendations made, and testing undertaken should be kept by the Port of Newcastle and the Heritage Consultant involved.

Reason:
All of these elements form part of the history of the structures and are able to inform future management of the site. For example, the product or material used to make a repair is best able to be repeated or avoided in the future, depending on the success of the repair, if there is an easily traced record of that material on file.

Policy 30
Fabric and elements identified as being of Exceptional Significance are likely to be original and will be integral to the design of the building. The fabric and elements graded as such are to be retained and conserved in-situ. Any changes proposed to this fabric are not to cause detrimental impact to the significance or appearance of the building or structure.

Reason:
Fabric and elements of Exceptional Significance should be treated with the most respect and care.

Policy 31
Fabric and elements graded as being of High Significance are likely to be original to the building and contribute to the significance or understanding of the building. The fabric and elements graded as such are to be retained and conserved, preferably in-situ. Any changes proposed to this fabric should minimise any impact to the significance of the item to a negligible level.

Reason:
Fabric and elements of High Significance should be treated with great respect and care to avoid detrimental impact.

Policy 32
Fabric and elements graded as being of Moderate Significance may be original or may have been altered. They make a lessor contribution to the significance of the item. The fabric and elements graded as such should be retained and conserved preferably in-situ. Any changes proposed to such fabric or elements should minimise any impact to significance of the overall item. Greater change may be tolerated if it will further enhance the significance of fabric or elements of higher significance.

Reason:
Fabric and elements of moderate significance make only a moderate contribution to the significance of the item and therefore any change to them may only cause a minor amount of impact if any. Some amount of change is therefore tolerated within this fabric or these elements.

Policy 33
Fabric or elements graded as being of Little Significance are likely to come from a later stage of the structure, or have been irreversibly altered. This fabric and these elements are able to be altered freely. If there is opportunity to make changes to this fabric or these elements which will enhance the significance of the item, they should be considered.

Reason:
Fabric and elements of little significance may cause difficulty in the interpretation of the significance of an item. Removal or demolition of these elements or this fabric will not diminish the significance of the item.

Policy 34
Fabric or building elements which are intrusive to the building or structures should be removed and the fabric returned to an earlier state or condition.

Reason:
By definition, fabric which is graded as intrusive to an item is causing impact to its significance. Removing the intrusive fabric will remove that element of impact and restore significance.

Policy 35
The external facades of the Hydraulic Engine House and internal volume of the Engine Room which have been graded as being of exceptional significance are to be conserved and retained in their original configuration inclusive of:

1. The form of the nineteenth century fenestration, joinery, and stone elements;
2. Open volume dimensions and proportions in entirety;
3. Remnants of historic platforms and ladders;
4. Remnants of former foundations for machinery;
5. Removal of intrusive alterations;
6. Reconstruction of known missing joinery details;

But exclusive of original Engine House machinery which has been permanently removed.

Reason:
The facade provides the initial impression and understanding of the building for all who encounter it, the internal volume of the Engine Room provides understanding and interpretation of the building for those fortunate enough to enter the building. Reinstatement of the original (or reconstructed) equipment within the Engine House would facilitate clear interpretation however would severely limit re-use options therefore diminishing those same opportunities for interpretation. The potential exists for sympathetically introduced “open” structures such as mezzanines, which may not adversely impact the appreciation of the volume of the space.

Policy 36
The former Boiler Rooms and Auxiliary Engine House which have been graded as being of high significance should be conserved so that there are opportunities to interpret their original configuration and detail inclusive of:

1. The form of the nineteenth century fenestration, joinery and stone elements;
2. Open volume dimensions and proportions;
3. Removal or adaption of intrusive openings walls and joinery;
4. Reconstruction of known missing joinery details.

But exclusive of original Boilers or Dynamo equipment.

There is opportunity for minor subdivision of the space with partitions or mezzanines provided there are provisions made through voids or glazing to interpret the overall dimensions and proportions of the original spaces.

Reason:
These spaces were secondary to the Engine Room and were full of heavy machinery which was less likely to have been encountered by visitors to the site. They are more able to tolerate some alteration with minimal impact so as to increase the viability of a reuse option.

19.8 MAINTENANCE OF EXTANT FABRIC

The fabric of the structures is located in an environment affected by both marine conditions and industrial processes. This results in both salt and chemical pollution impact upon the fabric. Despite the robust materials used in the construction of the structures, constant maintenance is required for the long-term conservation of the fabric. As an item listed in the State Heritage Register, there are minimum standards of maintenance that are required by the NSW Government.

https://www.heritage.nsw.gov.au/assets/Uploads/a-z-publications/m-o/Minimum-Standards-of-Maintenance-and-Repair.pdf

These minimum standards are used to inform the policies following.

In addition to the above statutory requirement, the Proponent and Heritage Architect have established a series of site-specific standards in Part 20 MAINTENANCE PLAN . This section defines an acceptable standard of fabric condition for which all future maintenance works are to be aimed at achieving and then sustaining. These details are fabric specific, described both graphically and in written form, and are informed generally by the standards of material observed, repaired and conserved during the 2018-2021 construction works packages undertaken on the building.

Policy 37
A Maintenance Plan is to be scheduled and followed for the building. The first revision of this plan is included within this CMP, but can be revised and issued as a stand-alone document. The Maintenance Plan should be reviewed every five years to ensure that the inspection periods are still appropriate to address the degradation of the various fabrics. Inspection Periods to be adjusted as necessary so as to ensure adequate observation of the building fabric, but without undue burden on the proprietor.

Reason:
Maintenance works will allow the building owner to stay on top of the building degradation. Once the maintenance is carried out, degradation will reduce in speed and severity and maintenance periods may be able to be extended slightly. Regular reviews will ensure that the appropriate materials receive the appropriate attention.

Policy 38
Maintenance Staff and Contractors are to be educated in appropriate conservation methods for historic fabric. Maintenance Staff and Contractors are to have free access to this Conservation Management Plan.

Reason:
Historic fabric requires historic, now regarded as specialist, methods in order to maintain it. It is not always appropriate to use familiar modern technologies to maintain historic fabric.

19.9 INTERPRETATION OF THE PLACE

The Carrington Hydraulic Engine House has been gazetted as being of State Significance, able to demonstrate not only the development of the Port of Newcastle, but also the development of the Coal Industry in New South Wales. Its historic fabric alongside its location adjacent to the still-in-use wharves may provide understanding to the development of loading operations from the nineteenth century up to the present day. Opportunities to interpret this significance are important to provide.

Policy 39
Interpretation of the significance of the Carrington Hydraulic Engine House's history and usage should be provided for the public to increase their understanding and awareness of the place and its broader historical, physical and contemporary context with Newcastle and its development.

An interpretation plan for the building should be implemented in unison with any adaptive reuse proposals. Responsibility for implementation of the plan will likely fall to both the asset owners, and/or the tenant, depending on the nature and location of the specific interpretation device. The interpretation plan is a guide and should be seen as an evolving document, adapted to suit the future adaptive re-use typology or user requirements for the building. Obligations regarding implementation and maintenance of agreed interpretation items should be included in any owner-tenant lease agreement for the building, to ensure the objectives of the plan are maintained in the long term.

Reason:
For the public to be able to access the site, an adaptive reuse of the building will be necessary. Such reuse will enable those opportunities for interpretation. The interpretation plan should be ready and in place for the reuse function.

Policy 40
Interpretation of the Crane Bases will be problematic due to the inability to provide public access to their fabric inside the secure area of the working port, however appropriately designed devices can still be installed that portray the history of the site to Port staff and future historians studying the items. In terms of their fabric and physical interpretation, the Crane Bases are best preserved as relics per Policy 27 and with interpretation information about the cranes and their bases also provided in a publicly assessable site in conjunction with the Hydraulic Engine House Interpretation Plan.

Reason:
The public needs to be able to access the interpretive material, while it is not possible to access the actual crane base fabric along the active berths of the Dyke.

19.10 ADAPTIVE REUSE & TENANCY

The adaptive reuse and tenancy of the Hydraulic Engine House building is a key goal for its management, as this will provide conditions and encouragement for it's long-term conservation. As with previous alterations to the structure, creating new spaces by inserting new material into the building may create a new vocabulary in design, which should be assessed based on impact to the significance of the item. Authentic nineteenth century detailing should be relegated to the nineteenth century portions of the building, and based on clear evidence of the original appearance. New fitout works should be of a modern but simple and sympathetic character so as to be easily distinguished as being new.

Policy 41
As per Policy 4, all parties involved in the tenancy of the Carrington Hydraulic Engine House building, such as the tenant body, their management and staff, must be made aware of the cultural significance of the building and of the content of the CMP.

Reason: To ensure it's effectiveness, the CMP must be considered an active management document, and put to use by the relevant parties "on the ground".

Policy 42
Any tenancy agreement for the Carrington Hydraulic Engine House site made between The Port of Newcastle and a lessee must set out the relevant responsibilities with regard to caring for and changing the building's fabric, attributable to and/or shared by each party.

Reason: Responsibilities for the care and development of the building should be clearly understood, to ensure all components are covered and none neglected. It is likely appropriate that the owner of the building retain responsibility for some components of the building's management, while others would necessarily be attributed to the occupier, pending negotiation of the lease agreement.

Policy 43
A procedure for reporting maintenance, repair and general building condition issues must be included and agreed upon by the Port of Newcastle and Lessee in any tenancy agreement for the Carrington Hydraulic Engine House building.

Reason: The users of the building are best placed to document maintenance issues as they arise within the building fabric. Swift attention to issues may help prevent impact on the Item's significance caused by fabric deterioration.

Policy 44
Proposals for Adaptive Reuse of the site are to be based on an understanding of the historical development of the building in context with its site, its significance, and its spaces. Reuse proposals should:

1. not require major alterations to significant building spaces or major modifications to significant building features; and
2. not unduly obscure interpretation of the history of the site or structure.

Reason:
The conservation of the building is the motivation for reuse. A reuse option which has no interest in the building and site would not be appropriate.

Policy 45
Modifications proposed for the adaptive reuse of the building must show respect to original design features of the structure to which they are applied.

Reason:
The purpose of the reuse is to provide opportunities to understand the original. Therefore, the original must prevail, and not be unreasonably obscured.

Policy 46
Modifications for adaptive reuse must minimise the removal of / connections to original fabric graded as being of exceptional or high significance.

Reason:
The adaptive reuse is ideally inserted into the original building rather than taking over it.

Policy 47
Significant modifications required for adaptive reuse should be removable and reversible.

Reason:
In combination with the other policies in this section, if the fabric introduced for the purpose of adaptive reuse is fully removable, the structure will be able to be returned to an earlier state and condition without impact. In its reversed condition, its significance would also be returned / retained at that prior level.

Policy 48
Modifications for the adaptive reuse of the building should be constructed in modern materials and be easily identified as being modern and new.

Reason:
This will provide benefits for interpretation, fabric with the patina of age will be recognised as part of the original building and its original use pattern, while modern materials with clean finishes will be easily recognised as for the new purpose of the building. This will also provide benefits for removal of the fabric in the future should that be desired. The modern material will be easily recognised as that which is able to be removed.

Policy 49
Provision of service heavy spaces (for example bathrooms, laundries and kitchens) are to be located in places where they will be of least impact to significant original building spaces or significant building fabric. Ideally, they would be located in existing spaces which are the correct size or in new structures which can be sympathetically located away from views.

Reason:
The introduction of small private spaces, with waterproofing membranes and hard finishes all combine to cut off sections of a larger space which may impact its interpretation and cover over original fabric s that it can't be interpreted either.

Policy 50
Provision of new servicing such as ducting, plumbing, and wiring, and rooms to facilitate those services such as Plant Rooms and Substations should be located in places where they will not impact spaces or fabric of exceptional significance and minimise impact on spaces or fabric of moderate to high significance. Ideally new servicing would be run through structures of new construction or of little significance and limit penetrations through significant fabric.

Reason:
The servicing of spaces involves multiple alterations to walls, ceilings and floors inclusive of core holes, penetrations and chasing. Each one of these methods, if applied to significant fabric will remove a portion of it that even when repaired, will not be original any more.

Policy 51
A tenant's adaptation and fit-out of the interior spaces of the Carrington Hydraulic Engine House building should ensure that original fabric or spatial features of Exceptional or High significance are retained and interpreted as far as possible. Interpretation is ideally visually, but some flexibility is to be considered here, for example in conjunction with Policy 24, where obligations to make safe fabric containing asbestos may negate options for visual interpretation of fabric.

Respectful adaptation of fabric of Moderate and Little significance is potentially appropriate, subject to assessment of its heritage impact.

Reason:
Fabric of Exceptional and High Significance is likely to be intrinsically linked with the story and interpretation of the Item, and should be celebrated in a respectful adaptive re-use proposal. Modifications to fabric of lesser significance, even large ones, can be appropriate if they can be shown to support the overall aim of adaptive-re use of the building, which in turn supports it's long-term conservation and survival.

19.11 INTRODUCTION OF NEW BUILDINGS

As described in Policy 46, it is likely for the sake of minimising impact to significant spaces and fabric that new buildings could be added to the site and connected to the Engine House building to facilitate adaptive reuse. These new buildings may contain bathrooms or service equipment or additional floor space to suit a reuse option.

Figure 225 above makes allowance for there to be new buildings introduced to the north of the Hydraulic Engine House where they will be beyond the sight lines to the item and will not impact the appearance of the Southern facade and its composition which is of exceptional significance.

Policy 52
New buildings on the site must be scaled and located so that they do not unreasonably impact:

1. Views to the southern façade of the building,
2. The significance of fabric of exceptional or high significance

New buildings are to be located in areas of moderate or lesser significance and / or in areas that have already been modified. New buildings are not to obscure or overpower the original design intention.

Policy 53
New buildings are to be designed so as to compliment the design vocabulary used during the significant phases of the development of the Hydraulic Engine House site and the relationship between the historic structures and the site. New work is however to be identified as contemporary in style, and not a replication of original.

Reason:
Buildings introduced to the site need to be designed with the same care as alterations to the existing building so as to avoid impact to significance.

19.12 MOVEABLE HERITAGE

Moveable Heritage comprises of items which can be assessed as being of cultural significance and contribute to the understanding of the use or occupation of the particular site.

It is expected that a number of items of movable heritage will be discovered during the cleaning out of the subfloor space below the Engine Room. The weather vane which formerly existed on the pediment of the building is a possibility for discovery also.

Policy 54
Undertake an inventory of all significant moveable heritage items with the assistance of an experienced heritage professional. Establish a safe repository, preferably (but not necessarily) on site, for items of high levels of significance. Catalogue all items to be stored. Items of lower levels of significance can be recorded and disposed of.

Reason:
These items are able to shed light on the day-to-day operation or occupation of the site and the conditions under which the occupants worked enhancing interpretation.

19.13 RECORDING

It is essential that a record of changes to the Carrington Hydraulic Engine House be maintained and appropriately archived for later reference. Recording is now a legal requirement for works undertaken under Section 57 of the Heritage Act.

Policy 55
Ensure that all works which affect fabric of moderate or higher significance are recorded in annotated images and drawings. Records should be kept in both printed and digital mediums. Digital files should be reviewed every ten years to ensure the medium on which they are stored is still compatible with current technology.

Reason:
The preparation of a Conservation Management Plan is reliant on the availability of archived historic records for the accuracy of its policies and recommendations. Better records allow for a better conservation outcome.

20. MAINTENANCE PLAN

In addition to Statutory Requirements, site specific minimum standards are listed following for various key elements of the Item's fabric. These standards are considered the "goal" condition that all future conservation and maintenance works occurring at the buildings should to work achieve, and then maintain in the long term.

It is acknowledged that given the current condition of the building, funding and time constraints, it may not be practicable to bring all elements of the building fabric to these standards immediately, and that a staged approach may be necessary.

The standards proposed are based on the NSW Heritage Office Publication Minimum Standards of Maintenance and Repair (1999), and are informed generally by the standards of material observed, repaired and conserved during the 2018-2021 construction works packages undertaken on the building.

Note that given their specific context's, different standards of maintenance apply between the Engine House building and Crane Base structures, although the physical fabric may be equivalent.

20.1 ENGINE HOUSE

20.1.1 Sandstone Wall Base Course (Internal/External)

Characteristics

Sydney & Hunter Valley quarried Sandstone

Minimum Standard

- Wall is weather tight, free from penetrations and vermin proof
- Stone masonry structurally sound
- No safety risk from unstable/loose elements
- Mortar joints largely filled (need not be 100% depth or coverage)
- Original pattern of stone coursing visible/ replicated
- Patina of age & weathering OK to original material
- Face indents, stone replacement, mortar/plastic repair utilised where necessary

Example Image

Unacceptable Condition

- Large Penetrations through wall
- Salt damage evident
- Significant weathering/ decay of stone (nom. >20% of material depth, case-by-case)
- Safety risk present from loose fabric
- Structural integrity compromised
- Graffiti / lead-based paint to surface

Example Image

Inspection Period

General: 5 years
Where Salt Decay Evident: 1 year

Post-Contract Maintenance

Check internal & external faces for fretting/ salt. Where fretting evident check the surface for acid/alkali neutrality. If the measure is not neutral, wash the surface & repeat test. Where fretting is severe, use salt removing poultice equal to: Westox Building Products Cocoon. For graffiti, use appropriate solvent based products suitable for sandstone substrate.

20.1.2 Brick Masonry (Internal/External)

Characteristics

Yellow sandstock bricks from Joseph Bowtell's Steam Brick & Tile Works

Minimum Standard

- Wall is weather tight, free from penetrations and vermin proof
- Brick masonry structurally sound
- No safety risk from unstable/loose elements
- Mortar joints largely filled (need not be 100% depth or coverage)
- Patina of age & weathering, minor remnants of mortar previously removed OK to original material
- Appropriate brick replacement where necessary

Example Image

Unacceptable Condition

- Large Penetrations, missing brickwork
- Metal pins causing damage from corrosion
- Significant weathering/ decay of bricks (nom. >20% of material depth, case-by-case)
- Safety risk present from loose fabric
- Structural integrity compromised / large cracks
- Salt damage evident
- Graffiti / plant growth / lead-based paint to surface
- Inappropriately coloured replacement brickwork
- Note: Paint finish to internal brickwork may be acceptable where similar finished utilised historically

Example Image

Inspection Period

General: 5 years
Where Salt Decay Evident: 1 year

Post-Contract Maintenance

Check internal & external faces for fretting. Where fretting evident check the surface for acid/alkali neutrality. If the measure is not neutral, wash the surface & repeat test. Where fretting is severe, use salt removing poultice equal to: Westox Building Products Cocoon. Annual check for vandalism.

20.1.3 Architectural Sandstone Features

Characteristics

Cornices, brackets, Frieze, architraves, mouldings, columns and the like.

Minimum Standard

- Free from penetrations and vermin proof
- Stone masonry structurally sound
- No safety risk from unstable/loose elements
- Mortar joints largely filled (need not be 100% depth or coverage)
- Original form of element generally visible/ replicated (need not be 100% or "as-new")
- Patina of age & weathering OK to original material
- Face rubbing, face indents, stainless steel pins, stone replacement, mortar/plastic repair utilised where necessary

Example Image

Unacceptable Condition

- Large Penetrations, missing architectural elements
- Salt damage evident
- Metal pins causing damage from corrosion
- Horizontal surfaces where water can pond
- Significant weathering/ decay of stone (nom. >20% of element depth, case-by-case)
- Safety risk present from loose fabric, cracks & flaking
- Structural integrity compromised
- Graffiti / plant growth / lead-based paint to surface

Example Image

Inspection Period

General: 5 years
Where Salt Decay Evident: 1 year

Post-Contract Maintenance

Check faces for fretting/ salt. Where fretting evident check the surface for acid/alkali neutrality. If the measure is not neutral, wash the surface & repeat test. Where fretting is severe, use salt removing poultice equal to: Westox Building Products Cocoon. For graffiti, use appropriate solvent-based products suitable for sandstone substrate.

20.1.4 Timber Roof Framing

Characteristics

Mixed hardwood framing with softwood roof boards

Minimum Standard

- Termite, rot and vermin free
- Members structurally sound
- No safety risk from unstable/loose elements
- Patina of age & previous damage OK on close inspection
- General black paint colouring to all exposed internal ceiling/roof structure whether original or replacement

Example Image

Unacceptable Condition

- Active Termite Presence
- Structural integrity compromised
- Visible mud-trails, rot or water damage from ground level
- Safety risk present from loose fabric
- Replacement timbers inappropriately coloured

Example Image

Inspection Period

General: 5 years
Where Termite Damage Evident: As per specialist sub-contractor's treatment program.

Post-Contract Maintenance

Termite damage has been recorded. Pest inspections to be routinely carried out. Termite infestations to be baited, monitored and nest removed where possible. Every 5 years inspect internal roof framing for rot and any evidence of structural damage. Inspect roof deck for evidence of sag/damage. Where found, assess for impact on further deterioration and where necessary remediate.

20.1.5 Slate Roof

Characteristics	Natural slate, 500x250mm, SSQ Del Carmen Ultra
Minimum Standard	• Free from penetrations and vermin proof • Weathertight • No safety risk from unstable/loose elements • Patina of age & weathering OK to original material
Example Image	
Unacceptable Condition	• Penetrations allowing water or vermin entry • Safety risk present from loose fabric • Excessive debris build up, staining, plant growth etc
Example Image	
Inspection Period	General: 5 years
Post-Contract Maintenance	Check for vandalism, broken slates, loose fixings and storm damage. Replace/repair damaged sections.

20.1.6 Metal Deck Roof & Galvanised Roof Plumbing

Characteristics

Galvanised metal roof sheet: Fielders Heritage barrel roll
Galvanised Gutters & Downpipes: Fielders Ainsworth OG 125mm

Minimum Standard

- Free from penetrations and vermin proof
- Weathertight
- No safety risk from unstable/loose elements

Example Image

Unacceptable Condition

- Penetrations allowing water or vermin entry
- Safety risk present from loose fabric
- Excessive corrosion
- Missing elements (Downpipes, roof screws etc)
- Excessive debris build up, staining, plant growth etc

Example Image

Inspection Period

General: 5 years

Post-Contract Maintenance

Check for vandalism, loose fixings, storm damage and corrosion. Patch any roof penetrations, clean gutters and ensure downpipes unblocked. Where corrosion evident, assess the age of the roof sheet and cause of corrosion. Replace non-functioning sheet with appropriate matching roof sheet to make good.

20.1.7 Lead Cappings & Roof Flashings

Characteristics	To roof ridges and selected sandstone features Rolled lead sheet 30kg/m_2
Minimum Standard	• Weathertight, sealed and sturdy • No safety risk from unstable/loose elements (considering high winds on site)
Example Image	
Unacceptable Condition	• Penetrations allowing water or vermin entry • Safety risk present from loose fabric • Missing or damaged elements
Example Image	
Inspection Period	General: 5 years
Post-Contract Maintenance	Check for vandalism, loose fixings, storm damage etc. Where flashing is lifting or damaged, assess for the cause and check adjacent areas for damage. Remediate and reinforce strapping where lifting evident.

20.1.8 Cast Iron Roof Gutters

Characteristics	Heavyweight cast-iron gutter segments
Minimum Standard	• Watertight, sealed and free draining • Cleared of debris • Stable, uniformly supported and secured to substrate • No safety risk from unsecured elements • No significant corrosion/flaking
Example Image	
Unacceptable Condition	• Unsealed/ open joints • Safety risk present from loose fabric • Debris build up • Flaking corrosion or corroded penetrations • Gutter unsupported on cornice below
Example Image	
Inspection Period	General: 5 years
Post-Contract Maintenance	Clean gutters and check joint seals for integrity, assess condition of corroded elements and fixings to substrate. Replace seals and fixings as necessary.

20.1.9 Timber Window and Door Frames

Characteristics

Painted Hardwood & softwoods
Paint: Equal to Dulux Weathershield Gloss finish

Minimum Standard

- Weathertight and sealed against vermin
- Paint in good condition
- Good integrity to timber, no termites or rot evident
- Secure and sturdy against vandalism

Example Image

Unacceptable Condition

- Penetrations allowing water, vermin or vandal entry
- Flaking or faded paint
- Missing or damaged elements, Vandalism, rot or termites.

Example Image

Inspection Period

Ground Level Elements: 1 year
High Level Elements: 5 Years
Repainting: 10 Years

Post-Contract Maintenance

Assess frames for rot, warping and vandalism.
Where rot is evident, remove/replace damaged section and treat area to drain water and ventilate.
Assess paint annually for damage, touch-up where damaged.

20.1.10 Glass Window Panes

Characteristics	Clear Float Glass
Minimum Standard	• Weathertight, sealed and sturdy • Free from cracks and vandalism
Example Image	
Unacceptable Condition	• Penetrations allowing water or vermin entry • Safety risk present from loose fabric • Missing or damaged elements
Example Image	
Inspection Period	General: 1 year
Post-Contract Maintenance	Check for vandalism, & loose panes Replace broken panes and secure loose panes

20.1.11 Polycarbonate Window Covers

Characteristics	Polycarbonate Vandal resistant coverings
Minimum Standard	• Sturdily fixed and intact without cracking • Polycarbonate clear without grime, yellowing or graffiti
Example Image	
Unacceptable Condition	• Loose or unsuitably fixed to window frame • Corroded or missing fixings • Cracking or damage to face • Yellowing to polycarbonate, excessively dirty or graffiti
Example Image	N/A
Inspection Period	Ground Level Elements: 1 year High Level Elements: 5 Years
Post-Contract Maintenance	Check for graffiti, vandalism and yellowing. Clean off graffiti with proven polycarbonate cleaning products. Replace damaged panels and panels excessively damaged by solar radiation.

20.1.12 Aluminium Framed Roof Windows

Characteristics	Anodised aluminium & glass roof windows
Minimum Standard	• Weathertight and sealed
Example Image	
Unacceptable Condition	• Penetrations allowing water or vermin entry • Safety risk present from loose fabric • Missing or damaged elements
Example Image	N/A
Inspection Period	General: 5 years
Post-Contract Maintenance	Check for storm damage and corrosive electrolysis. Clean/ repair damaged sections. Check silicone seals and replace periodically. Where electrolysis is evident assess cause and isolation of dis-similar metals. Replace damaged sections.

20.1.13 Cast Iron Floor Grates and Sub-Floor Metal Structure

Characteristics

Heavyweight cast iron floor grates, historic steel column and beam structure to Engine Room floor/sub-floor.

Minimum Standard

- Asbestos risk to occupants of the engine room remediated / isolated below capping structure
- Column structure stabilised to hold grates in-situ
- Corrosion damage stabilised or slowed as best as practicable
- View or interpretation of floor grates maintained
- Some patina of decay / damage is desirable, describing the fabric as an element of industrial archaeology

Example Image

Unacceptable Condition

- Severely compromised structural integrity to columns
- Safety risk present from asbestos hazard

Example Image

Inspection Period

General: 5-10 years

Post-Contract Maintenance

Post-contract maintenance/inspection program to be determined following development of asbestos remediation strategy for this fabric item.

20.2 CRANE BASES

Crane bases No. 07-10 have some similar fabric elements to the main Engine House, however the physical and programmatic context of the two elements are different, and hence different maintenance standards apply.

In difference to the Engine House, the crane bases are not habitable structures, have no internal spaces, are not publicly accessible, and are not generally experienced by responders in any way other than visually. It is proposed therefore that the Crane bases are to be maintained in the fashion of an industrial relic, rather than a useable/habitable piece of infrastructure. Their maintenance standards are hence less stringent than the Engine House.

It is noted also that several of the crane bases act as a substrate for contemporary port infrastructure, including shipping bollards, bridges and gangways etc. The continued and unrestricted use of the crane bases as part of the Port's active operation is a contributing element of their heritage significance, and it is noted that none of the below prescriptions apply to this aforementioned contemporary infrastructure, which can be amended/upgraded/removed as required by the proprietor (noting statutory obligations around notifications/approvals required for works to State Heritage Items).

When inspected in November 2020 during production of this report, it was considered that the condition of the historic fabric of Crane Bases No. 07,08 and 10 was acceptable, and no conservation works were considered necessary at the time. The sections following detail the proposed inspection regime to allow maintenance practices to be adopted if the condition of fabric deteriorates below the defined acceptable level.

Crane Base No. 09 has previously been demolished to below the waterline, with only the mass concrete footing remaining. It is suggested that obligations for maintenance of an underwater structure, which would involve highly specialised and expensive engineering and contracting services, would be unfairly onerous for the proprietor. It is proposed therefore that Crane Base 9 is retained in its current form as a relic of a previous structure (similar perhaps to a shipwreck), with no regular inspection or maintenance protocols required at this time. Inherently sturdy in its construction, it is likely that the concrete footing will survive in place for a long period of time without any interference.

20.2.1 Sandstone Wall Base Course (Internal/External)

Characteristics

Sydney & Hunter Valley quarried Sandstone

Minimum Standard

- Stone masonry structurally sound
- No safety risk from unstable/loose elements
- No risk of loss of large elements of fabric by decay/disconnection
- Mortar joints generally intact
- Original pattern of stone coursing identifiable
- Patina of age, use, decay, penetrations and weathering acceptable, unless compromising elements above

Example Image

Unacceptable Condition

- Salt efflorescence or corrosion of steel elements causing rapid decay to stone
- Very significant weathering/ decay of stone (nom. >50% of material depth, case-by-case)
- Safety risk present from loose fabric
- Risk of loss of entire elements of fabric
- Structural integrity of crane base compromised

Example Image

Not Applicable – Condition Currently Acceptable

Inspection Period

General: 5 years

Post-Contract Maintenance

5 yearly inspection to all sides of the crane base to assess condition of visible stone masonry. Update Maintenance plan and propose conservation/maintenance strategy accordingly as required.

20.2.2 Brick Masonry (Internal/External)

Characteristics	Orange sandstock bricks, visibly dissimilar to those of the Engine House
Minimum Standard	• Brick masonry structurally sound • No safety risk from unstable/loose elements • Mortar joints generally intact • Original pattern of brick coursing identifiable • Patina of age, use, decay, penetrations and weathering acceptable, unless compromising elements above • Isolated missing/ damaged single bricks acceptable • Oyster/sea life covering below the waterline acceptable. Noted that any attempt to remove this covering may inadvertently damage masonry beneath, and is not recommended
Example Image	
Unacceptable Condition	• Salt efflorescence or corrosion of steel elements causing rapid decay to stone • Very significant weathering/ decay of brickwork over large areas (nom. >50% of material depth over several brick units in close proximity, case-by-case) • Safety risk present from loose fabric • Structural integrity of crane base compromised
Example Image	Not Applicable – Condition Currently Acceptable
Inspection Period	General: 5 years
Post-Contract Maintenance	5 yearly inspection to all sides of the crane base to assess condition of visible brick masonry. Update Maintenance plan and propose conservation/maintenance strategy accordingly as required.

20.2.3 Concrete Elements

Characteristics

Concrete cappings have been layered variously over the top of the crane bases. Some concrete is clearly contemporary, other parts potentially much older. The base footing of each crane base is constructed in mass concrete without reinforcement. Base footings are generally not able to be inspected below the waterline.

Minimum Standard

- Concrete elements structurally sound
- No safety risk from unstable/loose elements
- Patina of age, use, decay, penetrations and weathering acceptable, unless compromising elements above
- Oyster/sea life covering below the waterline acceptable

Example Image

Unacceptable Condition

- Safety risk present from loose fabric
- Structural integrity of crane base compromised

Example Image

Not Applicable – Condition Currently Acceptable

Inspection Period

General: 5 years

Post-Contract Maintenance

5 yearly inspection to all visible concrete. Update Maintenance plan and propose conservation/maintenance strategy accordingly as required.

20.2.4 Timber Elements

Characteristics

Timber piles and retaining wall elements, some with remnant copper sheet cladding.

Minimum Standard

- No safety risk from unstable/loose elements
- Patina of age, use, decay, penetrations and weathering acceptable.

Note: It is proposed that remnant timber fabric be considered a relic, and be allowed to decay away over time, as no practicable conservation strategy is apparent (or considered warranted). Photographic records to be kept for future reference.

Example Image

Unacceptable Condition

- Safety risk caused by fabric condition.

Example Image

Not Applicable – Condition Currently Acceptable

Inspection Period

General: 5 years

Post-Contract Maintenance

5 yearly inspection to all visible timber elements. Photographic recording of fabric for future reference.

20.3 IMPLEMENTATION SCHEDULE

The CMP's maintenance plan is supported by the following implementation schedule which defines urgent, short, medium and long-term conservation works objectives.

For the purpose of this schedule, the following time periods apply:

- Urgent Works: Immediately required to maintain human safety &/or the structural integrity of the building fabric.
- Short Term: Priority Action, within 0-2 years.
- Medium Term: Desirable Action, within 5 years.
- Long Term: Non-Priority Action, within 10 years (or ongoing as necessary).

See equivalent item in previous Part 20 MAINTENANCE PLAN for full descriptions of conservation actions and outcomes.

20.3.1 Carrington Hydraulic Engine House

Urgent Works

Fabric Item	Action / Outcome
- Asbestos Enclosure	Ensure existing temporary seals to Engine Room are maintained in place to enclose asbestos hazard, until remediation strategy can be implemented.

Short Term Objectives

Fabric Item	Action / Outcome
- Asbestos Remediation	Design & implement asbestos remediation strategy for Engine Room to enable human access.
- Cast iron floor grates and sub-floor metal structure	In tandem with the asbestos remediation strategy, design and implement a structural strategy to maintain integrity of the metal floor structure which is currently compromised by corrosion.
- Termite Protection	Implement building-wide termite protection strategy with specialist consultant input.
- Sandstone & Brick Fabric	Repair / stabilisation of significantly degraded internal brick and stone fabric.
- Whole Building	Implement building-wide salt remediation strategy & install chemical damp proof course with specialist consultant input.

Medium Term Objectives

Fabric Item	Action / Outcome
- Interpretation	Design & implement interpretation device as per the recommendations of the Heritage Interpretation Strategy, pending its finalisation AND confirmation of a building tenant/ adaptive re-use proposal.
- Sandstone Fabric	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Brick Masonry Fabric	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Timber Roof framing.	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Slate Roof	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Metal Deck Roof	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Lead Cappings & roof Flashing	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Cast Iron Roof Gutters	5 yearly condition inspection and update of Maintenance Plan accordingly.

- Windows & Doors (timber, polycarbonate and glass components)	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Aluminium framed roof windows	5 yearly condition inspection and update of Maintenance Plan accordingly.

Long Term Objectives

Fabric Item	Action / Outcome
- All Timber components	Repaint every 10 years to ensure ongoing weather protection.
- Sandstone & Brick Fabric	Selective masonry repair and re-pointing as necessary to maintain condition of stone and brickwork.

20.3.2 Hydraulic Crane Bases No. 07-10

Urgent Works
None noted.

Short Term Objectives

Fabric Item	Action / Outcome
Interpretation	Design & implement interpretation device as per the recommendations of the Heritage Interpretation Strategy (pending its finalisation).

Medium Term Objectives

Fabric Item	Action / Outcome
- Sandstone base course	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Brick Masonry	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Concrete Elements	5 yearly condition inspection and update of Maintenance Plan accordingly.
- Timber Elements	5 yearly condition inspection and update of Maintenance Plan accordingly, maintain photographic records.

Long Term Objectives

Fabric Item	Action / Outcome
- Sandstone base course	Selective masonry repair and re-pointing as necessary to maintain condition of stonework
- Brick Masonry	Selective masonry repair and re-pointing as necessary to maintain condition of brickwork

21. PROGRESSION OF THE CONSERVATION MANAGEMENT PLAN

21.1 PREVIOUS MANAGEMENT PLANS

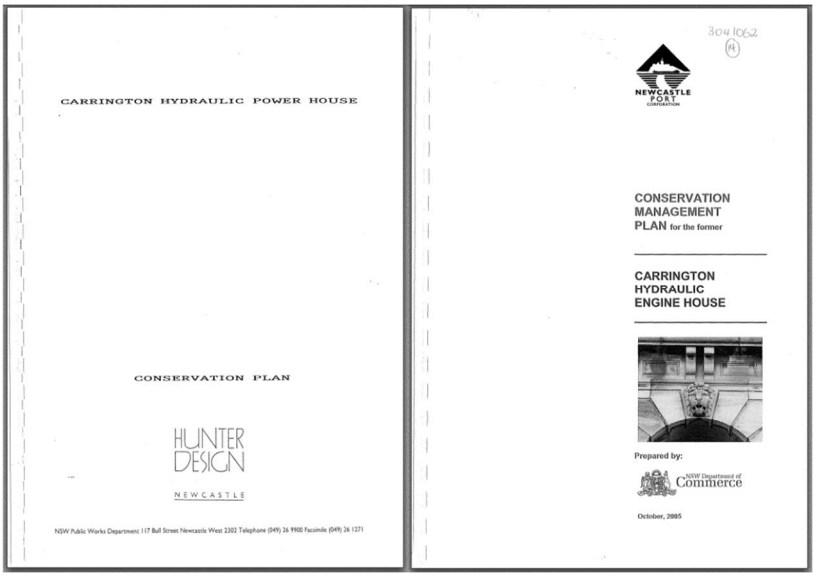


Figure 235. The 1993 Conservation Plan by Hunter Design Newcastle (left) and the 2005 Conservation Management Plan by the NSW Department of Commerce (right).

Two previous Conservation Management Plans for the Carrington Hydraulic Engine House have been accessed in production of this document, including;

- Carrington Hydraulic Power House – Conservation Plan; John Carr, Hunter Design Newcastle, NSW Public Works Department, 1993. ("The 1993 CMP")
- Conservation Management Plan for the former Carrington Hydraulic Engine House-Final Draft; NSW Department of Commerce, October 2005. ("The 2005 CMP")

The documents have notably become more expansive with each version, the 1993 CMP being comprised of 63 sparsely covered pages in length, the 2005 CMP 96 pages, and this 2021 version with around 250 pages of content. This is in part due to the development of recording technology (with the developing ease of use of digital colour photography and CAD drawing programs for example), partly due to increasing authority obligations for the production of such documents, and partly due to the increasing awareness of the significance of the Engine House building and crane bases with ongoing research and understanding of the site.

Following is a comparison table noting the elements which have progressed, been adapted or removed across the varying iterations of the CMP. Between the production of the 2005 CMP and this 2021 version, it is noted that the CHEH site's context has changed significantly, both physically and legislatively, being formally listed as a State Heritage Item in 2017, and having had several large scale conservation projects undertaken on the site, including creation of the south side pubic plaza. The comparison of the 2021 and 2005 CMP's is hence not a line-by-line assessment, (as the 2021 version would be considered almost entirely new), but rather a more general discussion of changes that would be relevant for an authority in understanding the context of the current CMP.

Users of this document are encouraged to refer to the previous CMP documents for the most complete understanding of the site's historical context and development, and the changes within its conservation management policy over time.

It is noted also that production of this updated CMP adheres to the (defunct) requirement of DA No. 07/1496, requesting that an updated CMP be provided to guide future adaptive re-use proposals. Refer Part 17.2.3 Development Approval No. 07/1496 for further information.

21.2 COMPARISON TABLE – CURRENT AND PREVIOUS CMP'S

21.2.1 Site Components Studied

		1993 CMP	2005 CMP	2021 CMP
Content:	Carrington Hydraulic Engine House Building	✓	✓	✓
	North-side Substation buildings	✓	✓	✗
	North-side lean-to additions	✓	✓	✗
	Hydraulic Crane Bases	✗	✓	✓
	South-side Public Plaza	✗	✗	✓

Discussion:
- The 1993 CMP focuses solely on the CHEH building and the agglomeration of buildings directly around it. The 2005 CMP increases the breadth of the study to include the hydraulic crane bases as a component of the heritage item, and it introduces the idea, continued in the 2021 CMP, that the crane bases should be managed as relics, not as re-useable structures.
- Having been demolished in advance of the production of the 2021 CMP, the substation and lean-to buildings are only discussed in this document via historical references, and are not physically analysed.
- Discussion of the south-side plaza is included solely in the 2021 CMP, it having been constructed in 2019.

21.2.2 Historical Context Studied

		1993 CMP	**2005 CMP**	**2021 CMP**
Content:	Pre-Colonial site history	✗	✓	✓
	The Moriarty Scheme, development of coal loading within the Port of Newcastle	✓	✓	✓
	Hydraulic power, Armstrong machinery, construction of CHEH & the Crane Bases	✓	✓	✓
	Alterations and additions to the CHEH building and crane infrastructure	✓	✓	✓
	Contemporary context & condition of the building (at time of writing)	✓	✓	✓

Discussion:
- The 1993 CMP does not describe any pre-colonial site history of the site, the 2005 CMP cursorily mentions it, and the 2021 CMP provides a more rounded overview. This is reflective of society's developing understanding of the importance of indigenous history and learning in any historical study.
- The 2005 CMP's historical context research regarding European development of the site is greatly developed beyond the 1993 edition, providing an in-depth and well referenced discussion about the instigation, development and decline of the CHEH building and crane bases. The 2021 CMP's historical context contains some newly researched information, but generally summarises an abridged version of the content of the 2005 (and 1993) revisions. (With this history well established, more emphasis is placed in the 2021 CMP on existing fabric condition and future policy than, and re-presenting known information).

21.2.3 Heritage Assessment

		1993 CMP	2005 CMP	2021 CMP
Content:	Assessment of Heritage/Cultural Significance, and categoric values (aesthetic, historic, scientific, social, association etc)	✓	✓	✓
	Discussion of Movable heritage Items	✗	✓	✓
	Discussion of Archaeology	✗	✓	✓
	Elemental assessment of fabric significance	✗	✗	✓
	Statement of Significance	✓	✓	✓
	Comparative Analysis	✗	✓	✓
	Landscape / Site Context	✗	✓	✓
	Discussion of Heritage Curtilage	✗	✓	✓
	Associated Items	✗	✗	✓

Discussion:
- The 2005 CMP introduces a number of new areas of study into its heritage assessment beyond the 1993 version, including discussion of moveable heritage items, archaeology, landscape/site context, curtilage and a comparative analysis.
- The 2021 CMP expands the range and depth of the comparative analysis with more newly researched examples or precedent engine house developments nationally and internationally.
- The 2021 CMP furthers the discussion of the industrial landscape of the site, it's effect on the site's heritage value, and relevant development constraints in the contemporary context of the Port of Newcastle.
- The 2021 CMP includes the equivalent discussion around moveable heritage as the 2005 CMP, although it is noted that very few items that fit this description are extant within the building today.
- The 2005 CMP does not go through an analysis of fabric condition or significance elementally, rather discussing whole parts of the building (e.g. the whole boiler room). The 2021 CMP breaks this description down further to discuss individual fabric elements around the Engine House building, and the crane bases (e.g. the condition of the crane base brickwork specifically).
- The 2021 CMP also includes a description of further associated items near the site that are part of it's historical story, although not included under its heritage listing.

