ARCHIVAL RECORD

WATERFRONT PRECINCT HERITAGE BUILDINGS, MAIN SITE BHP PORT WARATAH STEELWORKS, NEWCASTLE

MOULD CONDITIONING BUILDING

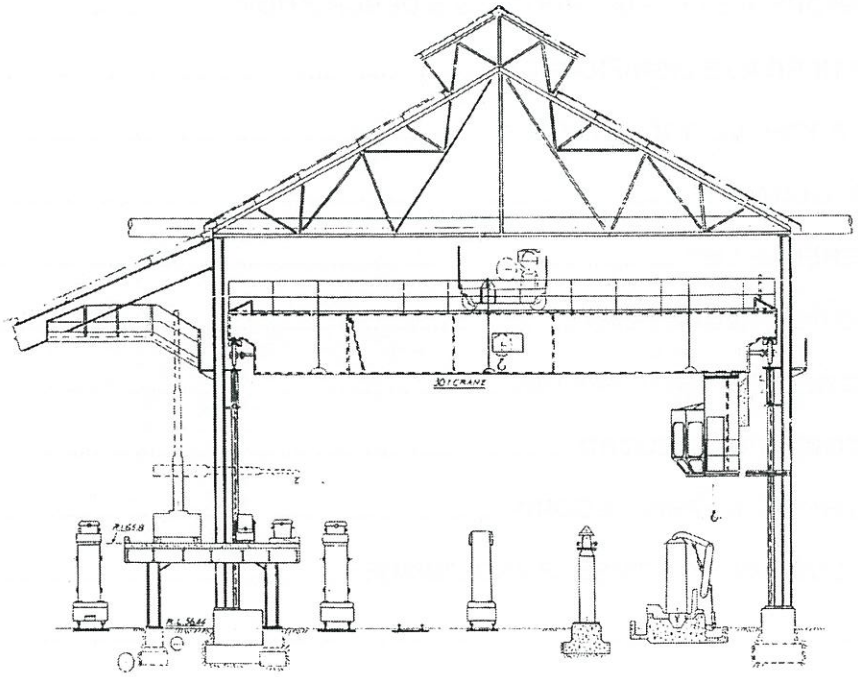

Figure 0.1 Section A-A, from "Layout of Equipment" drawing
Source: BHP Archives (92021/1 – 1964)

Prepared by:

EJE ARCHITECTURE

In Association with:

Rosemary Melville – Historian
Bill Jordan – Heritage Engineer
Austral Archaeology Pty Ltd

NEWCASTLE

412 King Street
Newcastle NSW 2300

Telephone: (02) 4929 2353
Facsimile: (02) 4926 3069
E-mail: mail@eje.com.au
Web Site: www.eje.com.au

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1.0 INTRODUCTION

1.1 Background to the project

Major changes have occurred in Newcastle and the Hunter region over the past 20 years. The downsizing and eventual decision to close BHP steel making operations and the rationalisation of the coal industry are a reflection of these changes. The BHP steel making site is strategically placed, not only on a local and regional level, but also on a State and National level. It has been proposed that the existing site be redeveloped as a major Container Handling Terminal servicing the east coast of Australia. The area to be developed as the Container Handling Terminal would require the demolition of all above ground structures located within this area to enable remediation of the land and redevelopment of the site. Development of the remainder of the site at a later stage for industrial /commercial purposes is also proposed.

In light of the above, EJE Architecture has been commissioned to prepare detailed archival records of the buildings proposed to be demolished that are considered to have heritage value. These records involve documenting the relevant buildings and items they contain as well as the industrial processes that took place within them. Designed to help ascertain the heritage significance of the buildings and associated processes, these archival records also form a statement for the future interpretation of this now redundant part of Newcastle's industrial culture.

The following document constitutes the Archival Record of the Mould Conditioning Building - an item classified as having a 'Regional level of heritage significance'

1.2 Archival Recording Methodology

The approach taken in recording these heritage items and the document format is based on heritage consultant input and current NSW Heritage Office's guidelines including those relating to the preparation of archival records and their photographic recording.

A number of important aspects have been identified in the statement of heritage significance included in the report whose recording was necessary to reflect the item's character and value described. Hence it is this statement that drives the rationale for the report and determines the relevance of information collected. Derived from three main elements - buildings (structure and fabric), the individual items they housed and the processes that took place within them - these aspects are elaborated on in a number of different ways, which reflect their respective social, technical and aesthetic qualities.

As a way of dealing with the items various facets of heritage value, the report is broken into 3 main components:

-Written descriptions (history, process and heritage statement),
-Pictorial descriptions (photographs and working drawings)
-Inventories and other supporting information

Together these components create a comprehensive account of the chronological development of both the buildings and the industrial technologies held within them that have invariably changed throughout their lives. At times the components are incorporated into each other to provide a more coherent and illuminating description. All material is cross-referenced to each other and referenced to archival registers and source publications.

The written descriptions provide a background to the building and the functions that it housed and incorporate relevant photographs. As an essential part of the written component, a statement on the item's heritage significance details why the item is valued.

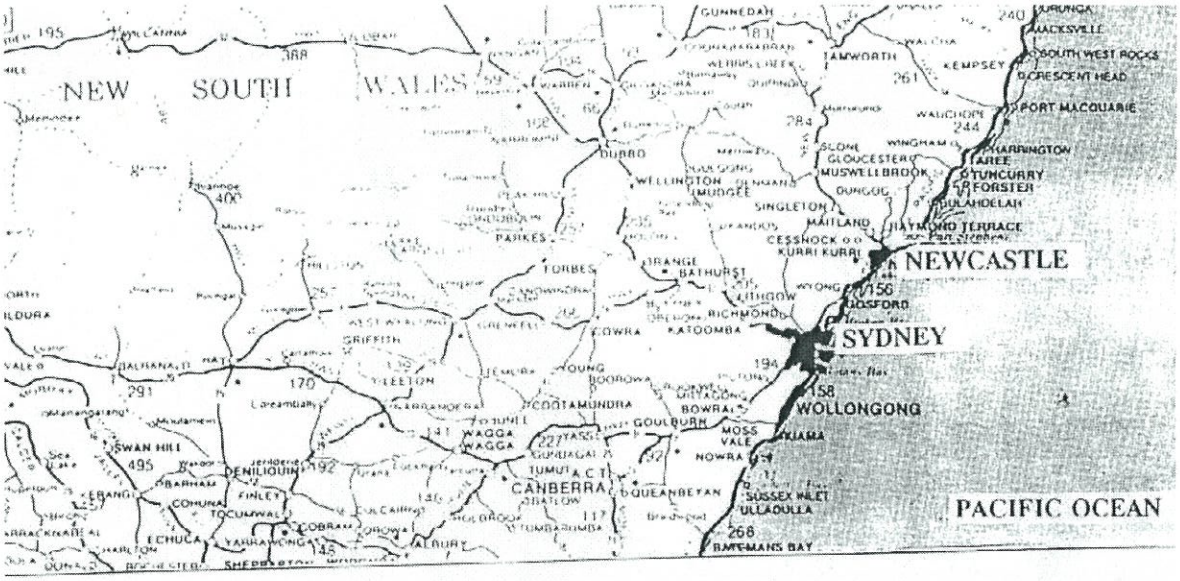
The bulk of the information in this report comes from the pictorial descriptions. Comprising of both historic and contemporary photographs, an account of the building fabric, the various industrial processes contained and the changes that have taken place through time is made. In addition, a selection of original working drawings provide a detailed picture of the construction techniques,

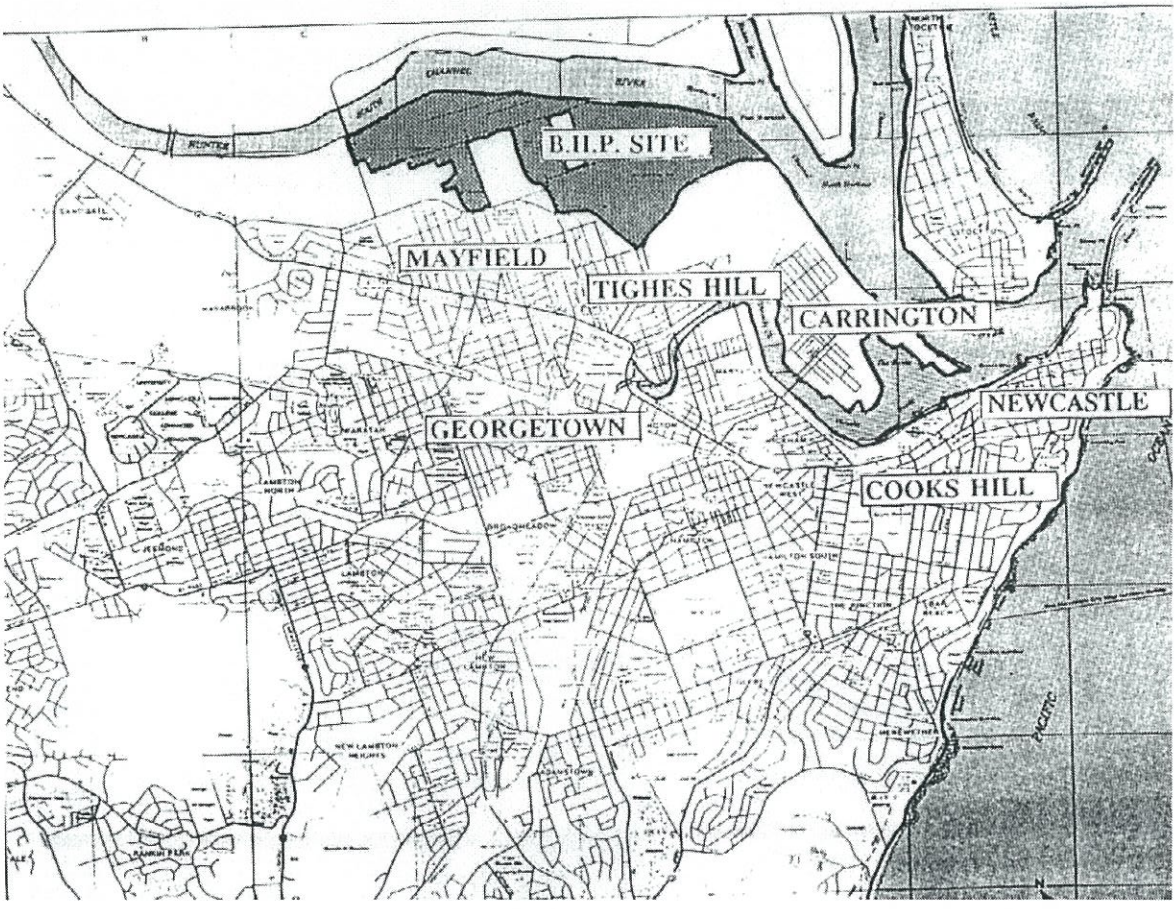
structure and fabric details and offer substantial dimensions and measurements, making largely redundant any requirement for contemporary measured drawings or scaled photographs.

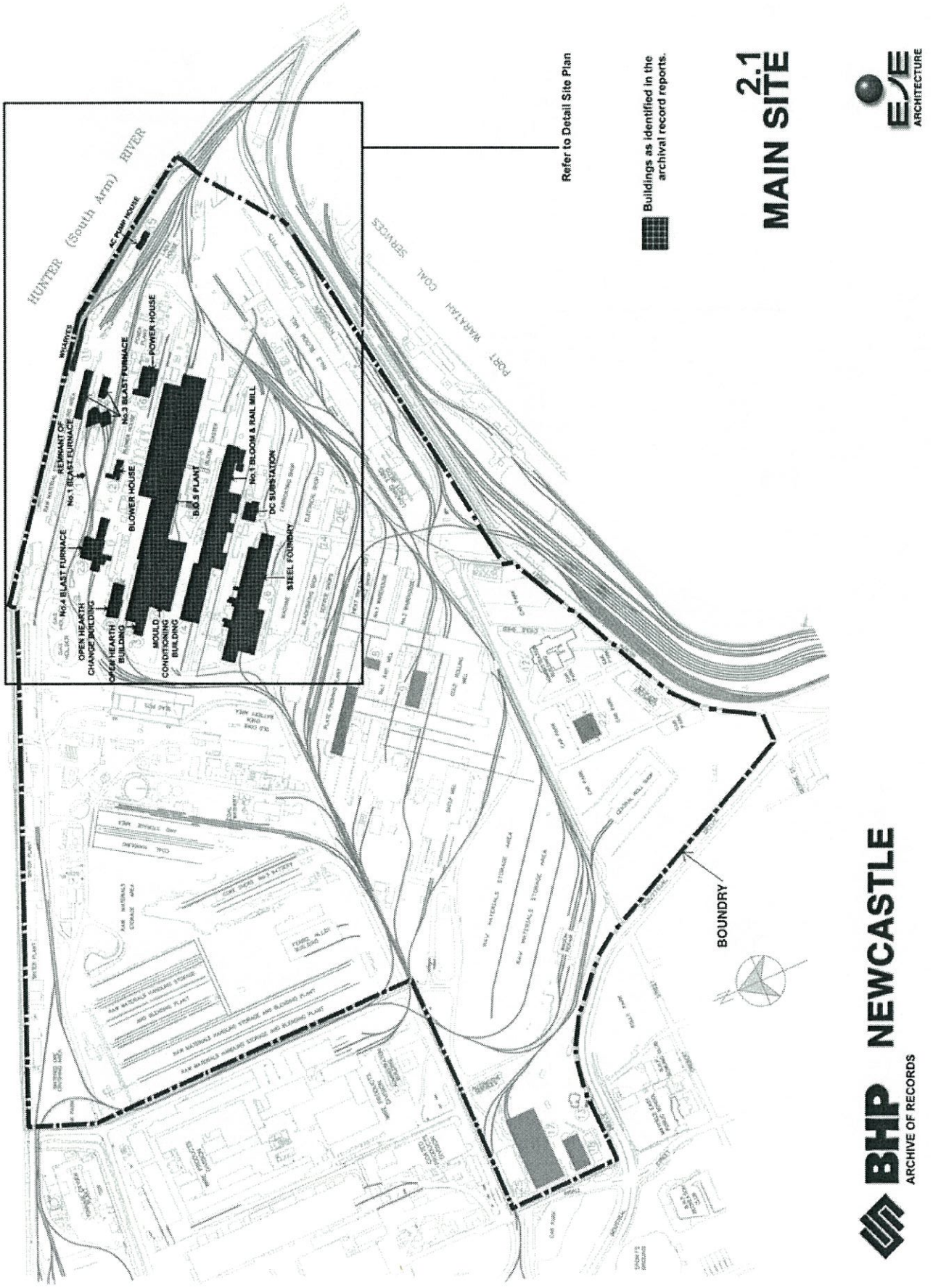
Supporting both the written and pictorial information is a series of inventories and tables which provide details of equipment contained within the building, cross referenced descriptions of photographs and shot locations, and bibliographical information.