21.2.4 Restrictions, Opportunities and Constraints

		1993 CMP	2005 CMP	2021 CMP
Content:	Discussion of legislative / planning restrictions, opportunities and constraints	✓	✓	✓
	Discussion of site restrictions, opportunities and constraints	✓	✓	✓
	Discussion of physical restrictions, opportunities and constraints within the building structures	✓	✓	✓

Discussion:
- Each version of the CMP updates these topics relevant to the current site context. The 2021 CMP discusses the planning restrictions applicable to the site at greatest length of all revisions of the CMP, in part due to the increased requirements occasioned by the building's gazettal to the State Heritage Listing in 2017.

21.2.5 Adaptive Re-Use and Interpretation

		1993 CMP	2005 CMP	2021 CMP
Content:	Discussion of future adaptive use of the Heritage item.	✓	✓	✓
	Discussion of Heritage Interpretation of the Heritage Item	✓	✓	✓
	Discussion of priority conservation works	✓	✓	✓
	Inclusion of an ongoing maintenance plan	✗	✗	✓
	Discussion of the inclusion of new buildings to the site	✓	✓	✓

Discussion:

- The 1993 CMP prescribes rigid controls for adaptive re-use of the building, going to the lengths of nominating only four specific use typologies that would be suitable, and providing very strict policies about modification to existing fabric. The 2005 CMP relaxes these controls considerably, not prescribing a type of adaptive re-use to be sought, and instead suggesting that the objectives of the CMP be used to guide the procurement/design of any adaptive re-use proposal. A number of policies are put in place to ensure re-use proposals would respect the significance of the building. The 2021 CMP most actively encourages an adaptive re-use of the building, aiming for flexibility in its controls to encourage this, following contemporary understanding that long-term use will support long-term conservation of the building's significance. It is noted that at the time of writing (August 2021) the building has been disused and deteriorating for nearly 60 years; as such it would appear that the policies of previous CMP's have not resulted in a tenancy within the building, which would have helped to ensure its upkeep. The proactive stance of the 2021 CMP in encouraging the re-use of the building aims to change this condition.
- Both the 1993 and 2005 CMP's recommend but do not provide a maintenance plan. The 2021 CMP provides this document in full, including discussion of recent conservation works and acceptable/inacceptable standards of fabric condition around the Item.
- Both the 1993 and 2005 CMP's briefly discuss but do not make any specific recommendations for Heritage Interpretation, where the 2021 CMP includes a comprehensive Heritage Interpretation Strategy within its appendices. The 2021 CMP is also the first of the documents to include interpretation devices at the site of the crane bases.
- All CMP's include a schedule of priority conservation works, each being updated to the condition of the building at the time of writing.
- Beginning with the 1993 CMP, all iterations note that the introduction of new buildings to the site could be appropriate on its north side, but the south façade and view to the harbour must remain unencumbered.

21.2.6 Conservation Policy

		1993 CMP	2005 CMP	2021 CMP
Content:	Policy regarding maintenance of cultural significance of the Item, conserving original fabric and re-instating original details	✓	✓	✓
	Policy regarding future use / adaptive re-use, including impact on fabric and significant components of the building	✓	✓	✓
	Policy supporting integration of new works within the building for adaptive re-use.	✗	✓	✓
	Polic about introduction of new buildings to the site	✓	✓	✓
	Policy regarding Interpretation	✓	✓	✓
	Policy regarding management of the Item	✓	✓	✓
	Policy regarding maintenance	✓	✓	✓
	Policy regarding treatment of Asbestos contamination	✗	✗	✓
	Policy regarding ongoing recording and inspection	✓	✓	✓
	Policy regarding management of Archaeology	✗	✓	✓
	Policy proposing preservation of the heritage crane bases as relics	✗	✓	✓
	Policy regarding lean-two additions and substation building	✗	✓	✗
	Policy regarding moveable heritage	✗	✓	✓
	Policy specifically regarding stonework conservation	✗	✓	✗
	Policy specifically regarding brickwork conservation	✗	✓	✗
	Policy specifically regarding metalwork conservation	✗	✓	✗
	Policy specifically regarding joinery conservation	✗	✓	✓
	Policy specifically regarding roof sheeting conservation	✗	✓	✗
	Policy specifically regarding ground contamination	✗	✓	✗

Discussion: - The general attitude of conservation policy between the three CMP's becomes more flexible, in aim of supporting a long-term adaptive re-use of the site. The 1993 CMP for example prescribes that re-use should not require any additions to the building, or internal demolition. The current 2021 CMP relaxes this to prescribe that re-use proposals should not require major alterations of modifications to significant building features or spaces, and maintains the more general 2005 CMP policy that "Modifications proposed for the adaptive reuse of the building must show respect to original design features of the structure to which they are applied". The 2021 CMP includes that adaptive re-use is a key goal of management of the Item, within its up-front policy on management of the site, where this was not expressly stated in the preceding CMP's (although adaptive re-use is discussed).

- Most policies of the 2005 and 2021 CMPs are comparable, many directly continued, although updated in the 2021 CMP for relevance to the contemporary context of the site. A few notable exceptions are included following.

- The 2021 CMP drops a policy of the 2005 CMP, that development is undertaken in accordance with the Newcastle LEP, given that this legislation is not applicable to the site in its current context.

- All three iterations of the CMP include protocols regarding its management, and both the 2005 and 2021 versions describe that changing use or ownership must be accompanied with agreement on ongoing conservation strategy of the building.
- The 2005 CMP introduces the policy that the crane bases should be preserved as relics, and this is continued into the 2021 CMP.
- No previous policy regarding conservation of the lean-to and substation buildings is continued into the 2021 CMP, as these buildings no longer exist on the site. Their part of the site's history is instead recommended to be expressed through implementation of the site's Heritage Interpretation Strategy.
- The 2005 CMP lists several very specific policies regarding the care of various fabric elements of the building (e.g. its stonework, its roof sheeting etc). These policies have not been continued in to the 2021 version, in favour of more flexible general controls about the standard of conservation to be achieved around the building. The introduction of the maintenance plan, a section not previously included in any CMP, has also overridden the need for specific policies on fabric elements, and adherence to this maintenance plan is a new policy which essentially encompasses (and expands on) the individual fabric maintenance polices of the 2005 CMP. Conservation projects that have occurred at the site following the 2005 CMP also negated the need for some of it's policies to be continued, such as the policy for the roof to be re-roofed in slate.

22. CONCLUSION

Once the chief glory of Newcastle's industrial heartbeat, the Carrington Hydraulic Engine House building has declined in integrity and condition since its redundancy in the 1960's.

A structure of cultural, architectural and historical significance, there is clear community interest in the Engine House building, and desire by the asset owners, The Port of Newcastle to return the building to a feature of the suburb and city of which residents can be proud.

Conservation works beginning in 2018 and continuing in stages to the time of writing have made a significant step in remediating the neglected condition of the building. With works currently under way (October 2021), it is anticipated that the buildings outside shell will be made completely weathertight and stable within a few months' time. Asbestos remediation works undertaken in 2020 have ensured that all internal spaces of the building are safely accessible, except the main engine room, which has further work to be completed.

While monumental and picturesque when viewed from the exterior, via the recently completed south-side public plaza, or at the apex of the Basin across the harbour from Honeysuckle, the Carrington Hydraulic Engine House needs a long-term adaptive re-use internally to regain its full potential as a significant historic icon. The Port of Newcastle is resolved to achieve this aim in the future, with this CMP setting out the framework to enable it to occur.

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Newcastle Morning Herald

Newcastle Herald

23.5 ELECTRONIC RESOURCES

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National Library of Australia: http://www.nla.gov.au/

Nearmap (by license) - http://au.nearmap.com/

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http://www.newcastle.nsw.gov.au/Development/Land-Use-Planning/Local-environmental-plans

Newcastle Region Library: http://www.newcastle.nsw.gov.au/Library/Home

NSW Government State Environmental Planning Policy (Three Ports) 2013:
https://www.legislation.nsw.gov.au/#/view/EPI/2013/228

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http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5055925

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NSW LPI: Spatial Information Exchange - http://maps.six.nsw.gov.au/

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24. APPENDICES

APPENDIX 1: CONSERVATION WORKS APPROVED AND UNDERTAKEN UNDER S60/2017/219

APPENDIX 2: CONSERVATION WORKS APPROVED AND UNDERTAKEN UNDER S60/2020/167.

APPENDIX 3: ARCHITECTURAL DOCUMENTATION – CRANE BASE FABRIC CONDITION 2020

APPENDIX 4: CHEH HERITAGE INTERPRETATION PLAN

01 LOCATION PLAN
SCALE N.T.S

CARRINGTON HYDRAULIC ENGINE HOUSE

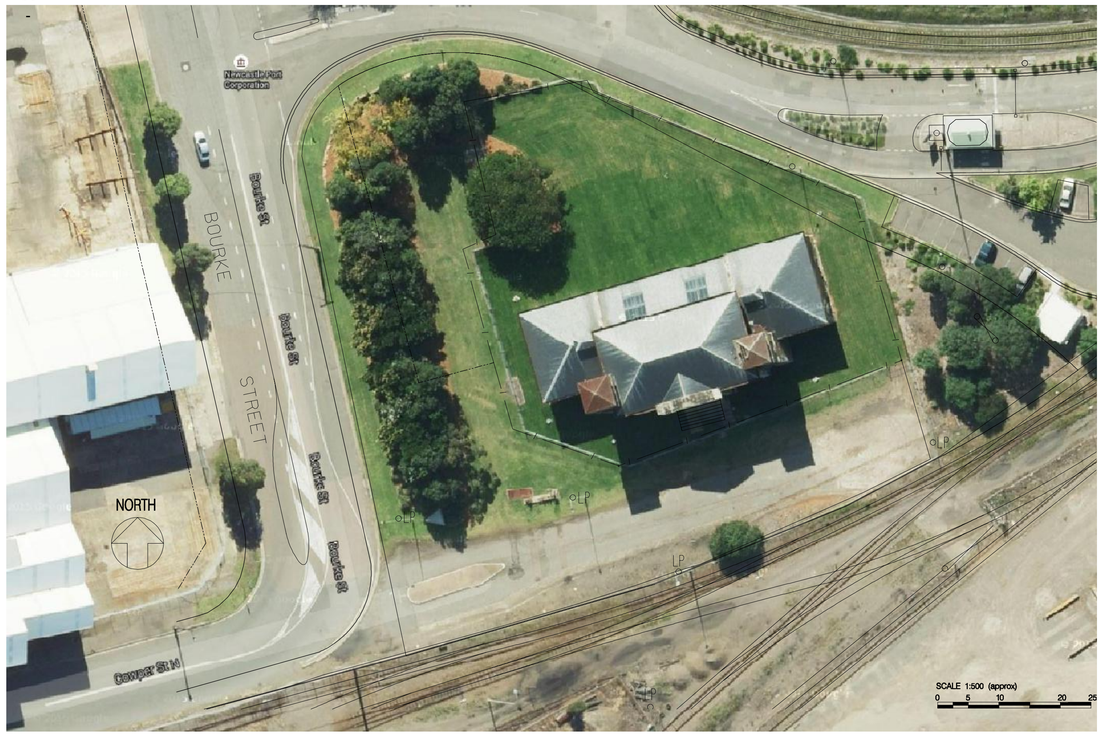
CONSERVATION WORKS

CNR BOURKE ST / COWPER ST, CARRINGTON NSW

CONSTRUCTION ISSUE

DRAWING REGISTER

C.01	LOCATION PLAN, SITE PLAN
C.02	FLOOR PLAN
C.03	ROOF PLAN
C.04	SOUTH & EAST ELEVATION
C.05	NORTH & WEST ELEVATION
C.06	DOOR & WINDOW SCHEDULE
C.07	INTERNAL ELEVATIONS



02 SITE PLAN
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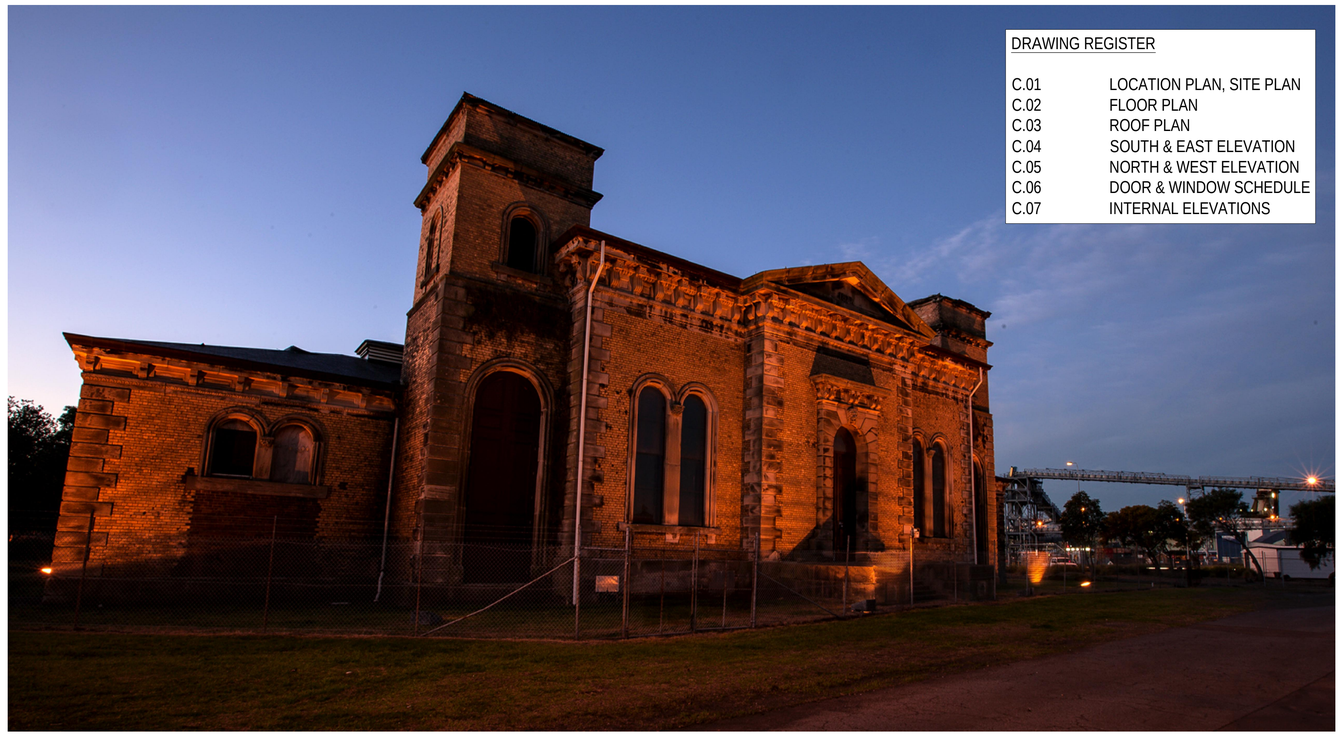

03 SUBJECT BUILDING
NTS

EJE ARCHITECTURE
ACN 002 912 843 | **ABN** 82 644 649 849
Nominated Architect - Bernard Collins | NSW Architects Registration No: 4438
P +61 2 4929 2353 | **F** +61 2 4926 3069 | **E** mail@eje.com.au | **W** www.eje.com.au
A 412 KING STREET, NEWCASTLE, NSW 2300

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REV	DATE	COMMENTS
A	14-12-15	DRAFT
B	01.04.16	CLIENT REVIEW
C	28.07.16	QS Issue
C	01.08.16	Pre-Tender Client Review
0	22.02.17	TENDER ISSUE
1	29.05.17	TENDER ISSUE
2	10.10.17	TENDER ISSUE
3	24.01.18	CONSTRUCTION ISSUE

DRN	CHKD	VRFD
BLC		
BLC	BJC	
BLC		
BLC		
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	

PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE
CONSERVATION WORKS

SITE : BOURKE ST
CARRINGTON NSW

CLIENT : PORT OF NEWCASTLE
6 NEWCOMEN ST
NEWCASTLE NSW

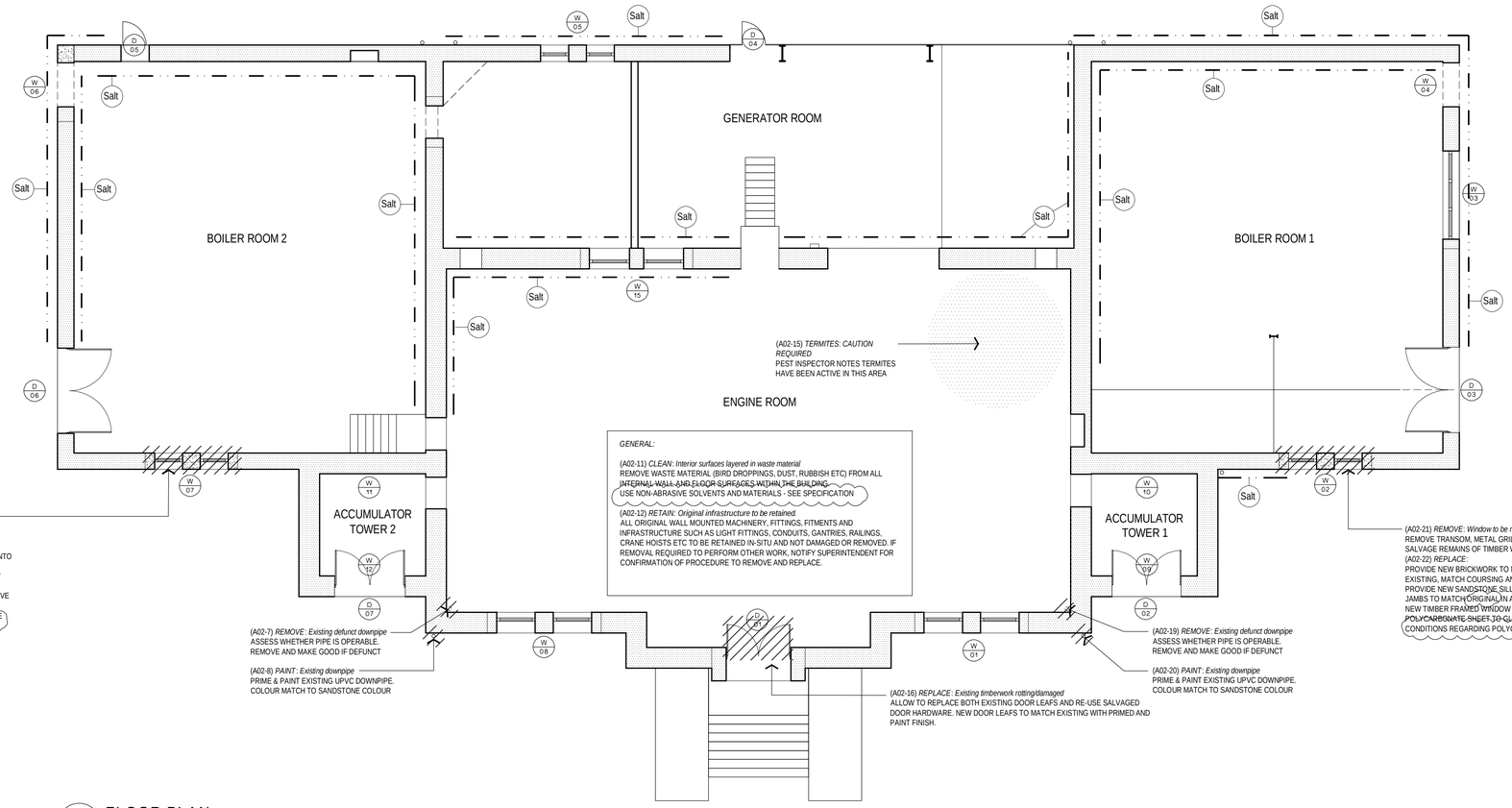
DRAWING : LOCATION/SITE PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

DRAWN :	DATE :	SCALES :
BLC	OCT 2015	As Shown

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	C	A01	3

EJE architecture



01 - FLOOR PLAN
SCALE 1:100

ALL PROPOSED NEW INTERNAL LIGHT FITTINGS DELETED

SCHEDULE OF MATERIALS

DOWNPIPE:	UPVC, PRIMED AND PAINTED
LEAD FLASHING/CAPPING:	ROLLED LEAD SHEET, 30.1 kg/m2 NO FLASHING LENGTH TO EXCEED 1.8m LONG, Min LAP TO BE 250mm
FLASHING/CAPPING CLIP:	50mm WIDE COPPER STRAP
METAL FLASHINGS & CAPPINGS:	*FILEDERS* Z600 HERITAGE GALVANISED 0.55 BMT
ROOF METAL SHEET:	*FIELDERS HERITAGE BARREL ROLL.* Z600 GALVANISED FINISH (*2 ounce/sqft*)
ROOF GUTTER:	*FIELDERS* HERITAGE GALVANISED GUTTER, HI-TEN O.G. GUTTER 115 WITH INTERNAL CAST CORNERS
ROOF BATTENS:	TO MATCH EXISTING
ROOF BOARDS:	TO MATCH EXISTING
ROOF SLATE:	NATURAL SLATE 500x250mm *SSQ Del Carmen Ultra*
ROOF SLATE NAILS:	COPPER CLOUTS 35-50 x 3.35mm with minimum 10mm head
ROOF SARKING:	*BRADFORD ENVIROSEAL PROCTORWRAP* MEDIUM DUTY VAPOUR PERMEABLE ROOF SARKING Poduct Code: 114445

DOOR & WINDOW TIMBER: To Superintendents Approval
ORIGINAL TIMBER: AUSTRALIAN CEDAR

SALT REMOVAL PRODUCT: *WESTOX BUILDING PRODUCTS* - COCOON - POULTICING MEDIUM

NOTE:
Termite damage has been recorded with pest inspections every 3 months by: Troy Ernest Pest Control (Mob: 0409 177 034)
Assess timber supporting members before standing on them.
Alert the Superintendent of any evidence of damage or current termite activity.

EXISTING

ASSESS
Report to Superintendent any damage.
Superintendent to advise if further work required.

WORK REQUIRED.
Refer to Elevations

DEMOLITION
Refer to Elevations

Salt (A02-29) SALT REMOVAL
Allow for 2x poultice applications to remove excess salts from sandstone/brick surfaces

EJE ARCHITECTURE
ACN 002 912 843 | **ABN** 82 644 649 849
Nominated Architect - Bernard Collins NSW Architects Registration No: 4438
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Port of Newcastle

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REV	DATE	COMMENTS
D	01/04/16	Tender & Construction Issue
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2	17.07.17	TENDER ISSUE
3	10.10.17	CONSTRUCTION ISSUE
4	12.10.17	CONSTRUCTION ISSUE
5	03.11.17	CONSTRUCTION ISSUE
6	24.01.18	CONSTRUCTION ISSUE

DRN	CHKD	VRFD
BLC	BJC	
BLC		
BLC		
BLC		
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	

PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE CONSERVATION WORKS
SITE : BOURKE ST CARRINGTON NSW

CLIENT : PORT OF NEWCASTLE 6 NEWCOMEN ST NEWCASTLE NSW
DRAWING : SITE PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

DRAWN :	DATE :	SCALES :
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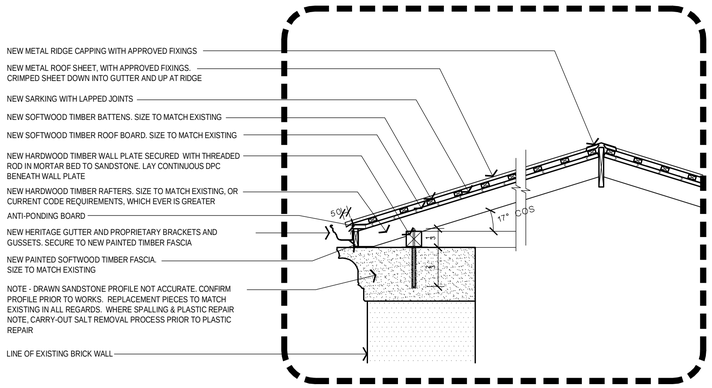
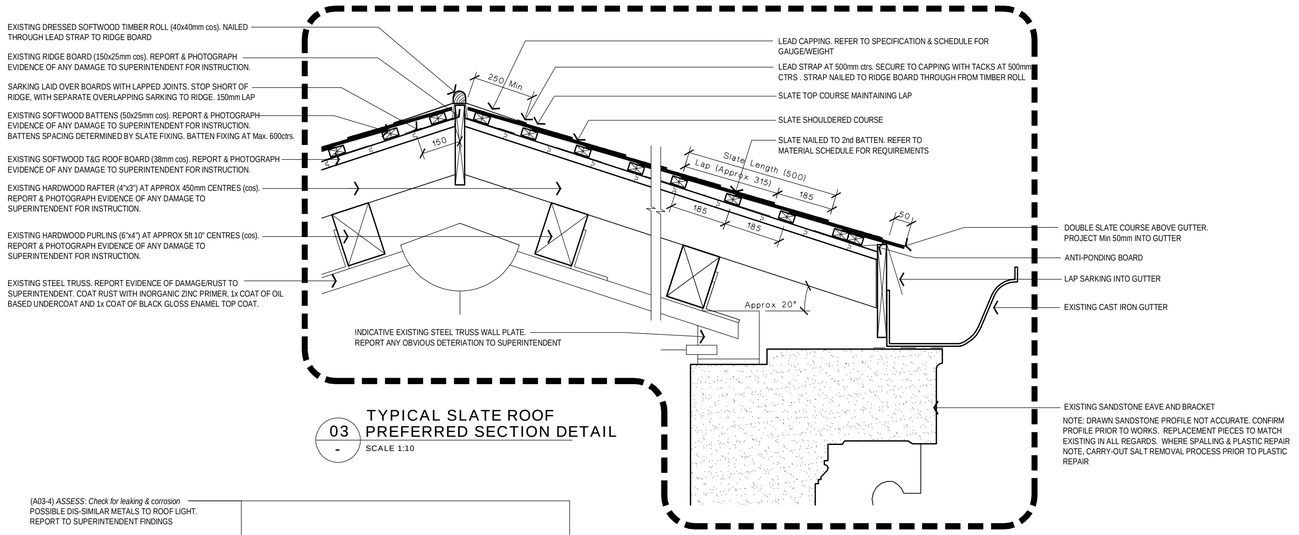
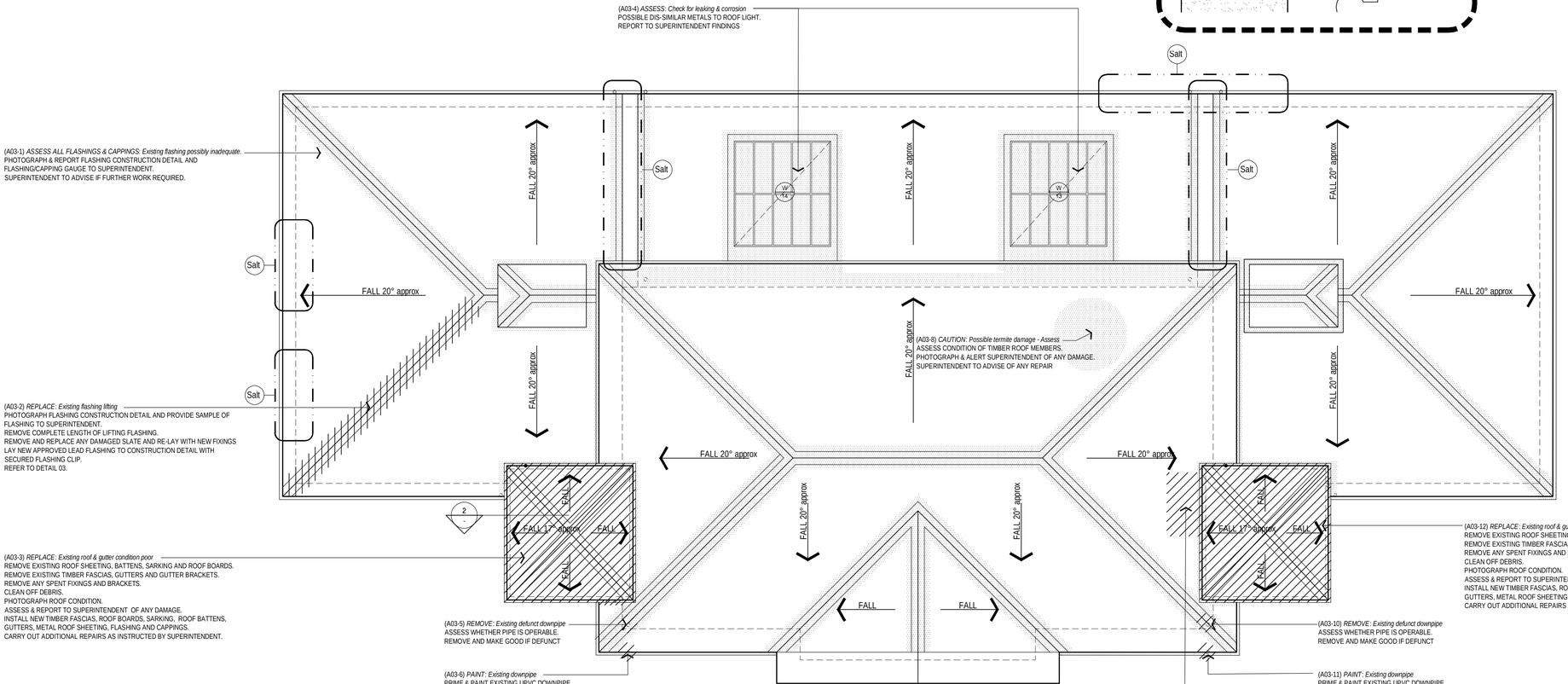
EJE architecture



02 - ACCUMULATOR TOWER ROOF SECTION DETAIL
SCALE 1:20



03 - TYPICAL SLATE ROOF PREFERRED SECTION DETAIL
SCALE 1:10



01 - ROOF PLAN
SCALE 1:100

SCHEDULE OF MATERIALS

DOWNPIPE:	UPVC, PRIMED AND PAINTED
LEAD FLASHING/CAPPING:	ROLLED LEAD SHEET, 30.1 kg/m2 NO FLASHING LENGTH TO EXCEED 1.8m LONG, Min LAP TO BE 250mm
FLASHING/CAPPING CLIP:	50mm WIDE COPPER STRAP
METAL FLASHINGS & CAPPINGS	*FIELDERS* Z600 HERITAGE GALVANISED 0.55 BMT
ROOF METAL SHEET:	*FIELDERS HERITAGE BARREL ROLL*. Z600 GALVANISED FINISH (2 *ounces/sqft*)
ROOF GUTTER:	*FIELDERS* HERITAGE GALVANISED GUTTER, HI-TEN O.G. GUTTER 115 WITH INTERNAL CAST CORNERS
ROOF BATTENS:	TO MATCH EXISTING
ROOF BOARDS:	TO MATCH EXISTING
ROOF SLATE:	NATURAL SLATE 500x250mm *SSQ Del Carmen Ultra*
ROOF SLATE NAILS:	COPPER CLOUTS 35-50 x 3.35mm with minimum 10mm head
ROOF SARKING:	*BRADFORD ENVIROSEAL PROCTORWRAP* MEDIUM DUTY VAPOUR PERMEABLE ROOF SARKING Poduct Code: 114445

DOOR & WINDOW TIMBER: To Superintendents Approval
ORIGINAL TIMBER: AUSTRALIAN CEDAR

SALT REMOVAL PRODUCT: *WESTOX BUILDING PRODUCTS* - COCOON - POULTICING MEDIUM

NOTE:
Termite damage has been recorded with pest inspections every 3 months by: Troy Ernest Pest Control (Mob: 0409 177 034)
Assess timber supporting members before standing on them.
Alert the Superintendent of any evidence of damage or current termite activity.

cos — Confirm On Site

ASSESS FOR REPLACEMENT:
Existing flashing/capping may be inadequate.
All roof flashing/capping to be assessed.

REPLACE OR REPAIR:
Existing fabric damaged

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0 — 25mm — 100mm — 200mm ON ORIGINAL A1

REV	DATE	COMMENTS
C	22-12-15	Notes amended
D	01/04/16	Tender & Construction Issue
E	13/07/16	Notes Amended
F	28/07/16	QS Issue
F	01/08/16	Pre-Tender Client Review
0	22.02.17	TENDER ISSUE
1	29.05.17	TENDER ISSUE
2	17/07/17	TENDER ISSUE
3	10/10/17	CONSTRUCTION ISSUE
4	03/11/17	CONSTRUCTION ISSUE
5	24/01/18	CONSTRUCTION ISSUE

DRN	CHKD	VRFD
BLC		
BLC	BJC	
BLC	BJC	
BLC		
BLC		
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	

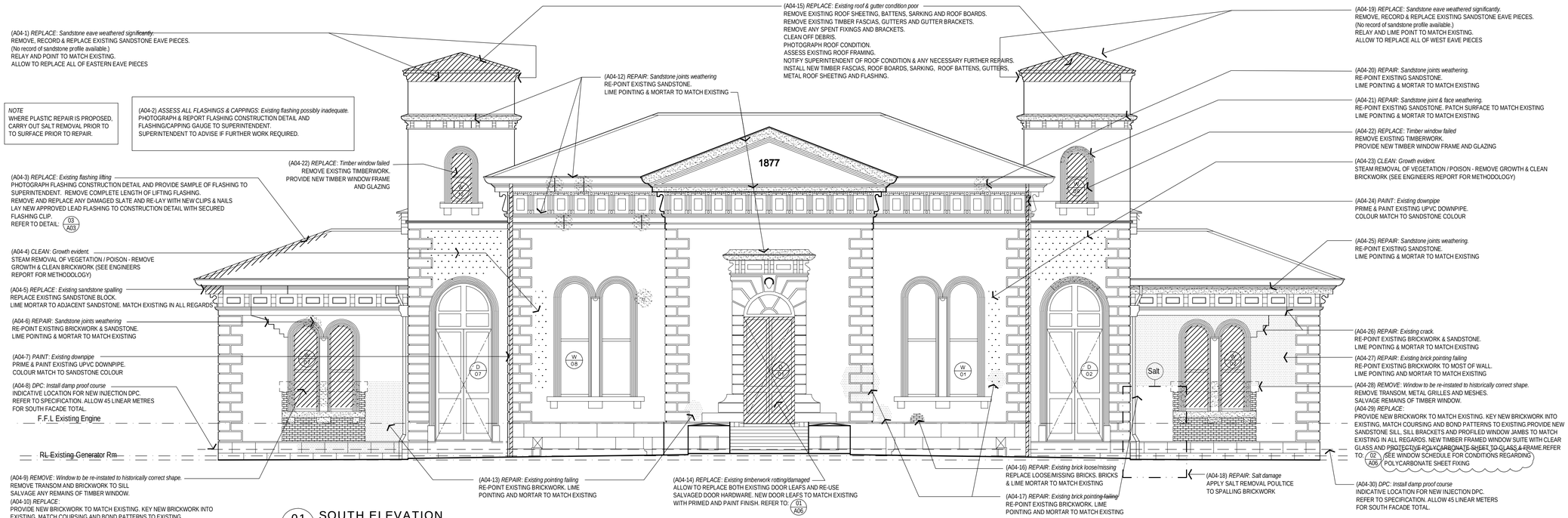
PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE CONSERVATION WORKS
SITE : BOURKE ST CARRINGTON NSW
CLIENT : PORT OF NEWCASTLE 6 NEWCOMEN ST NEWCASTLE NSW
DRAWING : ROOF PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

DRAWN :	DATE :	SCALES :
BLC	OCT 2015	As Shown

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	C	A03	5

EJE architecture



(A04-1) *REPLACE: Sandstone eave weathered significantly.*
REMOVE, RECORD & REPLACE EXISTING SANDSTONE EAVE PIECES.
(No record of sandstone profile available.)
RELAY AND POINT TO MATCH EXISTING.
ALLOW TO REPLACE ALL OF EASTERN EAVE PIECES

NOTE
WHERE PLASTIC REPAIR IS PROPOSED, CARRY OUT SALT REMOVAL PRIOR TO TO SURFACE PRIOR TO REPAIR.

(A04-2) *ASSESS ALL FLASHINGS & CAPPINGS: Existing flashing possibly inadequate.*
PHOTOGRAPH & REPORT FLASHING CONSTRUCTION DETAIL AND FLASHING/CAPPING GAUGE TO SUPERINTENDENT.
SUPERINTENDENT TO ADVISE IF FURTHER WORK REQUIRED.

(A04-3) *REPLACE: Existing flashing lifting*
PHOTOGRAPH FLASHING CONSTRUCTION DETAIL AND PROVIDE SAMPLE OF FLASHING TO SUPERINTENDENT. REMOVE COMPLETE LENGTH OF LIFTING FLASHING.
REMOVE AND REPLACE ANY DAMAGED SLATE AND RE-LAY WITH NEW CLIPS & NAILS
LAY NEW APPROVED LEAD FLASHING TO CONSTRUCTION DETAIL WITH SECURED FLASHING CLIP.
REFER TO DETAIL: 03 / A03

(A04-4) *CLEAN: Growth evident.*
STEAM REMOVAL OF VEGETATION / POISON - REMOVE GROWTH & CLEAN BRICKWORK (SEE ENGINEERS REPORT FOR METHODOLOGY)

(A04-5) *REPLACE: Existing sandstone spalling*
REPLACE EXISTING SANDSTONE BLOCK.
LIME MORTAR TO ADJACENT SANDSTONE. MATCH EXISTING IN ALL REGARDS

(A04-6) *REPAIR: Sandstone joints weathering*
RE-POINT EXISTING BRICKWORK & SANDSTONE.
LIME POINTING & MORTAR TO MATCH EXISTING

(A04-7) *PAINT: Existing downpipe*
PRIME & PAINT EXISTING UPVC DOWNPIPE.
COLOUR MATCH TO SANDSTONE COLOUR

(A04-8) *DPC: Install damp proof course*
INDICATIVE LOCATION FOR NEW INJECTION DPC.
REFER TO SPECIFICATION. ALLOW 45 LINEAR METRES FOR SOUTH FACADE TOTAL.

(A04-9) *REMOVE: Window to be re-instated to historically correct shape.*
REMOVE TRANSOM AND BRICKWORK TO SILL
SALVAGE ANY REMAINS OF TIMBER WINDOW.
(A04-10) *REPLACE:*
PROVIDE NEW BRICKWORK TO MATCH EXISTING. KEY NEW BRICKWORK INTO EXISTING, MATCH COURSING AND BOND PATTERNS TO EXISTING.
PROVIDE NEW SANDSTONE SILL, SILL BRACKETS AND PROFILED WINDOW JAMBS. TO MATCH EXISTING IN ALL REGARDS.
NEW TIMBER FRAMED WINDOW SUITE WITH CLEAR GLASS AND PROTECTIVE POLYCARBONATE SHEET TO GLASS & FRAME. REFER TO: 02 / A06
SEE WINDOW SCHEDULE FOR CONDITIONS REGARDING POLYCARBONATE SHEET FIXING

(A04-12) *REPAIR: Sandstone joints weathering*
RE-POINT EXISTING SANDSTONE.
LIME POINTING & MORTAR TO MATCH EXISTING

(A04-13) *REPAIR: Existing pointing failing*
RE-POINT EXISTING BRICKWORK. LIME POINTING AND MORTAR TO MATCH EXISTING

(A04-14) *REPLACE: Existing timberwork rotting/damaged*
ALLOW TO REPLACE BOTH EXISTING DOOR LEAFS AND RE-USE SALVAGED DOOR HARDWARE. NEW DOOR LEAFS TO MATCH EXISTING WITH PRIMED AND PAINT FINISH. REFER TO: 01 / A06

(A04-15) *REPLACE: Existing roof & gutter condition poor*
REMOVE EXISTING ROOF SHEETING, BATTENS, SARKING AND ROOF BOARDS.
REMOVE EXISTING TIMBER FASCIAS, GUTTERS AND GUTTER BRACKETS.
REMOVE ANY SPENT FIXINGS AND BRACKETS.
CLEAN OFF DEBRIS.
PHOTOGRAPH ROOF CONDITION.
ASSESS EXISTING ROOF FRAMING.
NOTIFY SUPERINTENDENT OF ROOF CONDITION & ANY NECESSARY FURTHER REPAIRS.
INSTALL NEW TIMBER FASCIAS, ROOF BOARDS, SARKING, ROOF BATTENS, GUTTERS, METAL ROOF SHEETING AND FLASHING.

(A04-16) *REPAIR: Existing brick loose/missing*
REPLACE LOOSE/MISSING BRICKS. BRICKS & LIME MORTAR TO MATCH EXISTING

(A04-17) *REPAIR: Existing brick pointing failing*
RE-POINT EXISTING BRICKWORK. LIME POINTING AND MORTAR TO MATCH EXISTING

(A04-18) *REPAIR: Salt damage*
APPLY SALT REMOVAL POULTICE TO SPALLING BRICKWORK

(A04-19) *REPLACE: Sandstone eave weathered significantly.*
REMOVE, RECORD & REPLACE EXISTING SANDSTONE EAVE PIECES.
(No record of sandstone profile available.)
RELAY AND LIME POINT TO MATCH EXISTING.
ALLOW TO REPLACE ALL OF WEST EAVE PIECES

(A04-20) *REPAIR: Sandstone joints weathering.*
RE-POINT EXISTING SANDSTONE.
LIME POINTING & MORTAR TO MATCH EXISTING

(A04-21) *REPAIR: Sandstone joint & face weathering.*
RE-POINT EXISTING SANDSTONE. PATCH SURFACE TO MATCH EXISTING
LIME POINTING & MORTAR TO MATCH EXISTING

(A04-22) *REPLACE: Timber window failed*
REMOVE EXISTING TIMBERWORK.
PROVIDE NEW TIMBER WINDOW FRAME AND GLAZING

(A04-23) *CLEAN: Growth evident.*
STEAM REMOVAL OF VEGETATION / POISON - REMOVE GROWTH & CLEAN BRICKWORK (SEE ENGINEERS REPORT FOR METHODOLOGY)

(A04-24) *PAINT: Existing downpipe*
PRIME & PAINT EXISTING UPVC DOWNPIPE.
COLOUR MATCH TO SANDSTONE COLOUR

(A04-25) *REPAIR: Sandstone joints weathering.*
RE-POINT EXISTING SANDSTONE.
LIME POINTING & MORTAR TO MATCH EXISTING

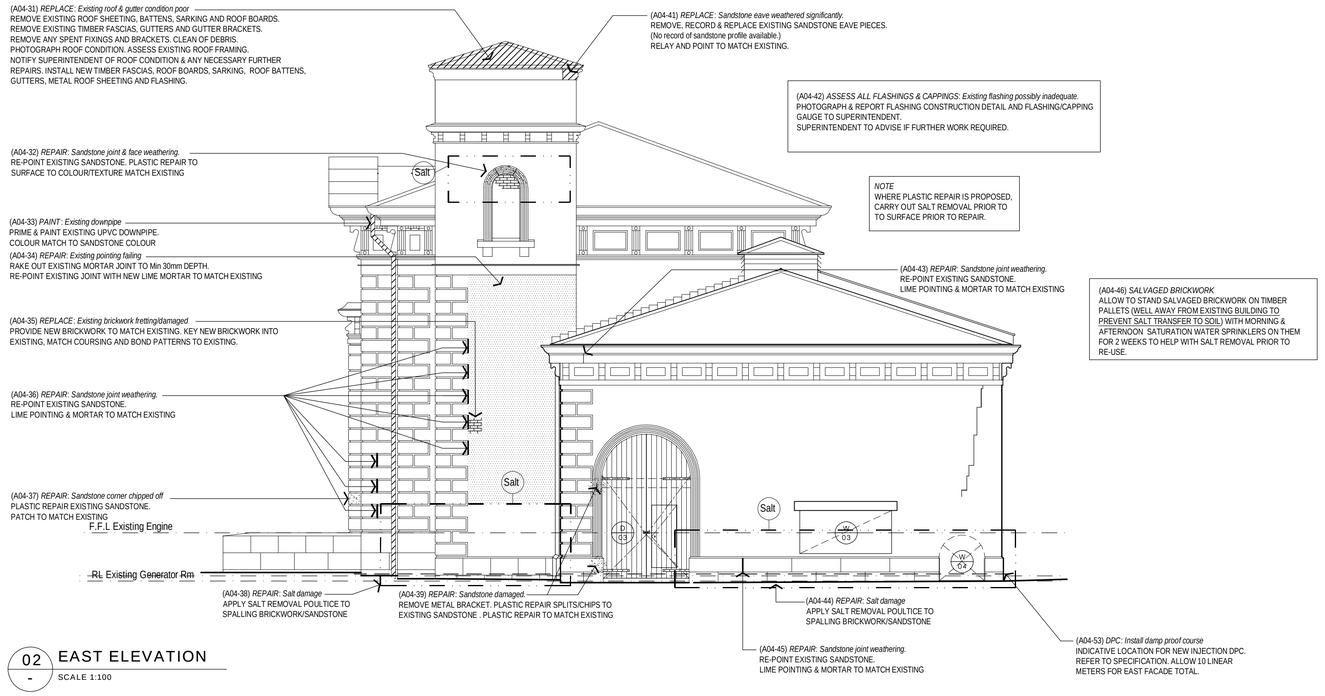
(A04-26) *REPAIR: Existing crack.*
RE-POINT EXISTING BRICKWORK & SANDSTONE.
LIME POINTING & MORTAR TO MATCH EXISTING

(A04-27) *REPAIR: Existing brick pointing failing*
RE-POINT EXISTING BRICKWORK TO MOST OF WALL.
LIME POINTING AND MORTAR TO MATCH EXISTING

(A04-28) *REMOVE: Window to be re-instated to historically correct shape.*
REMOVE TRANSOM, METAL GRILLES AND MESHES.
SALVAGE REMAINS OF TIMBER WINDOW.
(A04-29) *REPLACE:*
PROVIDE NEW BRICKWORK TO MATCH EXISTING. KEY NEW BRICKWORK INTO EXISTING, MATCH COURSING AND BOND PATTERNS TO EXISTING.PROVIDE NEW SANDSTONE SILL, SILL BRACKETS AND PROFILED WINDOW JAMBS TO MATCH EXISTING IN ALL REGARDS. NEW TIMBER FRAMED WINDOW SUITE WITH CLEAR GLASS AND PROTECTIVE POLYCARBONATE SHEET TO GLASS & FRAME.REFER TO: 02 / A06
SEE WINDOW SCHEDULE FOR CONDITIONS REGARDING POLYCARBONATE SHEET FIXING

(A04-30) *DPC: Install damp proof course*
INDICATIVE LOCATION FOR NEW INJECTION DPC.
REFER TO SPECIFICATION. ALLOW 45 LINEAR METERS FOR SOUTH FACADE TOTAL.

01 SOUTH ELEVATION
SCALE 1:100



(A04-31) *REPLACE: Existing roof & gutter condition poor*
REMOVE EXISTING ROOF SHEETING, BATTENS, SARKING AND ROOF BOARDS.
REMOVE EXISTING TIMBER FASCIAS, GUTTERS AND GUTTER BRACKETS.
REMOVE ANY SPENT FIXINGS AND BRACKETS. CLEAN OF DEBRIS.
PHOTOGRAPH ROOF CONDITION. ASSESS EXISTING ROOF FRAMING.
NOTIFY SUPERINTENDENT OF ROOF CONDITION & ANY NECESSARY FURTHER REPAIRS. INSTALL NEW TIMBER FASCIAS, ROOF BOARDS, SARKING, ROOF BATTENS, GUTTERS, METAL ROOF SHEETING AND FLASHING.

(A04-41) *REPLACE: Sandstone eave weathered significantly.*
REMOVE, RECORD & REPLACE EXISTING SANDSTONE EAVE PIECES.
(No record of sandstone profile available.)
RELAY AND POINT TO MATCH EXISTING.

(A04-42) *ASSESS ALL FLASHINGS & CAPPINGS: Existing flashing possibly inadequate.*
PHOTOGRAPH & REPORT FLASHING CONSTRUCTION DETAIL AND FLASHING/CAPPING GAUGE TO SUPERINTENDENT.
SUPERINTENDENT TO ADVISE IF FURTHER WORK REQUIRED.

(A04-32) *REPAIR: Sandstone joint & face weathering.*
RE-POINT EXISTING SANDSTONE. PLASTIC REPAIR TO SURFACE TO COLOUR/TEXTURE MATCH EXISTING

NOTE
WHERE PLASTIC REPAIR IS PROPOSED, CARRY OUT SALT REMOVAL PRIOR TO TO SURFACE PRIOR TO REPAIR.

(A04-33) *PAINT: Existing downpipe*
PRIME & PAINT EXISTING UPVC DOWNPIPE.
COLOUR MATCH TO SANDSTONE COLOUR

(A04-34) *REPAIR: Existing pointing failing*
RAKE OUT EXISTING MORTAR JOINT TO Min 30mm DEPTH.
RE-POINT EXISTING JOINT WITH NEW LIME MORTAR TO MATCH EXISTING

(A04-43) *REPAIR: Sandstone joint weathering.*
RE-POINT EXISTING SANDSTONE.
LIME POINTING & MORTAR TO MATCH EXISTING

(A04-46) *SALVAGED BRICKWORK*
ALLOW TO STAND SALVAGED BRICKWORK ON TIMBER PALLETS (WELL AWAY FROM EXISTING BUILDING TO PREVENT SALT TRANSFER TO SOIL) WITH MORNING & AFTERNOON SATURATION WATER SPRINKLERS ON THEM FOR 2 WEEKS TO HELP WITH SALT REMOVAL PRIOR TO RE-USE.

(A04-35) *REPLACE: Existing brickwork fretting/damaged*
PROVIDE NEW BRICKWORK TO MATCH EXISTING. KEY NEW BRICKWORK INTO EXISTING, MATCH COURSING AND BOND PATTERNS TO EXISTING.

(A04-36) *REPAIR: Sandstone joint weathering.*
RE-POINT EXISTING SANDSTONE.
LIME POINTING & MORTAR TO MATCH EXISTING

(A04-37) *REPAIR: Sandstone corner chipped off*
PLASTIC REPAIR EXISTING SANDSTONE.
PATCH TO MATCH EXISTING

(A04-38) *REPAIR: Salt damage*
APPLY SALT REMOVAL POULTICE TO SPALLING BRICKWORK/SANDSTONE

(A04-39) *REPAIR: Sandstone damaged.*
REMOVE METAL BRACKET. PLASTIC REPAIR SPLITS/CHIPS TO EXISTING SANDSTONE . PLASTIC REPAIR TO MATCH EXISTING

(A04-44) *REPAIR: Salt damage*
APPLY SALT REMOVAL POULTICE TO SPALLING BRICKWORK/SANDSTONE

(A04-45) *REPAIR: Sandstone joint weathering.*
RE-POINT EXISTING SANDSTONE.
LIME POINTING & MORTAR TO MATCH EXISTING

(A04-53) *DPC: Install damp proof course*
INDICATIVE LOCATION FOR NEW INJECTION DPC.
REFER TO SPECIFICATION. ALLOW 10 LINEAR METERS FOR EAST FACADE TOTAL.

02 EAST ELEVATION
SCALE 1:100

SCHEDULE OF MATERIALS

DOWNPIPE:	UPVC, PRIMED AND PAINTED
LEAD FLASHING/CAPPING:	ROLLED LEAD SHEET, 30.1 kg/m2 NO FLASHING LENGTH TO EXCEED 1.8m LONG, Min LAP TO BE 250mm
FLASHING/CAPPING CLIP:	50mm WIDE COPPER STRAP
METAL FLASHINGS & CAPPINGS:	*FIELDERS* Z600 HERITAGE GALVANISED 0.55 BMT
ROOF METAL SHEET:	*FIELDERS HERITAGE BARREL ROLL*. Z500 GALVANISED FINISH (2 ounce/sqft)
ROOF GUTTER:	*FIELDERS* HERITAGE GALVANISED GUTTER, HI-TEN O.G. GUTTER 115 WITH INTERNAL CAST CORNERS
ROOF BATTENS:	TO MATCH EXISTING
ROOF BOARDS:	TO MATCH EXISTING
ROOF SLATE:	NATURAL SLATE 500x250mm *SSQ Del Carmen Ultra*
ROOF SLATE NAILS:	COPPER CLOUTS 35-50 x 3.35mm with minimum 10mm head
ROOF SARKING:	*BRADFORD ENVIROSEAL PROCTORWRAP* MEDIUM DUTY VAPOUR PERMEABLE ROOF SARKING Poduct Code: 114445

DOOR & WINDOW TIMBER: To Superintendents Approval
ORIGINAL TIMBER: AUSTRALIAN CEDAR

SALT REMOVAL PRODUCT: *WESTOX BUILDING PRODUCTS* - COCOON - POULTICING MEDIUM

NOTE:
Termite damage has been recorded with pest inspections every 3 months by: Troy Ernest Pest Control (Mob: 0409 177 034)
Assess timber supporting members before standing on them.
Alert the Superintendent of any evidence of damage or current termite activity.

REPLACE OR REPAIR:
Existing fabric damaged

BRICKWORK FAILING:
Replace existing brickwork. Align coursing and match existing brick & bond pattern.

SANDSTONE FAILING:
Patch, re-face or replace existing spalling sandstone.

BRICK MORTAR FAILING:
Rake out & re-point existing brickwork (min.25mm depth). Lime mortar pointing to match existing

CLEAN FACADE:
Steam removal of vegetation / poison - remove growth & clean brickwork (see engineers report for methodology)

REMOVE:
Remove redundant fitting, fixture or brickwork shown dashed. Make good.

(A04-55) SALT DAMAGE - REMEDIATION REQUIRED:
Surface appears damaged by salt. Allow for 2x poultice applications to remove excess salt.

EJE ARCHITECTURE
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Nominated Architect - Bernard Collins | NSW Architects Registration No: 4438
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0 — 25mm — 100mm — 200mm ON ORIGINAL A1

REV	DATE	COMMENTS
D	01/04/16	Tender & Construction Issue
E	11/07/16	Notation revised
F	28/07/16	QS Issue
G	01/08/16	Pre-Tender Client Review
0	22.02.17	TENDER ISSUE
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DRN	CHKD	VRFD
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DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	

PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE CONSERVATION WORKS
SITE : BOURKE ST CARRINGTON NSW
CLIENT : PORT OF NEWCASTLE 6 NEWCOMEN ST NEWCASTLE NSW
DRAWING : NORTH and EAST ELEVATIONS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

DRAWN :	DATE :	SCALES :
BLC	OCT 2015	1:100

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	C	A04	6

EJE architecture

(A05-1) *ASSESS ALL FLASHINGS & CAPPINGS: Existing flashing possibly inadequate.*
PHOTOGRAPH & REPORT FLASHING CONSTRUCTION DETAIL AND FLASHING/CAPPING GAUGE TO SUPERINTENDENT.
SUPERINTENDENT TO ADVISE IF FURTHER WORK REQUIRED.

NOTE
WHERE PLASTIC REPAIR IS PROPOSED, CARRY OUT SALT REMOVAL PRIOR TO TO SURFACE PRIOR TO REPAIR.

(A05-3) *REPLACE: Existing sandstone spalling*
REPLACE EXISTING SANDSTONE BLOCK.
LIME MORTAR TO ADJACENT SANDSTONE. MATCH EXISTING IN ALL REGARDS

(A05-4) *REPLACE: Existing downpipe broken*
PHOTOGRAPH & NOTIFY SUPERINTENDENT ON DOWNPIPE MATERIAL & FIXING.
REMOVE DAMAGED DOWNPIPE TO NEXT JOINT.
REPLACE WITH NEW MATCHING DOWNPIPE MARRIED INTO EXISTING.

(A05-5) *REPAIR: Existing sandstone joint open.*
RE-POINT EXISTING SANDSTONE.
PLASTIC REPAIR TO MATCH EXISTING

(A05-6) *REPLACE: Existing brickwork spalling*
PROVIDE NEW BRICKWORK TO MATCH EXISTING. KEY NEW BRICKWORK INTO EXISTING, MATCH COURSING AND BOND PATTERNS TO EXISTING.

(A05-7) *ASSESS & NOTIFY: Condition of existing rainwater heads and downpipes unknown.*
PHOTOGRAPH RAINWATER HEADS & DOWNPIPES & FORWARD TO SUPERINTENDENT. ADVISE IF AN REPAIRS REQUIRED.

(A05-8) *SECURE*
SECURE WINDOW OPENING TO PREVENT VERMIN ENTRY, BOARD UP INTERNALLY WITH WEATHERPROOF MATERIAL

(A05-10) *SALT REMOVAL: Build-up of salts / spalling evident*
SIGNIFICANT SALT DAMAGE EVIDENT. ALLOW FOR SALT REMOVAL POULTICE.
ALLOW FOR SALT REMOVAL FOR ANY SALVAGING OF BRICKS/SANDSTONE

(A05-12) *REPLACE / REPAIR: Sandstone spalling*
ALLOW TO RAKE OUT THE SANDSTONE JOINTS AND GAPS AND RE-POINT WITH LIME BASED MORTAR. REMOVE ANY EMBEDDED METAL AND FILL HOLES WITH LIME MORTAR. FILL LARGER GAPS WITH LIME BASED MORTAR AND ALLOW FOR REINFORCEMENT & S.S. DOWELS TO LARGER GAPS.

(A05-13) *REPLACE: Existing roof & gutter condition poor*
REMOVE EXISTING ROOF SHEETING, BATTENS, SARKING AND ROOF BOARDS.
REMOVE EXISTING TIMBER FASCIAS, GUTTERS AND GUTTER BRACKETS.
REMOVE ANY SPENT FIXINGS AND BRACKETS.
CLEAN OFF DEBRIS.
PHOTOGRAPH ROOF CONDITION.
ASSESS EXISTING ROOF FRAMING.
NOTIFY SUPERINTENDENT OF ROOF CONDITION & ANY NECESSARY FURTHER REPAIRS.
INSTALL NEW TIMBER FASCIAS, ROOF BOARDS, SARKING, ROOF BATTENS, GUTTERS, METAL ROOF SHEETING AND FLASHING.

(A05-14) *CAUTION: Possible termite damage -Assess*
PEST CONTRACTOR ADVISED THAT POSSIBLE ROOF TIMBER DAMAGE IN THIS AREA. ALLOW TO INSPECT, PHOTOGRAPH AND ADVISE SUPERINTENDENT OF ANY DAMAGE.

(A05-15) *SALT REMOVAL: Build-up of salts / spalling evident*
SIGNIFICANT SALT DAMAGE EVIDENT. ALLOW FOR SALT REMOVAL POULTICE.
ALLOW FOR SALT REMOVAL FOR ANY SALVAGING OF BRICKS/SANDSTONE

(A05-18) *REPLACE: Existing downpipe broken*
PHOTOGRAPH & NOTIFY SUPERINTENDENT ON DOWNPIPE MATERIAL & FIXING.
REMOVE DAMAGED DOWNPIPE TO NEXT JOINT.
REPLACE WITH NEW MATCHING DOWNPIPE MARRIED INTO EXISTING.

(A05-19) *REPLACE: Existing brickwork spalling*
PROVIDE NEW BRICKWORK TO MATCH EXISTING. KEY NEW BRICKWORK INTO EXISTING, MATCH COURSING AND BOND PATTERNS TO EXISTING.

(A05-20) *REPLACE: Existing sandstone spalling*
REPLACE EXISTING SANDSTONE BLOCK.
LIME MORTAR TO ADJACENT SANDSTONE. MATCH EXISTING IN ALL REGARDS

(A05-21) *SECURE*
SECURE WINDOW OPENING TO PREVENT VERMIN ENTRY, BOARD UP INTERNALLY WITH WEATHERPROOF MATERIAL

(A05-22) *ASSESS & NOTIFY: Condition of existing rainwater heads and downpipes unknown.*
PHOTOGRAPH RAINWATER HEADS & DOWNPIPES & FORWARD TO SUPERINTENDENT. ADVISE IF AN REPAIRS REQUIRED.
SUPERINTENDENT TO ADVISE IF TO PROCEED WITH ANY WORKS.

(A05-23) *ASSESS: Check for leaking & corrosion*
POSSIBLE DIS-SIMILAR METALS TO ROOF LIGHT.
REPORT TO SUPERINTENDENT FINDINGS

(A05-24) *ASSESS: Flashing turndown*
CHECK THAT FLASHING IS TURNED DOWN TO PREVENT CAPTURING OF WATER

(A05-26) *REMOVE: Non original fabric to be removed*
CAREFULLY REMOVE TILES / RENDER COAT TO EXPOSE ORIGINAL BRICKWORK OR SANDSTONE BENEATH.

F.F.L Existing Engine Rm

RL Existing Generator Rm

Salt

01 - NORTH ELEVATION
SCALE 1:100

(A05-31) *REPLACE: Existing roof & gutter condition poor*
REMOVE EXISTING ROOF SHEETING, BATTENS, SARKING AND ROOF BOARDS.
REMOVE EXISTING TIMBER FASCIAS, GUTTERS AND GUTTER BRACKETS.
REMOVE ANY SPENT FIXINGS AND BRACKETS.
CLEAN OFF DEBRIS.
PHOTOGRAPH ROOF CONDITION.
ASSESS EXISTING ROOF FRAMING.
NOTIFY SUPERINTENDENT OF ROOF CONDITION & ANY NECESSARY FURTHER REPAIRS.
INSTALL NEW TIMBER FASCIAS, ROOF BOARDS, SARKING, ROOF BATTENS, GUTTERS, METAL ROOF SHEETING AND FLASHING.

(A05-32) *ASSESS ALL FLASHINGS & CAPPINGS: Existing flashing possibly inadequate.*
PHOTOGRAPH & REPORT FLASHING CONSTRUCTION DETAIL AND FLASHING/CAPPING GAUGE TO SUPERINTENDENT.
SUPERINTENDENT TO ADVISE IF FURTHER WORK REQUIRED.

(A05-33) *REPAIR: Existing sandstone face spalling.*
PLASTIC REPAIR EXISTING PROFILED SANDSTONE EAVE PIECE. PATCH TO MATCH ADJACENT SANDSTONE. PROVIDE S.S PINS AND ARMATURE MESH TO BUILD UP SURFACE.
MATCH EXISTING PROFILE & COLOUR

(A05-37) *DPC: Install damp proof course*
INDICATIVE LOCATION FOR NEW INJECTION DPC.
REFER TO SPECIFICATION. ALLOW 10 LINEAR METERS TO WEST ELEVATION TOTAL

(A05-38) *REMOVE: Ground level higher than inside*
GRADE GROUND LEVEL SO FINISHED SURFACE LEVEL IS APPROX 100mm LOWER THAN INTERNAL SLAB LEVEL. GRADE WITH FALL AWAY FROM BUILDING.

(A05-41) *REPLACE : Existing brickwork spalling*
REPLACE MISSING BRICKWORK. BRICKS, MORTAR, POINTING AND COURSING MATCH EXISTING IN ALL REGARDS
KEY NEW BRICKWORK INTO EXISTING

(A05-42) *REPLACE : Existing sandstone face spalling*
CUT OUT DAMAGED AREA AND REPLACE WITH GOOD QUALITY SALVAGED PIECES FROM OTHER MATCHING PROFILES IF AVAILABLE. OTHERWISE MATCH WITH NEW.

NOTE
WHERE PLASTIC REPAIR IS PROPOSED, CARRY OUT SALT REMOVAL PRIOR TO TO SURFACE PRIOR TO REPAIR.

(A05-43) *REPAIR: Existing sandstone face spalling*
PLASTIC REPAIR EXISTING PROFILED SANDSTONE JAMB . PATCH TO MATCH ADJACENT SANDSTONE. PROVIDE S.S PINS AND ARMATURE MESH FOR SURFACE BUILD-UP. MATCH EXISTING PROFILE & COLOUR

(A05-44) *REPLACE : Existing brickwork spalling*
REPLACE EXISTING BRICKWORK. BRICKS, MORTAR, POINTING AND COURSING MATCH EXISTING IN ALL REGARDS
KEY NEW BRICKWORK INTO EXISTING

(A05-45) *PAINT: Existing downpipe*
PRIME & PAINT EXISTING UPVC DOWNPIPE.
COLOUR MATCH TO SANDSTONE COLOUR

(A05-46) *REPAIR: Existing sandstone face spalling*
PLASTIC REPAIR EXISTING PROFILED SANDSTONE SILL BRACKET. PATCH TO MATCH ADJACENT SANDSTONE. PROVIDE S.S PINS AND ARMATURE MESH FOR SURFACE BUILD-UP. MATCH EXISTING PROFILE & COLOUR

(A05-47) *REPLACE: Existing flashing lifting*
PHOTOGRAPH FLASHING CONSTRUCTION DETAIL AND PROVIDE SAMPLE OF FLASHING TO SUPERINTENDENT.
REMOVE COMPLETE LENGTH OF LIFTING FLASHING.
REMOVE AND REPLACE ANY DAMAGED SLATE AND RE-LAY WITH NEW CLIPS & NAILS
LAY APPROVED LEAD FLASHING TO CONSTRUCTION DETAIL WITH SECURED SECURING CLIP.
REFER TO DETAIL - (SE) A03

(A05-48) *CLEAN: Growth evident.*
STEAM REMOVAL OF VEGETATION / POISON - REMOVE GROWTH & CLEAN BRICKWORK (SEE ENGINEERS REPORT FOR METHODOLOGY)

(A05-49) *REPAIR : Existing pointing failing*
RE-POINT EXISTING BRICKWORK & SANDSTONE.
LIME POINTING AND MORTAR TO MATCH EXISTING

(A05-50) *DPC: Install damp proof course*
INDICATIVE LOCATION FOR NEW INJECTION DPC.
REFER TO SPECIFICATION. ALLOW 10 LINEAR METERS TO WEST ELEVATION TOTAL

F.F.L Existing Engine

RL Existing Generator Rm

Salt

02 - WEST ELEVATION
SCALE 1:100

SCHEDULE OF MATERIALS

DOWNPIPE:	UPVC, PRIMED AND PAINTED
LEAD FLASHING/CAPPING:	ROLLED LEAD SHEET, 30.1 kg/m2 NO FLASHING LENGTH TO EXCEED 1.8m LONG, Min LAP TO BE 250mm
FLASHING/CAPPING CLIP:	50mm WIDE COPPER STRAP
METAL FLASHINGS & CAPPINGS:	*FIELDERS* Z600 HERITAGE GALVANISED 0.55 BMT
ROOF METAL SHEET:	*FIELDERS HERITAGE BARREL ROLL*. Z600 GALVANISED FINISH (2 ounce/sqft)
ROOF GUTTER:	*FIELDERS* HERITAGE GALVANISED GUTTER, HI-TEN O.G. GUTTER 115 WITH INTERNAL CAST CORNERS
ROOF BATTENS:	TO MATCH EXISTING
ROOF BOARDS:	TO MATCH EXISTING
ROOF SLATE:	NATURAL SLATE 500x250mm *SSQ Del Carmen Ultra*
ROOF SLATE NAILS:	COPPER CLOUTS 35-50 x 3.35mm with minimum 10mm head
ROOF SARKING:	*BRADFORD ENVIROSEAL PROCTORWRAP* MEDIUM DUTY VAPOUR PERMEABLE ROOF SARKING Poduct Code: 114445

DOOR & WINDOW TIMBER: To Superintendents Approval
ORIGINAL TIMBER: AUSTRALIAN CEDAR

SALT REMOVAL PRODUCT: *WESTOX BUILDING PRODUCTS* - COCOON - POULTICING MEDIUM

NOTE:
Termite damage has been recorded with pest inspections every 3 months by: Troy Ernest Pest Control (Mob: 0409 177 034)
Assess timber supporting members before standing on them.
Alert the Superintendent of any evidence of damage or current termite activity.

REPLACE OR REPAIR:
Existing fabric damaged

BRICKWORK FAILING:
Replace/repair existing brickwork. Align coursing and match existing brick & bond pattern.

SANDSTONE FAILING:
Patch, re-face or replace existing spalling sandstone.

BRICK MORTAR FAILING:
Rake out & re-point existing brickwork (min 25mm depth). Lime mortar pointing to match existing

CLEAN FACADE:
Steam removal of vegetation / poison - remove growth & clean brickwork (see engineers report for methodology)

REMOVE:
Remove redundant fitting, fixture or brickwork shown dashed. Make good.

(A05-51) SALT DAMAGE - REMEDIATION REQUIRED:
Surface appears damaged by salt. Allow for 2x poultice applications to remove excess salt

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0 — 25mm — 100mm — 200mm ON ORIGINAL A1

REV	DATE	COMMENTS
C	01/04/16	Tender & Construction Issue
D	13/07/16	Notation revised
E	28/07/16	QS Issue
F	01/08/16	Pre-Tender Client Review
0	22.02.17	TENDER ISSUE
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2	17.07.17	TENDER ISSUE
3	10.10.17	CONSTRUCTION ISSUE
4	12.10.17	CONSTRUCTION ISSUE
5	03.11.17	CONSTRUCTION ISSUE
6	24.01.18	CONSTRUCTION ISSUE

DRN	CHKD	VRFD
BLC	BJC	
BLC		
BLC		
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	

PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE CONSERVATION WORKS
SITE : BOURKE ST CARRINGTON NSW

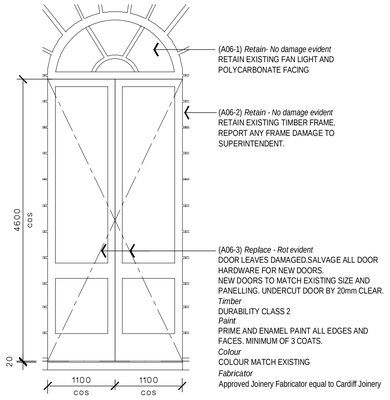
CLIENT : PORT OF NEWCASTLE NEWCOMEN ST NEWCASTLE NSW
DRAWING : SOUTH and WEST ELEVATIONS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS

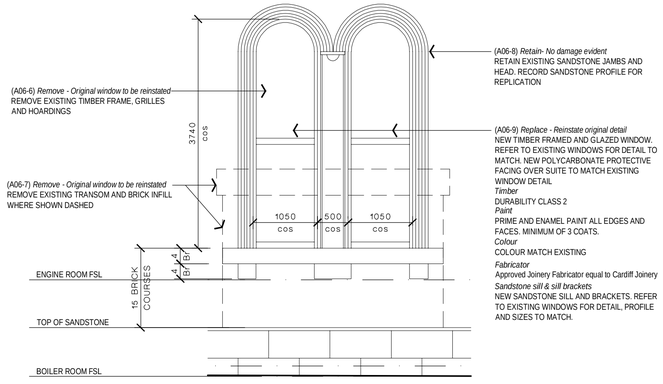
DRAWN :	DATE :	SCALES :
BLC	OCT 2015	1:100

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	C	A05	6

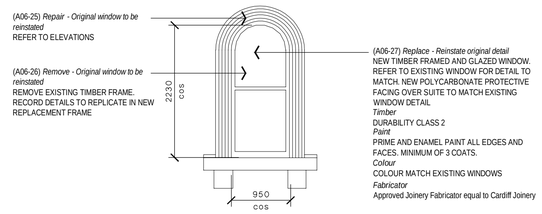
EJE architecture



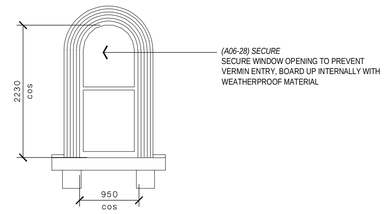
01 D.01
SCALE 1:50



02 W.02 & W.07
SCALE 1:50



03 W.09 & 12
SCALE 1:50 ACCUMULATOR TOWER



04 W.10 & 11
SCALE 1:50 ACCUMULATOR TOWER

NO WORK REQUIRED

D.02	*Existing door appears fine - Report any damage*
D.03	*Existing door appears fine - Report any damage*
D.04	*Existing Temporary door - maintain security*
D.05	*Existing door appears fine - Report any damage*
D.05	*Existing Temporary door - maintain security*
D.07	*Existing door appears fine - Report any damage*

NO WORK REQUIRED

W.01	*Existing window appears fine - Report any damage*
W.03	*Report any damage*
W.04	*Report any damage*
W.05	*Report any damage*
W.06	*Report any damage*
W.08	*Existing window appears fine - Report any damage*
W.13	*Assess for dis-similar metal corrosion and leaks. Report any damage.*
W.14	*Assess for dis-similar metal corrosion and leaks. Report any damage.*
W.15	*Internal: Appears stable*

GENERAL - POLYCARBONATE WINDOW PROTECTION SHEET DETAILS:

POLYCARBONATE PROTECTIVE FACING TO RESTORED WINDOWS MUST BE AFFIXED IN A WAY THAT IS REVERSIBLE IN FUTURE AND MINIMISES IMPACTS ON THE FABRIC OF MASONRY WALLS AND TIMBER WINDOWS. THE PROTECTIVE FACING MUST BE INSTALLED IN MORTAR JOINTS ONLY USING NON-FERROUS FIXINGS. FIXING DETAIL TO BE DISCUSSED AND CONFIRMED ON SITE WITH SUPERINTENDENT.

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0 25mm 100mm 200mm ON ORIGINAL A1

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PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE CONSERVATION WORKS

SITE : BOURKE ST CARRINGTON NSW

CLIENT : PORT OF NEWCASTLE NEWCOMEN ST NEWCASTLE NSW

DRAWING : DOOR & WINDOW SCHEDULE

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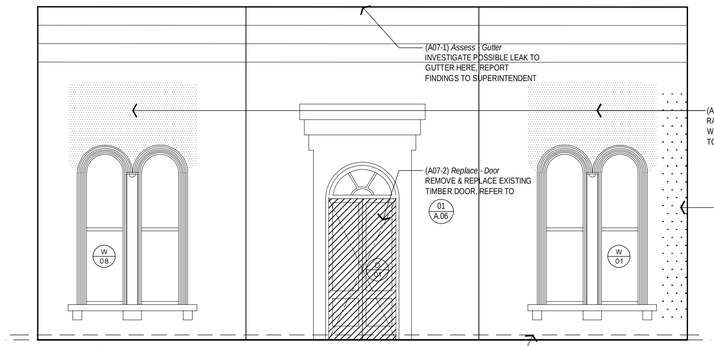
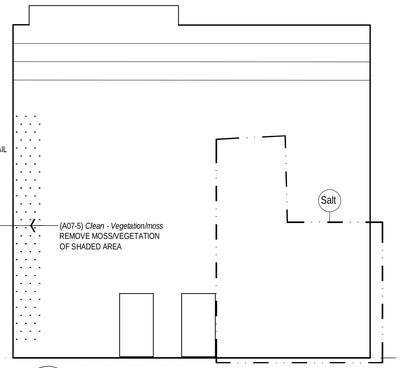
DRAWN :	DATE :	SCALES :
BLC	OCT 2015	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	C	A06	6

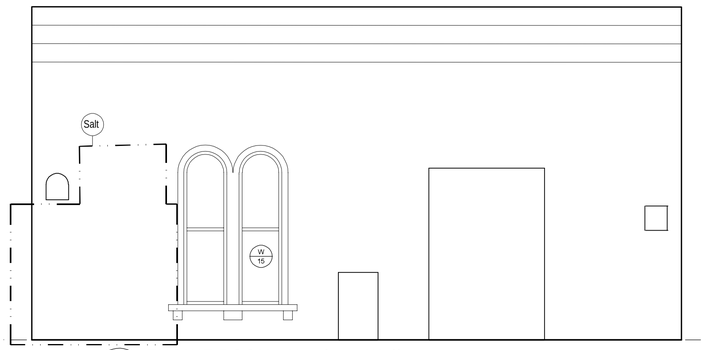
EJE architecture



01 - ENGINE ROOM - Southern Wall
SCALE 1:100



02 - ENGINE ROOM - Western Wall
SCALE 1:100



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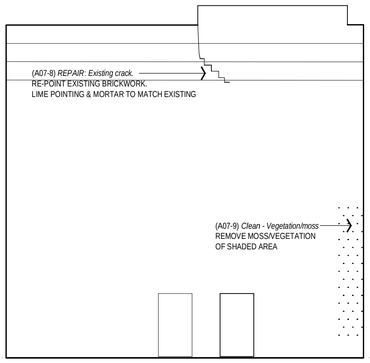
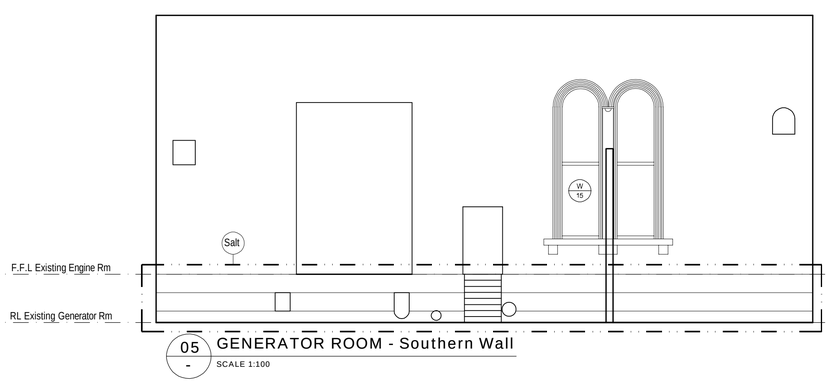
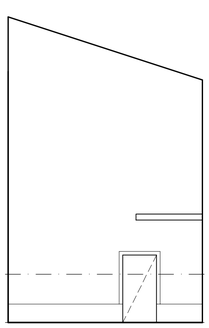
SCALE 1:100



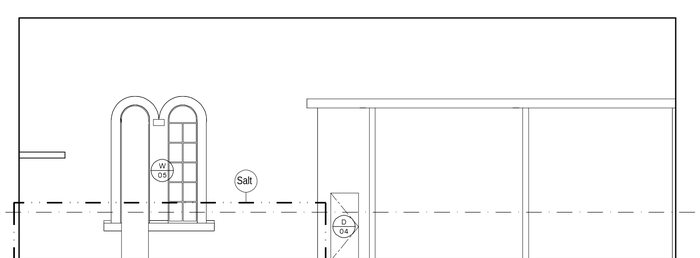
04 - ENGINE ROOM - Eastern Wall
SCALE 1:100



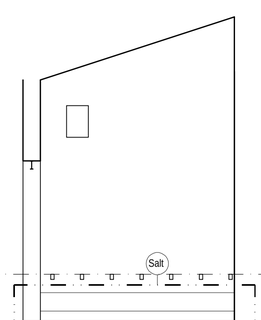
05 - GENERATOR ROOM - Southern Wall
SCALE 1:100



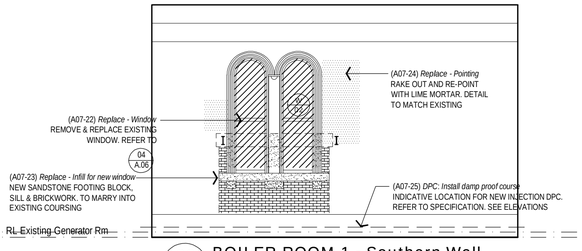
06 - GENERATOR ROOM - Western Wall
SCALE 1:100



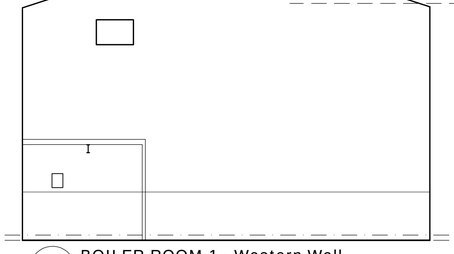
07 - GENERATOR ROOM - Northern Wall
SCALE 1:100



08 - GENERATOR ROOM - Eastern Wall
SCALE 1:100



09 - BOILER ROOM 1 - Southern Wall
SCALE 1:100



10 - BOILER ROOM 1 - Western Wall
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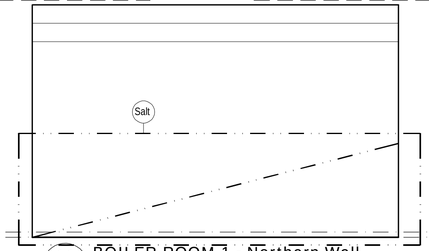
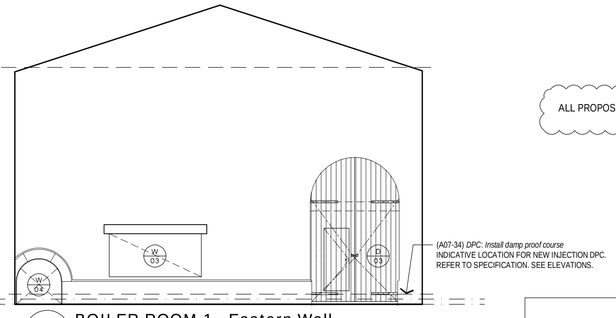
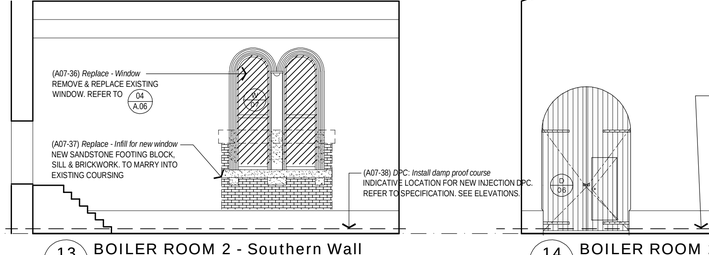


11 - BOILER ROOM 1 - Northern Wall
SCALE 1:100

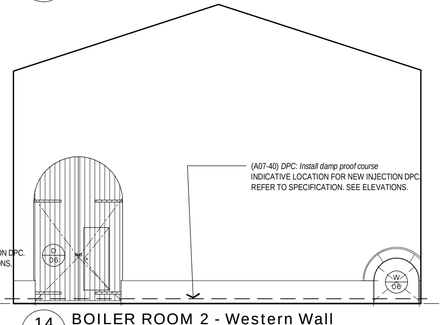


12 - BOILER ROOM 1 - Eastern Wall
SCALE 1:100

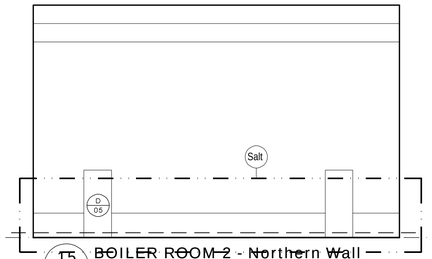
ALL PROPOSED NEW INDOOR LIGHTING DELETED



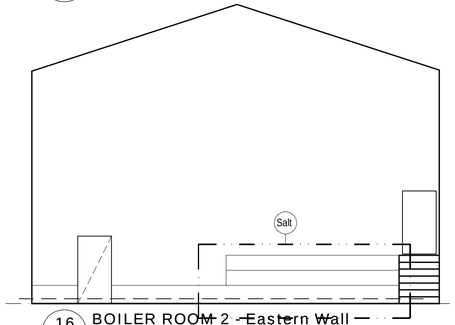
13 - BOILER ROOM 2 - Southern Wall
SCALE 1:100



14 - BOILER ROOM 2 - Western Wall
SCALE 1:100



15 - BOILER ROOM 2 - Northern Wall
SCALE 1:100



16 - BOILER ROOM 2 - Eastern Wall
SCALE 1:100

REPLACE OR REPAIR:
Existing fabric damaged

BRICKWORK FAILING:
Replace existing brickwork. Align coursing and match existing brick & bond pattern.

SANDSTONE FAILING:
Patch, re-face or replace existing fretted sandstone.

BRICK MORTAR FAILING:
Rake out & re-point existing brickwork (min 25mm depth). Lime mortar pointing to match existing

CLEAN FACADE:
Steam removal of vegetation / poison - remove growth & clean brickwork (see engineers report for methodology)

REMOVE:
Remove redundant fitting, fixture or brickwork shown dashed. Make good.