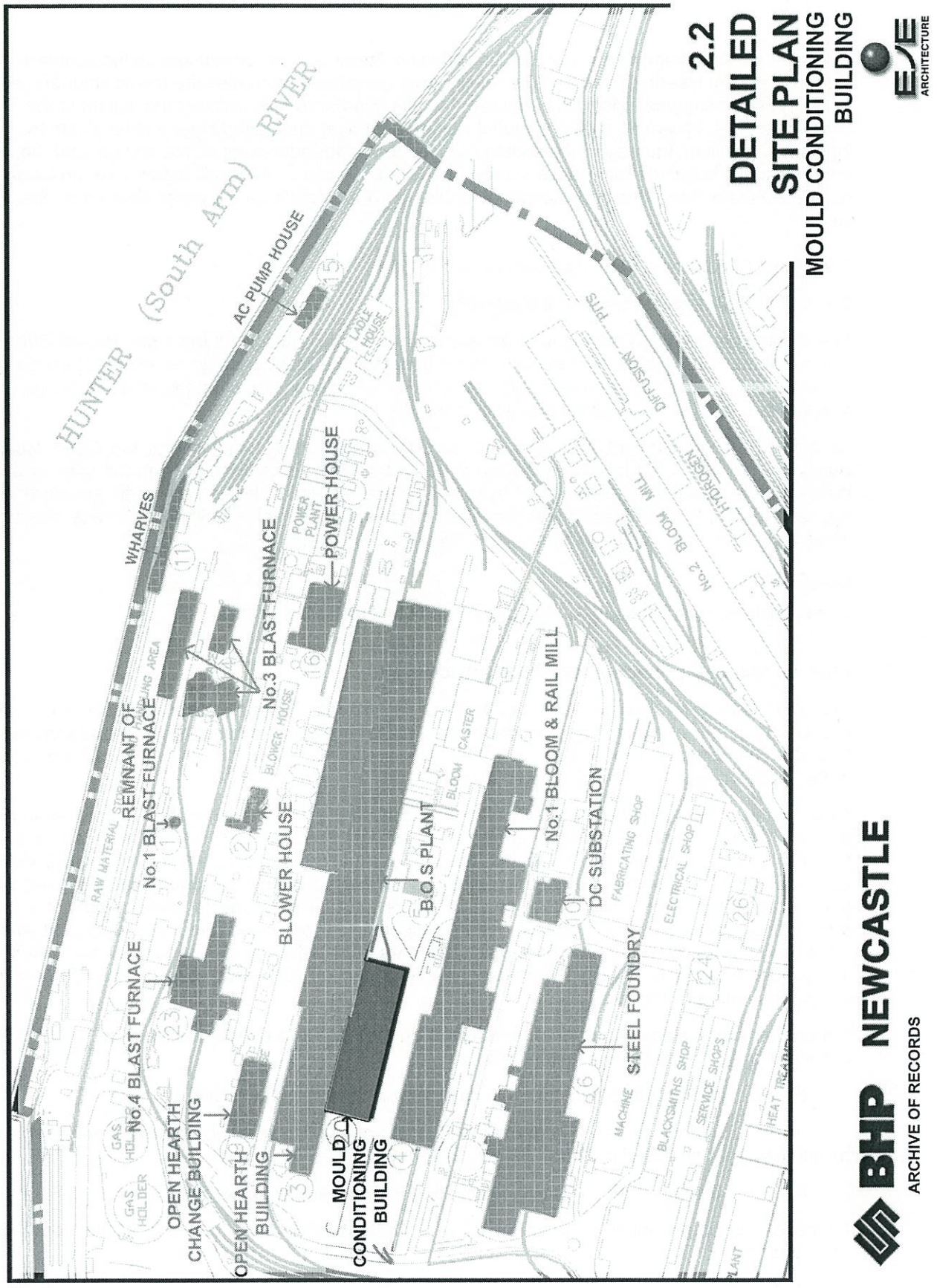
The process of documenting the heritage items involved a number of input teams, of which EJE was the coordinator.

2.0 LOCATION PLANS






2.1
MAIN SITE
Refer to Detail Site Plan
Buildings as identified in the archival record reports.
HUNTER (South Arm) RIVER
PORT WARATAH COAL SERVICES
No.4 BLAST FURNACE
No.1 BLAST FURNACE
No.3 BLAST FURNACE
POWER HOUSE
BLOWER HOUSE
B.O.S PLANT
No.3 BLOOM & RAIL MILL
DC SUBSTATION
STEEL FOUNDRY
OPEN HEARTH CHANGE BUILDING
OPEN HEARTH BUILDING
MOULD CONDITIONING BUILDING
BOUNDRY
BHP NEWCASTLE
ARCHIVE OF RECORDS
EJE ARCHITECTURE


HUNTER (South Arm) RIVER
AC PUMP HOUSE
WHARVES
REMNANT OF No.1 BLAST FURNACE
No.3 BLAST FURNACE
POWER HOUSE
No.4 BLAST FURNACE
OPEN HEARTH CHANGE BUILDING
OPEN HEARTH BUILDING
BLOWER HOUSE
MOULD CONDITIONING BUILDING
B.O.S PLANT
No.1 BLOOM & RAIL MILL
DC SUBSTATION
STEEL FOUNDRY
2.2
DETAILED SITE PLAN
MOULD CONDITIONING BUILDING
EJE ARCHITECTURE
BHP NEWCASTLE
ARCHIVE OF RECORDS

3.0 OUTLINE OF HISTORY, INDUSTRIAL PROCESS & DESCRIPTION

In 1942 a building, known as the Mould Conditioning Building, was constructed on the southern side of the Open Hearth Building. This building was constructed to house the mould strippers, and to transport the stripped ingots on buggies to the pits in order to provide freer movement of the charging cranes. However, the consequent loss of ingot heat and mixed steel problems due to ingots being spilt on the way to the soaking pits led to the abandonment of this system, and the adoption of the building's alternative name, "The Giggle House".[1] Although ingots were no longer stripped in the building, the conditioning of moulds for re-use became the major function on the site.

The Mould Conditioning Plant was demolished in 1971.[2]

3.1 The Building Description & Structure

The Mould Conditioning Building is of the same form of construction as the Open Hearth Building which adjoins it. Its date of construction, 1942, may indicate that conservative riveted steel design was still being used at the steelworks at that date; it might also indicate that an existing design was adapted to enable it to be built as rapidly as possible.

Of note is the structure of a skillion infill section between this building and the Open Hearth Building. The roof of the infill uses welded plate web girders as rafters although the span is such that available rolled steel joists would have been quite adequate. If this part of the structure was also built during World War II it may represent the first use of welded steel on the site at a time when higher priorities could not spare any rolled sections for the work.

Condition

The building is in similar condition to other riveted steel frame buildings on site.

Steel condition & protection at BHP Steelworks site

The BHP site in Newcastle is in a "Marine" to "Severe Marine" zone in accordance with AS/NZ 2312:1994 — "Guide to protection of iron and steel against exterior atmospheric corrosion". Now that the localized micro-climate from the operation of the plant has been removed, protection of the steelwork needs to be considered in terms of this Standard.

Observation at the site indicates that none of the steelwork on site has a coating system complying with this Standard for a design life of greater than 5 years. Some of the steelwork, such as the blast furnaces, is not protected at all and has been designed to operate in a hot environment where corrosion is inhibited by high temperatures driving off moisture; other steelwork was designed with extra thickness to form a sacrificial layer. In almost all buildings and in areas nearby the high temperature operations have been successful in keeping the corrosion under control except where steel has been insulated by brickwork which has trapped moisture and corrosion has been severe. There does not appear to be any general galvanic protection (i.e. galvanizing or zinc-rich coating) on major structural elements.