Salt (A07-47) SALT DAMAGE - REMEDIATION REQUIRED:
Surface appears damaged by salt. Allow for 2x poultice application to reduce excess salt

EJE ARCHITECTURE
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Nominated Architect - Bernard Collins | NSW Architects Registration No: 4438
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Port of Newcastle

0 25mm 100mm 200mm ON ORIGINAL A1

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BLC		
BLC		
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	
DFW	BJC	

PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE CONSERVATION WORKS
SITE : BOURKE ST CARRINGTON NSW

CLIENT : PORT OF NEWCASTLE 6 NEWCOMEN ST NEWCASTLE NSW

DRAWING : INTERNAL ELEVATIONS

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

DRAWN :	DATE :	SCALES :
BLC	OCT 2015	1:100

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	C	A07	5

EJE architecture

01 SITE PLAN

CARRINGTON HYDRAULIC ENGINE HOUSE

106 BOURKE STREET, CARRINGTON, NSW 2294

STAGE 2 RESTORATION WORKS

CONSTRUCTION SET

ARCHITECTURAL DRAWING SCHEDULE

A000	COVER SHEET & SITE PLAN
A101	SUB FLOOR - EXISTING / DEMOLITION PLAN
A102	GROUND FLOOR - EXISTING / DEMOLITION PLAN
A103	ROOF - EXISTING / DEMOLITION PLAN
A111	SUB FLOOR - PROPOSED PLAN
A112	GROUND FLOOR - PROPOSED PLAN
A113	ROOF - PROPOSED PLAN
A500	CONDITION REGISTER
A502	NORTH, EAST, WEST ELEVATIONS - EXISTING
A503	SOUTH ELEVATION - EXISTING
A511	NORTH, EAST, WEST ELEVATIONS - PROPOSED
A551	SECTIONS - PROPOSED
A901	DOOR & WINDOW SCHEDULES & DETAILS

EJE ARCHITECTURE
ACN 002 912 843 | **ABN** 82 644 649 849
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NSW Architects Registration No: 4438
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REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	9/08/2020	PRELIMINARY TENDER SET FOR REVIEW	DW/LE	DFW	BJC
0	24/08/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	
2	5/03/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT: NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE: BOURKE STREET
CARRINGTON 2294

DRAWING: COVER SHEET & SITE PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	5/03/2021	NTS

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A000	2

Port of Newcastle

EJE architecture

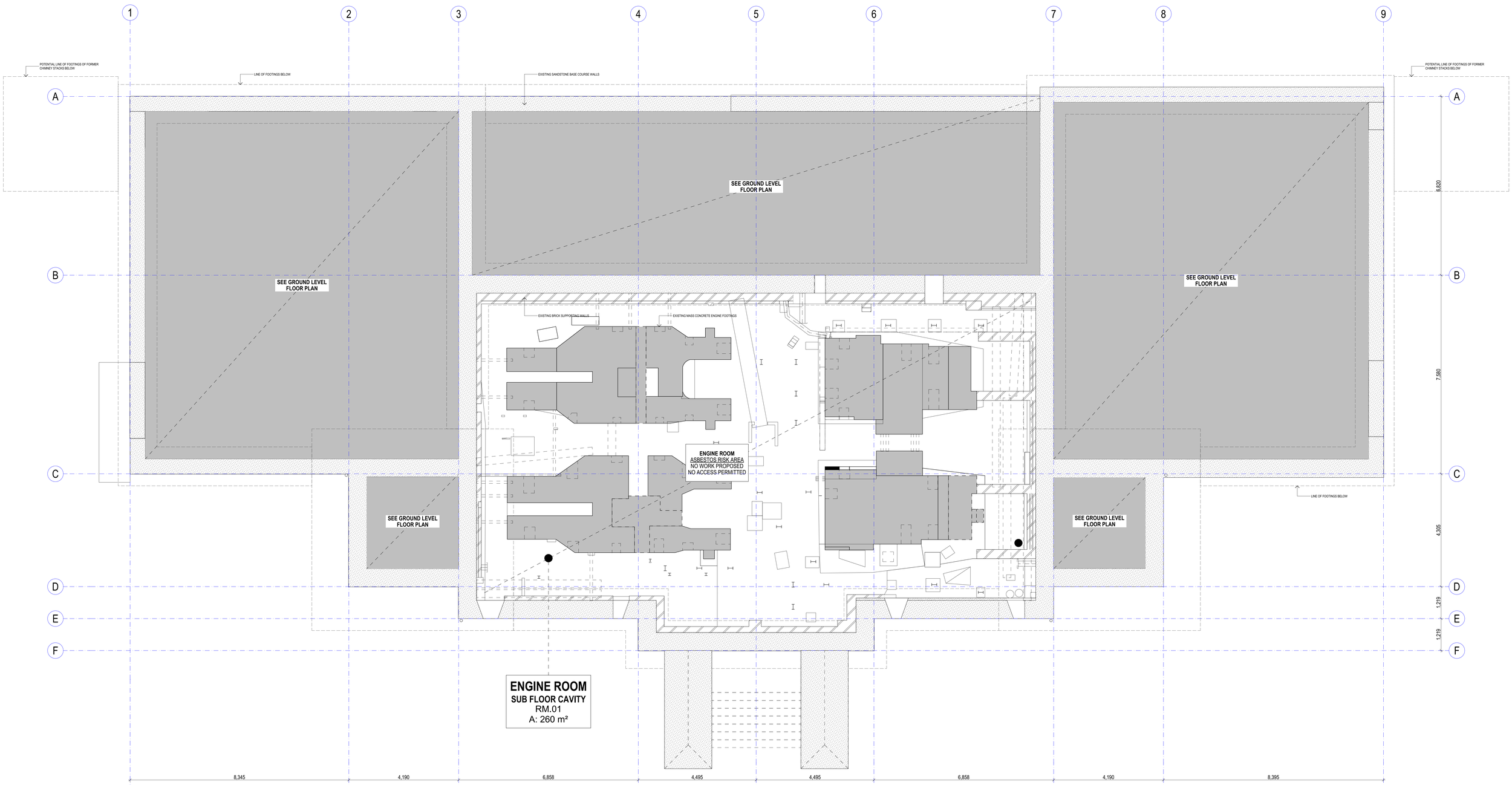
ABBREVIATIONS

AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BG	BOX GUTTER
BH	BULKHEAD
BLK	CONCRETE BLOCKWORK
CAP	CAPPING
CFC	COMPRESSED FIBRE CEMENT
CL	CENTRE LINE
CLD	CLADDING
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CR	CEMENT RENDER
CRN	CORNICE
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
E	EXISTING
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
EQ	EQUAL SPACING
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
G	GUTTER
GW	GLASS WINDOW
HD	HINGED DOOR
HR	HANDRAIL
HYD	HYDRAULIC
MC	METAL CLADDING
MECH	MECHANICAL
MRS	METAL ROOF SHEETING
PB	PLASTERBOARD
PCT	POWDERCOAT
PS	POST - TIMBER
PT	PAINT FINISH
RL	REDUCED LEVEL
SC	STONE CLADDING
SD	SLIDING DOOR
SK	SKIRTING
SPR	SPREADER
SS	STAINLESS STEEL
ST	STONE
TB	TIMBER BEAM
TIM	TIMBER
TME	TO MATCH EXISTING
TYP	TYPICAL
#	No. DENOTES TYPE AS SCHEDULED

LEGEND

- W1.05 — WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05
- L1.05 — LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE N° 05
- D1.05 — DOOR MARKER eg. DOOR / LEVEL 1 / DOOR N° 05
- EXISTING WALLS
- WALLS TO BE DEMOLISHED
- NEW WALLS
- 0.00 — EXISTING RL
- 0.00 — PROPOSED RL
- WT50 — **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL.

REFERENCE ONLY - NO WORK TO SUB-FLOOR AREAS



SUB FLOOR - EXISTING

1:50

EJE ARCHITECTURE

ACN 002 912 643 | **ABN** 82 644 649 849
Nominated Architect - Bernard Collins
NSW Architects Registration No: 4438
Suite 1, 3 Gladstone St, Newcastle, NSW 2300
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1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT: NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE: BOURKE STREET
CARRINGTON 2294

DRAWING: SUB FLOOR - EXISTING / DEMOLITION PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	23/11/2020	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A101	1

Port of Newcastle

EJE architecture

ABBREVIATIONS

AR	ARCHITRAVE	EJ	EXPANSION JOINT	PT	PAINT FINISH
AS	AUSTRALIAN STANDARD	EQ	EQUAL SPACING	RL	REDUCED LEVEL
BG	BOX GUTTER	FB	FACE BRICK	SC	STONE CLADDING
BH	BULKHEAD	FC	FIBRE CEMENT SHEETING	SD	SLIDING DOOR
BLK	CONCRETE BLOCKWORK	FFL	FINISHED FLOOR LEVEL	SK	SKIRTING
CAP	CAPPING	FG	FIXED GLASS	SPR	SPREADER
CFC	COMPRESSED FIBRE CEMENT	G	GUTTER	SST	STAINLESS STEEL
CL	CENTRE LINE	GW	GLASS WINDOW	ST	STONE
CLD	CLADDING	HD	HINGED DOOR	TB	TIMBER BEAM
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION	HR	HANDRAIL	TBR	TIMBER
CONC	CONCRETE	HYD	HYDRAULIC	TME	TO MATCH EXISTING
COS	CONFIRM ON SITE	MC	METAL CLADDING	TYP	TYPICAL
CR	CEMENT RENDER	MECH	MECHANICAL		
CRN	CORNICE	MRS	METAL ROOF SHEETING	#	No. DENOTES TYPE AS SCHEDULED
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION	PB	PLASTERBOARD		
E	EXISTING	PCT	POWDERCOAT		
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION	PS	POST - TIMBER		

LEGEND

- W1.05 — WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05
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- WALLS TO BE DEMOLISHED
- NEW WALLS
- 0.00 — EXISTING RL
- 0.00 — PROPOSED RL
- WT56 — **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL.

EXISTING DOORWAY
EXISTING BRICKED UP DOORWAY
DEMOLISH TIMBER INFILL WITHIN STONE OPENING
DEMOLISH TIMBER WINDOW WITHIN STONE OPENING
WG.01
EXISTING COLUMNS & BEAM OVER, CLEAN BACK CORROSION AND PREPARE FOR PAINT TREATMENT AS SCHEDULED.
DEMOLISH LIGHT WEIGHT TIMBER WALL. RETAIN STUDS FOR RE-USE AT CONTRACTOR'S DISCRETION.
EXISTING STONE ARCHWAY IN WALL
EXISTING BRICKED UP DOORWAY
DEMOLISH EXISTING HALF-HEIGHT BRICK PARTITION WALL
EXISTING CHANNEL IN FLOOR
GENERATOR ROOM - ROOF FRAMING ABOVE: ALLOW TO MAKE DETAILED INSPECTION OF INTERNAL TIMBER ROOF FRAMING VIA ELEVATED WORK PLATFORM OR AS NECESSARY, AND DOCUMENT TERMITE ACTIVITY/ LEAKS/ DAMAGE WHEREVER APPARENT. PROPOSE A RECTIFICATION METHODOLOGY TO BE CONFIRMED AS A CONTRACT VARIATION.
TEMPORARY ASBESTOS SEALS IN PLACE TO ALL ENGINE ROOM OPENINGS.
RETAIN BRICKED UP FORMER ARCHWAY AS EXISTING.
DEMOLISH NON-ORIGINAL RAISED TOPPING SLAB DOWN TO FLOOR LEVEL
DEMOLISH PLYWOOD COVERING TO WINDOW OPENING
CAREFULLY REMOVE ORIGINAL TIMBER DOORS AND METAL HINGES. ALLOW TO EXAMINE CONSTRUCTION DETAIL OF DOORS ONCE REMOVED IN ORDER TO RE-BUILD NEW LEAVES TO ORIGINAL DETAIL.
DG.03
TEMPORARY ASBESTOS SEALS IN PLACE TO ALL ENGINE ROOM OPENINGS.
DEMOLISH NON-ORIGINAL STEEL STRUCTURE. - REPAIR BRICKWORK AT WALL JUNCTIONS AS NECESSARY TO ORIGINAL DETAIL.
DG.02
DEMOLISH TIMBER DOORS AND REMOVE METAL HINGES FROM STONEWORK. INVESTIGATE OPTIONS FOR RE-USE OR REPLACEMENT OF METAL HINGES IN NEW DOORS DURING DEMOLITION.

GENERATOR ROOM
RM.04
A: 138 m²

BOILER ROOM 2
RM.03
A: 159 m²

BOILER ROOM 2 - ROOF FRAMING ABOVE: ALLOW TO MAKE DETAILED INSPECTION OF INTERNAL TIMBER ROOF FRAMING VIA ELEVATED WORK PLATFORM OR AS NECESSARY, AND DOCUMENT TERMITE ACTIVITY/ LEAKS/ DAMAGE WHEREVER APPARENT. PROPOSE A RECTIFICATION METHODOLOGY TO BE CONFIRMED AS A CONTRACT VARIATION.

BOILER ROOM 1
RM.05
A: 164 m²

BOILER ROOM 1 - ROOF FRAMING ABOVE: ALLOW TO MAKE DETAILED INSPECTION OF INTERNAL TIMBER ROOF FRAMING VIA ELEVATED WORK PLATFORM OR AS NECESSARY, AND DOCUMENT TERMITE ACTIVITY/ LEAKS/ DAMAGE WHEREVER APPARENT. PROPOSE A RECTIFICATION METHODOLOGY TO BE CONFIRMED AS A CONTRACT VARIATION.

ENGINE ROOM
ASBESTOS RISK AREA
NO WORK PROPOSED
NO ACCESS PERMITTED

ACCUMULATOR TOWER 2
RM.02
A: 12 m²

ENGINE ROOM
RM.01
A: 260 m²

ACCUMULATOR TOWER 1
RM.06
A: 13 m²

8,345 | 4,190 | 6,858 | 4,495 | 4,495 | 6,858 | 4,190 | 8,395

2,740 (COS) | 6,820 | 7,560 | 4,305 | 1,220 | 1,220

1 2 3 4 5 6 7 8 9 — A B C D E F

ENGINE ROOM - EXISTING
1:50

EJE ARCHITECTURE
ACN 002 912 843 | **ABN** 82 644 649 849
Nominated Architect - Bernard Collins
Registration No (NSW) - 6359
A 412 KING STREET, NEWCASTLE, NSW 2300
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A	9/08/2020	PRELIMINARY TENDER SET FOR REVIEW	DFW/LE	DFW	BJC
0	24/08/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC
2	5/03/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT: NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE: BOURKE STREET
CARRINGTON 2294

DRAWING: GROUND FLOOR - EXISTING / DEMOLITION PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln | DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	5/03/2021	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A102	2

Port of Newcastle

EJE architecture

ABBREVIATIONS

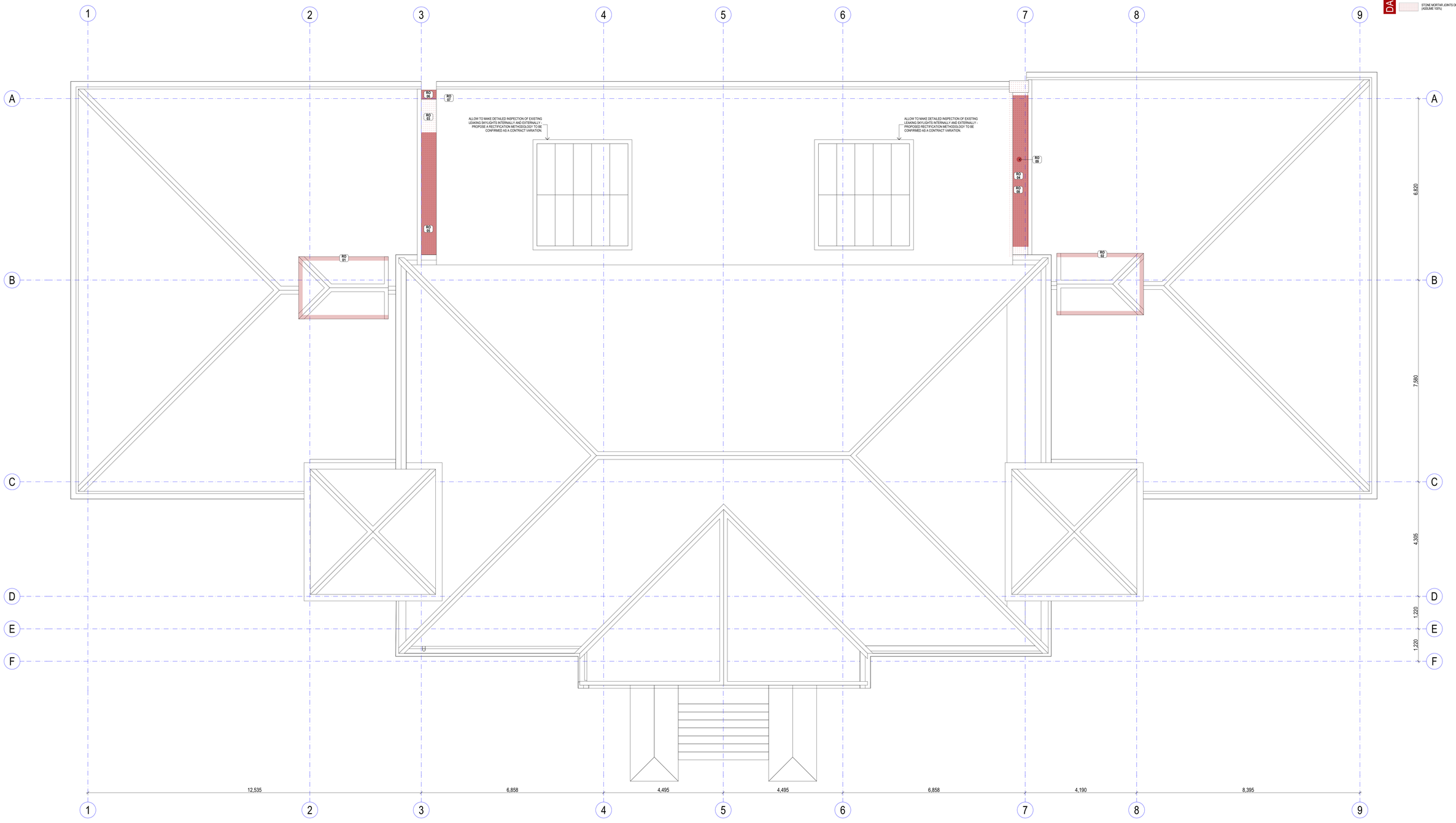
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BG	BOX GUTTER
BH	BULKHEAD
BLK	CONCRETE BLOCKWORK
CAP	CAPPING
CFC	COMPRESSED FIBRE CEMENT
CL	CENTRE LINE
CLD	CLADDING
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CR	CEMENT RENDER
CRN	CORNICE
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
E	EXISTING
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
EQ	EQUAL SPACING
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
G	GUTTER
GW	GLASS WINDOW
HD	HINGED DOOR
HR	HANDRAIL
HYD	HYDRAULIC
MC	METAL CLADDING
MECH	MECHANICAL
MRS	METAL ROOF SHEETING
PB	PLASTERBOARD
PCT	POWDERCOAT
PS	POST - TIMBER
PT	PAINT FINISH
RL	REDUCED LEVEL
SC	STONE CLADDING
SD	SLIDING DOOR
SK	SKIRTING
SPR	SPREADER
SS	STAINLESS STEEL
ST	STONE
TB	TIMBER BEAM
TIMR	TIMBER
TME	TO MATCH EXISTING
TYP	TYPICAL
#	No. DENOTES TYPE AS SCHEDULED

LEGEND

- WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05 — W1.05
- LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE N° 05 — L1.05
- DOOR MARKER eg. DOOR / LEVEL 1 / DOOR N° 05 — D1.05
- EXISTING WALLS
- WALLS TO BE DEMOLISHED
- NEW WALLS
- EXISTING RL — 0.00
- PROPOSED RL — 0.00
- **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL. — WT50

DAMAGE KEY

- BR2-5 <RO1> — LOCATION - E.G. "BOILER RM 2 - SOUTH"
  WEAR/DAMAGE ID NO. - REFER "CONDITION REGISTER" DWG A000
- STONE/FABRIC DAMAGE
- BRICK MORTAR DEGRADED 01-50%
- BRICK MORTAR DEGRADED 51-100%
- STONE MORTAR JOINTS DEGRADED (ASSUME 100%)



ROOF LEVEL - EXISTING
1:50

EJE ARCHITECTURE
ACN 002 912 641 | **ABN** 30 644 549 949
Nominated Architect - Bernard Collins
NSW Architects Registration No.: 4438
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PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT : NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE : BOURKE STREET
CARRINGTON 2294

DRAWING : ROOF - EXISTING / DEMOLITION PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

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DRAWN :	DATE :	SCALES :
DW/LE	23/11/2020	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A103	1

Port of Newcastle

EJE architecture

ABBREVIATIONS

AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BG	BOX GUTTER
BH	BULKHEAD
BLK	CONCRETE BLOCKWORK
CAP	CAPPING
CFC	COMPRESSED FIBRE CEMENT
CJ	CONTROL LINE
CLD	CLADDING
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CR	CEMENT RENDER
CRN	CORNICE
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LEGEND

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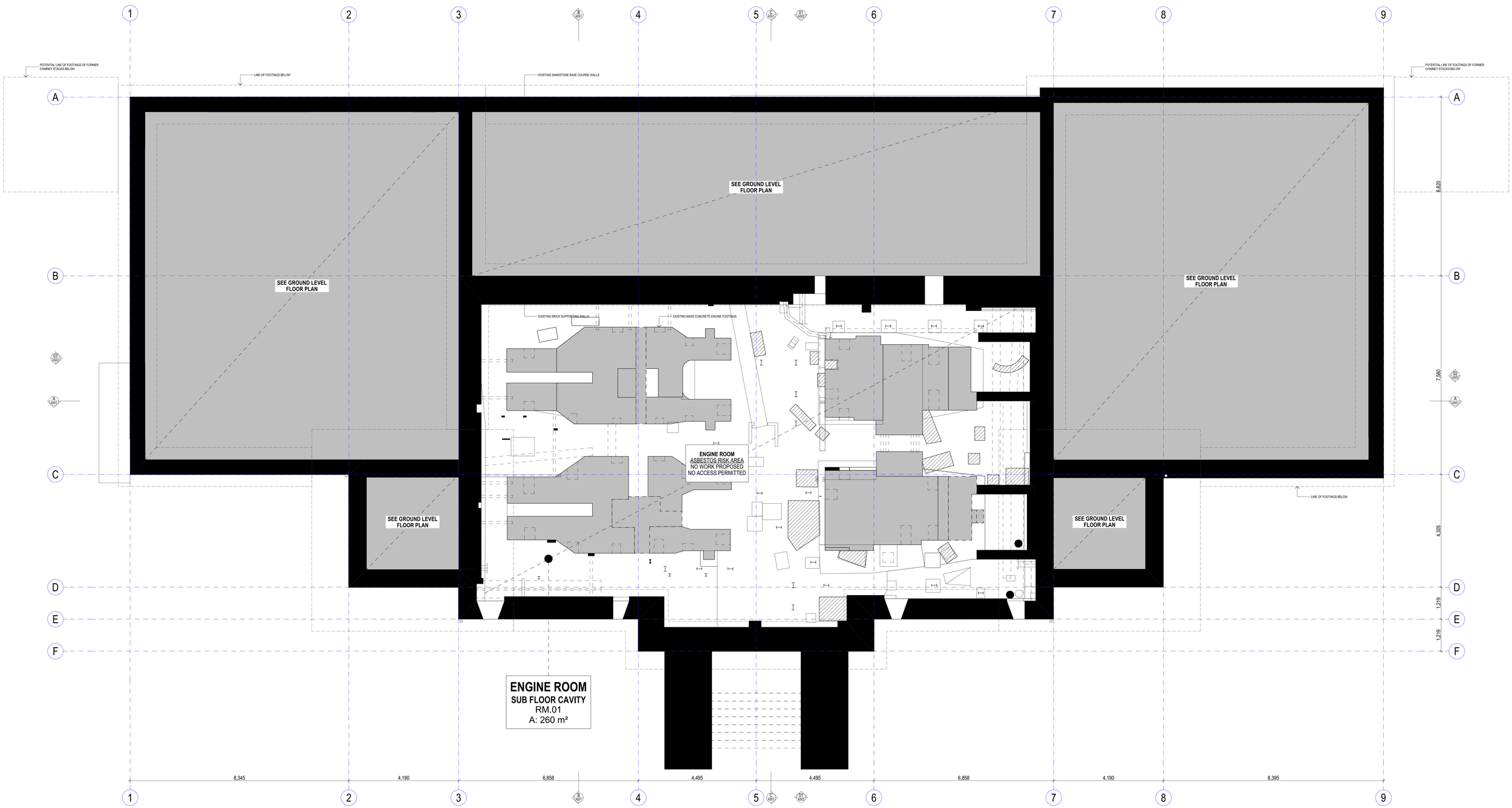
REFERENCE ONLY - NO WORK TO SUB FLOOR AREAS



SUB FLOOR - PROPOSED

1:50

EJE ARCHITECTURE

ACN 002 912 843 | **ABN** 82 644 649 849
Nominated Architect: Ewan Jones
NSW Architects Registration No: 4438
A 412 KING STREET, NEWCASTLE, NSW 2300
P +61 2 4926 2333 | **F** +61 2 4926 3069 | **E** mail@eje.com.au | **W** www.eje.com.au

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PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT: NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE: BOURKE STREET
CARRINGTON 2294

DRAWING: SUB FLOOR - PROPOSED PLAN

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FILENAME : 11009-2-2021-03-05.pln DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	23/11/2020	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A111	1

Port of Newcastle

EJE architecture

ABBREVIATIONS

AR	ARCHITRAVE	EJ	EXPANSION JOINT	PT	PAINT FINISH
AS	AUSTRALIAN STANDARD	EQ	EQUAL SPACING	RL	REDUCED LEVEL
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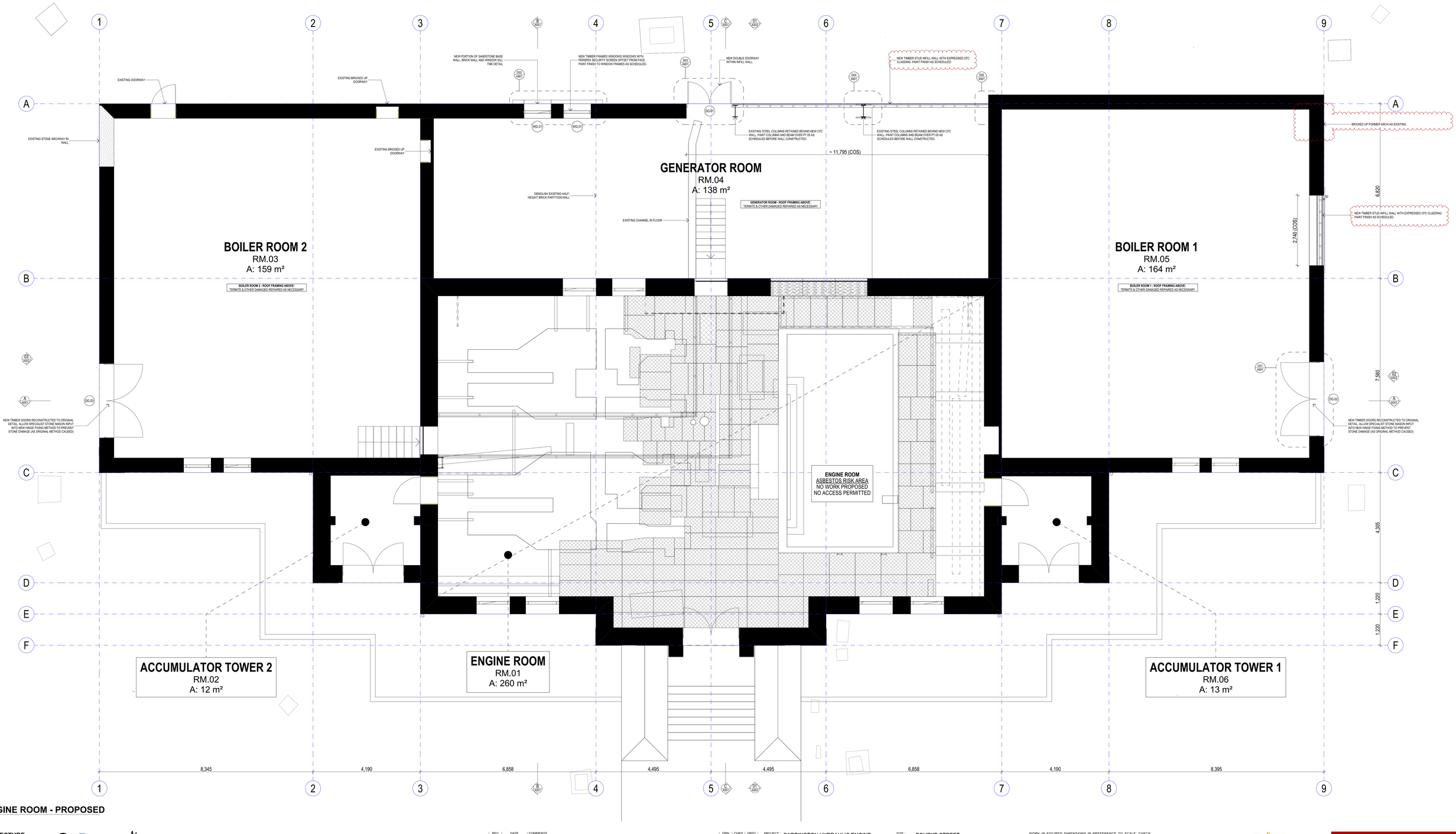
- WALLS TO BE DEMOLISHED
- NEW WALLS
- EXISTING RL — 0.00
- PROPOSED RL — 0.00
- **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL. — WT06



ENGINE ROOM - PROPOSED
1:50

EJE ARCHITECTURE
ACN 002 912 843 | **ABN** 82 644 649 849
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REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	9/06/2020	PRELIMINARY TENDER SET FOR REVIEW	DFW/LE	DFW	BJC
0	24/06/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC
2	5/03/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT: NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE: BOURKE STREET
CARRINGTON 2294

DRAWING: GROUND FLOOR - PROPOSED PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	5/03/2021	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A112	2

Port of Newcastle

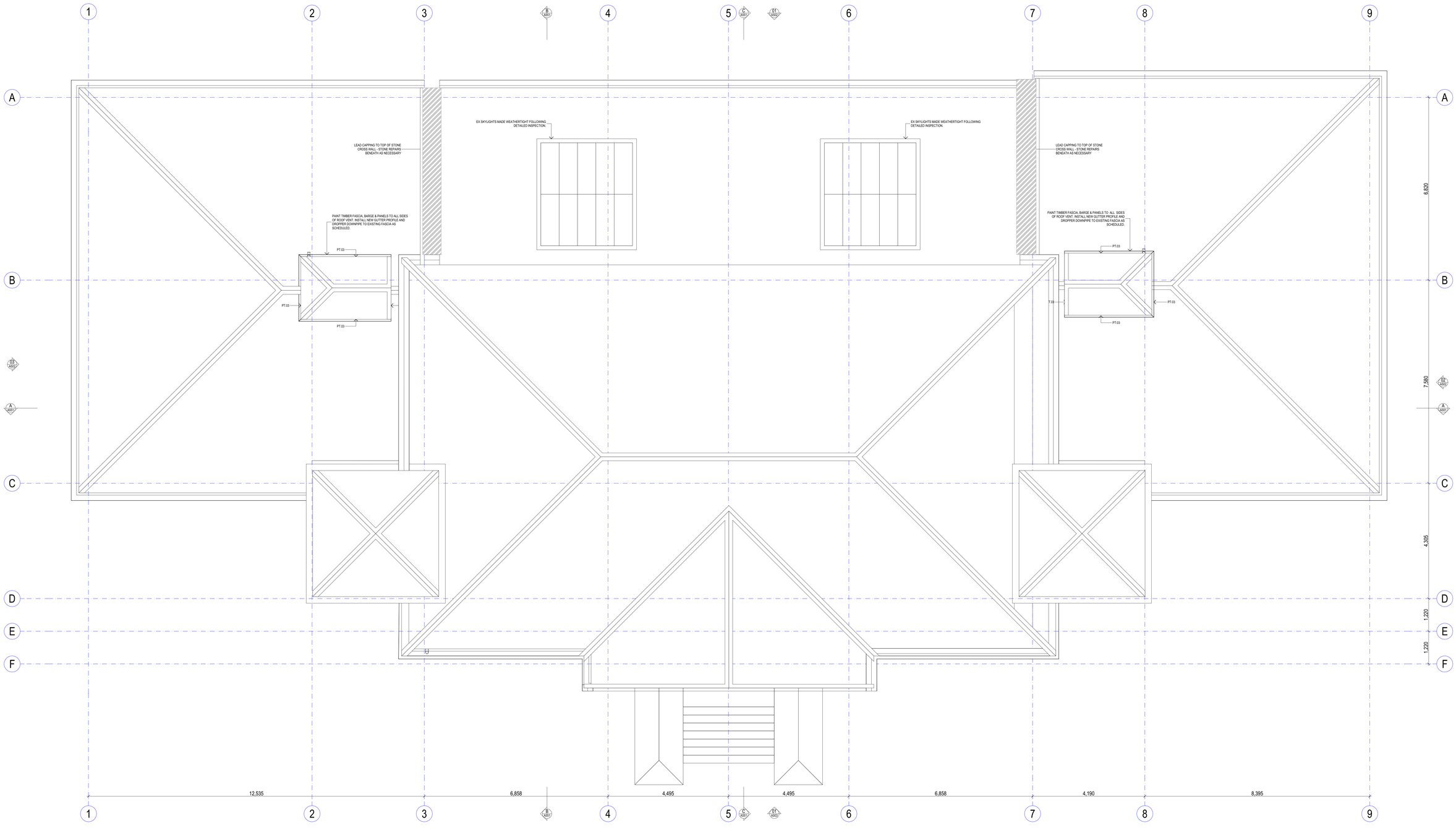
EJE architecture

ABBREVIATIONS

AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BG	BOX GUTTER
BH	BULKHEAD
BLK	CONCRETE BLOCKWORK
CAP	CAPPING
CFC	COMPRESSED FIBRE CEMENT
CJ	CONTROL JOINT
CLD	CLADDING
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CR	CEMENT RENDER
CRN	CORNICE
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
E	EXISTING
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
EQ	EQUAL SPACING
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
G	GUTTER
GW	GLASS WINDOW
HD	HINGED DOOR
HR	HANDRAIL
HYD	HYDRAULIC
MC	METAL CLADDING
MECH	MECHANICAL
MRS	METAL ROOF SHEETING
PB	PLASTERBOARD
PCT	POWDERCOAT
PS	POST - TIMBER
PT	PAINT FINISH
RL	REDUCED LEVEL
SC	STONE CLADDING
SD	SLIDING DOOR
SK	SKIRTING
SPR	SPREADER
SS	STAINLESS STEEL
ST	STONE
TB	TIMBER BEAM
TIM	TIMBER
TME	TO MATCH EXISTING
TYP	TYPICAL
#	No. DENOTES TYPE AS SCHEDULED

LEGEND

- W1.05 — WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05
- L1.05 — LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE N° 05
- D1.05 — DOOR MARKER eg. DOOR / LEVEL 1 / DOOR N° 05
- EXISTING WALLS
- WALLS TO BE DEMOLISHED
- NEW WALLS
- 0.00 — EXISTING RL
- 0.00 — PROPOSED RL
- WT56 — **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL.



ROOF LEVEL - PROPOSED
1:50

EJE ARCHITECTURE
ACN 153 910 843 | **ABN** 15 644 649 849
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REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	9/08/2020	PRELIMINARY TENDER SET FOR REVIEW	DFW/LE	DFW	BJC
0	24/08/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT: NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE: BOURKE STREET
CARRINGTON 2294

DRAWING: ROOF - PROPOSED PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	23/11/2020	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A113	1

Port of Newcastle

EJE architecture

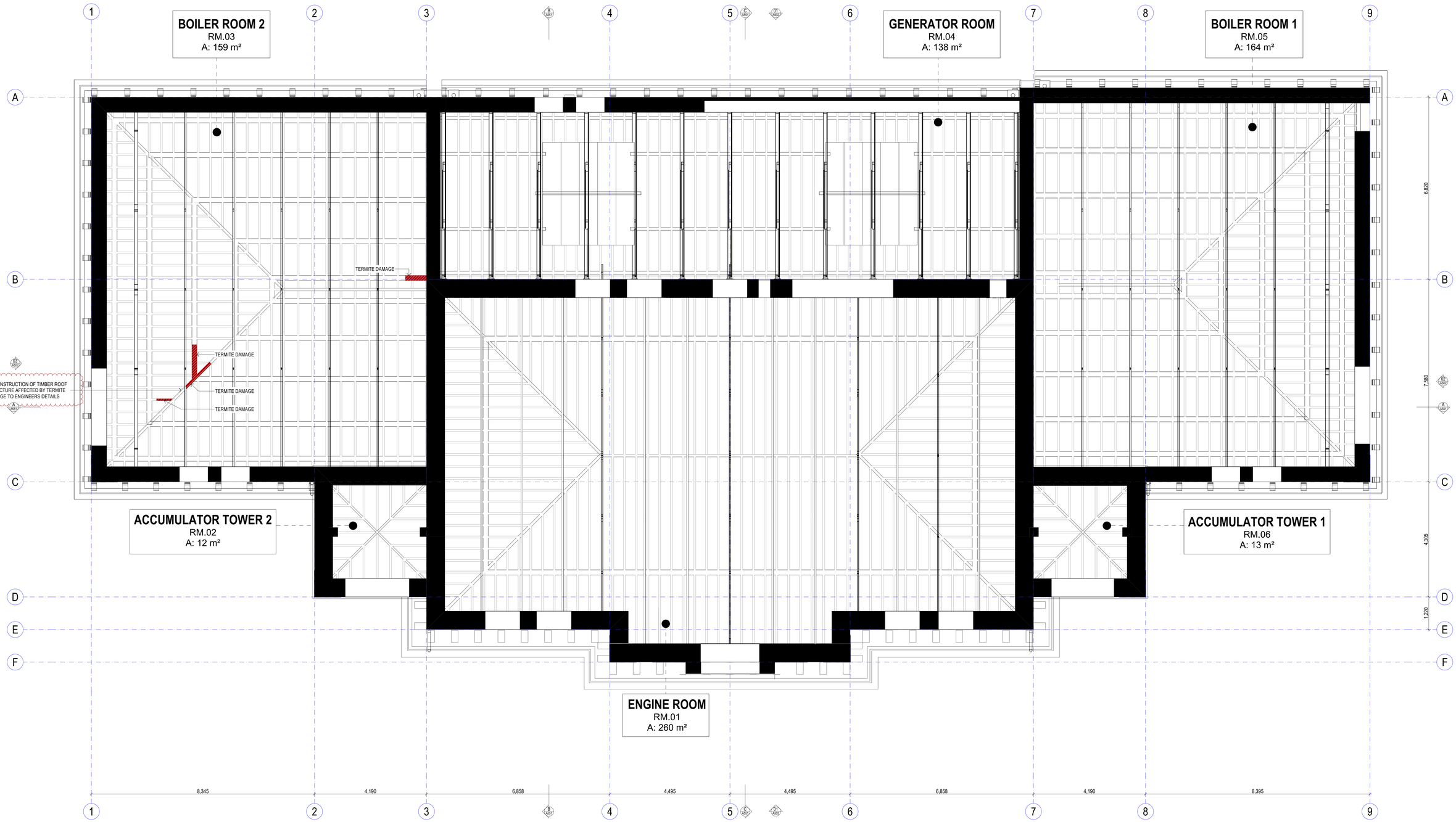
ABBREVIATIONS

AR	ARCHITRAVE	EJ	EXPANSION JOINT	PT	PAINT FINISH
AS	AUSTRALIAN STANDARD	EQ	EQUAL SPACING	RL	REDUCED LEVEL
BG	BOX GUTTER	FB	FACE BRICK	SC	STONE CLADDING
BH	BULKHEAD	FC	FIBRE CEMENT SHEETING	SD	SLIDING DOOR
BLK	CONCRETE BLOCKWORK	FFL	FINISHED FLOOR LEVEL	SK	SKIRTING
CAP	CAPPING	FG	FIXED GLASS	SPR	SPREADER
CFC	COMPRESSED FIBRE CEMENT	G	GUTTER	SS	STAINLESS STEEL
CJ	CONTROL LINE	GW	GLASS WINDOW	ST	STONE
CLD	CLADDING	HD	HINGED DOOR	TB	TIMBER BEAM
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION	HR	HANDRAIL	TBR	TIMBER
CONC	CONCRETE	HYD	HYDRAULIC	TME	TO MATCH EXISTING
COS	CONFIRM ON SITE	MC	METAL CLADDING	TYP	TYPICAL
CR	CEMENT RENDER	MECH	MECHANICAL		
CRN	CORNICE	MRS	METAL ROOF SHEETING	#	No. DENOTES TYPE AS SCHEDULED
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION	PB	PLASTERBOARD		
E	EXISTING	PCT	POWDERCOAT		
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION	PS	POST - TIMBER		

LEGEND

- W1.05 — WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05
- L1.05 — LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE N° 05
- D1.05 — DOOR MARKER eg. DOOR / LEVEL 1 / DOOR N° 05
- EXISTING WALLS
- WALLS TO BE DEMOLISHED
- NEW WALLS
- 0.00 — EXISTING RL
- 0.00 — PROPOSED RL
- WT50 — **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL.

EXISTING ROOF MEMBER SIZES:
RAFTERS - 70 X 100
PURLINS - 100 X 150
RIDGE PLATES - 100 X 240



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N

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REV	DATE	COMMENTS	DRN	CHKD	VRFD
01	21/12/2020	CONSTRUCTION ISSUE	DFW	DFW	BJC
02	15/01/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC
03	5/03/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT: NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE: BOURKE STREET
CARRINGTON 2294

DRAWING: REFLECTED CEILING PLAN

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	5/03/2021	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A401	03

Port of Newcastle

EJE architecture

GENERAL | GEN

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	POTENTIAL REPAIR
GEN 01	Original cast iron gutters	General leaking connections between segments. Isolated severe corrosion to bottom of gutter pan (March 2019)	150m (linear - East West North perimeter of main roof)	2	Clean out all gutters. Re-seat and seal all gutter segment connections. Patch badly corroded areas of gutter internally with welded metal plate, or replace portion of gutter with new section fabricated to original detail. Allow to install new down-turned flashing into gutter underneath lowest rows of roof slates.
GEN 02	Cement Mortar below gutters	Apparant non-original application of cement based mortar below gutter line generally is causing damage to surrounding stonework (March 2019)	150m (linear - East West North perimeter of main roof)	2	Removal and re-pointing with lime based mortar, allow attention to the falls of re-installed gutters to ensure no water ponding.