If major structural elements were to be retained on the site for a period in excess of 10 years the Standard gives the following coating systems:

(i) galvanizing plus a two coat paint system (not possible in situ);

(ii) various two and three coat paint systems applied after abrasive blast cleaning and having either a zinc based primer or high-build epoxy;

(iii) a sprayed metal coating followed by a two coat painting system.

Of these, only (ii) is likely to be practical. All would be extremely expensive and require continuing maintenance.

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[1] D. Ruddell, former Chief Construction Engineer, BHP Newcastle, quoted in *Men of Steel,An Anecdotal History of Steelmaking,* Newcastle, 1999, p.30.

[2] G. Blaxell, "Time Chart of Significant Events at BHP Newcastle Steelworks" (unpublished) 1998.

4.0 STATEMENT OF HERITAGE SIGNIFICANCE

The building itself remains in substantially interpretable condition. The building structure is in reasonable condition with cladding generally intact, however bases of some columns show signs of deterioration.

The Mould Conditioning Building has been assessed (1991 Port Waratah Steelworks Conservation Plan) as having Regional significance within the context of the development of the Steelworks. The following detailed Assessment of Significance has been undertaken to reflect current NSW Heritage Act, Heritage Amendment Act and Burra Charter requirements.

Historic Significance

As the BOS Plant represents a significant contribution to the development of steel making in New South Wales through being among the largest and most modern of its type at installation, the significance of the Mould Conditioning Building is in its link with the B.O.S and Open Hearth Building.

The innovative design and creative building engineering design represent association with a significant phase in the development of Steel making in the state and nation. It also clearly demonstrates the evolution of change in the process of making steel in NSW and Australia. For these reasons the building has highest-level REGIONAL HISTORIC Significance.

Aesthetic Significance

The Mould Conditioning Building provides evidence of a playing a unique role in the operational layout of the B.O.S. and Open Hearth Building, thus demonstrating an involvement in the evolution of Steel making in N.S.W.

The conversion of the Open Hearth furnaces site while still in operation and construction of the "lean – to" addition of the Mould Conditioning Building into these elements demonstrates innovative structural design and construction. It therefore, demonstrates technical innovation or achievement, resulting in a specific aesthetic. This achievement is rare at the regional level. Thus, the Mould Conditioning Building has REGIONAL AESTHETIC significance.

Social Significance

Like all of the elements on the Steelworks site, the Mould Conditioning Building represents the development of integrated iron and steel making on the Newcastle steelworks site and continues to bear evidence of its important linkage with the creation of employment in Newcastle and the region. As such, this building and the larger site has highest level REGIONAL, SOCIAL Significance.

Technical Significance

The Mould Conditioning Building, by virtue of its capacity and unique operational layout as part of the B.O.S and Open Hearth Building continues to provide an indication of techniques of exceptional interest and rarity at the regional level.

Technical innovations in production and conditioning of moulded steel, form important benchmarks in steel and alloy production. The item has highest-level potential to reveal historical/industrial archaeological information of value to the region. For these reasons it has REGIONAL Technical Significance.

5.0 INVENTORY OF ARCHIVAL DOCUMENTS

The Following list constitutes the archival documents used for this report and other documents that contain related material for this archival record. For archival drawings, the BHP drawings document register (documents located in the BHP archive, Melbourne) may be found on the computer disk located in the appendix.

Blaxell, G. "Time Chart of Significant Events at BHP Newcastle Steelworks" (unpublished) 1998

Discussions with **D. Ruddell**, former Chief Construction Engineer, Newcastle Steelworks

6.0 SELECTED PHOTOGRAPHS

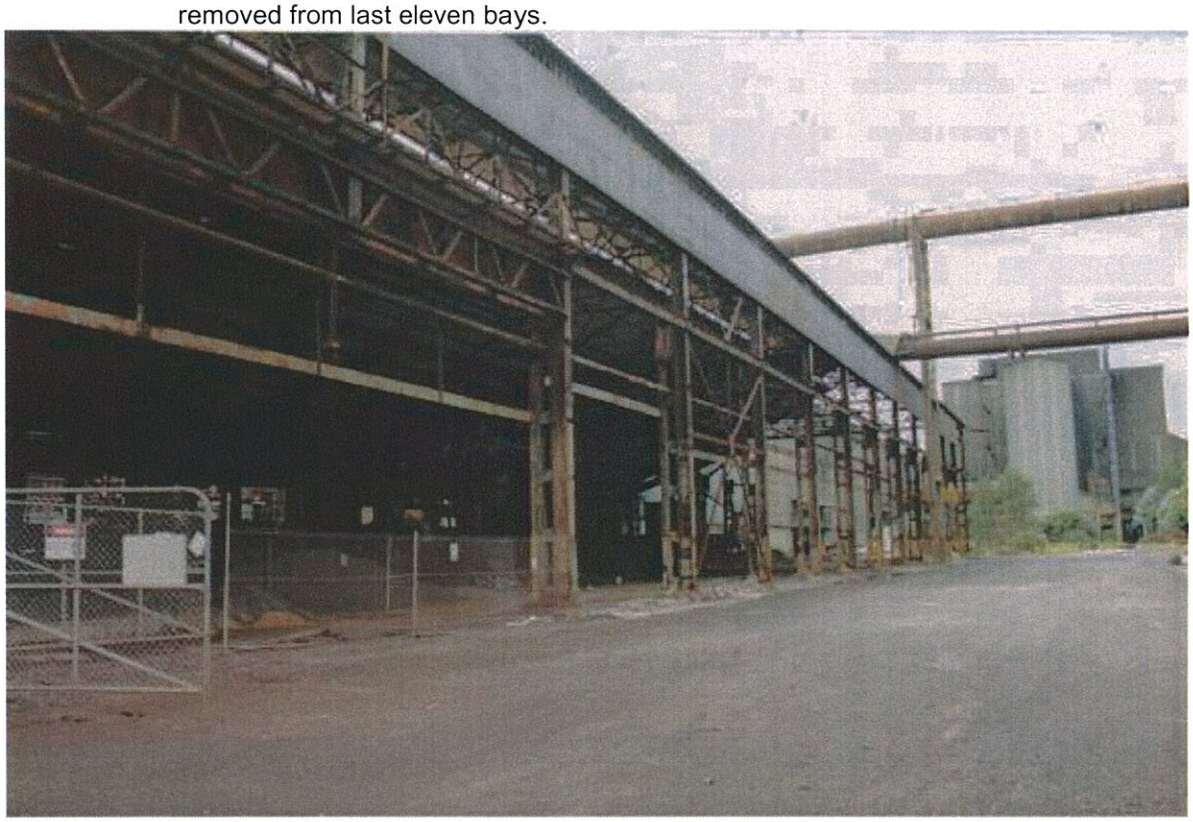
EXTERNAL:

Figure 6.1 Mould Conditioning Building (item 20). Viewed from East looking West. Note deep steel beam skillion addition between mould conditioning building and open hearth building (item 3) at far right.

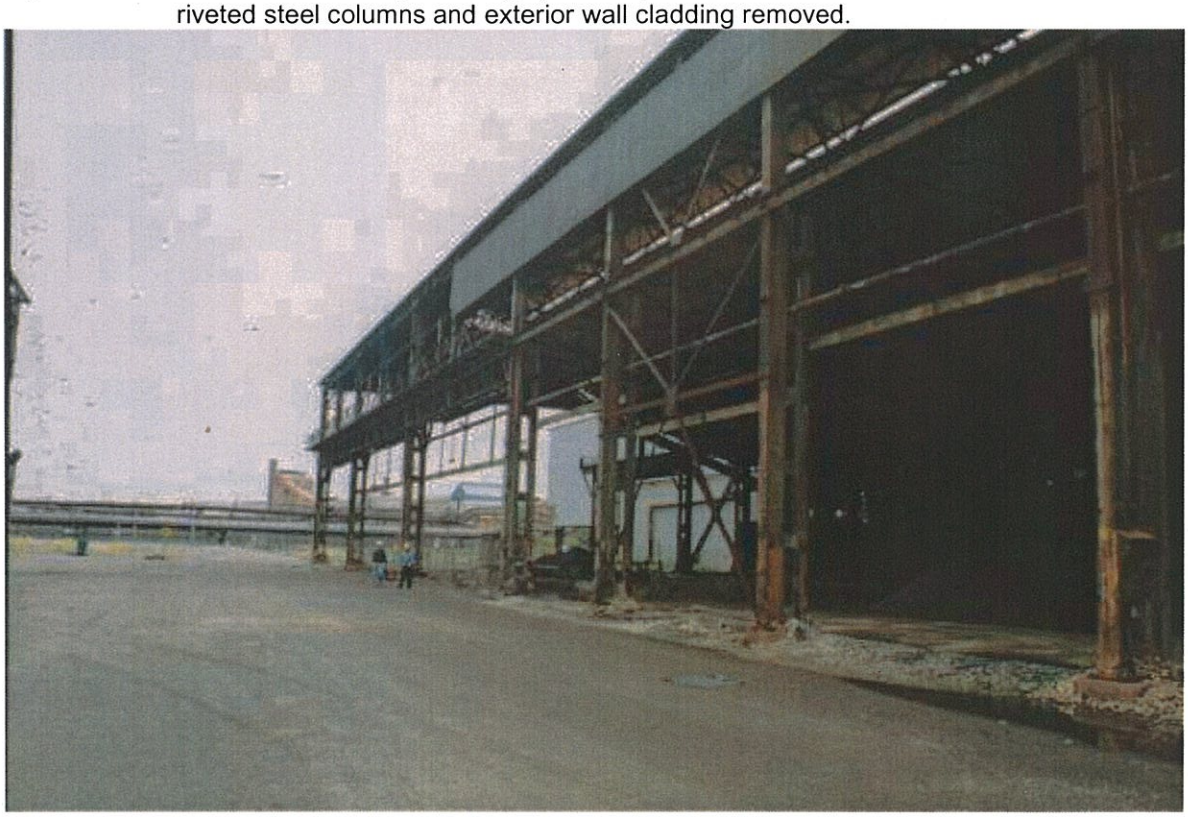
EXTERNAL:

Figure 6.2 Mould Conditioning Building (item 20). Roof structure detail showing steel trusses and ridge vent detail. Viewed from East looking West.

EXTERNAL:
Figure 6.3 Mould Conditioning Building (item 20). Viewed from South looking East towards bloom caster in background beyond planting. Note riveted crane rail beam has been removed from last eleven bays.

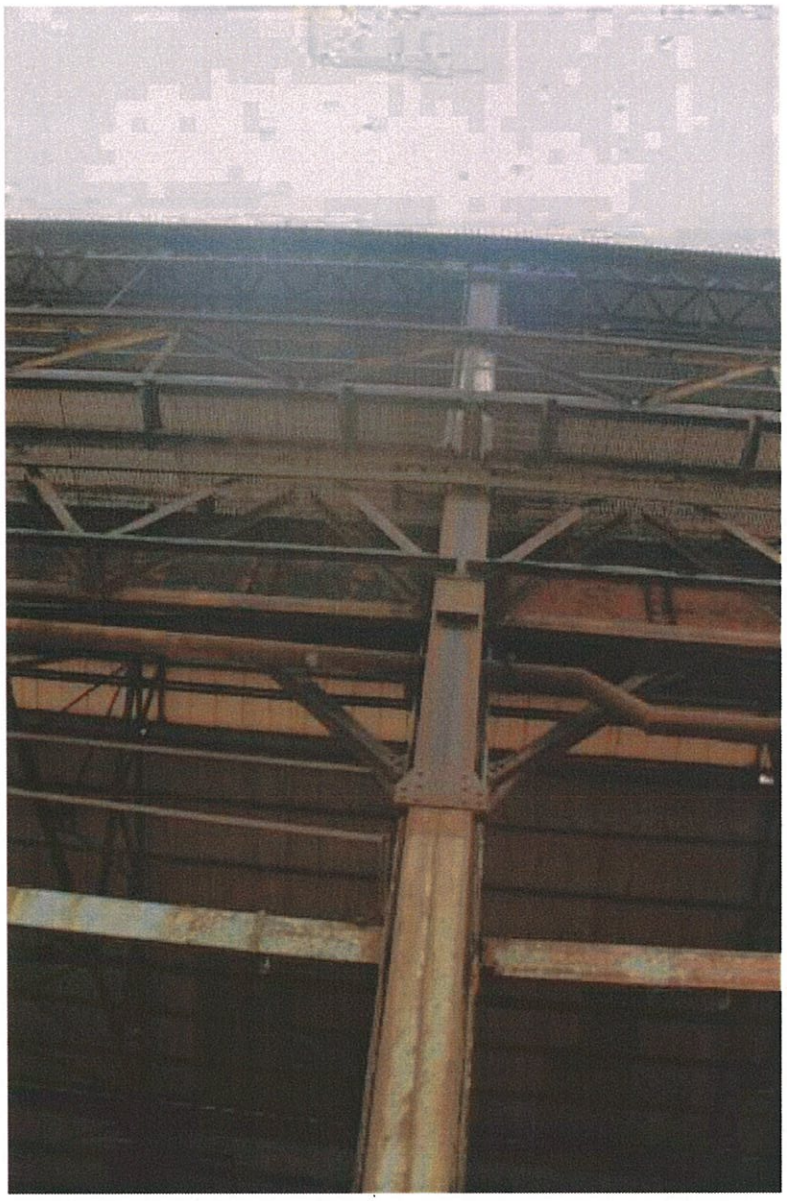


EXTERNAL:
Figure 6.4 Mould Conditioning Building (item 20). View of southern wall Western end not riveted steel columns and exterior wall cladding removed.