ROOF | RO

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	POTENTIAL REPAIR
R0 01	West roof vent fascia	Timber Fascia degraded (August 2020)	4m (linear)	2	Repair existing timber fascia as necessary, paint finish as scheduled. Install new gutter & DP as scheduled.
R0 02	East roof vent fascia	Timber Fascia degraded (August 2020)	4m (linear)	2	Repair existing timber fascia as necessary, paint finish as scheduled. Install new gutter & DP as scheduled.
R0 03	West stone cross wall capping	Mortar degraded (August 2020)	7m2	2	Re-pointing all joints. Lead capping to entire top surface of cross wall.
R0 04	East Stone cross wall capping	Mortar degraded (August 2020)	7m2	2	Re-pointing all joints. Lead capping to entire top surface of cross wall.
R0 05	West stone cross wall capping	Stone damage to capping piece	N.A	2	Stone repair/replacement to original detail.
R0 06	West stone cross wall capping	Stone damage/ cracks to capping piece	N.A	2	Stone repair/replacement to original detail.
R0 07	Slate Roof	Loose Slates	1m2	2	Investigate and repair loose slates as necessary
R0 08	Stone cross wall capping	Stone damage/ cracks to capping piece	N.A	2	Stone repair/replacement to original detail.
R0 09	Stone cross wall capping	Metal Pin	N.A	2	Remove & patch

BOILER ROOM 2 - WEST FACADE | BR2-W

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	POTENTIAL REPAIR
BR2-W 01	Stone Cornice	Mortar degraded (April 2019)	3m2	2	Re-pointing all joints
BR2-W 02	Stone Frieze	Mortar degraded (April 2019)	12m2	2	Re-pointing all joints
BR2-W 03	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 04	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 05	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 06	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 07	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 08	Stone Bracket and Cornice over	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR2-W 09	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR2-W 10	Face brickwork	Mortar degraded (April 2019)	19m2	2	Re-pointing 50-100% of joints
BR2-W 11	Face brickwork	Mortar degraded (April 2019)	1m2	2	Re-pointing 50-100% of joints
BR2-W 12	Face brickwork	Mortar degraded (April 2019)	2m2	2	Re-pointing 50-100% of joints
BR2-W 13	Face brickwork	Mortar degraded (April 2019)	5m2	2	Re-pointing 50-100% of joints
BR2-W 14	Stone Quoin	Mortar degraded (April 2019)	4m2	2	Re-pointing all joints
BR2-W 15	Face brickwork	Large crack above archway (April 2019)	N.A	1 to 2	Consult engineer for methodology for repair of cause. Repair brickwork and repoint as necessary.
BR2-W 16	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-W 17	Stone voussoir	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 18	Stone Base	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 19	Stone Base	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 20	Stone Architrave	Mortar degraded (April 2019)	1m2	2	Re-pointing all joints
BR2-W 21	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-W 22	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-W 23	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-W 24	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-W 25	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-W 26	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-W 27	Stone Base	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 28	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-W 29	Stone Architrave	Mortar degraded (April 2019)	N.A	2	Re-pointing all joints
BR2-W 30	Stone Architrave	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-W 31	Face brickwork	Iron pin (April 2019)	N.A	2	Remove & patch
BR2-W 32	Face brickwork	Iron pin (April 2019)	N.A	2	Remove & patch
BR2-W 33	Stone base	Mortar degraded (March 2019)	N.A	8m2	Re-pointing all joints
BR2-W 34	Stone Frieze/ brickwork below	Minor Cracking	N.A	2	Re-pointing all joints

BOILER ROOM 1 - EAST FACADE | BR1-E

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	POTENTIAL REPAIR
BR1-E 01	Stone Cornice	Mortar degraded (April 2019)	5m2	2	Re-pointing all joints
BR1-E 02	Stone Frieze	Mortar degraded (April 2019)	13m2	2	Re-pointing all joints
BR1-E 03	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 04	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 05	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 06	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 07	Stone Bracket & Frieze	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 08	Stone Cornice, Brackets and Frieze below	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 09	Stone Quoin	Mortar degraded (April 2019)	4m2	2	Re-pointing all joints
BR1-E 10	Face brickwork	Mortar degraded (April 2019)	2m2	2	Re-pointing 01-50% of joints
BR1-E 11	Face brickwork	Iron pins (April 2019)	N.A	2	Remove & patch
BR1-E 12	Face brickwork	Mortar degraded (April 2019)	2m2	2	Re-pointing 50-100% of joints
BR1-E 13	Stone voussoir	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 14	Stone Architrave	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 15	Stone Architrave	Stone damage from door metal work(April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 16	Stone Architrave	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 17	Face brickwork	Iron pin (April 2019)	N.A	2	Remove & patch
BR1-E 18	Stone Base	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 19	Stone Architrave	Door hinges are causing damage within stone architrave	N.A	1	Allow to investigate and repair damage to stone work caused by door hinges once doors are removed.
BR1-E 20	Stone Architrave	Mortar degraded (April 2019)	N.A	2	Re-pointing all joints
BR1-E 21	Face brickwork	Pins and fittings around old light fitting (April 2019)	N.A	2	Remove all including light fitting & patch
BR1-E 22	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR1-E 23	Face brickwork	Brick damage (holes) (April 2019)	N.A	2	Mortar Patch
BR1-E 24	Face brickwork	Timber box and glue from previous sign	N.A	3	Remove and clean brickwork to original
BR1-E 25	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR1-E 26	Stone Base	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 27	Stone Base	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 28	Window Opening	Steel grill corroded and damaged	N.A	3	Remove ply covering, Clean and Paint internal steelwork as scheduled. New CFC wall externally as documented.
BR1-E 29	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR1-E 30	Face brickwork	Iron pin (April 2019)	N.A	2	Remove & patch
BR1-E 31	Face brickwork	Iron pin (April 2019)	N.A	2	Remove & patch
BR1-E 32	Face brickwork	Various Brick damage (April 2019)	N.A	2	Replace as original
BR1-E 33	Stone Base	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR1-E 34	Face brickwork	Former arched opening missing.	N.A	2	Demolish brickwork as required to install new stone archway to match original detail.
BR1-E 35	Stone Base	Former arched opening missing.		2	Rebuild stone arch as per same detail on west elevation., though higher within wall. New CFC wall infill externally as documented.
BR1-E 36	Stone Base	Mortar degraded (April 2019)	11m2	2	Re-pointing all joints
BR1-E 37	Face brickwork	Brick damage & cracking,	N.A	2	Replace bricks and repoint as necessary
BR1-E 38	Stone Arch	Graffiti	N.A	3	Remove Graffiti

ENGINE ROOM - EAST HIGH LEVEL FACADES | ER-E

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	PROPOSED REPAIR
ER-E 01	Stone Cornice	Mortar degraded (April 2019)	3m2	2	Re-pointing all joints
ER-E 02	Stone Frieze	Mortar degraded (April 2019)	12m2	2	Re-pointing all joints
ER-E 03	Gutter & Supporting Stone	Gutter, stone brackets and portion of stone frieze visibly sagging and separating from building, subsequent gutter leak internally and externally. (April 2019)	N.A	1	Repair corner stonework to original detail, reconstruct gutter and local roof framing as necessary. Retain carved shape from previous original RWH.
ER-E 04	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
ER-E 05	Face Brickwork	Mortar degraded August 2020)	8m2	3	Re-pointing 01-50% of joints

ENGINE ROOM - WEST HIGH LEVEL FACADES | ER-W

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	PROPOSED REPAIR
ER-W 01	Stone Cornice	Mortar degraded (April 2019)	3m2	2	Re-pointing all joints
ER-W 02	Stone Frieze	Mortar degraded (April 2019)	12m2	2	Re-pointing all joints
ER-W 03	Gutter & Supporting Stonework	Gutter, stone brackets and portion of stone frieze visibly sagging and separating from building, subsequent gutter leak internally and externally. (April 2019)	N.A	1	Repair corner stonework to original detail, reconstruct gutter and local roof framing as necessary. Retain carved shape from previous original RWH.
ER-W 04	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
ER-W 05	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
ER-W 06	Face Brickwork	Mortar degraded August 2020)	8m2	2	Re-pointing 50-100% of joints

ENGINE ROOM - NORTH HIGH LEVEL FACADES | ER-N

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	PROPOSED REPAIR
ER-N 01	Stone Cornice	Mortar degraded (April 2019)	8m2	2	Re-pointing all joints
ER-N 02	Stone Frieze	Mortar degraded (April 2019)	37m2	2	Re-pointing all joints
ER-N 03	Gutter & Supporting Stonework	See ER-W 03			
ER-N 04	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
ER-N 05	Stone Bracket & Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
ER-N 06	Stone Bracket & Cornice, and Frieze below	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
ER-N 07	Stone Cornice & frieze below	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
ER-N 08	Stone Frieze	Metal Pin (August 2020)	N.A	2	Remove & patch
ER-N 09	Gutter & Supporting Stonework	See ER-E 03			
ER-N 10	Stone Cornice, Bracket & frieze below	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
ER-N 11	Stone Frieze	Metal Pin (August 2020)	N.A	2	Remove & patch
ER-N 12	Stone Frieze	Metal Pin (August 2020)	N.A	2	Remove & patch
ER-N 13	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
ER-N 14	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
ER-N 15	Stone Cornice, Bracket & frieze below	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
ER-N 16	Stone Cornice, Bracket & frieze below	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
ER-N 17	Stone Frieze	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.

BOILER ROOM 1 - NORTH FACADE | BR1-N

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	POTENTIAL REPAIR
BR1-N 01	Stone Cornice	Mortar degraded (April 2019)	4m2	2	Re-pointing all joints
BR1-N 02	Stone Frieze	Mortar degraded (April 2019)	9m2	2	Re-pointing all joints
BR1-N 03	Stone Cornice	Stone damage (April 2019)	N.A	2	Replacement as original
BR1-N 04	Stone Cornice	Stone damage (April 2019)	N.A	2	Replacement as original
BR1-N 05	Stone Cornice	Stone damage (April 2019)	N.A	2	Replacement as original
BR1-N 06	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR1-N 07	Stone Wall/ Capping	Plant Growing	N.A	2	Poison and remove, repair stonework as original. Retain indent from original gutter location.
BR1-N 08	Face Brickwork	Redundant flashing in wall	N.A	3	Remove and repoint
BR1-N 09	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
BR1-N 10	Face brickwork	Mortar degraded (April 2019)	35m2	2	Re-pointing 50-100% of joints
BR1-N 11	Face brickwork	Brick damage & cracking,	0.5m2	2	Replace brickwork as original & repoint following footing works - see BR1-N.16
BR1-N 12	Face brickwork	Large areas of brick damage (April 2019)	N.A	2	Replace as original
BR1-N 13	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
BR1-N 14	Face brickwork	Large areas of brick damage (April 2019)	N.A	2	Replace as original (or with contrasting brick to identify former wall location)
BR1-N 15	Face brickwork	Render cover to brickwork	9m2	3	Remove render & assess brick condition beneath, repair as necessary
BR1-N 16	Footing	Potential slight movement to corner of wall and footings (April 2019)	N.A	1 to 2	Consult engineer, stabilise footing if required.
BR1-N 17	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 18	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 19	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 20	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 21	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 22	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 23	Stone Base	Stone damage (April 2019)	1m2	2	Stone replacement/ indent
BR1-N 24	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 25	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 26	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 27	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
BR1-N 28	Stone base	Mortar degraded (March 2019)	15m2	2	Re-pointing all joints
BR1-N 29	Face brickwork	Large area of brick damage (April 2019)	1m2	2	Replace as original (or with contrasting brick to identify former wall location)
BR1-N 30	Cast Iron Header and Copper DP Elbow	Leaking Connections (August 2020)	N.A	2	Investigate connections and seal leaks where apparant.
BR1-N 31	Stone Frieze	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR1-N 32	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR1-N 33	Stone Frieze	Metal Penetration	N.A	2	Remove & patch
BR1-N 34	Face Brickwork	Cable (?) Hanging loose	N.A	3	Remove & patch

GENERATOR ROOM LEFT AND RIGHT - NORTH FACADE | GRL-N / GRR-N

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	POTENTIAL REPAIR
GRL-N 01	Stone Cornice	Mortar degraded (April 2019)	4m2	2	Re-pointing all joints
GRL-N 02	Stone Frieze	Mortar degraded (April 2019)	9m2	2	Re-pointing all joints
GRL-N 03	Stone Cornice, Brackets & Frieze below	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
GRL-N 04	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
GRL-N 05	Stone Cornice, Brackets & Frieze below	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
GRL-N 06	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
GRL-N 07	Stone Frieze	Insulated electrical cable penetrations (April 2019)	N.A	3	Retain insulated penetrations, mastic seal to internal holes or similar.
GRL-N 08	Face brickwork	Many metal pins & penetrations (April 2019)	N.A	2	Remove & patch
GRL-N 09	Face brickwork	Mortar degraded (April 2019)	1m2	2	Re-pointing 50-100% of joints
GRL-N 10	Face brickwork	Mortar degraded (April 2019)	1m2	2	Re-pointing 50-100% of joints
GRL-N 11	Face brickwork	Metal pins (August 2020)	N.A	2	Remove & patch
GRL-N 12	Face brickwork	Mortar degraded (April 2019)	1m2	2	Re-pointing 50-100% of joints
GRL-N 13	Face Brickwork	Redundant flashing in wall (April 2019)	N.A	3	Remove and repoint
GRL-N 14	Face brickwork	Many metal pins & penetrations (April 2019)	N.A	2	Remove & patch
GRL-N 15	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
GRL-N 16	Stone Frieze	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
GRL-N 17	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
GRL-N 18	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
GRL-N 19	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
GRL-N 20	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
GRL-N 21	Concrete & stone base	General degradation (April 2019)	2m2	3	Replace as original
GRL-N 22	Header & downpipe		N.A	2	
GRn 23	Stone Cornice, Brackets & Frieze below	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
GR-N 24	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
GR-N 25	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
GR-N 26	Face brickwork	Mortar degraded (April 2019)	1m2	2	Re-pointing 50-100% of joints
GR-N 27	Face brickwork	Mortar degraded (April 2019)	N.A	2	Re-pointing 50-100% of joints
GR-N 28	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
GR-N 29	Face brickwork	Large areas of brick damage (April 2019)	1m2	2	Replace as original (or with contrasting brick to identify former wall location)
GR-N 30	Face brickwork	Mortar degraded (April 2019)	2m2	2	Re-pointing 50-100% of joints
GR-N 31	Stone Architrave	Mortar degraded (April 2019)	N.A	2	Re-pointing all joints
GR-N 32	Face brickwork	Brick damage (April 2019)	0.5m2	2	Replace as original
GR-N 33	Face brickwork	Mortar degraded (April 2019)	2m2	2	Re-pointing 50-100% of joints
GR-N 34	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
GR-N 35	Face brickwork	Iron anchors penetrating wall (April 2019)	N.A	3	Consult engineer as to necessity for anchors to remain, remediate problem and remove and patch OR leave in place.
GR-N 36	Face brickwork	Mortar degraded (April 2019)	1m2	2	Re-pointing 50-100% of joints
GR-N 37	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
GR-N 38	Stone Base	Stone damage (April 2019)	N.A	2	Stone replacement/ indent
GR-N 39	Stone base	Mortar degraded (March 2019)	10m2	2	Re-pointing all joints
GR-N 40	Cast Iron Header and Copper DP Elbow	Leaking Connections (August 2020)	N.A	2	Investigate connections and seal leaks where apparant.
GR-N 41	Stone Frieze, Cornice & Bracket	Paint splash to surface	1m2	3	Clean all paint from surface
GR-N 42	Stone Frieze	Stone damage (August 2020)	1m2	3	Stone repair/replacement to original detail.
GR-N 43	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original

BOILER ROOM 2 - NORTH FACADE | BR2-N

CODE	FABRIC	CONDITION / DATE	APPROXIMATE MEASUREMENT	PRIORITY	POTENTIAL REPAIR
BR2-N 01	Stone Cornice	Mortar degraded (April 2019)	4m2	2	Re-pointing all joints
BR2-N 02	Stone Frieze	Mortar degraded (April 2019)	10m2	2	Re-pointing all joints
BR2-N 03	Stone cross wall end piece	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail. Retain carved shape of original RWH.
BR2-N 04	Stone Cornice, Frieze & Bracket below	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-N 05	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-N 06	Stone Cornice	Stone damage (April 2019)	N.A	2	Stone repair/replacement to original detail.
BR2-N 07	Face Brickwork	Mortar degraded (April 2019)	2m2	2	Re-pointing 50-100% of joints
BR2-N 08	Face Brickwork	Redundant flashing in wall (April 2019)	N.A	3	Remove and repoint
BR2-N 09	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
BR2-N 10	Face brickwork	Large areas of brick damage (April 2019)	3m2	2	Replace as original (or with contrasting brick to identify former wall location)
BR2-N 11	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
BR2-N 12	Face brickwork	Mortar degraded (April 2019)	0.5m2	2	Re-pointing 50-100% of joints
BR2-N 13	Face brickwork	Large areas of brick damage/missing brickwork (April 2019)	3m2	2	Replace brickwork as original, submit colour-matched brick selection to architect for approval before proceeding.
BR2-N 14	Face brickwork	Render & tile cover to brickwork (April 2019)	13m2	3	Remove render & assess brick condition beneath, repair as necessary
BR2-N 15	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
BR2-N 16	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
BR2-N 17	Face brickwork	Mortar degraded (April 2019)	3m2	2	Re-pointing 50-100% of joints
BR2-N 18	Face brickwork	Contrasting bricks placed in front of original wall (April 2019)	5m2	3	Remove contrasting bricks & assess brick condition beneath, repair as necessary
BR2-N 19	Face brickwork	Brick damage (April 2019)	N.A	2	Replace as original
BR2-N 20	Face brickwork	Many metal pins (April 2019)	N.A	2	Remove & patch
BR2-N 21	Face brickwork	Render cover to brickwork (April 2019)	5m2	3	Remove render & assess brick condition beneath, repair as necessary
BR2-N 22	Face brickwork	Brick damage (April 2019)	0.5m2	2	Replace as original
BR2-N 23	Stone base	Mortar degraded (March 2019)	9m2	2	Re-pointing all joints
BR2-N 24	Face brickwork	Large areas of brick damage (April 2019)	1m2	2	Replace as original
BR2-N 25	Cast Iron Header and Copper DP Elbow	Leaking Connections (August 2020)	N.A	2	Investigate connections and seal leaks where apparant.
BR2-N 26	Stone Frieze	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR2-N 27	Stone Bracket and Cornice over	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR2-N 28	Stone Frieze	Minor Cracking	N.A	2	Pin loose stone, Re-pointing all joints.
BR2-N 29	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR2-N 30	Stone Cornice	Stone damage (August 2020)	N.A	2	Stone repair/replacement to original detail.
BR2-N 31	Stone Frieze	Mortar and surface damage from previously demolished cross wall	N.A	3	Remove surface mortar and clean frieze back to original detail
BR2-N 32	Stone Frieze	Hole to stone	N.A	2	Mortar patch

CONDITION REGISTER NOTES:

1 - THE CONTRACTOR IS TO CONSIDER THE PREVIOUSLY COMPLETED WORKS TO THE SOUTH FACADE OF THE BUILDING AS THE **"PERFORMANCE STANDARD"** FOR THE PROJECT.
THAT IS TO SAY THAT THE PROJECT BRIEF IS FOR THE CONTRACTOR TO RESTORE THE NORTH, EAST AND WEST FACADES OF THE BUILDING TO THE SAME STANDARD AS THE SOUTH FACADE.

2 - THIS CONDITION REGISTER HAS BEEN COMPILED BY EJE ARCHITECTURE BEGINNING MARCH 2019 FROM NON-INVASIVE OBSERVATIONS FROM GROUND LEVEL AND ELEVATED WORK PLATFORM. EJE IS NOT QUALIFIES TO OFFER STRUCTURAL OPINIONS. THIS DOCUMENT IS NOT INTENDED TO CONVEY ANY OPINION AS TO THE STRUCTURAL ADEQUACE OR INTEGRITY OF THE STRUCTURE, NOR SHOULD IT IN ANY WAY BE CONSTRUED AS SO DOING. SIMILARLY, THE AUTHOR'S OBSERVATIONS ARE LIMITED TO THE FABRIC ONLY. THEY DO NOT COMMENT ON THE CAPACITY, ADEQUACY, OR STATUTORY COMPLIANCE OF ANY BUILDING SERVICES.

3 - THE CONDITION REGISTER (AND ACCOMPANYING ARCHITECTURAL DRAWINGS) ARE NOT CONSIDERED TO DOCUMENT THE FULL NATURE OF THE BUILDING'S DETERIORATION, BUT RATHER PROVIDE A GENERAL OVERVIEW OF ISSUES OBSERVABLE IN THE BUILDING FABRIC, THE LIKE OF WHICH NEED TO BE RECTIFIED TO ACHIEVE THE PERFORMANCE SPECIFICATION. THE CONTRACTOR IS TO DETERMINE THE FULL SCOPE OF WORK GIVEN THEIR SPECIALIST KNOWLEDGE.

4 - LIKEWISE, THE CONDITION REGISTER AND DRAWINGS DO NOT PROVIDE A FULL SCOPE OF WORK TO REMEDIATE/REPAIR/CONSERVE THE NOTED DETERIORATION ISSUES. THE CONTRACTOR IS TO ALLOW THEIR SPECIALIST INPUT INTO THE EXACT NATURE AND EXTENT OF EACH REPAIR METHODOLOGY.

5 - ALL ITEMS ARE TO BE READ IN CONJUNCTION WITH RELATED ARCHITECTURAL DRAWINGS AND SPECIFICATIONS, AND CONSULTANT DOCUMENTATION. IN CASE OF DISCREPANCY OR CONFUSION, CLARIFICATION MUST BE MADE THROUGH EJE.

CONDITION REGISTER KEY:

ITEM CODING:
CONDITION REGISTER ITEMS ARE CODED *"(ROOM)-(CARDINAL DIRECTION) (ITEM NUMBER)"*

EXAMPLE CODE: *BR1-E 16 = "BOILER ROOM 1 - EAST FACADE, ITEM 16"*

ROOM CODES:

BR1	*BOILER ROOM 1*
BR1	*BOILER ROOM 2*
ER	*ENGINE ROOM*
GEN	*GENERAL ITEM*
GR	*GENERATOR ROOM*
RO	*ROOF*

MEASUREMENTS:
MEASUREMENTS OF AREAS OF FABRIC AS DESCRIBED IN THE CONDITION REGISTER ARE APPROXIMATE ONLY, AND ARE GENERALLY MADE AS A "BEST GUESS" BY EYE ONLY OF THE AREA OF WORK THAT WOULD BE REQUIRED TO REMEDIATE THE ISSUE. THE AREA/QUANTITY OF REMEDIATION WORKS REQUIRED FOR ANY SPECIFIC ISSUE SHOULD BE CONFIRMED BY THE JUDGEMENT OF THE SPECIALIST REPAIR CONTRACTOR.

WORKS PRIORITY RATING GUIDES:
PRIORITY 1: FABRIC CONDITION PRESENTS A POTENTIAL DANGER TO USERS OF THE SITE, OR CONTRIBUTES SIGNIFICANTLY TO THE DEGREDATION OD THE BUILDING FABRIC AT THE PRESENT TIME.

PRIORITY 2: FABRIC CONDITION WILL CONTRIBUTE TO THE DEGREDATION OF THE BUILDING IN THE MEDIUM TERM.

PRIORITY 3: FABRIC CONDITION WILL CONTRIBUTE TO THE DEGREDATION OF THE BUILDING IN THE LONG TERM.

TERMS:
"STONE REPAIR/REPLACEMENT TO ORIGINAL DETAIL"
- THE CONTRACTOR IS TO ALLOW TO INVESTIGATE EACH INSTANCE OF STONE DAMAGE NOTED AS SUCH AND PROPOSE THE APPROPRIATE CONSERVATION METHODOLOGY. THESE COULD INCLUDE FOR EXAMPLE:
- EXFOLIATE LOOSE AREAS OF STONE BACK TO SMOOTH SURFACE ONLY, TO PREVENT FUTURE WATER ENTRY/PONDING AND DETRITUS BUILD UP.
- USE APPROPRIATE PIN SYSTEM TO STRUCTURALLY SECURE A LOOSE OR CRACKED PIECE OF ORIGINAL STONE WORK IN POSITION.
- CARVE OUT DAMAGED STONEWORK AND INDENT A NEW STONE PIECE FABRICATED TO ORIGINAL DETAIL.
- FULL REPLACEMENT OF A DAMAGED OR MISSING STONE, FABRICATED TO ORIGINAL DETAIL.

"RE-POINTING 01-50% / 51-100% OF JOINTS"
GENERAL ESTIMATES OF THE QUANTITY OF MORTAR JOINTS WITHIN THAT AREA THAT WILL NEED TO BE RE-POINTED TO ACHIEVE THE PERFORMANCE SPECIFICATION. THE CONTRACTOR IS TO ALLOW THEIR SPECIALIST JUDGMENT IN DETERMINING THE ACTUAL AMOUNT OF REPOINTING NECESSARY IN ORDER TO ACHIEVE THE PERFORMANCE SPECIFICATION FOR THE WORKS.

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ABBREVIATIONS

AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BG	BOX GUTTER
BH	BULKHEAD
BLK	CONCRETE BLOCKWORK
CAP	CAPPING
CFC	COMPRESSED FIBRE CEMENT
CL	CENTRE LINE
CLD	CLADDING
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CR	CEMENT RENDER
CRN	CORNICE
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
E	EXISTING
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
EQ	EQUAL SPACING
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
G	GLASS
GW	GLASS WINDOW
HD	HINGED DOOR
HR	HANDRAIL
HYD	HYDRAULIC
MC	METAL CLADDING
MECH	MECHANICAL
MR	METAL ROOF SHEETING
PB	PLASTERBOARD
PCT	POWDERCOAT
PS	POST - TIMBER
PT	PAINT FINISH
RL	REDUCED LEVEL
SC	STONE CLADDING
SD	SLIDING DOOR
SK	SKIRTING
SPR	SPREADER
SS	STAINLESS STEEL
ST	STONE
TB	TIMBER BEAM
TBR	TIMBER
TME	TO MATCH EXISTING
TYP	TYPICAL
#	No. DENOTES TYPE AS SCHEDULED

LEGEND

- W1.05 — WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05
- L1.05 — LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE N° 05
- D1.05 — DOOR MARKER eg. DOOR / LEVEL 1 / DOOR N° 05
- EXISTING WALLS
- WALLS TO BE DEMOLISHED
- NEW WALLS
- 0.00 — EXISTING RL
- (0.00) — PROPOSED RL
- WT50 — **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL.

DAMAGE KEY

- BR2-S <ID> — LOCATION - E.G. "BOILER RM 2 - SOUTH"
- HIERARDAMAGE ID NO. - REFER "CONDITION REGISTER" DWG A500
- STONE/FABRIC DAMAGE
- BRICK MORTAR DEGRADED 01-50%
- BRICK MORTAR DEGRADED 51-100%
- STONE MORTAR JOINTS DEGRADED (ASSUME 100%)

PAINT REMOVAL:
REMOVE NON-ORIGINAL EXTERIOR PAINT TO ALL FACE BRICKWORK AND MASONRY SURFACES ON NORTH, EAST AND WEST FACADES

ALLOW TO INVESTIGATE HOW DP IS CONNECTED INTO BACK OF GUTTER, REMOVE FOR REPLACEMENT.

REMOVE EXISTING PVC/ STEEL DP RETAIN CAST IRON RWH AT TOP

CLEAN BACK, PREPARE & PRIME ALL EXPOSED STRUCTURAL STEEL FOR NEW PAINT TREATMENT AS SCHEDULED AND TO MANUFACTURER'S INSTRUCTIONS.

DEMOLISH EXISTING, LIGHTWEIGHT FRAMING WALL. SALVAGE TIMBER STUDS FOR RE-USE IN NEW WALL AT CONTRACTOR'S DISCTRETION. RETAIN STEEL COLUMNS & BEAM OVER.

RETAIN EXISTING BRICKED UP DOOR OPENING. REPAIR BRICKS WITHIN AS NECESSARY. DO NOT RE-BUILD SANDSTONE BASE COURSE IN DOORWAY.

NORTH ELEVATION 1:50 EXISTING
1:50

PAINT REMOVAL:
REMOVE NON-ORIGINAL EXTERIOR PAINT TO ALL FACE BRICKWORK AND MASONRY SURFACES ON NORTH, EAST AND WEST FACADES

DEMOLISH NON-ORIGINAL STEEL STRUCTURE. REPAIR BRICKWORK AT WALL JUNCTIONS AS NECESSARY TO ORIGINAL DETAIL.

REMOVE EXISTING DOORS, HINGES, AND STEEL BEAM PENETRATING THROUGH DOORWAY.

REMOVE EXTERNAL PLYWOOD COVERING TO ALLOW ACCESS TO INTERNAL STEELWORK

EAST ELEVATION 1:50 EXISTING
1:50

PAINT REMOVAL:
REMOVE NON-ORIGINAL EXTERIOR PAINT TO ALL FACE BRICKWORK AND MASONRY SURFACES ON NORTH, EAST AND WEST FACADES

CAREFULLY REMOVE EXISTING DOORS AND HINGES. ALLOW MEASURE EXISTING DOOR LEAVES IN DETAIL AND INVESTIGATE CONSTRUCTION DETAILS TO ALLOW RE-CONSTRUCTION OF NEW TIMBER DOORS TO EAST AND WEST FACADES TO THE ORIGINAL DETAIL.

WEST ELEVATION 1:50 EXISTING
1:50

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0 — 25mm — 100mm — 200mm ON ORIGINAL A3

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	9/08/2020	PRELIMINARY TENDER SET FOR REVIEW	DFW/LE	DFW	BJC
0	24/08/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

SITE: BOURKE STREET CARRINGTON 2294

CLIENT: NEWCASTLE PORT CORPORATION BOURKE ST CARRINGTON

DRAWING: NORTH, EAST, WEST ELEVATIONS - EXISTING

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln — DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	23/11/2020	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A502	1

Port of Newcastle

EJE architecture

ABBREVIATIONS

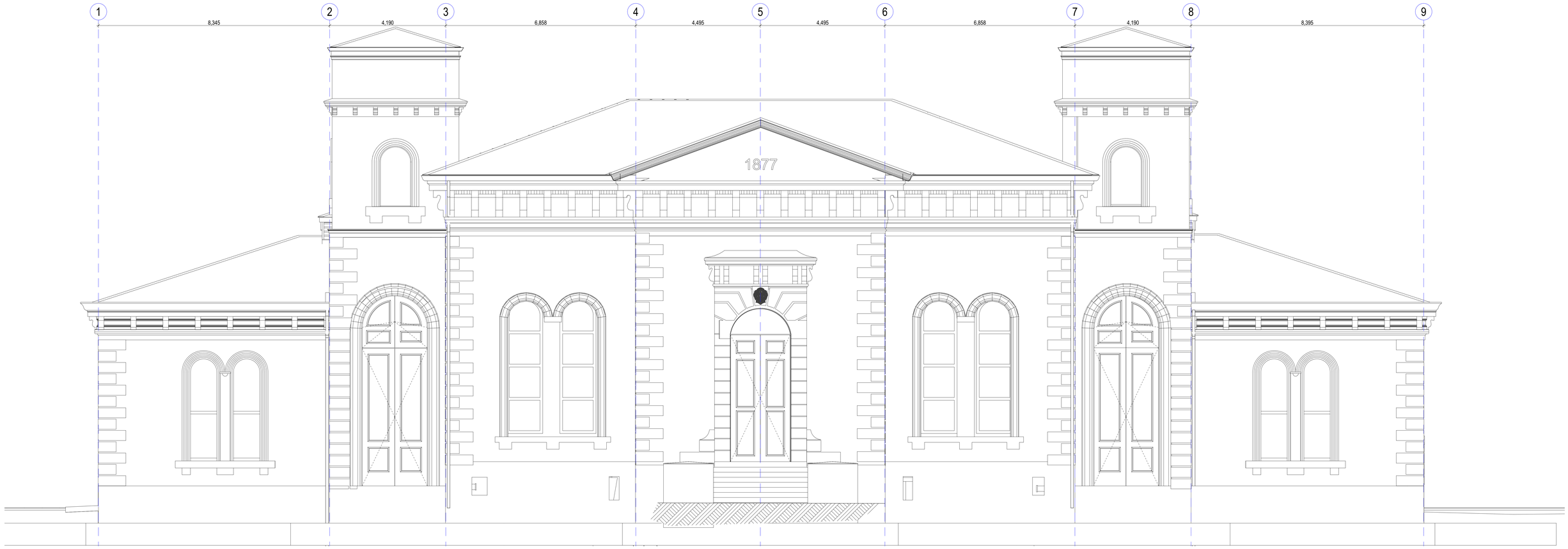
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BG	BOX GUTTER
BH	BULKHEAD
BLK	CONCRETE BLOCKWORK
CAP	CAPPING
CFC	COMPRESSED FIBRE CEMENT
CL	CENTRE LINE
CLD	CLADDING
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CR	CEMENT RENDER
CRN	CORNICE
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
E	EXISTING
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
EQ	EQUAL SPACING
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
G	GLASS
GW	GLASS WINDOW
HD	HINGED DOOR
HR	HANDRAIL
HYD	HYDRAULIC
MC	METAL CLADDING
MECH	MECHANICAL
MR	METAL ROOF SHEETING
PB	PLASTERBOARD
PCT	POWDERCOAT
PS	POST - TIMBER
PT	PAINT FINISH
RL	REDUCED LEVEL
SC	STONE CLADDING
SD	SLIDING DOOR
SK	SKIRTING
SPR	SPREADER
SS	STAINLESS STEEL
ST	STONE
TB	TIMBER BEAM
TBR	TIMBER
TME	TO MATCH EXISTING
TYP	TYPICAL
#	No. DENOTES TYPE AS SCHEDULED

LEGEND

- W1.05 — WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05
- L1.05 — LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE N° 05
- D1.05 — DOOR MARKER eg. DOOR / LEVEL 1 / DOOR N° 05
- EXISTING WALLS
- WALLS TO BE DEMOLISHED
- NEW WALLS
- 0.00 — EXISTING RL
- 0.00 — PROPOSED RL
- WT50 — **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL.

DAMAGE KEY

- BR2-S — LOCATION - E.G. "BOILER RM 2 - SOUTH"
  HI/ARD/MAGE ID NO. - REFER "CONDITION REGISTER" DWG A000
- STONE/FABRIC DAMAGE
- BRICK MORTAR DEGRADED 01-50%
- BRICK MORTAR DEGRADED 51-100%
- STONE MORTAR JOINTS DEGRADED (ASSUME 100%)



SOUTH ELEVATION 1:50 EXISTING
1:50

REFERENCE ONLY - NO WORK TO SOUTH FACADE

CONDITION OF THE SOUTH FACADE AT THE TIME OF TENDER IS TO BE CONSIDERED THE "PERFORMANCE STANDARD" FOR THE CONSERVATION WORKS TO THE NORTH, EAST AND WEST FACADES.

EJE ARCHITECTURE
ACN 002 912 641 | **ABN** 32 644 549 949
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0 — 25mm — 100mm — 200mm ON ORIGINAL A0

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	9/09/2020	PRELIMINARY TENDER SET FOR REVIEW	DFW/LE	DFW	BJC
0	24/06/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT: NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE: BOURKE STREET
CARRINGTON 2294

DRAWING: SOUTH ELEVATION - EXISTING

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln — DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	23/11/2020	1:50

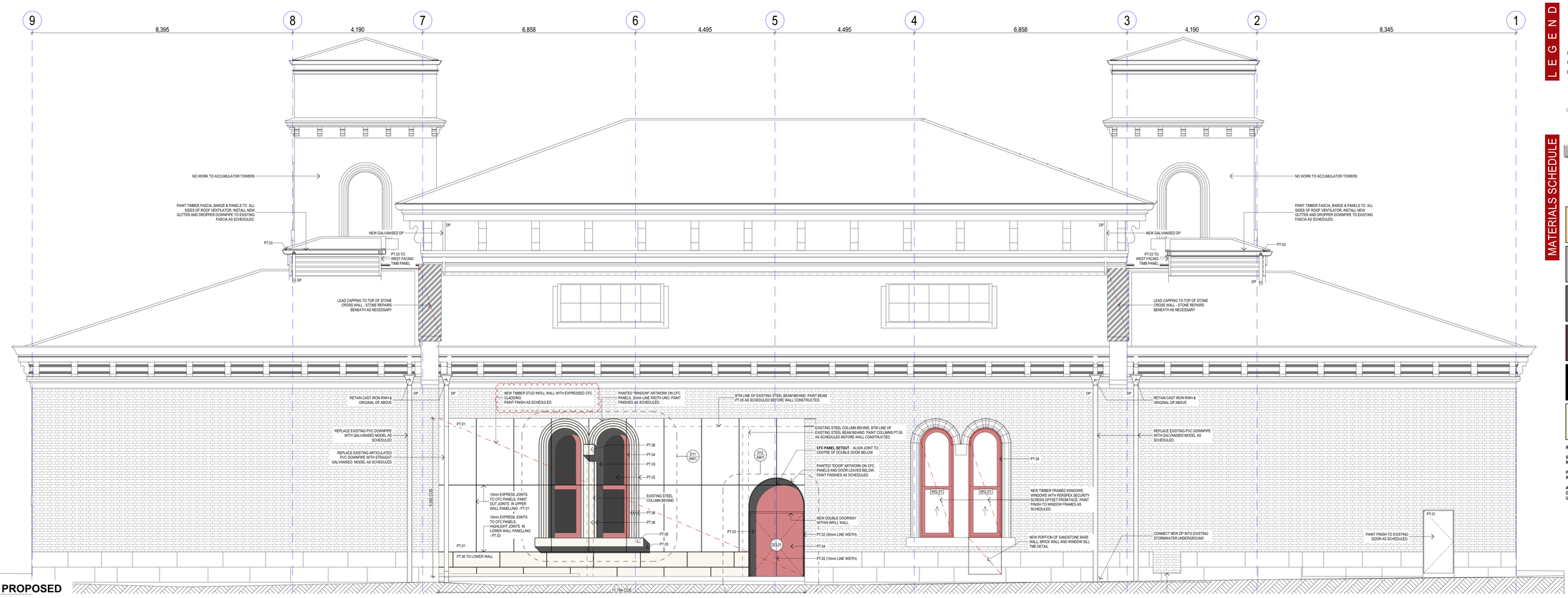
PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A503	1

Port of Newcastle

EJE architecture

ABBREVIATIONS

AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BG	BOX GUTTER
BH	BULKHEAD
BLK	CONCRETE BLOCKWORK
CAP	CAPPING
CFC	COMPRESSED FIBRE CEMENT
CL	CENTRE LINE
CLD	CLADDING
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CR	CEMENT RENDER
CRN	CORNICE
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
E	EXISTING
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
EQ	EQUAL SPACING
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
G	GLASS
GW	GLASS WINDOW
HD	HINGED DOOR
HR	HANDRAIL
HYD	HYDRAULIC
MC	METAL CLADDING
MECH	MECHANICAL
MR	METAL ROOF SHEETING
PB	PLASTERBOARD
PCT	POWDERCOAT
PS	POST - TIMBER
PT	PAINT FINISH
RL	REDUCED LEVEL
SC	STONE CLADDING
SD	SLIDING DOOR
SK	SKIRTING
SPR	SPREADER
SS	STAINLESS STEEL
ST	STONE
TB	TIMBER BEAM
TBR	TIMBER
TNE	TO MATCH EXISTING
TYP	TYPICAL
#	No. DENOTES TYPE AS SCHEDULED



NORTH ELEVATION - PROPOSED
1:50

LEGEND

- W1.05 — WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05
- L1.05 — LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE N° 05
- D1.05 — DOOR MARKER eg. DOOR / LEVEL 1 / DOOR N° 05
- EXISTING WALLS
- WALLS TO BE DEMOLISHED
- NEW WALLS
- 0.00 — EXISTING RL
- (0.00) — PROPOSED RL
- WT56 — **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL.

MATERIALS SCHEDULE

NEW EAVES GUTTER
FIELDERS 'AINSWORTH OG" 125mm HERITAGE GALVANISED FINISH MATCHING DOWNPIPE & COMPONENTS.

NEW DOWNPIPES
FIELDERS - SIZED TO MATCH EXISTING HERITAGE GALVANISED FINISH MATCHING COMPONENTS.

PAINT PT.01
DULUX - EXTERIOR FOR CFC SUBSTRATE COLOUR - TO MATCH ORIGINAL BROWORK E.G. BUTTER RIDGE A197

PAINT PT.02
DULUX - EXTERIOR FOR CFC SUBSTRATE COLOUR - WINTER FOG A70

PAINT PT.03
DULUX - EXTERIOR FOR CFC SUBSTRATE COLOUR - HAMMER GREY A5

PAINT PT.04
DULUX - FOR TIMBER DOORS & WINDOWS/ CFC SUBSTRATE COLOUR - TO MATCH EXISTING MAROONRED DOORS & WINDOWS OF SOUTH FACADE

PAINT PT.05
DULUX - FOR EXISTING STEEL CORROSION PROTECTION IN MARINE / INDUSTRIAL ENVIRONMENT COLOUR - BLACK

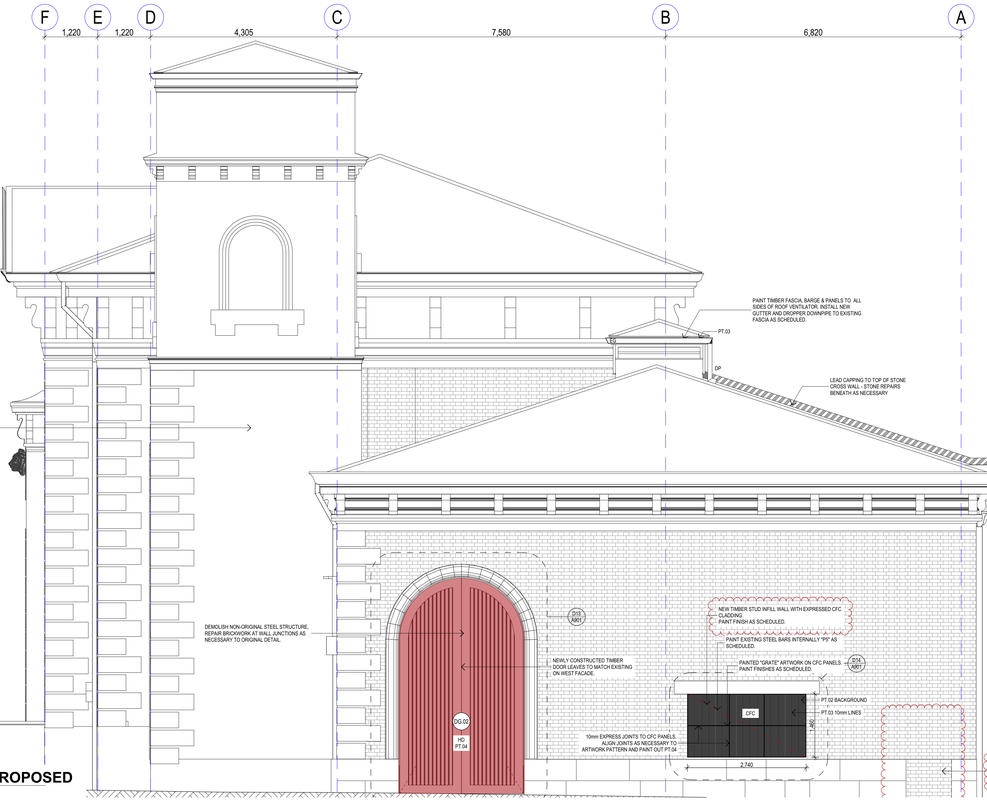
PAINT PT.06
DULUX - FOR CFC SUBSTRATE COLOUR - TO MATCH ORIGINAL SANDSTONE BASE E.G. SAND DIAMOND QUARTER A198

ALL PAINTS:

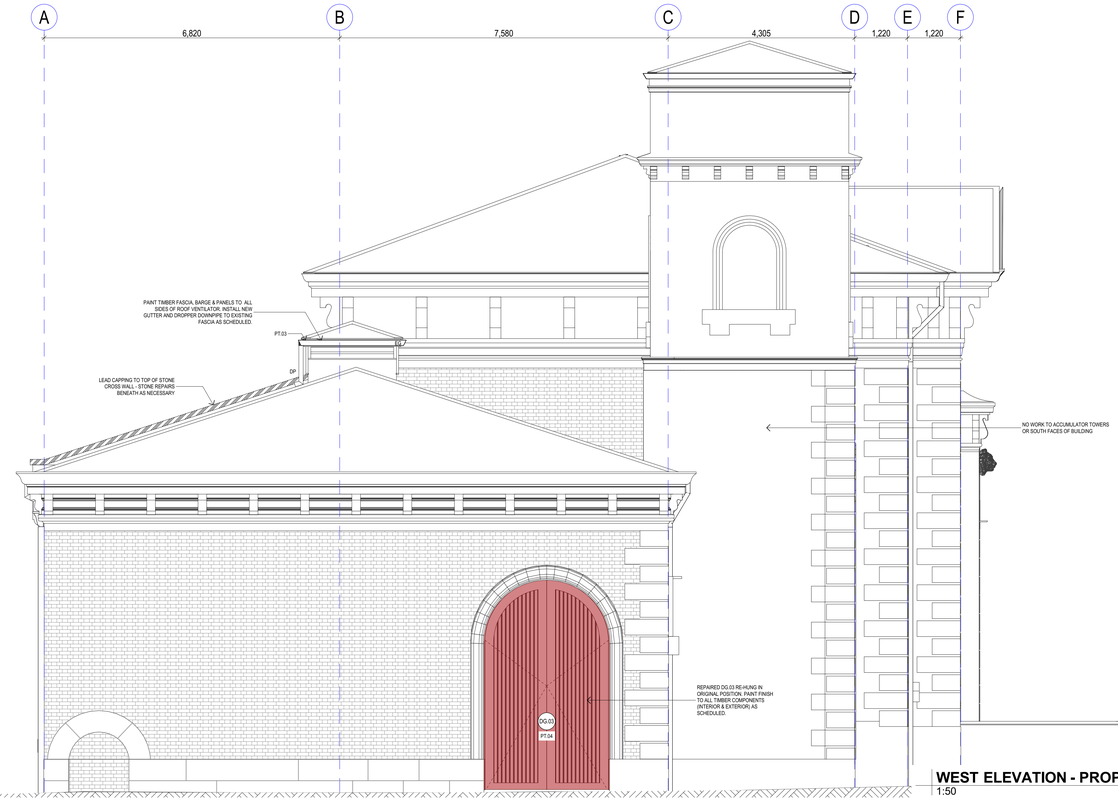
SPECIFIC PAINT TYPES TO SPECIALIST SUB-CONTRACTOR'S RECOMMENDATION TO SUIT DESCRIBED APPLICATION.

PREPARE SURFACE, PRIME & PAINT TO MANUFACTURER'S INSTRUCTIONS.

ALLOW TO PREPARE SAMPLE PAINTED AREA FOR OWNER/ARCHITECTS APPROVAL OF ALL COLOURS BEFORE UNDERTAKING WORK.



EAST ELEVATION - PROPOSED
1:50



WEST ELEVATION - PROPOSED
1:50

EJE ARCHITECTURE
ACN 002 912 641 | **ABN** 67 644 645 849
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0 — 25mm — 100mm — 200mm ON ORIGINAL A3

REV	DATE	COMMENTS	DRN	CHKD	VRFD
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0	24/08/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC
2	5/03/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC

PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE

SITE: BOURKE STREET CARRINGTON 2294

CLIENT: NEWCASTLE PORT CORPORATION BOURKE ST CARRINGTON

DRAWING: NORTH, EAST, WEST ELEVATIONS - PROPOSED

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

FILENAME : 11009-C-2021-03-05.pln — DATE PRINTED : 18/03/2021

DRAWN : DW/LE — DATE : 5/03/2021 — SCALES : 1:50

PROJECT No : 11009 — PHASE : CON — DRAWING No : A511 — REV : 2

Port of Newcastle

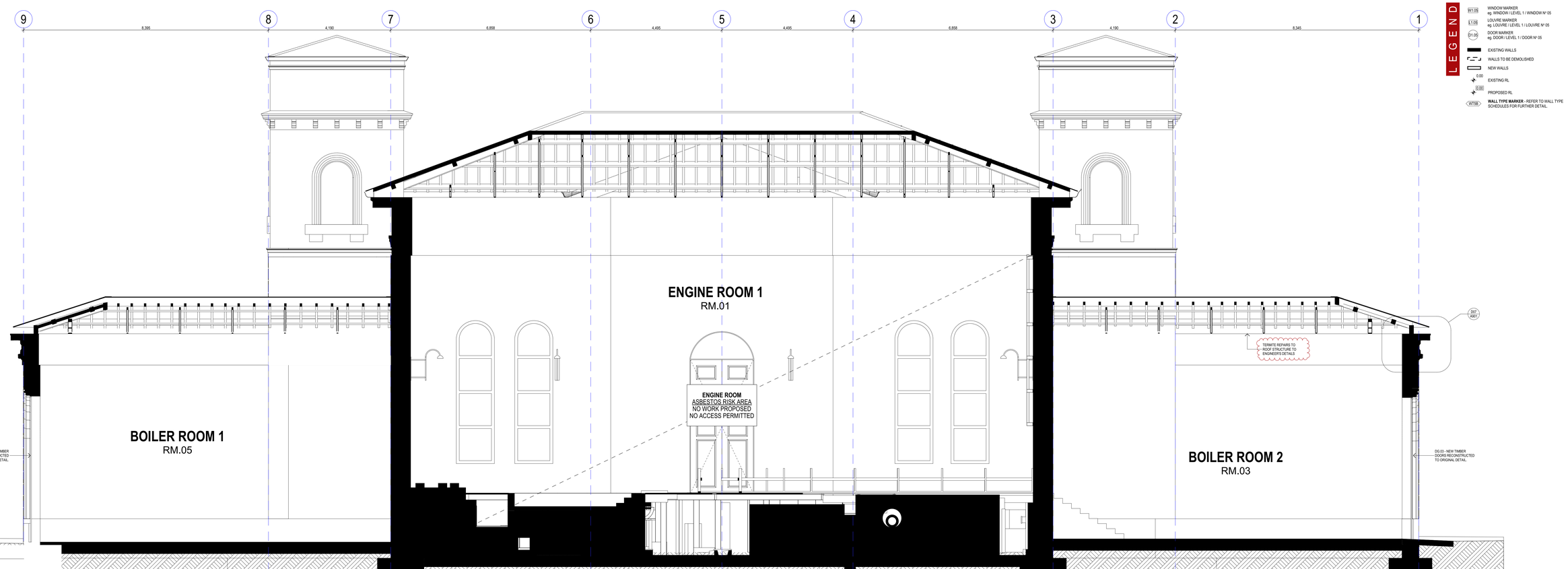
EJE architecture

ABBREVIATIONS

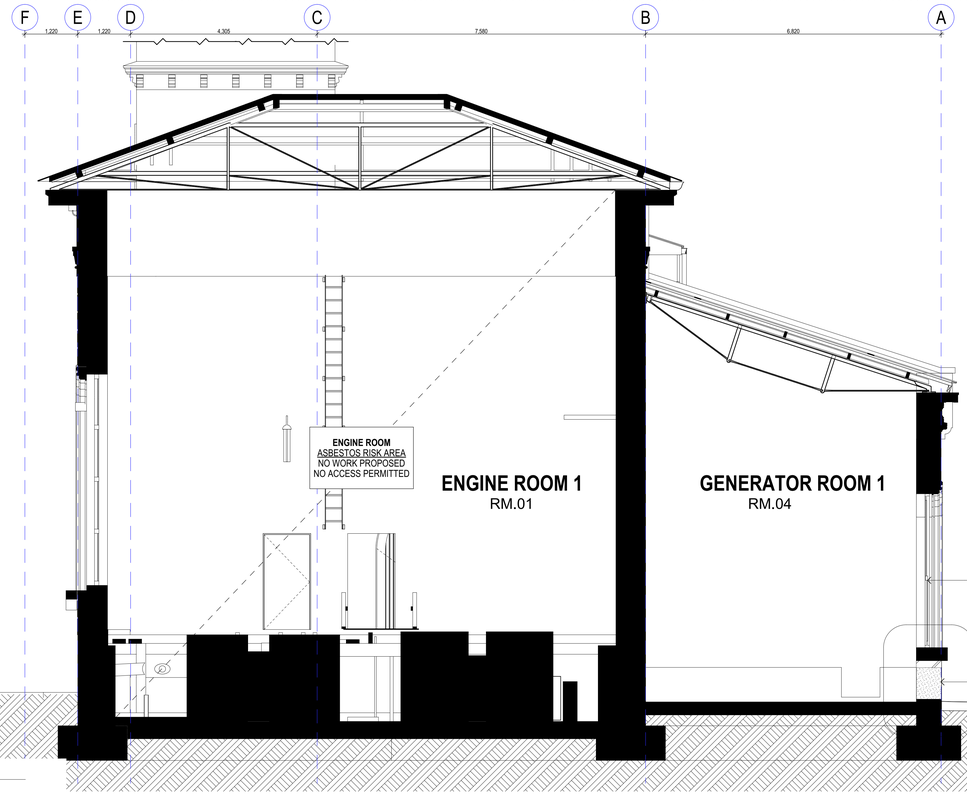
AR	ARCHITRAVE
AS	AUSTRALIAN STANDARD
BG	BOX GUTTER
BH	BULKHEAD
BLK	CONCRETE BLOCKWORK
CAP	CAPPING
CFC	COMPRESSED FIBRE CEMENT
CL	CENTRE LINE
CLD	CLADDING
COL	COLUMN - REFER TO STRUCTURAL DOCUMENTATION
CONC	CONCRETE
COS	CONFIRM ON SITE
CR	CEMENT RENDER
CRN	CORNICE
DP	DOWNPIPE - REFER TO HYDRAULIC DOCUMENTATION
E	EXISTING
EG	EAVES GUTTER - REFER TO HYDRAULIC DOCUMENTATION
EJ	EXPANSION JOINT
ES	EQUAL SPACING
FB	FACE BRICK
FC	FIBRE CEMENT SHEETING
FFL	FINISHED FLOOR LEVEL
FG	FIXED GLASS
G	GLASS
GW	GLASS WINDOW
HD	HINGED DOOR
HR	HANDRAIL
HYD	HYDRAULIC
MC	METAL CLADDING
MECH	MECHANICAL
MR	METAL ROOF SHEETING
PB	PLASTERBOARD
PCT	POWDERCOAT
PS	POST - TIMBER
PT	PAINT FINISH
RL	REDUCED LEVEL
SC	STONE CLADDING
SD	SLIDING DOOR
SK	SKIRTING
SPR	SPREADER
SS	STAINLESS STEEL
ST	STONE
TB	TIMBER BEAM
TBR	TIMBER
TME	TO MATCH EXISTING
TYP	TYPICAL
#	No. DENOTES TYPE AS SCHEDULED

LEGEND

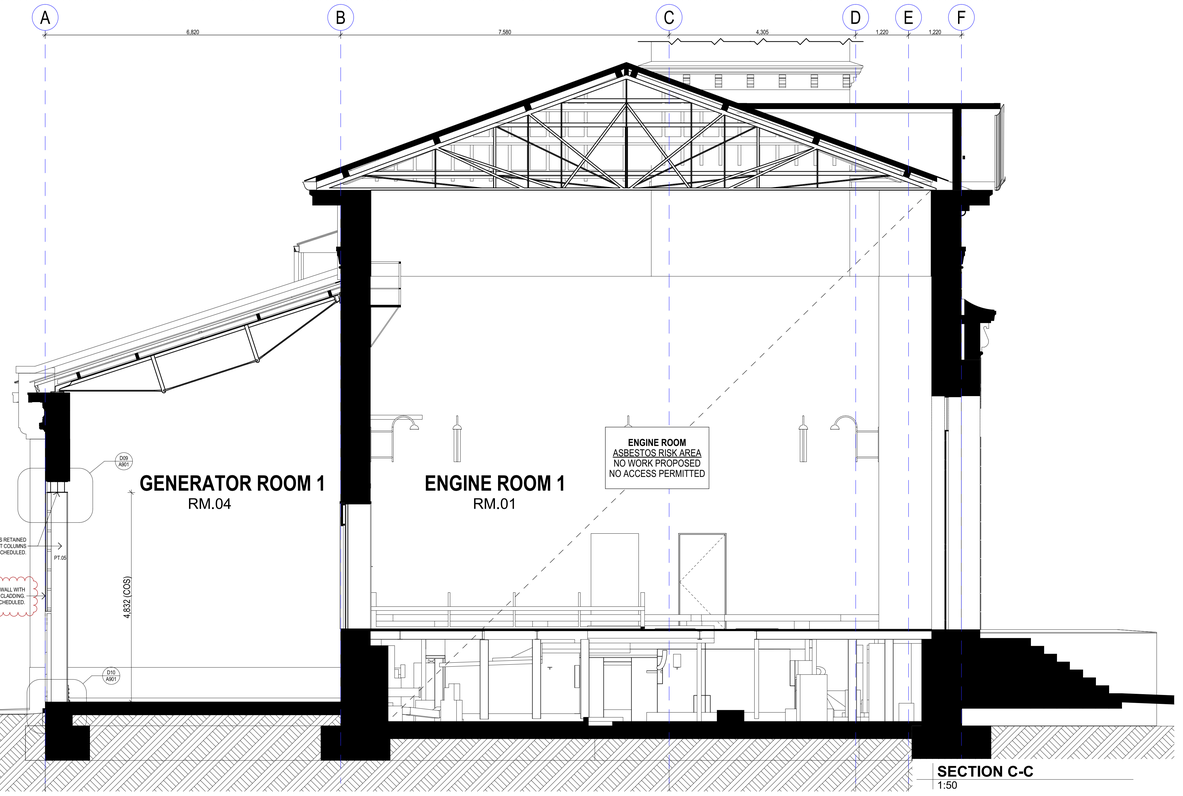
- W1.05 — WINDOW MARKER eg. WINDOW / LEVEL 1 / WINDOW N° 05
- L1.05 — LOUVRE MARKER eg. LOUVRE / LEVEL 1 / LOUVRE N° 05
- D1.05 — DOOR MARKER eg. DOOR / LEVEL 1 / DOOR N° 05
- EXISTING WALLS
- WALLS TO BE DEMOLISHED
- NEW WALLS
- 0.00 — EXISTING RL
- 0.00 — PROPOSED RL
- WT50 — **WALL TYPE MARKER** - REFER TO WALL TYPE SCHEDULES FOR FURTHER DETAIL.



SECTION A-A
1:50



SECTION B-B
1:50



SECTION C-C
1:50

EJE ARCHITECTURE
ACN 002 912 843 | **ABN** 82 644 649 849
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0 100mm 200mm 500mm 200mm ON ORIGINAL A0

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	9/08/2020	PRELIMINARY TENDER SET FOR REVIEW	DW/LE	DFW	BJC
0	24/08/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC
2	13/01/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC
3	5/03/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC

PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE

SITE : BOURKE STREET CARRINGTON 2294

CLIENT : NEWCASTLE PORT CORPORATION BOURKE ST CARRINGTON

DRAWING: SECTIONS - PROPOSED

WORK IN FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

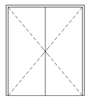
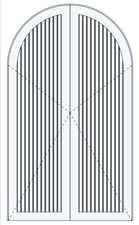
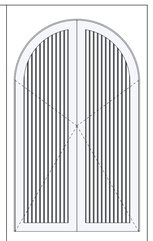
FILENAME : 11009-C-2021-03-05.pln DATE PRINTED : 18/03/2021

DRAWN :	DATE :	SCALES :
DW/LE	5/03/2021	1:50

PROJECT No :	PHASE :	DRAWING No :	REV :
11009	CON	A551	3

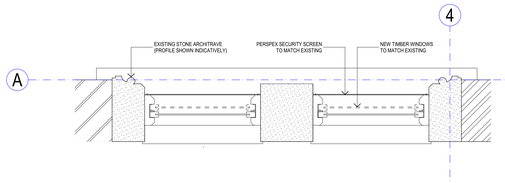
Port of Newcastle

EJE architecture

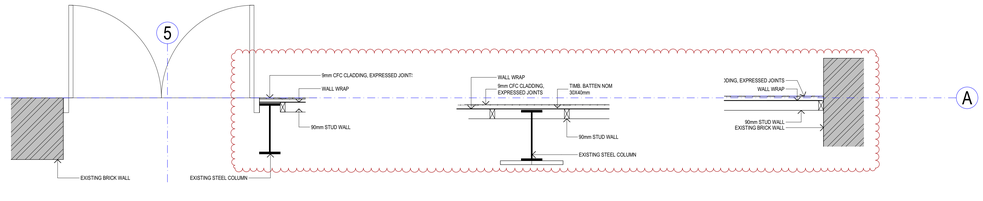
ELEVATION			
DOOR NUMBER	DG.01	DG.02	DG.03
NOMINAL DIMENSIONS	1,710×2,040	2,900×5,000	2,900×4,900
LEAF & FINISH	TIMBER - PAINT FINISH AS SCHEDULED	TIMB. RE-USE ORIGINAL WHERE POSSIBLE, NEW TIMB. MIN DURABILITY CLASS 2.	TIMB. RE-USE ORIGINAL WHERE POSSIBLE, NEW TIMB. MIN DURABILITY CLASS 2.
FRAME & FINISH	STEEL - PAINT FINISH AS SCHEDULED	EXISTING STONE ARCHITRAVE	EXISTING STONE ARCHITRAVE
NOTES	HINGED DOUBLE SECURITY DOOR. WATERPROOF SEALANT TO ALL EDGES OF TIMBER LEAVES. ALLOW DROP BOLTS INTERNALLY AND APPROPRIATE LOCKING MECHANISM AND HANDLES.	REBUILD DOOR TO MATCH EXISTING, RE-USING ORIGINAL TIMBER IN GOOD CONDITION. WATERPROOF SEALANT TO ALL EDGES OF TIMBER LEAVES. PAINT FINISH AS SCHEDULED. ALLOW INTERNAL DROP BOLTS, APPROPRIATE LOCKING MECHANISM AND HANDLES. 3 COATS OF ENAMEL PAINT FINISH	REBUILD DOOR TO MATCH EXISTING, RE-USING ORIGINAL TIMBER IN GOOD CONDITION. WATERPROOF SEALANT TO ALL EDGES OF TIMBER LEAVES. PAINT FINISH AS SCHEDULED. ALLOW INTERNAL DROP BOLTS, APPROPRIATE LOCKING MECHANISM AND HANDLES. 3 COATS OF ENAMEL PAINT FINISH

DG04 DELETED

ELEVATION	
WINDOW NUMBER	WG.01
NOM. HEIGHT	3,550
NOM. WIDTH	1,070
FRAME & PANEL	TIMBER FRAMED, CLEAR GLAZED + PERSPEX SCREEN
NOTES	2X UNITS, SINGLE HUNG TIMBER FRAMED WINDOWS WITH OPERABLE LOWER SASH. WINDOW TO MATCH ORIGINAL DETAILS OF SOUTH FACADE. PERSPEX SECURITY SCREEN OFFSET FROM FRONT FACE TO MATCH EXISTING ELSEWHERE. ALLOW INTERNAL LOCKS.



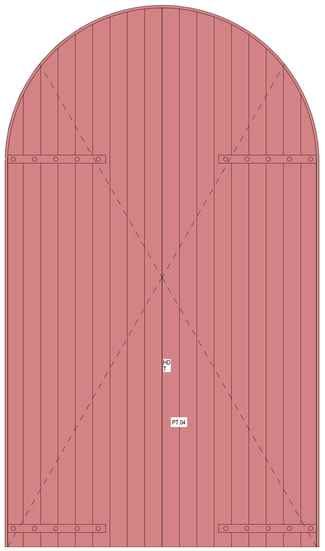
D02 NEW WINDOWS WG.01 PLAN
1:20



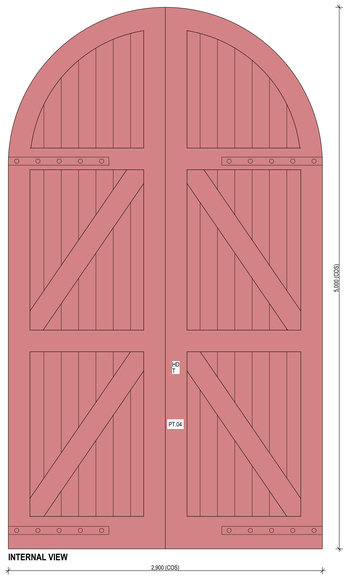
D03 NEW WALL AND DOOR
1:20

D04 EXISTING COLUMN NEW WALL
1:20

D05 NEW WALL JUNCTION
1:20



EXTERNAL VIEW

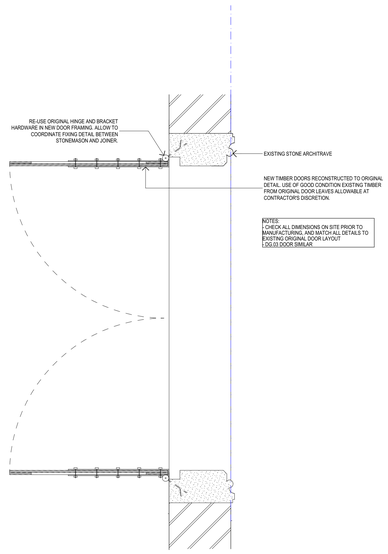


INTERNAL VIEW

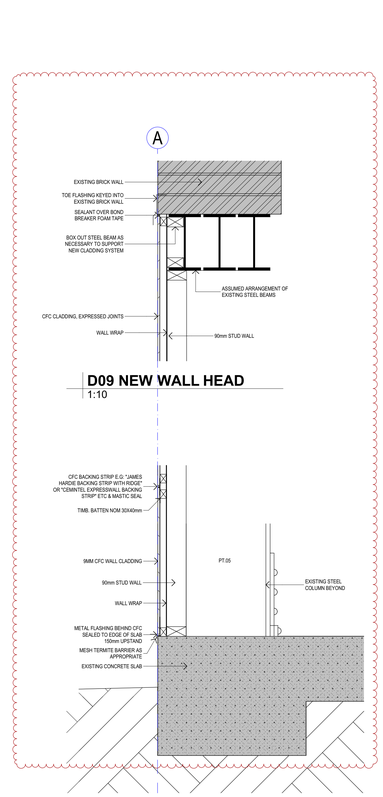
NOTES:
- CHECK ALL DIMENSIONS ON SITE PRIOR TO FABRICATION
- CHECK ALL DETAILS TO EXISTING ORIGINAL DOOR
- DG.03 DETAILS SIMILAR (NOTE DOORS MAY BE DIFFERENT HEIGHTS)
- RE-USE OF TIMBER IN GOOD CONDITION FROM ORIGINAL DOORS AT CONTRACTORS DISCRETION ALLOWABLE
- ALLOW FOR APPROPRIATE LOCKING MECHANISM, DROP BOLTS AND HANDLES.

D13 EXISTING COLUMN NEW WALL
1:20

D06 DELETED

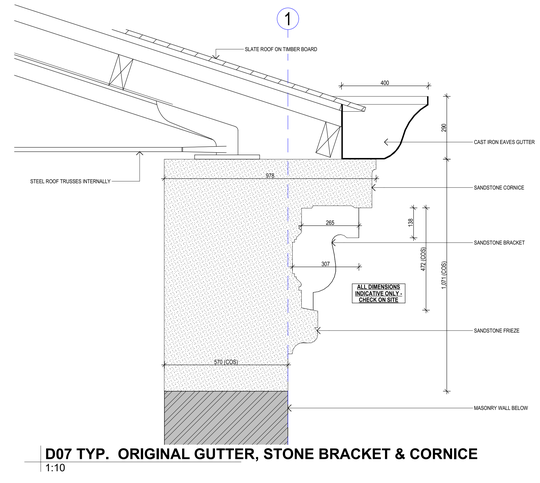


D01 REBUILT DOOR DG.02
1:20

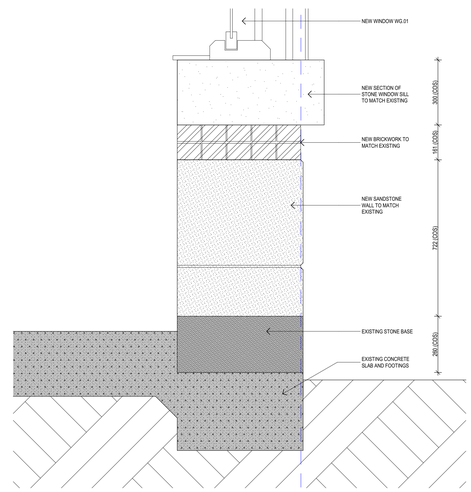


D09 NEW WALL HEAD
1:10

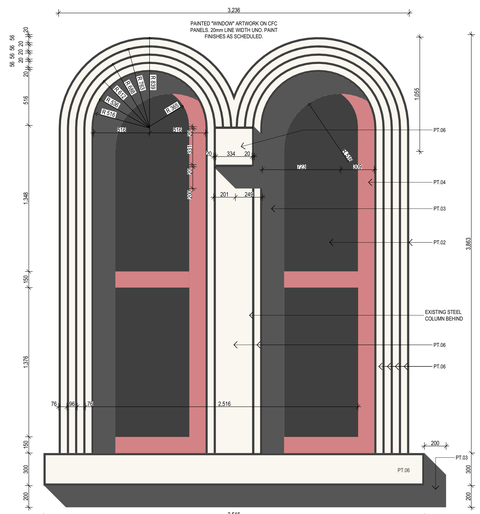
D10 NEW WALL BASE
1:10



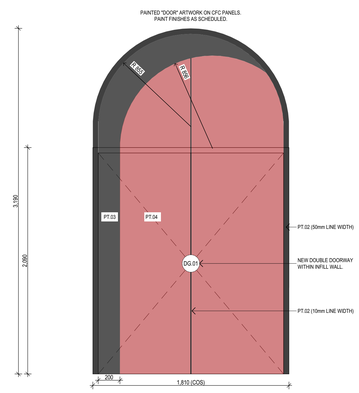
D07 TYP. ORIGINAL GUTTER, STONE BRACKET & CORNICE
1:10



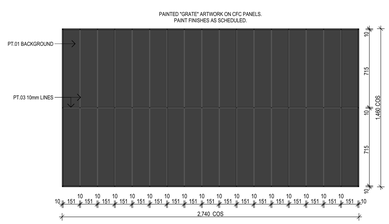
D08 WINDOW SILL
1:10



D11 PAINTED "WINDOW" ARTWORK
1:20



D12 PAINTED "DOOR" ARTWORK
1:20



D14 EXISTING COLUMN NEW WALL
1:20

EJE ARCHITECTURE
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Nominated Architect - Bernard Collins
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A 412 KING STREET, NEWCASTLE, NSW 2300
P +61 2 4929 2353 | **F** +61 2 4926 3069 | **E** mail@eje.com.au | **W** www.eje.com.au

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0 25mm 100mm 200mm ON ORIGINAL A0

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	9/08/2020	PRELIMINARY TENDER SET FOR REVIEW	DFW/LE	DFW	BJC
0	24/08/2020	TENDER ISSUE	DFW	DFW	BJC
1	23/11/2020	CONSTRUCTION ISSUE	DFW	BJC	BJC
2	5/03/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC
3	18/03/2021	CONSTRUCTION ISSUE	DFW	DFW	BJC

PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE

CLIENT : NEWCASTLE PORT CORPORATION
BOURKE ST
CARRINGTON

SITE : BOURKE STREET
CARRINGTON 2294

DRAWING : DOOR & WINDOW SCHEDULES & DETAILS

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DRAWN : **DW/LE** DATE : **18/03/2021** SCALES : **1:20, 1:10**

PROJECT No : **11009** PHASE : **CON** DRAWING No : **A901** REV : **3**

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01 SITE PLAN / AERIAL PHOTO
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CARRINGTON HYDRAULIC ENGINE HOUSE:

CRANE BASES No. 07-10

THE DYKE, THE PORT OF NEWCASTLE, NEWCASTLE NSW

WORKING DRAWINGS

ARCHITECTURAL DRAWING SCHEDULE

A000	COVER SHEET / SITE PLAN
A100	EXISTING PLANS, PERSPECTIVES & IMAGERY
A501	EXISTING ELEVATIONS - CRANE BASES 07-10

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PROJECT: CARRINGTON HYDRAULIC ENGINE HOUSE - CRANE BASES 07-10

SITE: BOURKE ST CARRINGTON NSW 2294

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DRAWING: COVER SHEET / SITE PLAN

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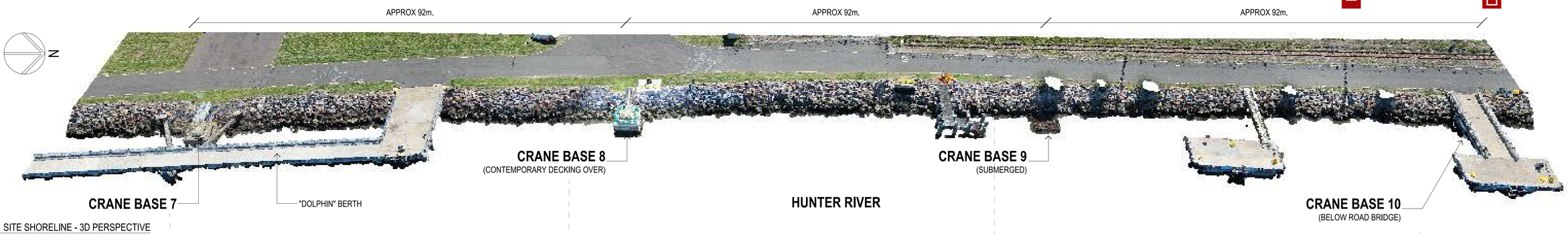
FABRIC KEY

- CONCRETE
- SANDSTONE
- FACE BRICK
- OYSTER GROWTH

DAMAGE KEY

- PAINT SPLASH/SURFACE DISCOLORATION
- STONE/FABRIC DAMAGE
- BRICK MORTAR DEGRADED
- STONE MORTAR JOINTS DEGRADED



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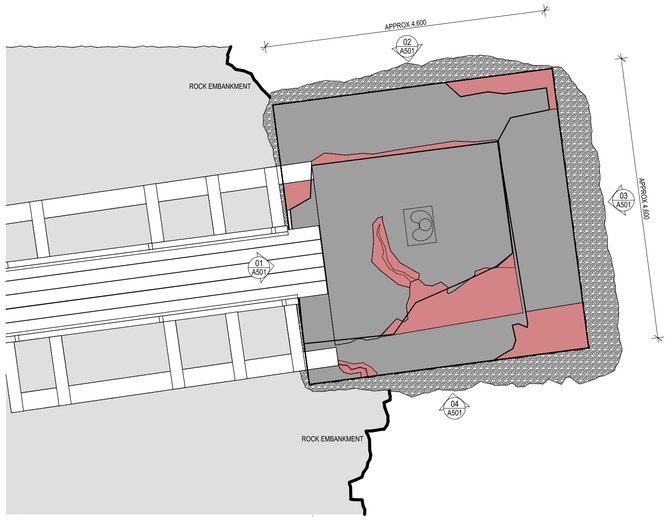

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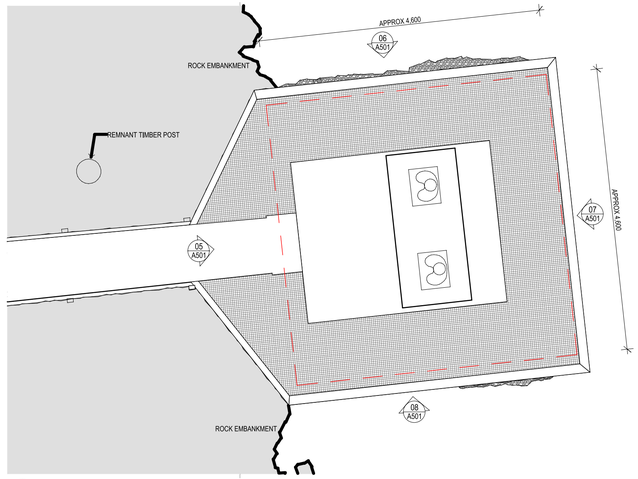

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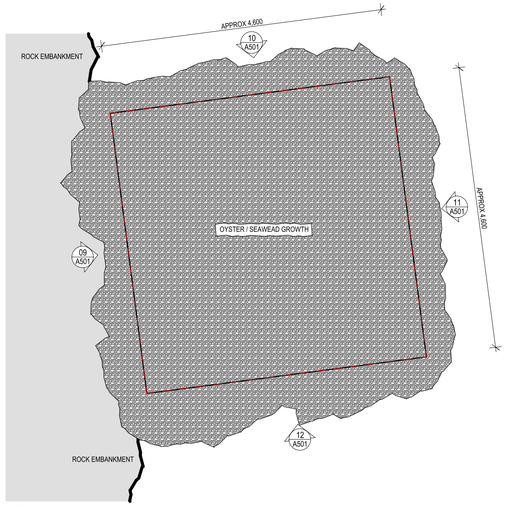

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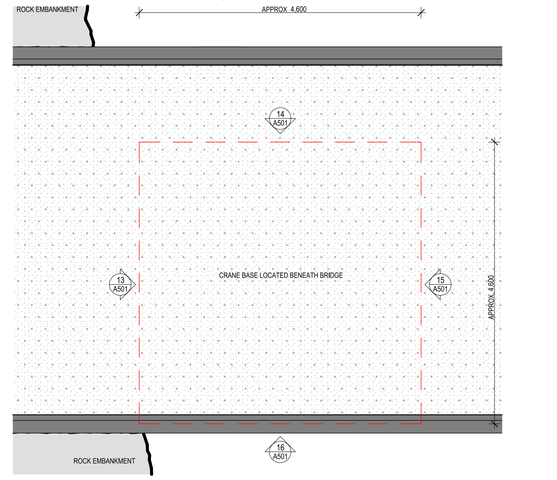

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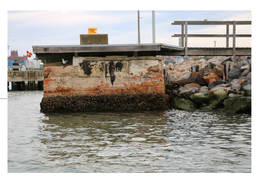

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PROJECT : CARRINGTON HYDRAULIC ENGINE HOUSE - CRANE BASES 07-10

SITE : BOURKE ST CARRINGTON NSW 2294

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FABRIC KEY

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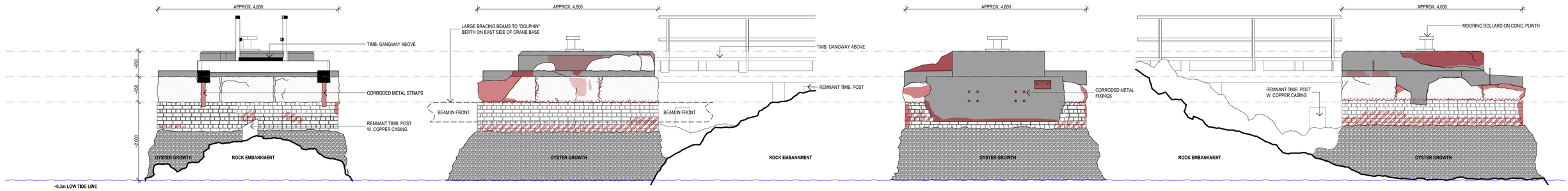
- SANDSTONE
- FACE BRICK
- OYSTER GROWTH

DAMAGE KEY

- PAINT SPLASH/SURFACE DISCOLORATION
- STONE/FABRIC DAMAGE
- BRICK MORTAR DEGRADED
- STONE MORTAR JOINTS DEGRADED

(LAND SIDE THIS COLUMN)

(WATER SIDE THIS COLUMN)



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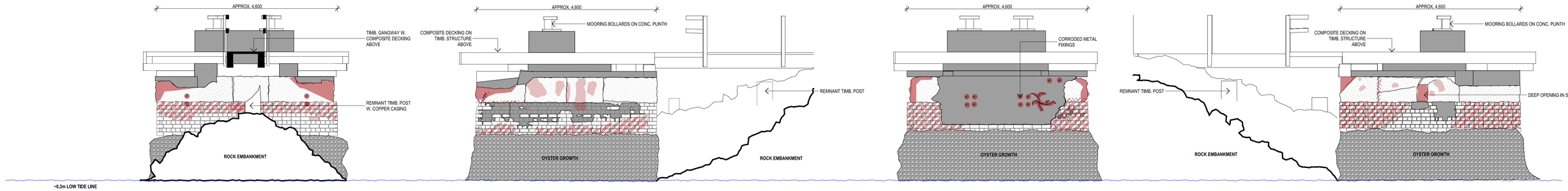
03 EAST ELEV. 1:50

04 SOUTH ELEV. 1:50



CRANE BASE 08

05 WEST ELEV. 1:50

06 NORTH ELEV. 1:50

07 EAST ELEV. 1:50

08 SOUTH ELEV. 1:50

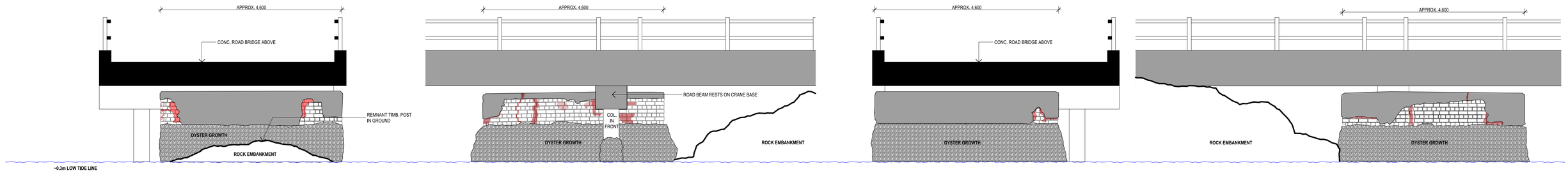
CRANE BASE 09

09 WEST ELEV. 1:50

10 NORTH ELEV. 1:50

11 EAST ELEV. 1:50

12 SOUTH ELEV. 1:50



CRANE BASE 10

13 WEST ELEV. 1:50

14 NORTH ELEV. 1:50

15 SOUTH ELEVATION 1:50

16 SOUTH ELEV. 1:50

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SITE : BOURKE ST CARRINGTON NSW 2294

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CARRINGTON HYDRAULIC ENGINE HOUSE

Interpretation Strategy

EJE Heritage

December 2021 - Revision A

COVER IMAGE:

CARRINGTON HYDRAULIC ENGINE HOUSE FORECOURT & SOUTH FACADE - 2019

date of issue

December 2021 - REVISION A

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Prepared by EJE Heritage,
412 King Street Newcastle NSW 2300

CARRINGTON HYDRAULIC ENGINE HOUSE SOUTH FACADE - 2016

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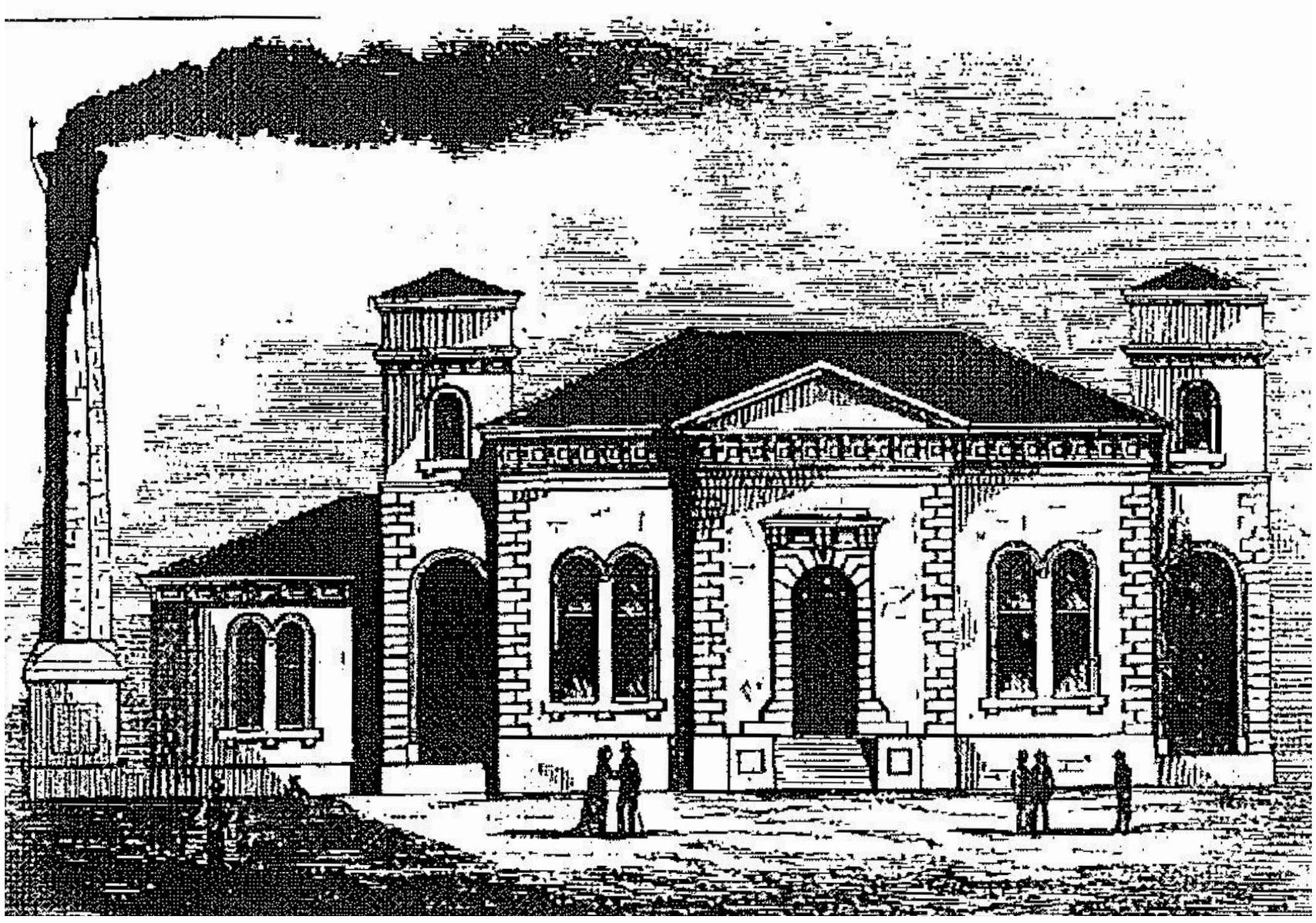
EXECUTIVE SUMMARY

This Interpretation Strategy has been prepared as a component of the Port of Newcastle's ongoing commitment to restoration of the historic Carrington Hydraulic Engine House building, located on the Port of Newcastle's Bourke St site in Carrington NSW. The key objective of this report is to provide guidelines for future heritage interpretation planning of the item.