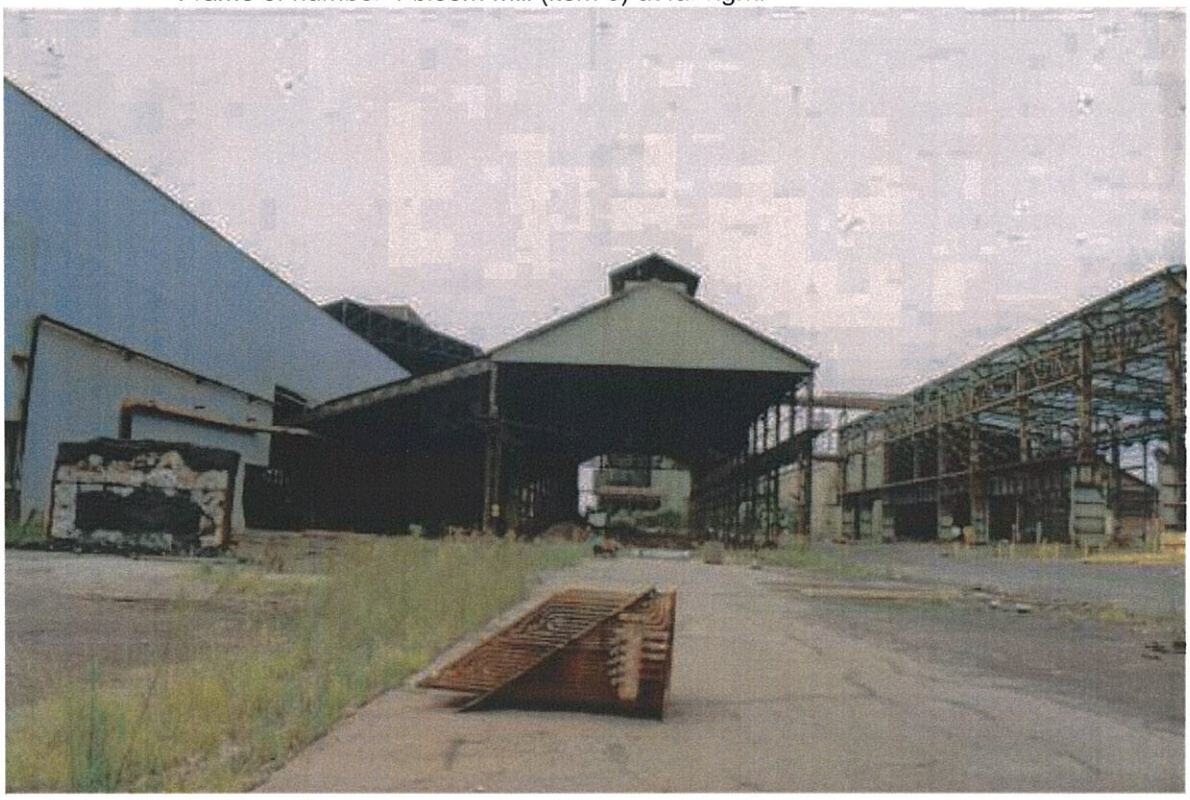


EXTERNAL:

Figure 6.5 Mould Conditioning Building (item 20). Shows steel framing details of South wall. Note riveted crane rail beam painted red and parallel chord angle iron truss frames.



EXTERNAL:
Figure 6.6 Mould Conditioning Building (item 20). Viewed from West looking East showing West elevation with North skillion addition to open hearth building (item 3) at far left. Frame of number 1 bloom mill (item 5) at far right.

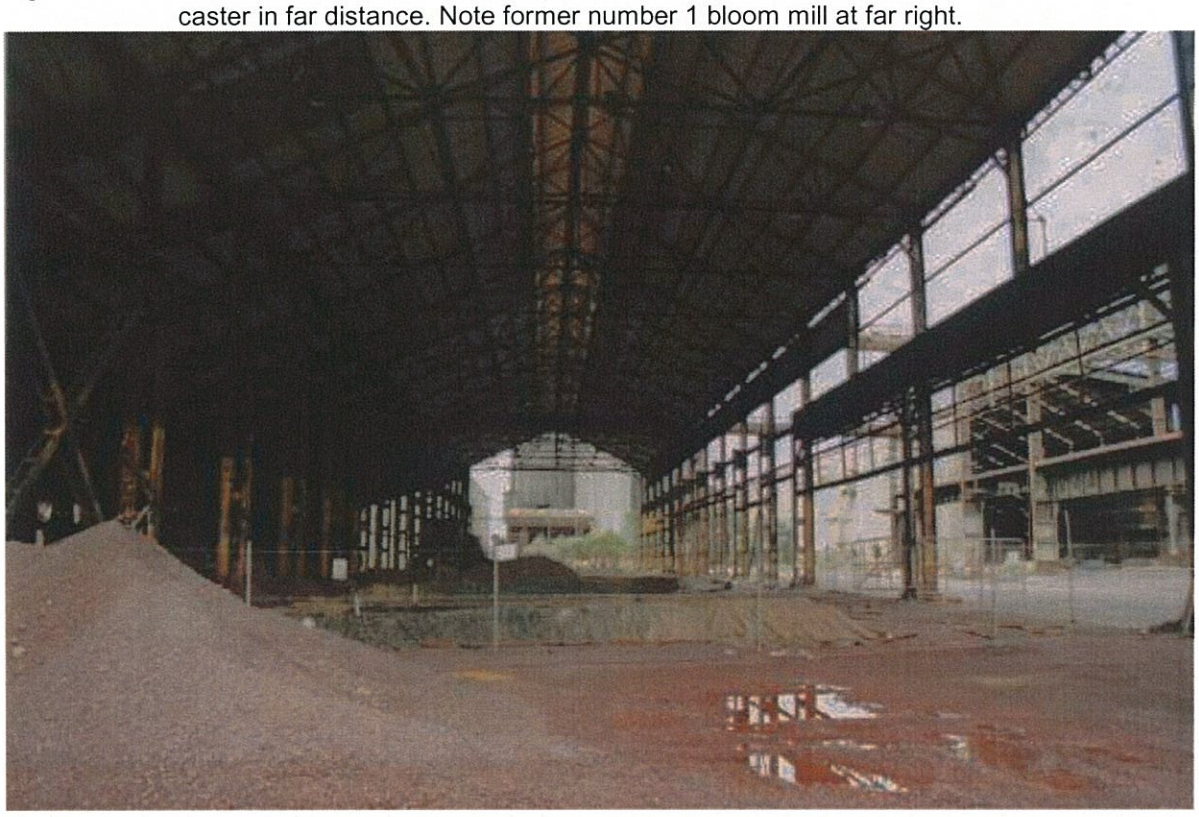


EXTERNAL:
Figure 6.7 Mould Conditioning Building (item 20). View of West end wall showing roof and ridge vent profile.

EXTERNAL:
Figure 6.8 Mould Conditioning Building (item 20). View of west end wall showing roof and ridge vent profile.

EXTERNAL:
Figure 6.9 Mould Conditioning Building and addition (item 20) with open hearth building (item 3) at left. Note B.O.S. Building (item 21) overhead at rear.

INTERNAL
Figure 6.10 Mould Conditioning Building (item 20).Interior view looking East towards bloom caster in far distance. Note former number 1 bloom mill at far right.



INTERNAL
Figure 6.11 Mould Conditioning Building (item 20). Interior view looking west. Note riveted steel columns and exterior wall cladding removed.

INTERNAL
Figure 6.12 Mould Conditioning Building (item 20). Interior view looking North to open hearth building (item 3). Note crane rail beam painted red and skillion addition between open hearth and mould conditioning buildings.

INTERNAL
Figure 6.13 Mould Conditioning Building (item 20). View of West end wall showing outrigger on North West column of West end wall. Open hearth building (item 3) in background.

7.0 NEGATIVE REFERENCE LIST

The following information relates to the complete set of negatives taken for the recording of this building. Under each Roll Number is a table containing the negative numbers and a description of each frame taken of that roll. The roll and negative numbers, position and direction of frame taken are referenced in the plan in section 8.0 – photographic reference plan. The numbers in the column titled "Figure No." relate to the selected photographs in section 6.0 of this report. Items marked with a dash in this column have prints located in the appendix along with the complete set of negatives.