The story of the Engine House is specific and particular, with a number of prominent themes that "tell" its tale. It is a building with a key role in the historical development of the Port, and in a sense the city of Newcastle. It is as such imperative that its heritage be interpreted in a manner that is public, prominent and easy to understand, but at the same time sympathetic to the historic built fabric of the site.

Interpretation strategies are recommended in this plan that aim to enrich the audience's experience of the Engine House and assist in a deeper understanding of its heritage values. These include both publicly accessible devices, and more private ones located within potentially tenanted or secure areas of the Port. Proposed locations for each delivery method have been established at key points that are logical and informative, but also nonrestrictive for future users of the building.

It is recommended that a collaborative approach between the audience and stakeholders be adopted in the design of the interpretive media. This reflects best practice in heritage interpretation, whereby collaboration and feedback is encouraged. There is significant opportunity for the Port of Newcastle to engage with members of the Carrington Community and future building tenants to consolidate the interpretation process beyond the recommendations of this report.



INTRODUCTION

INTERPRETATION

The subject site is located at the apex of *The Basin* along the north shoreline of the Port of Newcastle, looking back across the harbour to the well trafficked residential and hospitality district of Honeysuckle. The building sits at the end of Cowper Street, a wide and prominent transit route through the suburb of Carrington.

Aims of the Plan

The following strategy is intended to provide direction and framework for the future heritage interpretation of the Carrington Hydraulic Engine House.

Objectives

The objectives of the plan are to:

- *identify locations and methods of implementing an "interpretive framework" that is accessible, logical and informative in its approach;*
- *enrich the visitor's experience to the Carrington Hydraulic Engine House site, making it more meaningful and enjoyable;*
- *assist the visitor to develop a deeper understanding of all the heritage values of the place, and in particular how the physical nature of the building & its associated machinery developed across its historical timeline;*
- *contribute to and support the character of the Port and Hydraulic Engine House precinct, and;*
- *develop the Hydraulic Engine House precinct as a potential tourist/visitor attraction, and asset for the Port of Newcastle or future tenants as a draw card element within the region.*

METHODOLOGY

This plan has been prepared in accordance with the guidelines provided by *Heritage NSW* whereby an Interpretation Plan is defined as a document that provides the policies, strategies and detailed advice for interpreting a heritage item. It is based on research and analysis and plans to communicate the significance of the item, both during any conservation project and for the ongoing life of the item. The plan identifies key themes, storylines and audiences and provides recommendations about interpretation media. It includes practical and specific advice about how to implement the plan.

Consultation

This plan has been prepared in consultation with the asset owners, the Port of Newcastle.

The opportunity to engage the audience and other stakeholders in a collaborative design process for some of the interpretive media (wall plaques, internal installations), has also been identified in this plan. This will facilitate ongoing consultation and feedback from the audience, which is essential for relevant and effective interpretation.

OTHER RELEVANT STUDIES

Carrington Hydraulic Power House - Conservation Management Plan,
Hunter Design Newcastle, 1993

Conservation Management Plan for the Former Carrington Hydraulic Engine House,
NSW Department of Commerce, Oct 2005

Conservation Management Plan - Carrington Hydraulic Engine House & Crane Bases 7, 8, 9 & 10 - Draft 3
EJE Heritage, 2021

Port of Newcastle Heritage & Conservation Register
Port of Newcastle, 2014

The Pump House at Carrington (Bullock Island)
J. Guy, W. Kostyrko, J. Lott, B. Rodd, UNE Thesis 608

Extant Remains of Hydraulic Power in Newcastle and Sydney, NSW
J. Gibson, Engineers Australia, July 2009

Carrington Hydraulic Pumping Station, Newcastle
Engineering Heritage Australia, Vol.2 No.2 April 2016

Hydraulic Power and Voal Loading at Newcastle Harbour, New South Wales
D. Bairstow, Australian Historical Archaeology, Vol.4, 1986

HERITAGE LISTINGS

The site and building are listed on the following Heritage Registers:

NSW Heritage Act - Item 01987, Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10, 25 Aug 2017

Three Ports SEPP 2013

National Trust of Australia Register 1639 30 May 77

Register of the National Estate Nom.1/08/1977001293 21 Oct 80 AHC

HISTORICAL OVERVIEW

HISTORICAL CONTEXT

The Awabakal people who inhabited the land near the Hunter River referred to Bullock Island as "Onebygamba" meaning "large mound". It was an appropriate moniker for the wide expanse of ground rising (albeit only marginally) above the surface between two arms of the Hunter River where Throsby Creek entered the secondary flow.

The area achieved its later colonial name of Bullock Island as cattle would go there to graze when the low tide allowed them access. Bullock island was swampy and isolated and as such was ignored by settlers for many years while development occurred on firmer ground elsewhere.

The Moriarty Plan

Edward Orpen Moriarty had broad engineering experience in breakwater construction, railway works, surveying and shipbuilding. He had worked as a cadet engineer on the Isle of Portland breakwater in Ireland before emigrating to New South Wales with his family in 1843. After working as a consulting engineer and surveyor in Sydney for several years, he became an assistant in the Surveyor-General's Department. In 1853 he became Engineer-Surveyor of the Steam Navigation Board (which he later Chaired), followed by his appointment to Newcastle in 1855 as Engineer for Hunter River improvements. After leaving Newcastle in 1858 he became Engineer in Chief, Harbours and Rivers for the Public Works Department.

Moriarty produced a report on the navigation problems at Newcastle, identifying "two natural drawbacks of the harbour": a rock ledge and unusual current at the entrance, and the extensive banks of sand within. He predicted the removal of the rock ledge, or the carving of a channel through it, "at some future time", but laid down a three stage plan to reduce the levels of silt and sand within the harbour. These steps were summarised by maritime historian Terry Callen:

The first stage was the "continuation of the river" plan and involved the building of a large stone dyke curving from Port Waratah to opposite the Australian Agricultural Company's wharf (Crown Street). The second stage was to build a similar stone wall from near Crown Street curving slightly until it met Macquarie Pier. The third stage was a small stone guidewall or breakwater on the northern side of the harbour at Pirate Point. All three features were planned to work together in concentrating the outgoing current into one stream which would scour out the harbour and the bar.

The government had raised funds for Newcastle harbour improvements by levying of tonnage dues. This scheme operated from 1858 until the 1873 when the Repeal of Tonnage Dues Act was passed, following pressure from local politicians who resented the expenditure of locally raised funds elsewhere.

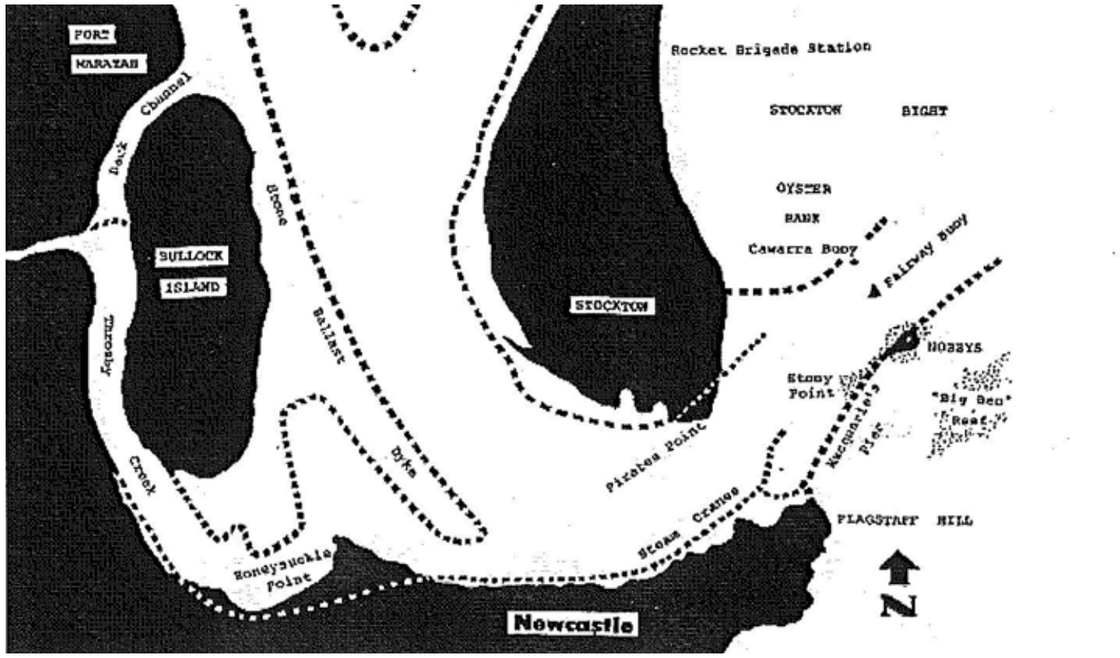
Stage 1: The Dyke

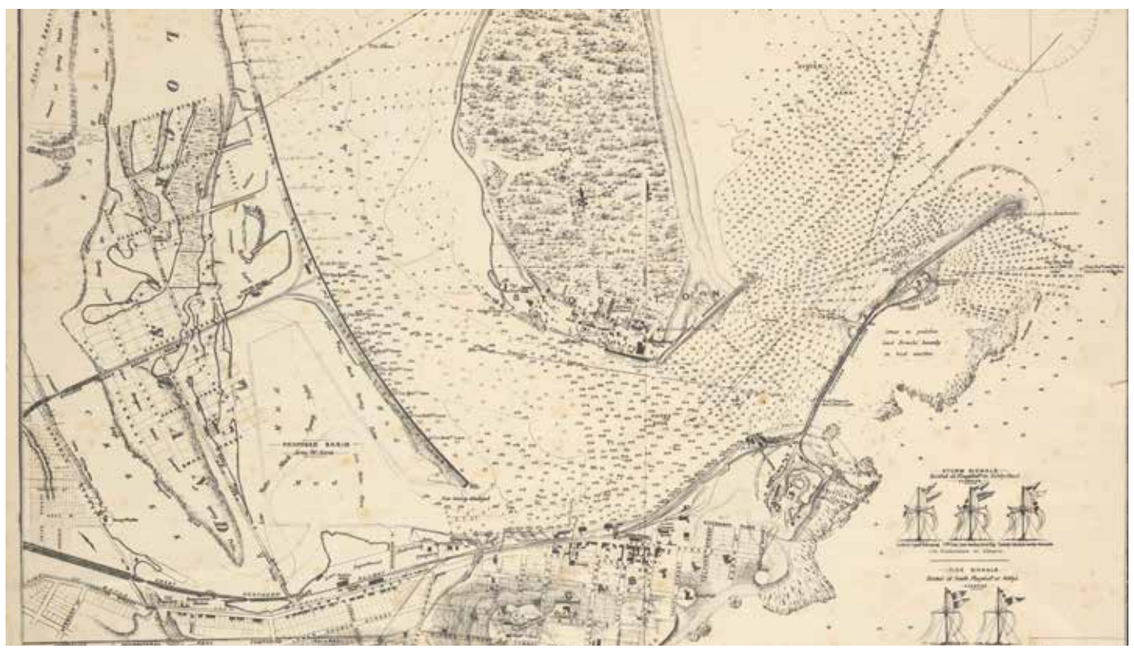
Construction of The Dyke at Bullock Island served a dual purpose in Moriarty's plan. While its eastern face would improve the flow of the river, it would also support a line of wharves for coal loading purposes. Reclamation work behind The Dyke would create an area of land which could be devoted to loading activities.

A sand bank of about 650 hectares ran north-south on the east of the Bullock Island, and Moriarty proposed depositing a layer of ballast along the margin of the bank to prevent it flooding at high tide and to divert the flow of the river to scour a channel to the east of the Dyke. In 1862, two ballast jetties were built and ships began depositing ballast heaps on the line of the embankment, while sand dredged from the harbour was pumped behind the newly created wall.

The diverse nature of the ground on the man-made island was highlighted in the Newcastle Herald:

"Here we have geological specimens from every part of the world. The whole expanse of ground has been built up of ballast from the ships that come to





our harbour. In one place we tread upon a layer of London flint, next a collection of stones from the shores of the sunny Mediterranean. These are succeeded by a rocky mound from Scandinavian coasts and these in turn give place to blue stone from Melbourne, green trap from New Zealand, limestone from Singapore and even the sun burnt bricks and glazed uncouth carvings from a dismantled village in far off China".

By 1874 the stone bank was complete. With reclamation work continuing on Bullock Island, by 1890 a series of mudflats had been transformed into 121 acres of usable land. Enlargement of the basin behind The Dyke in 1892 involved pumping sand through a pipe laid under the main railway line. Rock at the entrance to the new basin was removed by drilling and blasting, using a specially built rockbreaker, *Poseidon*.

Coal Loading Moves to The Dyke

Contracts had been let in 1874 for the construction of wharves on the eastern side of Bullock Island, in preparation for the transfer of coal loading activities from the southern side of the harbour. The New South Wales Parliamentary Papers of 1877 Refer to the expenditure of 20,000 pounds for 'Newcastle wharf, cranes, hydraulic engine house &c.' Archaeologist, Damaris Bairstow, documented the development of these wharves between 1875 and 1877:

Along the Dyke, wharves were built in 30 metre sections, 60 metres apart starting about 230 metres from the southern end. Seventeen were built in 1875, the same year as the branch railway crossed Throsby's Creek on the east side of the island. By 1876, including all sidings, some eleven kilometres of single track had been laid, all in steel, designed to last six times as long as the iron rails normally used. In 1876-7, concrete foundations for the first four hydraulic cranes were laid at Berths 4, 5, 6 and 7, ninety metres apart. [These bases supported the cranes which later became known as Nos. 7, 8, 9 and 10]. In the course of the latter year, the first ten wharves were connected to form a continuous timber-built wharf 838 metres long.

Hydraulic powered cranes were selected for The Dyke coal loading berths, and tenders were called for "the erection of the engine house, boiler house, smoke stack and hydraulic towers" in April 1876. The building was erected by private contractors employed by Harbours and Rivers section of the Public Works Department, with the design of the building often being attributed to the Government Architect, James Barnet. Built on "huge blocks of shining white sandstone", and featuring the same yellow bricks from local brick maker, Bowtell, that had been used in the Customs House, the building drew favourable comment:

"On heavy foundations, then thought essential for any major building on reclaimed land, this Classic Revival edifice is of yellow, compressed brick, with Sydney sandstone quoins, architrave, frieze and pediment. The roof was boarded and slated. The overall length was 43.9 metres, the depth 26.9 metres. The engine room measured 21.3 by 12.3 metres."

Contracts for the hydraulic pumps and associated hydraulic loading cranes were awarded to the Armstrong Hydraulic Machinery Co., Elswick, England. In February 1878, Moriarty witnessed a test lift and on 19th March 1878, the first shipment of coal loaded by hydraulic cranes left Newcastle Harbour aboard the *Downiemount*, which had brought the cranes from Britain on her previous voyage.

The cranes were described in *Town and Country Journal*, March 1879:

"*the chief glory of Newcastle: These beautiful pieces of mechanism ... represent the last achievements of mechanical science in hydraulic machinery. They could be manipulated by a child. The wagons of coal are brought into position by a rope worked by an hydraulic windlass. The man in charge has simply to press his foot on the treadle, while he draws in the rope, and the irresistible water pressure does the rest. The wagon being in position, the hooks of the chains are fastened in it, and the man standing on the platform of the hydraulic crane moves a lever, and the giant lifts the top of the truck as easily as a mother would lift her child, without a sound swings it over the ship's hatchway, where the lumpers knock out the pins which fasten the bottom of the truck, and then the coal disappears into the hold of the vessel. The whole process takes only a minute and a half.*"

The hydraulic cranes installed at the Carrington Engine House were the first employed in the entire country. They predated any similar machines in Sydney (at the Pump House in Ultimo) by more than a decade. The Sydney machines drove a great diversity of warehouse and commercial equipment across the CBD, while those at Carrington were constructed exclusively to drive the coal loading facility, the largest in the state. That this new and expensive technology was first employed in Newcastle demonstrates the acknowledged importance of Newcastle Harbour in the NSW economy at that time. J C Docherty records that the northern coal fields, of which Newcastle was the port, accounted for about 70 per cent of all coal production in NSW between 1880 and 1930.

To keep up with the demand for coal, the Carrington Hydraulic Engine House was soon upgraded and expanded. It's original four cranes were increased in number, with four more commencing service from 1880, four more smaller units in 1888, and three cranes were transferred from Queens Wharf on the south of the harbour in 1889. Operating night and day for over a decade had taxed the original engines and plans were put in place to install a new, more powerful engine to power the hydraulic cranes and generate electricity for lighting on the wharf and in the building.

To accommodate the larger equipment an extra boiler was required, and in 1890 a second boiler room and smokestack were constructed on the east side of the building, symmetrical with the west side. The existing gas lights were decommissioned when the electric lights were lit on the 2nd of September 1891, and by February 1892 all the new machinery was operating.

One of our Lions

In the Christmas day edition of the Newcastle Morning Herald in 1891, there was high praise recorded for the additions to the building, the new equipment, and the Engineer who enabled it all to come together:

"We give it as our opinion that our experienced and energetic Engineer for Harbours and Rivers will not permit avoidable delay to retard this important addition to the loading and discharging capabilities of the port. Another important improvement in an economic direction has been recently effected by the above-named official at THE HYDRAULIC ENGINE HOUSE, the exterior of which, since the completion of the new wing during this year, presents a more uniform and imposing appearance.

The interior, especially when lit up at night by means of the arc and incandescent lights, with the ponderous and well-kept machinery in rapid motion, is a most pleasing sight. A stranger visiting the port and leaving without having paid a visit to the hydraulic and electric engine house will have missed seeing what the citizens of Newcastle may be justly pardoned for terming "one of our lions." From this building, the machinery in which is going almost incessantly from midnight on the Sunday, to the same hour on the Saturday following the year round (may it still continue its almost ceaseless revolutions) is worked the 13 hydraulic cranes extending for over three quarters of a mile north and south along the dyke, each one of which is capable, should necessity require, of loading a vessel from 2000 to 8000 tons burden, well within twenty four hours."

The progressive influence of electricity made its mark at the coal loading facilities on more than just the lighting. Between May 1916 an April 1917 six new electric cranes were brought into service at the port and quickly overtook the bulk of the coal loading duties. They were powered by a temporary power plant at the Eastern end of railway land until the Zaara Street Substation was completed in 1920.

The Hydraulic cranes were still utilised up until the 1960's, though their maintenance was increasingly neglected and many were left derelict when they ceased to function. A report sent from the Waterfront Group of Unions to the Minister for Transport in 1957 stated that one of the travelling cranes had been out of action for more than two years, two for six months and others for lesser periods.

After World War II, Japan turned to Australia to supply the coal needed to power their reconstruction. This contributed greatly to the increase in demand for coal coming through the Port of Newcastle. The cranes that remained in operation at the port were no longer able to keep up and began to attract derision. In 1955 the author of *Australian Coal, Shipping, Steel and the Harbour* described that:

"..the port has been brought to such chaos as to make it almost unworkable... All in all it is lamentable and tragic picture. There is not a port in Australia or elsewhere in the world, which could possibly present such an example of ineptitude and neglect."

It is a tragedy that "the chief glory of Newcastle" could become "such an example of ineptitude and neglect" in only 75 years.

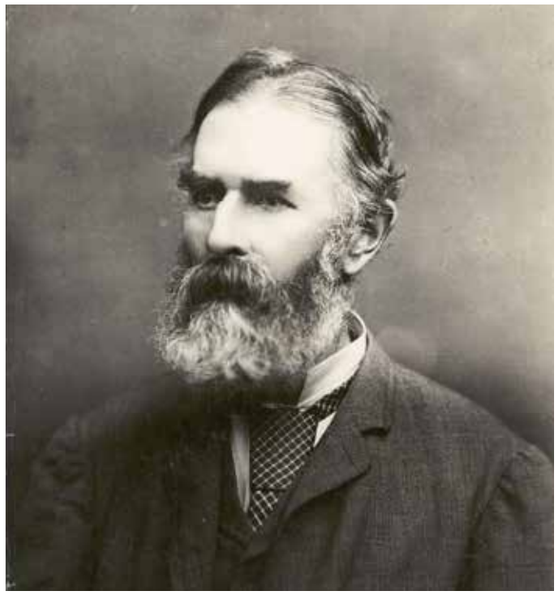
To remedy the situation, the Newstan coal loader came into operation in 1958, its completion having been assisted by private enterprise. It provided immediate relief to the coal loading pressure. Federal Government Funding assisted the next phase of the port upgrade. Commencing in 1964 and completed in 1967, The Basin Coal Loader replaced the Hydraulic cranes and the now outdated electric cranes. Once the last of the hydraulic cranes was decommissioned, work commenced on stripping out the now redundant equipment from the Engine House. The accumulators had to be cut into pieces to remove them from their towers, and the chimney sacks were demolished in the name of public safety. There remains only remnants of the original equipment in the Engine House to date.

STATEMENT OF SIGNIFICANCE

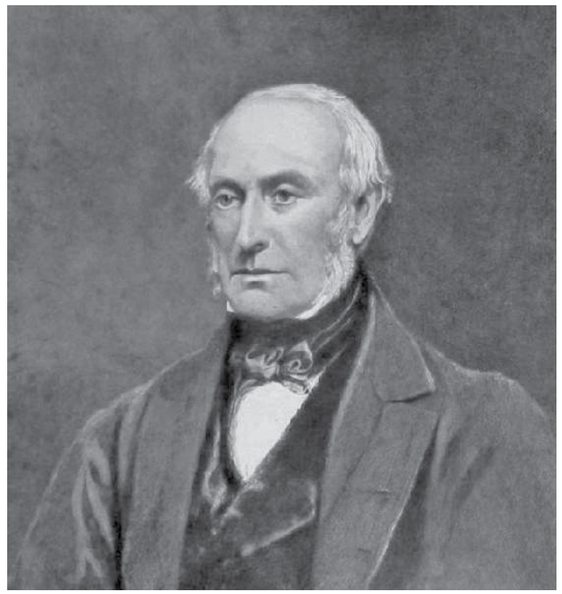
The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10, Carrington, are of state heritage significance for their strong association with the port-related application of hydraulic and electrical power in NSW. As relics of an industrial wonder of their age, the Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 form part of a group collectively illustrating the early application and progress of technologies historically important in the economic development of NSW. They are specially associated with the development of coal handling in Port Hunter, the largest coal port in the Southern Hemisphere and one of great importance in the development of the NSW coal industry. The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are the only examples of their type in NSW, and at both state and national levels constitute the most complete example of a coal loading system predating the introduction of conveyor belt-based loading technology.

The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance for their association with Sir W.G. Armstrong and Company Ltd. and Cowans, Sheldon and Co. Ltd, engineering companies of world importance; with NSW government engineers Edward Orpen Moriarty; Cecil Darley; John Whitton; Percy Allan and Orlando Brain, and potentially with NSW government architect James Barnet and Edmund Spencer, one of his assistants; and with the public and private sector workers who constructed, operated and maintained the Bullock Island coal handling complex. Although some of the fabric has been depleted or removed over time, both the Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance for their design, materials and setting. They may also be of state heritage significance as constituting landmarks of the public sector-driven transformation of Port Hunter from a swampy estuary to a deep water harbour of national importance. The Hydraulic Engine House and Crane Bases Nos. 7, 8, 9 and 10 are of state heritage significance in yielding scientific and archaeological information as to the nineteenth century transfer of hydraulic technology from the UK to NSW.

NSW State Heritage Register - 21 Aug 2017



Edward Orpen Moriarty



Sir William George Armstrong

CONSERVATION POLICY

The Carrington Hydraulic Engine House is a place of cultural heritage significance which should be managed and conserved accordingly for the benefit of future generations.

The following is a summary of the relevant Conservation Policies applying to the site and regarding it's interpretation, as per the 2021 Conservation Management Plan (Draft 3) prepared by EJE Architecture.

19.9 INTERPRETATION OF THE PLACE

The Carrington Hydraulic Engine House has been gazetted as being of State Significance, able to demonstrate not only the development of the Port of Newcastle, but also the development of the Coal Industry in New South Wales. Its historic fabric alongside its location adjacent to the still-in-use wharves may provide understanding to the development of loading operations from the nineteenth century up to the present day. Opportunities to interpret this significance are important to provide.

Policy 39

Interpretation of the significance of the Carrington Hydraulic Engine House's history and usage should be provided for the public to increase their understanding and awareness of the place and its broader historical, physical and contemporary context with Newcastle and its development.

An interpretation plan for the building should be implemented in unison with any adaptive reuse proposals. Responsibility for implementation of the plan will likely fall to both the asset owners, and/or the tenant, depending on the nature and location of the specific interpretation device. The interpretation plan is a guide and should be seen as an evolving document, adapted to suit the future adaptive re-use typology or user requirements for the building. Obligations regarding implementation and maintenance of agreed interpretation items should be included in any owner-tenant lease agreement for the building, to ensure the objectives of the plan are maintained in the long term.

Reason:

For the public to be able to access the site, an adaptive reuse of the building will be necessary. Such reuse will enable those opportunities for interpretation. The interpretation plan should be ready and in place for the reuse function.

Policy 40

Interpretation of the Crane Bases will be problematic due to the inability to provide public access to their fabric inside the secure area of the working port, however appropriately designed devices can still be installed that portray the history of the site to Port staff and future historians studying the items. In terms of their fabric and physical interpretation, the Crane Bases are best preserved as relics per Policy 27 and with interpretation information about the cranes and their bases also provided in a publicly assessable site in conjunction with the Hydraulic Engine House Interpretation Plan.

Reason:

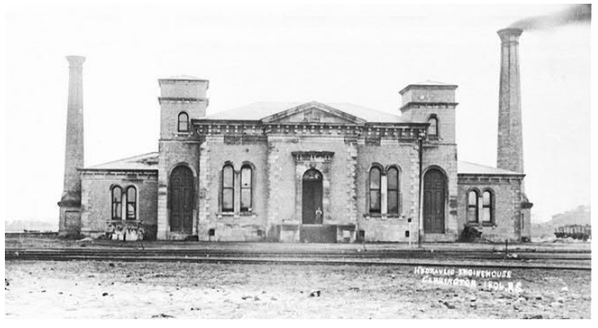
The public needs to be able to access the interpretive material, while it is not possible to access the actual crane base fabric along the active berths of the Dyke.

CONSERVATION MANAGEMENT PLAN

Revision A

CARRINGTON HYDRAULIC ENGINE HOUSE
& CRANE BASES Nos. 7, 8, 9 & 10

THE PORT OF NEWCASTLE
106 BOURKE ST
CARRINGTON, NSW



Prepared by EJE Heritage
December 2021
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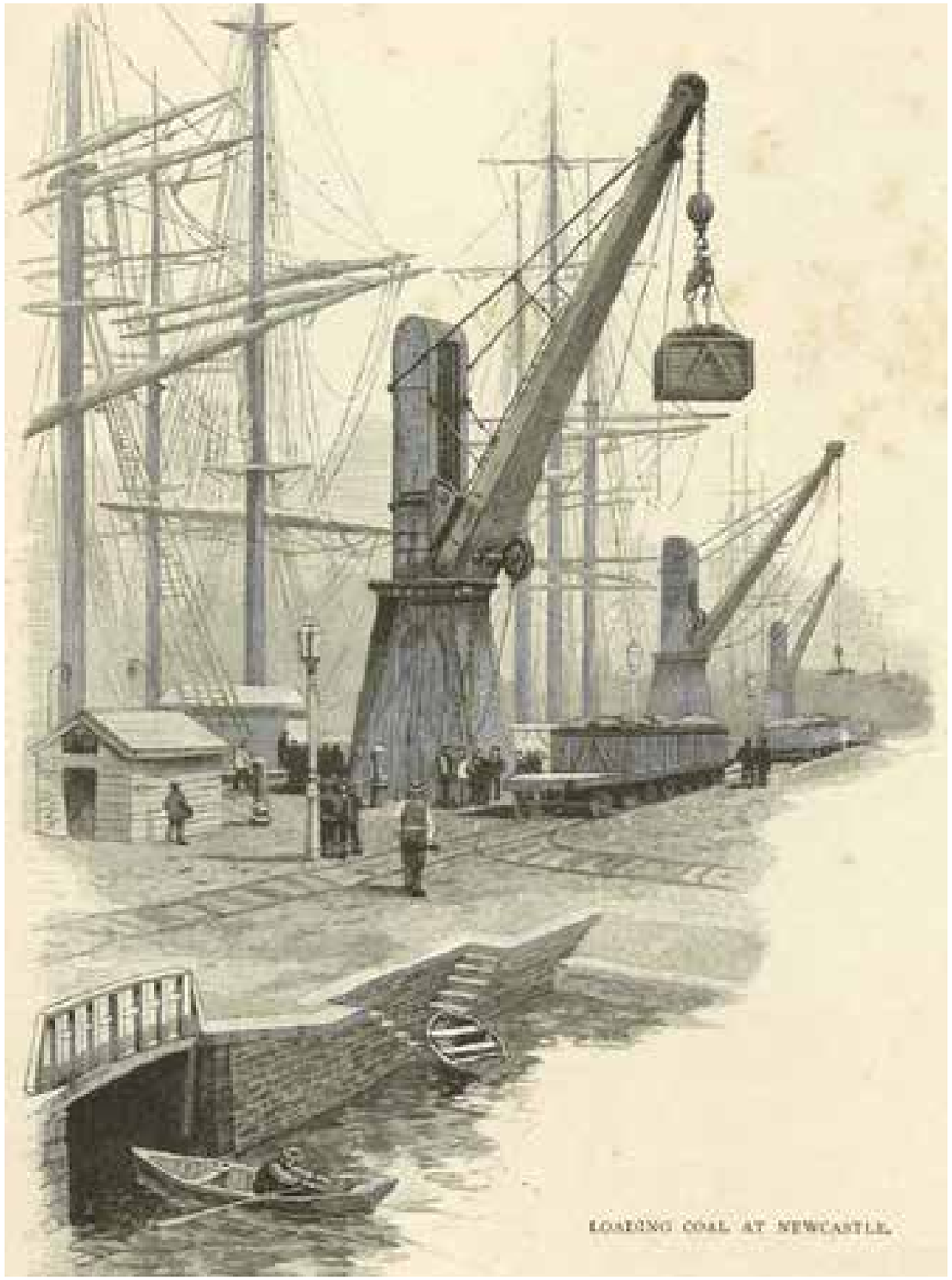
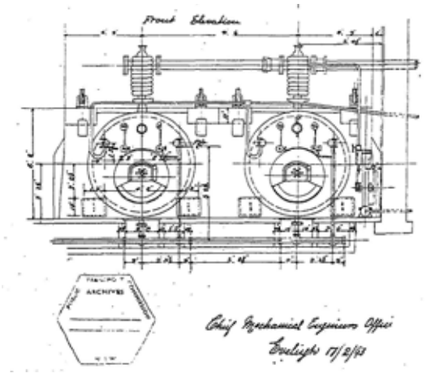

LOADING COAL AT NEWCASTLE.

PART THREE

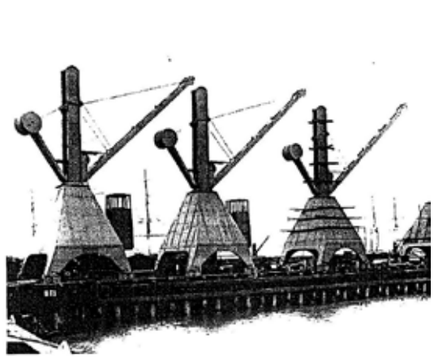
INTERPRETATION THEMATICS

KEY THEMES

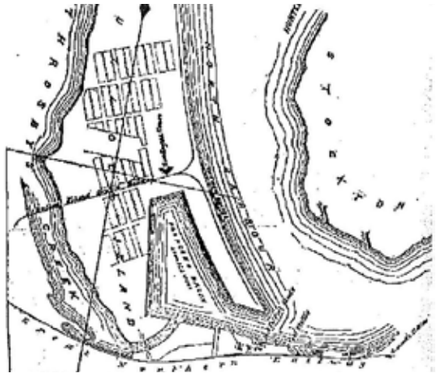
‘One of Our Lions’



‘Hydraulic Power’



‘Hydraulic Cranes’



‘The Port’

‘Shipping & Cargo’

STORYLINES

‘One of Our Lions’

The Newcastle Herald on 25th Dec 1891 provided an emotive description of the Hydraulic Engine House:

A stranger visiting the port and leaving without having paid a visit to the hydraulic and electric engine house will have missed seeing what the citizens of Newcastle may be justly pardoned for terming “one of our lions,”

There is potential the that Engine House site could be utilised by school groups as a historical study item, and the significance of the lion’s head keystone combined with the above description provides opportunity to weave a storyline for the building that focuses on a younger audience.

Working with a creative writer/ graphic artist, interpretation material could be created aimed at primary school children using a story of a lion as a metaphor for the history of the building’s engines. Cartoon imagery of a young lion training to be a weight lifter and blowing steam out its ears for example could cover the development of the hydraulic engine house and cranes in a manner suitable for children.

This material could be used in conjunction with the site’s fixed interpretive devices to define an exploration trail around the building that tells its history.

‘Hydraulic Power’

The invention of the Hydraulic Accumulator by Sir William George Armstrong and its implementation in Newcastle is a significant theme, in that the use of the technology in the Carrington Hydraulic Engine house was the first in the nation, predating even Sydney by a full decade.

The technology developed by Armstrong was sophisticated beyond its time. The accumulators in the Engine House featured complicated and redundant safety features to prevent catastrophe from the immense 800psi hydraulic pressure developed in the towers.

The engines were fed by water from a holding tank in Hamilton, with water sourced from pumps beyond. The network circuit of reticulation between the source, tank, engines, accumulators and finally the cranes on the dyke was complex and extensive. This storyline hence spreads out beyond the building into infrastructure projects throughout surrounding suburbs.

With increased demand for trade in coal from the Port, the engines were upgraded and extended at several points in the site’s history, with modifications to the building made concurrently.

The comparative chronology of the development of various power sources, from hydraulic to electric for example, would also be of interest to discus within this theme.

‘Hydraulic Cranes’

The first four hydraulic cranes were ordered for use of the site in 1874, before construction of the Engine House itself, showing the Port’s willingness to invest in the new and premium technology that would be in use for the next 70 years, and for a time, being its industrial pride and glory.

Original construction drawings of the crane’s are available today, as well as many good quality and visually interesting photographs of the cranes in use. Several first hand newspaper articles are also available describing the testing and operation of the machinery.

The development of and additions to the cranes along the Bullock Island wharf is documented within this storyline, describing their installation, heyday operation, later inefficiencies and eventual decline as superior technology emerged.

Discussion and imagery of the extant crane footings on the port’s wharf to the east of the site is included to interpret the remaining built fabric of the once immense structures.

A comparative analysis of modern coal loading facilities in the Port of Newcastle would be an interesting addition to this theme, leading into the following thematic heading with reference to Newcastle’s position today as the world’s largest coal export port.

‘The Port’

The story of the port’s development begins with traditional indigenous use of the harbour estuary by the Awabakal and Worimi people. While not an “export” centre in today’s sense, the function of the harbour as a place of gathering and food collection for the Aboriginal people is critical to its historical timeline and development.

The changing use and shape of the Port in the colonial era is well documented, and this storyline describes the changes made across time, focussing particularly on the visionary scheme of Engineer Edward Orpen Moriarty.

Moriarty’s scheme to focus the flow of the Hunter River and deepen it’s shipping channel was ambitious, but again showed that the vision of the Port as a world leading facility was founded right back at it’s inception.

The formation of Carrington and the Dyke on reclaimed land is an element of local interest, and chronological maps of the area’s formation would be included here for reference, along with historical images of the built fabric of the suburb in years gone by.

A description of the various wharfs of the harbour (on both banks) and their changes over time would also be appropriate here, culminating in the nature of the contemporary facilities and perhaps description of the Port’s vision of the future over the next century.

‘Shipping & Coal’

Imagery of Newcastle harbour packed with tall masted ‘Windjammers’ hastily awaiting their load of coal are evocative and illuminating as to the long-standing working nature of the Port. This theme looks at the discovery of coal at Newcastle by early explorers, and its transport and export from the very beginning of Newcastle’s settlement by Europeans.

Discussion is made of the distribution of coal mining throughout the region, both historically and contemporarily, and its transport methods to the cranes of coal loaders of the Port, then onwards around the country and the world.

Description is made of the changes in ship typology that have used the harbour as their loading point over its history, beginning with early tall masted timber hulled sailing ships and finishing with today’s bulk carriers.

The development of shipping technology would be described against the necessitated changes in loading facilities and harbour dynamics, linking back to the themes of the Port’s development and the hydraulic machinery.

AUDIENCE

Successful interpretation engages the audience; this provokes interest and reflection about the item and its values in a way that sustains the ambience and promotes the significance of the place.

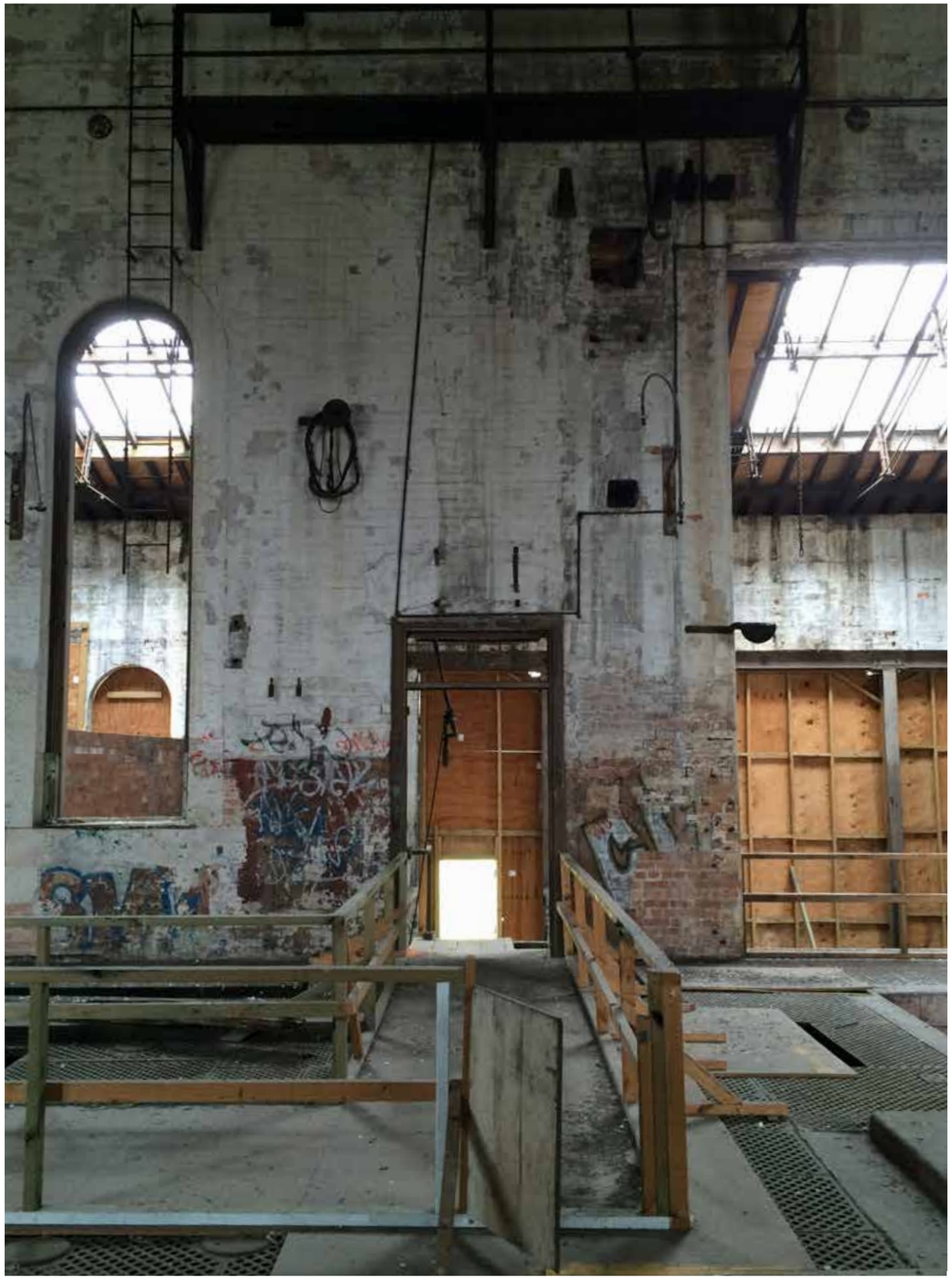
The audience here is defined as anyone that will access the Carrington Hydraulic Engine House and its landscape surrounds, as well as the private Port of Newcastle staff that have access to the physical site of the hydraulic crane bases (which are not able to be accessed by the public).

The external elements of the interpretation strategy surrounding the Engine House building are necessarily considered to be for interpretation by the "general public", as unrestricted access to the site's southern plaza is currently provided for use by the community.

The internal elements of the interpretation strategy are considered to be for the "future users of the building". It is not yet known who this group will be, and whether they will be members of the public, private tenants, the owner themselves, or an amalgamation of all three. The strategy must therefore be flexible in its implementation to allow for unknown future factors in the building's use and fitout.

Potential audience groups are imagined to be:

- **Port of Newcastle Staff & Visitors**
- **Future Commercial Tenants & their clients**
- **Tourist & Cruise Terminal user groups**
- **Carrington Community Groups and the General Public of various demographics**
- **Special event groups (wedding photographs etc)**
- **Educational / Historical study groups (schools etc)**



The interior spaces of the Carrington Hydraulic Engine House could attract a range of tenants and varied audiences.

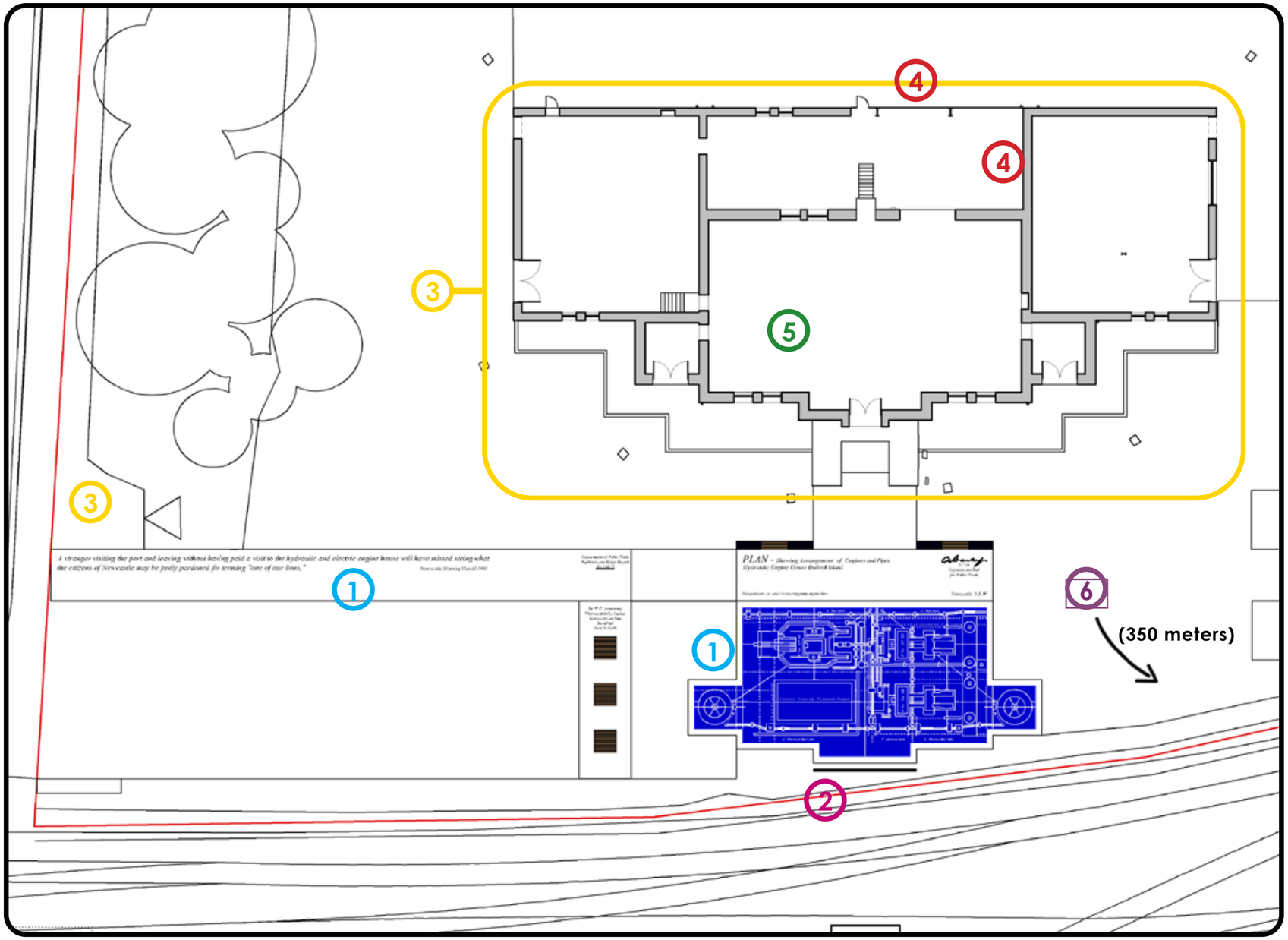
INTERPRETATION STRATEGY

INTERPRETATION MASTERPLAN

The identification of areas and locations suitable for interpretive devices is spread between publicly accessible external spaces, and potentially private use internal spaces. Care is taken to allow flexibility in the planning so as not to constrain the usability of the space for the purposes of a future commercial tenant.

The interpretation scheme proposed consists of six different methods / media:

1. INTERPRETIVE PLAZA & PATHWAYS
2. FENCELINE "PORTAL" ARTWORK
3. SIGNAGE / WALL PLAQUE DEVICES
4. INTERPRETIVE INSTALLATION ARTWORK
5. SUB-FLOOR CAVITY REPRESENTATION
6. CRANE BASE PLAQUE DEVICES



CARRINGTON HYDRAULIC ENGINE HOUSE
GROUND FLOOR / SITE PLAN

INTERPRETATION DEVICES

1. INTERPRETIVE PLAZA

CONSTRUCTED 2018-2019

The key feature of the site's interpretation strategy is a public interpretive plaza, located on the south (front) side of the building, presenting a "blue print" of the Engine House's original machinery at near full scale. Located outside, the plaza ensures public "access" to the main historical feature of the site, it's hydraulic engines, at all times, and does this independently of a potential future private operator that may not provide public access to the internal spaces of the building.

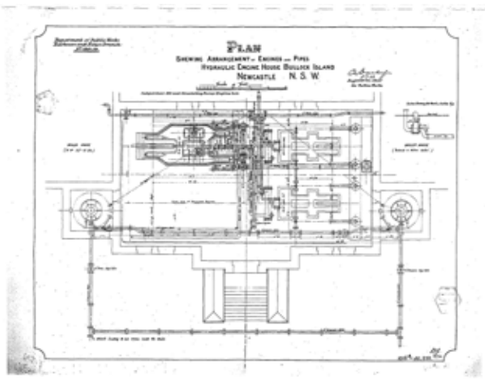
Text from the mechanical diagrams and the historic descriptions of the building is inlaid to pathways to continue the story.

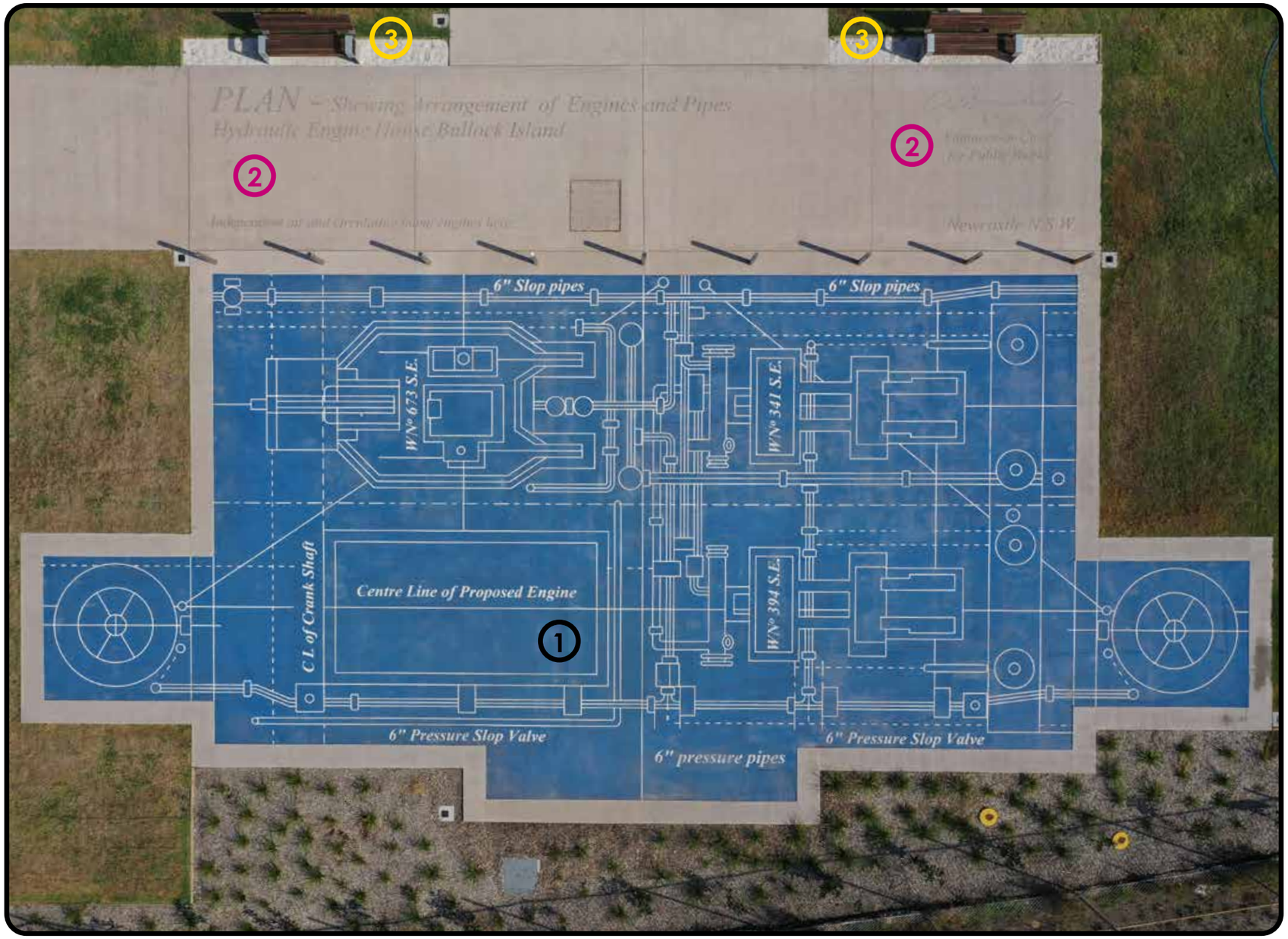
The plaza is flat, and hence does not interrupt views to or photographs of the building, and does not challenge it's prominence in height or bulk.

① SCALE MECHANICAL DIAGRAM

② INLAY & ETCHED TEXT

③ SEATING & VIEWING AREAS





Original mechanical diagrams for the layout of the Engine House are recreated at near full scale.

CARRINGTON HYDRAULIC ENGINE HOUSE
INTERPRETIVE PLAZA AERIAL PHOTO

2. FENCELINE “PORTAL” ARTWORK

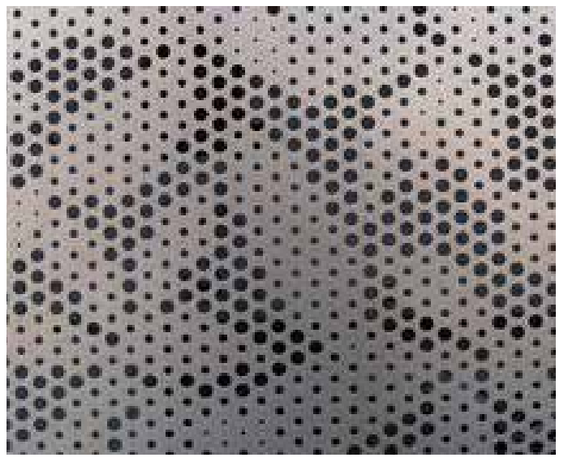
The elevated position of a viewer atop the Engine House steps allows a commanding view from the apex of the harbour basin, across the working port and back to the bustling Honeysuckle entertainment precinct of the city.

While the built environment of the area has changed since 1877, the nature and function of the harbour have not. A large “viewing portal” window depicts a view of the harbour, roughly from the correct location, during the construction of the dyke during the late 1800’s. A forest of masts crowds the newly built wharfs as the Newcastle coal trade moves into full swing.

The sign is proposed to be constructed in a perforated stainless steel screen, framed and mounted against the southern fenceline of the site. The 1800mm height of the screen is large enough to give a realistic view to the harbour-gone-by while standing the in the plaza, but will not interrupt the view across the site from the building at its floor level or from the front steps, or towards the building when viewed from the harbour or Honeysuckle in the distance.

The portal allows the viewer to look back to the harbour as seen in the 19th century.

Example perforated metal screen designs by Locker Group



Perforated screen doors at Newcastle Visitor Information Center (former Civic Station)

3. SIGNAGE / WALL PLAQUE DEVICES

STREET ENTRY SIGN CONSTRUCTED 2019

Beginning at the street entry, a series of signs and wall plaques form an interpretive trail through the Carrington Hydraulic Engine House site. The plaques are comprised of text and graphics that deliver core historical information about the key interpretive themes of the item.

Our recommendation is that the design of these plaques be a collaborative process involving audience and stakeholder representatives. Collaboration is identified as appropriate in a best practice approach to heritage interpretation (as outlined in the Heritage Council of NSW Interpretation Policy), whereby heritage interpreters provide opportunities for the community to participate in the content of the device.

10 plaques in total are proposed, located both internally and externally around the building. A large signboard at the street entry (installed December 2019) gives an overview of the significance of the site, and the conditions of public access.

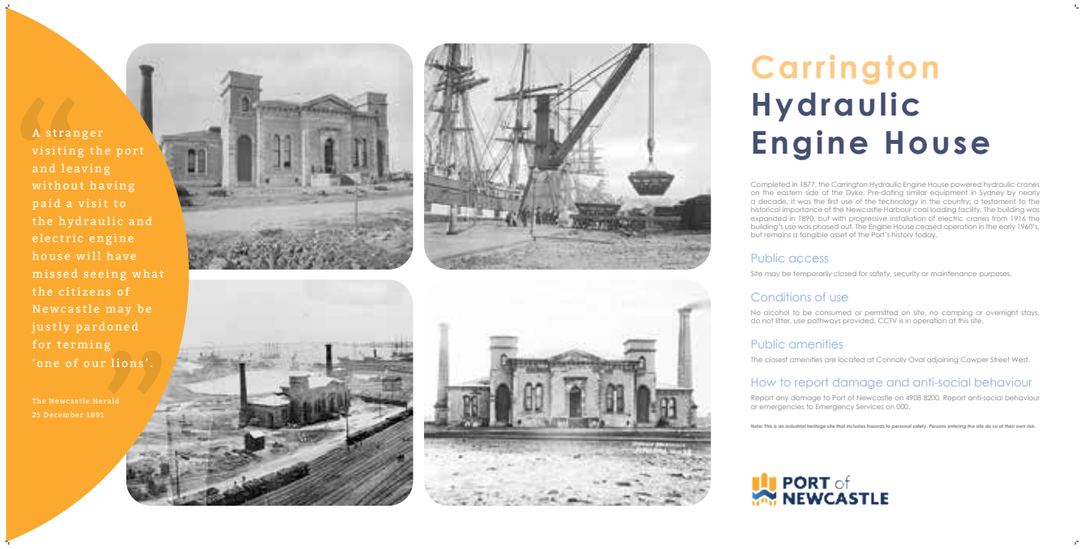
SPECS:

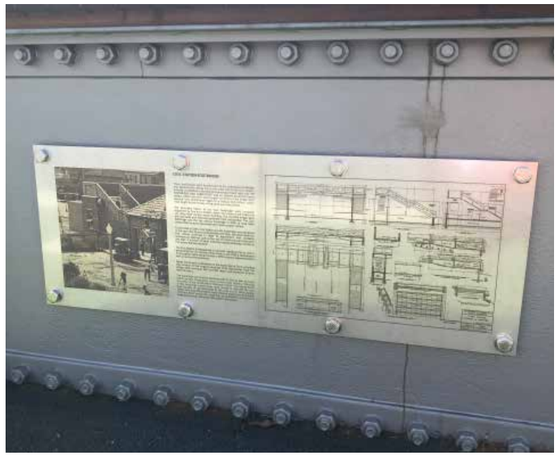
Materials:	Stainless Steel / Powdercoat Finish
Approx. Dimensions:	350 (W) x 450 (H)
Interpretation:	Laser etched text/ imagery

Street entry signboard, installed December 2019.

Precedent exterior stainless steel interpretation plaque at Museum Plaza, Newcastle

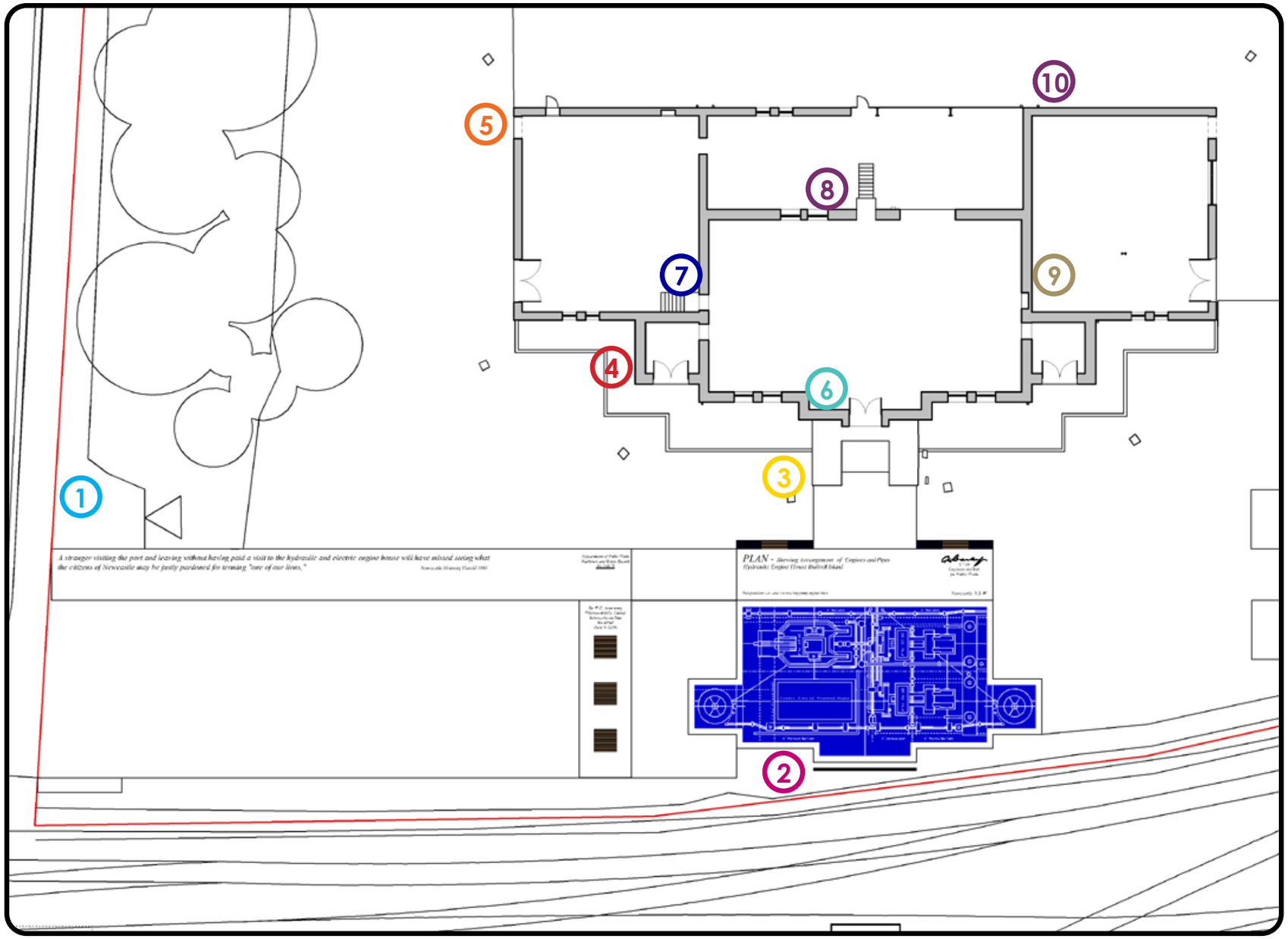
The Historic weather vane silhouette is taken as the symbol for interpretation of the Engine House.





POTENTIAL WALL PLAQUE LOCATIONS

1. SITE ENTRY (CONSTRUCTED 2020)
2. PORTAL ARTWORK
3. STAIR PLINTH (SIDE)
4. ACCUMULATOR TOWER (SIDE)
5. FORMER CHIMNEY STACK (SIDE)
6. ROOM 1
7. ROOM 2
8. ROOM 3
9. ROOM 4
10. FORMER ELECTRICAL WORKSHOPS



CARRINGTON HYDRAULIC ENGINE HOUSE
WALL PLAQUE LOCATION PLAN

4. INTERPRETIVE INSTALLATION ARTWORK INTERNAL

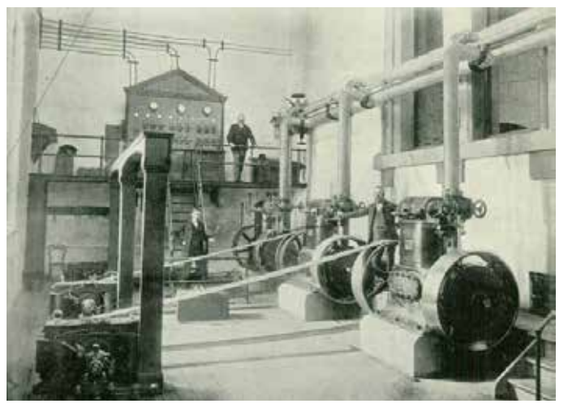
Where photographs of internal spaces of the Engine House are available, the opportunity exists to interpret the content of the image in the form of an installation artwork. An excellent image exists within the rear "condensing house" in 1893 for example, showing well dressed workers reclining amongst the engines and electric dynamo's installed in 1891.

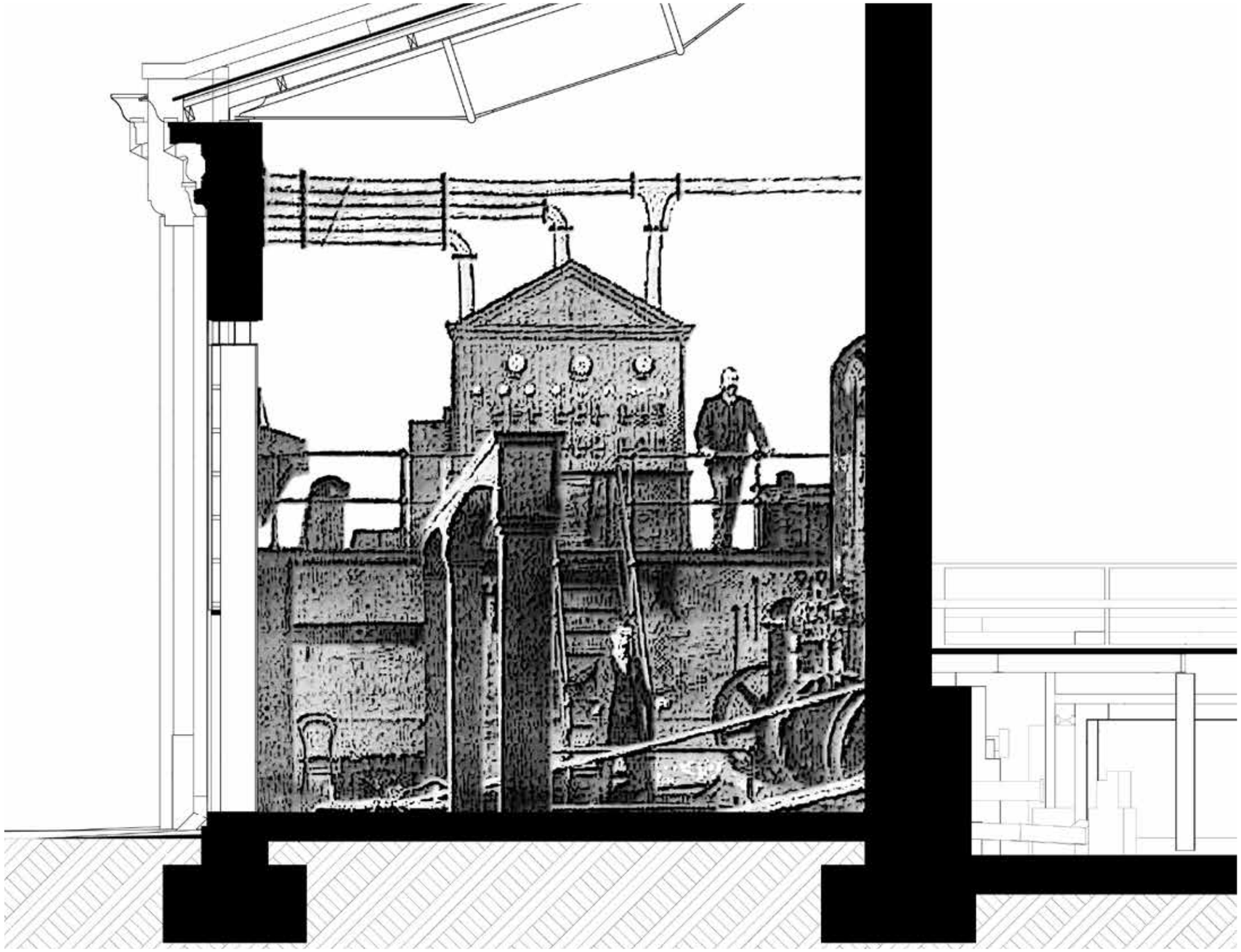
A stylised representation of the electrical switchboard and gantry against the east wall of the room could be interpreted by an artist at full scale on the wall, in silhouette or full detail. The artistic method and stylistic detail of the interpretation could be negotiated with a future tenant in order to align with their use and styling of the space.

SPECS:

Materials:	Paint/print on wall surface
Approx. Dimensions:	6300 (W) x 5500 (H)
Interpretation:	Installation Artwork

Viewed at full scale, an interpretive artwork will effectively depict the past use of the room in a striking manner.





4. INTERPRETIVE INSTALLATION ARTWORK EXTERNAL

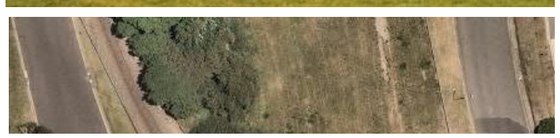
COMPLETED 2021

A large non-original wall opening is present on the north facade of the building, where the former electrical workshops connected into the rear generator room.

Construction works in 2020-2021 have enclosed this opening in a lightweight CFC clad wall, with a stylised interpretive artwork painted externally, representing the original symmetrical window openings of the facade. The sandstone base course of the building is also identified, with the wall background painted to blend into the yellow masonry of the building.

Opportunities for other exterior interpretation artworks are limited, as any element that modifies original face masonry would likely not be appropriate.

	SPECS:
Materials:	Paint on CFC wall cladding
Approx. Dimensions:	7000 (W) x 5000 (H)
Interpretation:	Installation Artwork



5. SUB-FLOOR CAVITY REPRESENTATION

The sub-floor cavities, industrial relics, large concrete buttresses and cast iron grates that make up the base of the Engine Room are critical items of fabric that convey understanding of the Item's historical use.

Significant hurdles in presenting this information however, due to the extremely poor condition of the original floor structure, and presence of asbestos contamination in the sub-floor area.

Interpretation of this space is also highly dependant on the future use of the engine room, which is presently unknown. It is recommended that an interpretation proposal for this area of the building be developed in detail only once a building user has been identified.

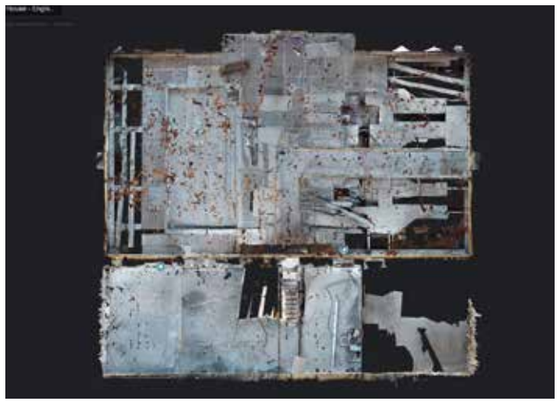
There are many potential options for interpretation that can be explored at this time. Two ideas for example are provided as follows:

- Integration of glass floor viewing panels within a new floor surface in the engine room, and sub-floor lighting to display the archaeological remnants below.

- Development of a digital/ Virtual Reality experience of the Engine Room and sub-floor, using 3D imagery already captured with "Matterport" scanning technology .

(Above) Glass floor viewing panel to archaeological ruins, LIDL store, Dublin Ireland.
(Right) Trafficable glass floor to Viking Ruins, Jorvik Viking Centre, Kent, UK.

(Below) Digital imagery from 3D "Matterport" scanning of Carrington Hydraulic Engine House.



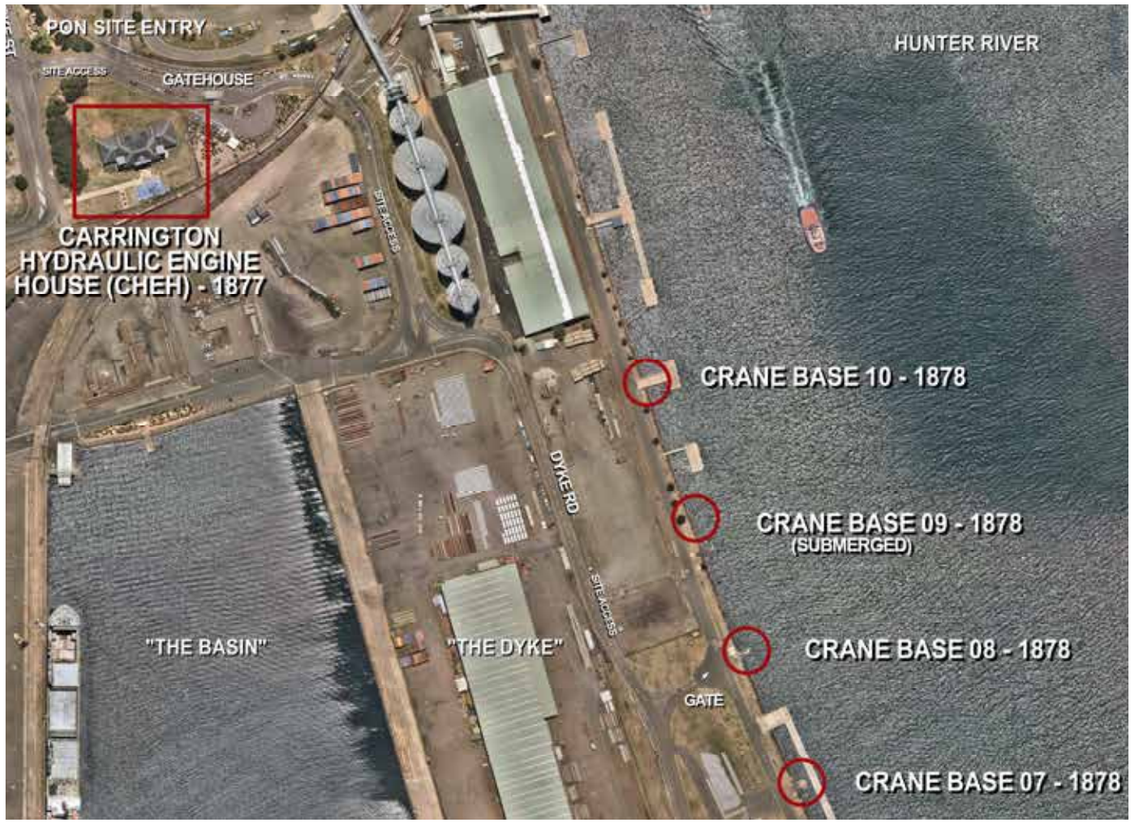
6. EXTERNAL PLAQUES - CRANE BASES

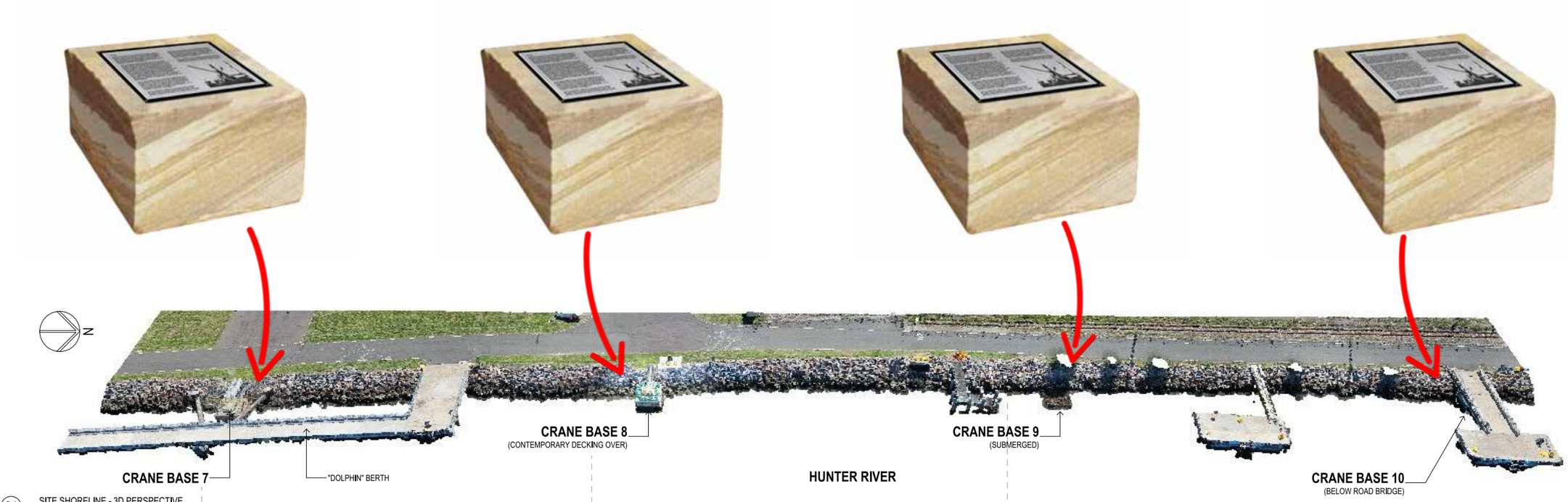
A series of simple interpretation plaques are proposed at the site of the crane bases along the east shoreline of "The Dyke". As an active working port, this site will not be accessible by the public, so the purpose of the plaques is to inform Port of Newcastle Staff of the heritage significance of the remnant structures and also record historical information about the crane bases in a physical fashion on the site (as opposed to solely in text form within the CMP).

With vehicle, ship and modern crane movements common around the site, the interpretation devices must necessarily be low profile and unobtrusive. Given the fabric condition of the crane bases, and their location over (or under) water, it is also proposed that the plaques not be directly fixed to the structures.

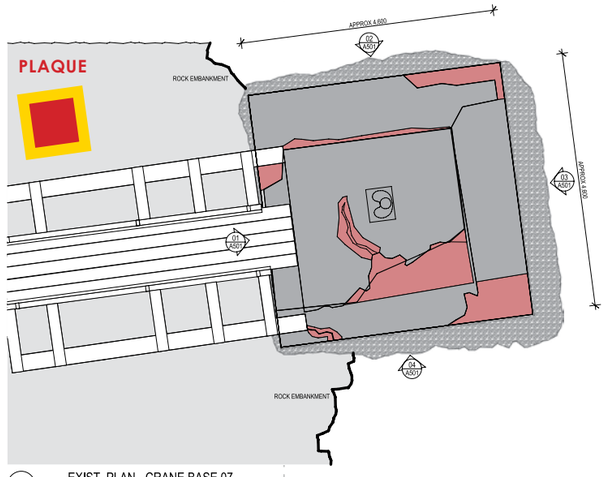
A series of simple sandstone blocks is as such proposed, one each located on the shoreline adjacent to each crane base, with a simplified version of the Engine House plaques mounted to the top. The stone blocks would be relatively easy to shift if future operational requirements of the Port dictate, but are also solid enough to weather the open conditions of the site. The sandstone blocks could be salvaged from remnant stone left over from previous stages of building work.

A stockpile of remnant sandstone pieces is available from previous stages of conservation work at the Engine House, which could be used for the proposed external plaques.

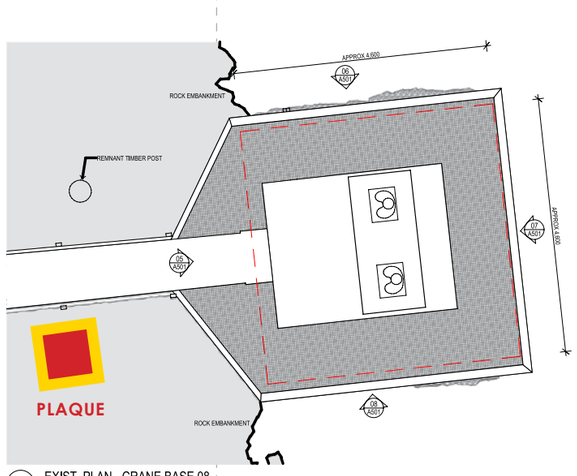




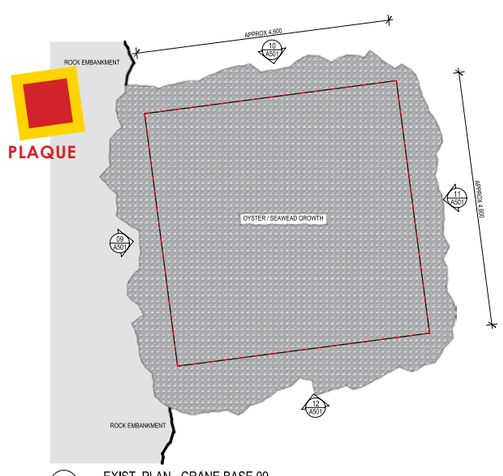
01 SITE SHORELINE - 3D PERSPECTIVE
NOT TO SCALE



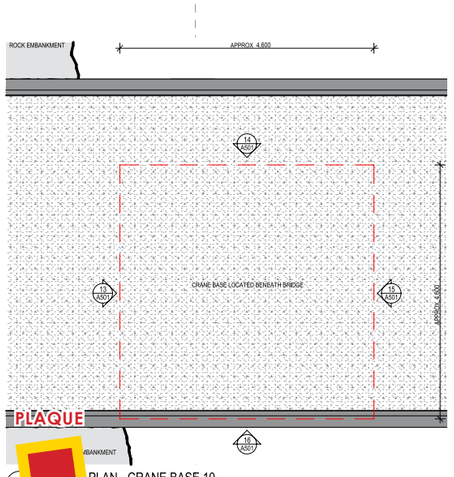
02 EXIST. PLAN - CRANE BASE 07
1:50



03 EXIST. PLAN - CRANE BASE 08
1:50



04 EXIST. PLAN - CRANE BASE 09
1:50



05 PLAN - CRANE BASE 10
1:50

IMPLEMENTATION

1. Construction of Interpretive Plaza & Landscape Works	*Completed 2019*
2. Installation of Site Entry interpretation sign	*Completed 2019*
3. Review Draft Interpretation Strategy Document	*Completed 2020-2021*
4. Construction of north wall exterior interpretive artwork	*Completed 2021*
5. Amend and Issue final Interpretation Strategy Document	*Completed 2021*
6. Installation of Portal Window artwork	*TBC (Allow coordination with future tenant)*
7. Concept Design Interpretive Wall Plaques	*TBC (Allow coordination with future tenant)*
8. Community Workshop & feedback - Wall Plaque Historical Content	*TBC (Allow coordination with future tenant)*
9. Design Revision of Wall Plaques, Production & Installation	*TBC (Allow coordination with future tenant)*
10. Installation of Exterior Wall Plaques	*TBC (Allow coordination with future tenant)*
11. Installation of Interior Wall Plaques	*TBC (Allow coordination with future tenant)*
12. Interior Interpretive Installation Artwork	*TBC (Allow coordination with future tenant)*

CONCLUSION

The Carrington Hydraulic Engine House is potentially one of Newcastle's most significant historic sites, and a well researched and appropriately implemented interpretation plan will ensure the Port of Newcastle can promote this significance to the community for the long term.

With the known high level of public interest in the site, and predicted increase in tourist traffic through the Port via a new Cruise Ship Terminal, the site has potential to become a community and visitor focus point, where the history of Newcastle's industry can be put on show.

The possibility for the adaptive re-use of the building for a commercial purpose, although not part of the scope of this strategy, is clearly understood and recommended. Implementation of the interpretation plan in conjunction with a tenant's re-use scheme for the site will ensure maximum promotion of the building, the Port and their joint history, as well as any business operating from the Engine House.

This implementation of this Interpretation Strategy, comprising the six elements of the plaza, the portal window, infographic wall plaques to the building and crane bases, installation artwork and sub-floor cavity representation will allow the Hydraulic Engine House to remain the public focal point of Carrington and the Port of Newcastle for many years to come.

have missed