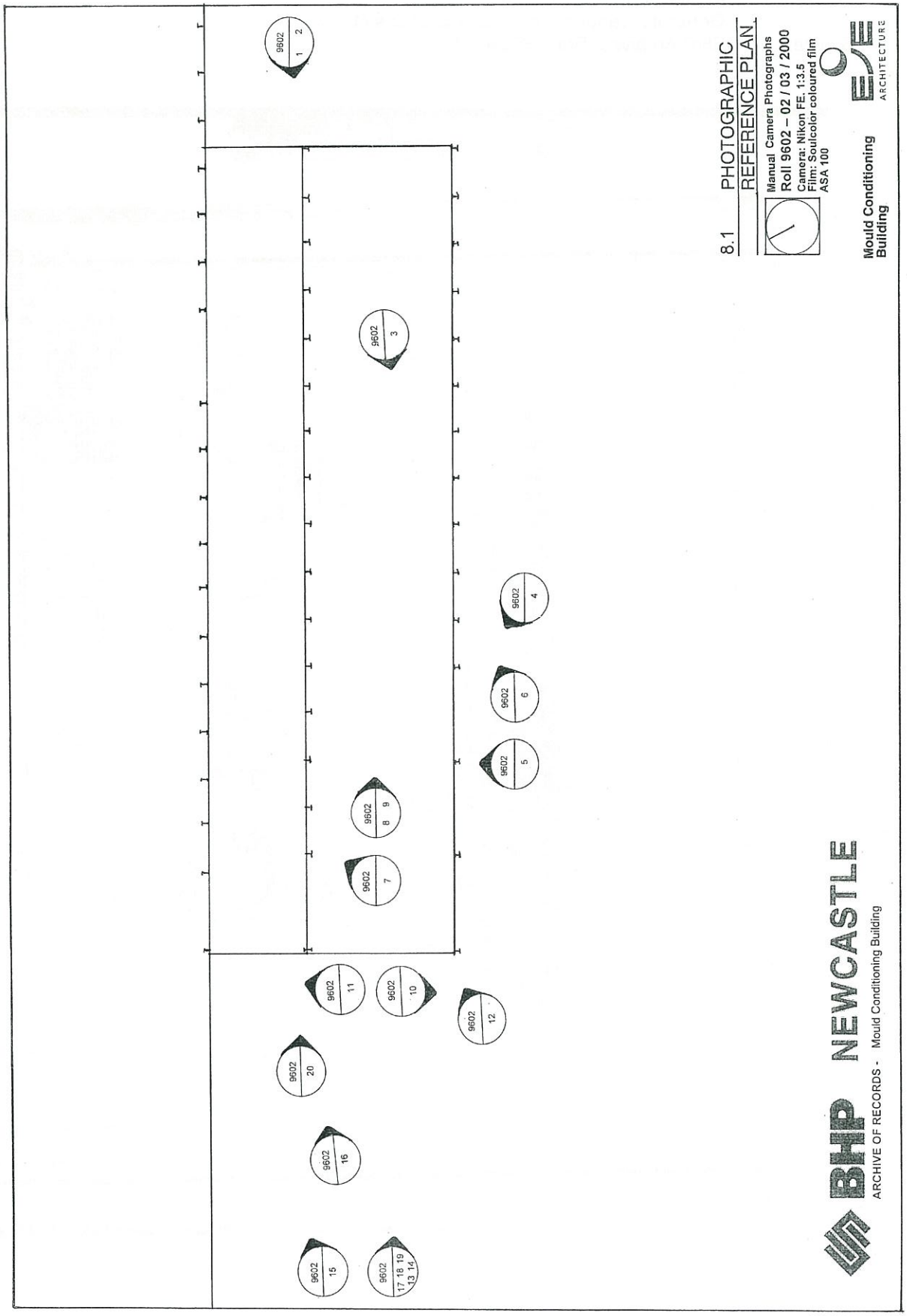
ROLL 9602 – 02/3/2000

Camera: Nikon FE. F 1:3.5
Film: Soulcolor coloured film ASA 100

Neg No.	Figure No.	Description
1	6.2	Mould Conditioning Building. Roof structure detail showing steel trusses and ridge vent detail. Viewed from East looking West.
2	6.1	Mould Conditioning Building. Viewed from East looking West. Note deep steel beam skillion addition between mould conditioning building and open hearth building at far right.
3	6.11	Mould Conditioning Building. Interior view looking west. Note riveted steel columns and exterior wall cladding removed.
4	6.4	Mould Conditioning Building. View of southern wall Western end not riveted steel columns and exterior wall cladding removed.
5	6.5	Mould Conditioning Building. Shows steel framing details of South wall. Note riveted crane rail beam painted red and parallel chord angle iron truss frames.
6	6.3	Mould Conditioning Building. Viewed from South looking East towards bloom caster in background beyond planting. Note riveted crane rail beam has been removed from last eleven bays.
7	6.12	Mould Conditioning Building. Interior view looking North to open hearth building. Note crane rail beam painted red and skillion addition between open hearth and mould conditioning buildings.
8	-	Mould Conditioning Building. Interior view looking East. Note bloom caster in far distance. Note angle iron roof trusses and parts of crane rail beams missing.
9	6.10	Mould Conditioning Building. Interior view looking East towards bloom caster in far distance. Note former number 1 bloom mill at far right.
10	-	Mould Conditioning Building. South West corner showing braced outrigger. Note frame of soaking pits building at right and number 1 bloom mill behind with steel foundry in far distance beyond.
11	6.13	Mould Conditioning Building. View of West end wall showing outrigger on North West column of West end wall. Open hearth building in background.
12	6.7	Mould Conditioning Building. View of West end wall showing roof and ridge vent profile.
13	6.8	Mould Conditioning Building. View of west end wall showing roof and ridge vent profile.
14	-	Mould Conditioning Building. View from West looking East showing West wall and skillion addition between open hearth building at far left frame of number 1 bloom mill at far right.
15	-	Mould Conditioning Building. Open hearth building viewed from immediately West of mould conditioning building.
16	6.9	Mould Conditioning Building and addition with open hearth building at left. Note B.O.S. Building overhead at rear.

17	-	Mould Conditioning Building. Viewed from West looking East showing West elevation with North skillion addition to open hearth building at far left. Frame of number 1 bloom mill at far right.
18	6.6	Mould Conditioning Building. Viewed from West looking East showing West elevation with North skillion addition to open hearth building at far left. Frame of number 1 bloom mill at far right.
19	-	Mould Conditioning Building. Viewed from West looking East showing West elevation with North skillion addition to open hearth building at far left. Frame of number 1 bloom mill at far right.
20	-	Mould Conditioning Building North skillion addition to open hearth building at far left view taken from West looking East.

8.0 PHOTOGRAPHIC REFERENCE PLAN



9.0 DIAGRAMMATIC RECORD AND DRAWINGS

Figure 9.1 Mould Conditioning Plant
General Arrangement – Plan / Sections (1964)
Source: BHP Archives. Ref – 65290 / 1

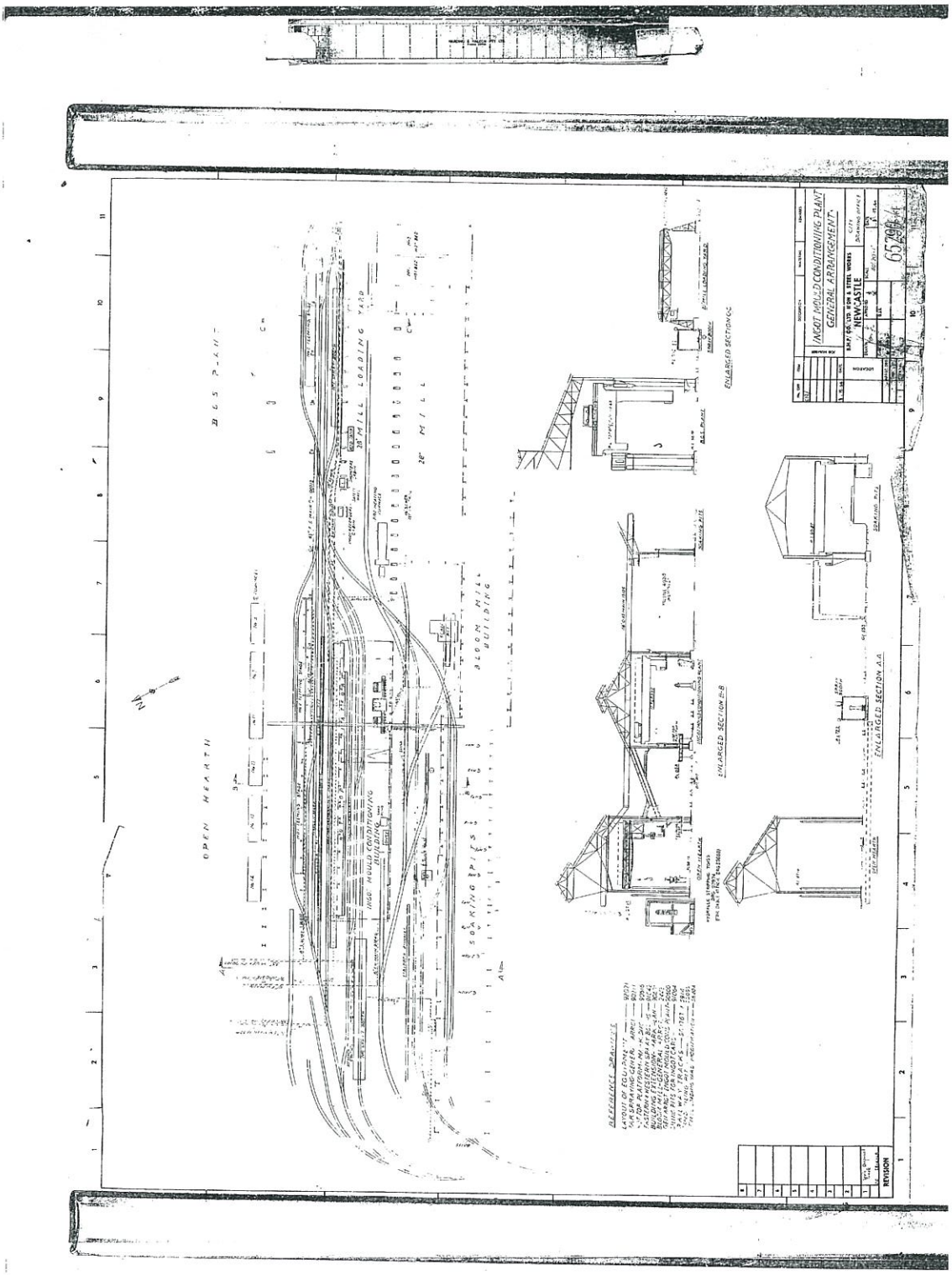
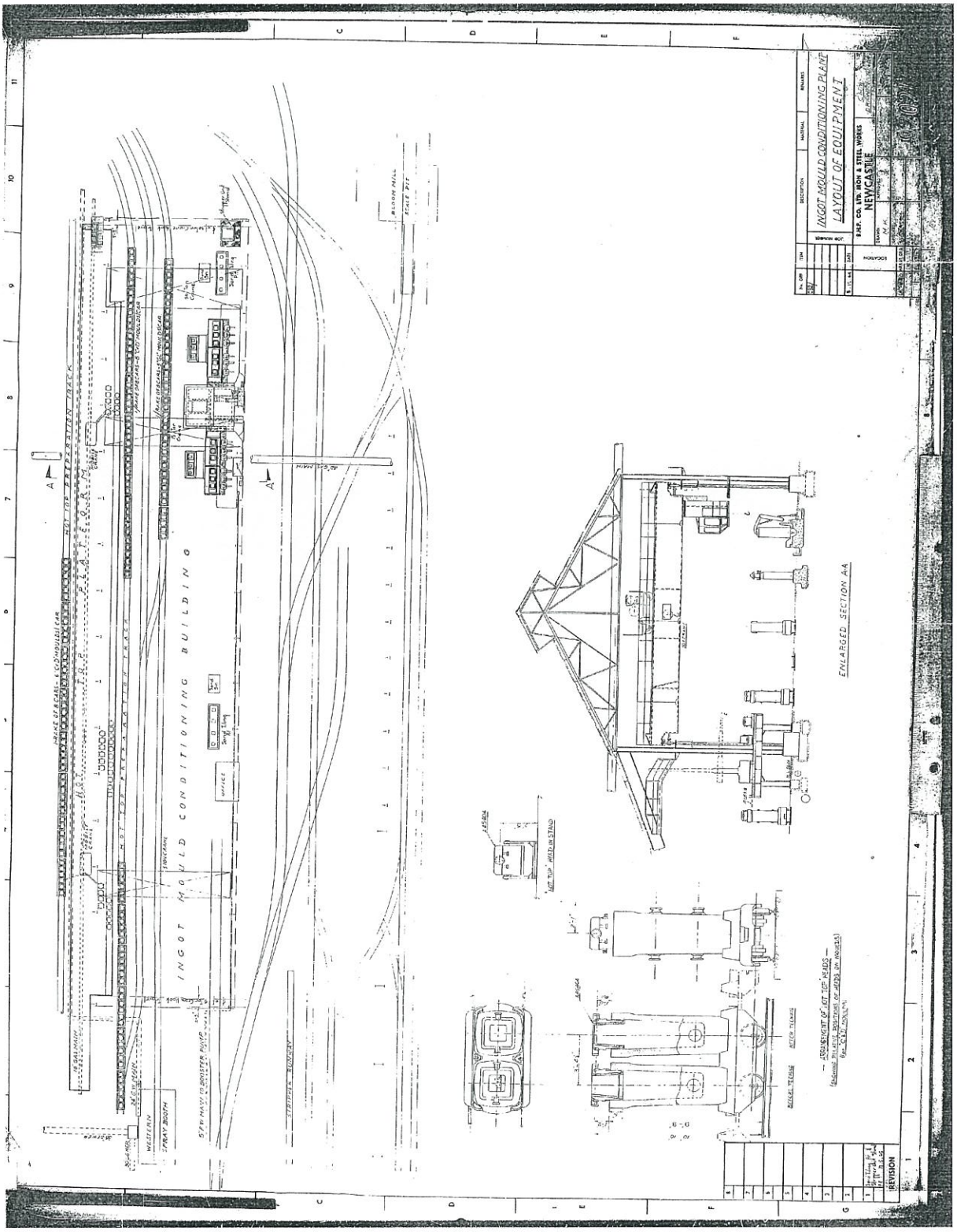


Figure 9.2 Mould Conditioning Plant
Layout of Equipment – Plan / Section / Details (1964)
Source: BHP Archives. Ref – 92021 / 1



10.0 HISTORIC PHOTOGRAPHIC RECORD

Note: No historic photographic record found during the compilation of this report.

11.0 FULL FORMAT PHOTOGRAPHIC RECORD

Note: No full format photographic records were accessible during the compilation of this report.

12.0 INVENTORY OF EQUIPMENT, FITMENTS AND FINISHES

N.B. There are no items to record in the inventory

13.0 APPENDICES

Appendix A: Manual camera negatives and photos

Appendix B: Digital images and disk - (N/A)

Appendix C: Archive Drawing Register Disk

13.1 Appendix A: Manual camera negatives and photos

Refer to the final Archive Report master copy, to be submitted to the NSW Heritage Office, for negatives and additional mounted manual photographs

13.2 Appendix C: Archive Drawing Register Disk

Refer to the final Archive Report master copy, to be submitted to the NSW Heritage Office, for the drawing register disk. Also accompanying the master copy shall be full size prints of the drawings as included in Section 9.0 -"Diagrammatic Records & Drawings".