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.

Manual camera photographs

ROLL 9870 – 27/03/2000

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

Neg No.	Figure No.	Description
0A	-	East elevation (part) Cowper furnaces.
1A	-	North elevation (part) of Cowper furnaces.
2A	6.13	Detail North elevation of Cowper furnaces and top of blast furnace.
3A	6.12	Detail North elevation of "Larry Car" Eastern end of travel.
4A	-	North elevation of raw materials area and hoist.
5A	-	North elevation (part) showing Cowper furnaces.
6A	-	North elevation (part).
7A	6.14	North elevation (part) showing relationship of blast furnace to raw materials crane and storage.
8A	-	North elevation of blast furnace materials "skip bridge" in foreground.
9A	6.15	North elevation of blast furnace.
10A	6.18	Detail of torpedo ladle looking East.
11A	6.19	Detail of torpedo ladle looking West (parts of motor gear missing).
12A	6.16	East elevation showing relationship of blast furnace to ship cranes.
13A	-	Full height detailed East elevation of blast furnace.
14A	6.17	South elevation of blower pipes feeding ovens.
15A	-	Detail East elevation.

ROLL 9856 – 27/03/2000

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

Neg No.	Figure No.	Description
9A	-	General West Elevation
10A	-	West elevation looking to Northern raw materials bins area.
11A	-	Detail of "Larry Car".
12A	6.3	Detail of hopper line facing East.
13A	6.5	Detail of West elevation of slag granulator.
14A	-	Detail of bin hoppers looking East.
15A	6.4	Detail of "Larry Car" hoppers looking west.
16A	6.6	Part North elevation (lower level). Detail of slag granulator.
17A	-	Detail looking up to furnace core above casting floor.
18A	6.7	Detail (part) South elevation showing "gas washer".
19A	-	Detail (part) South elevation.
20A	-	Detail (part) South elevation Western side of dust catcher.
21A	6.9	Detail (part) South elevation dust catcher hopper (left), Cowper furnace (right).
22	-	South elevation showing cowper furnaces.
23	-	View East along ladle lines.
24A	-	East elevation dust catcher (left) cowper furnace (right).

ROLL 9898 – 29/03/2000

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

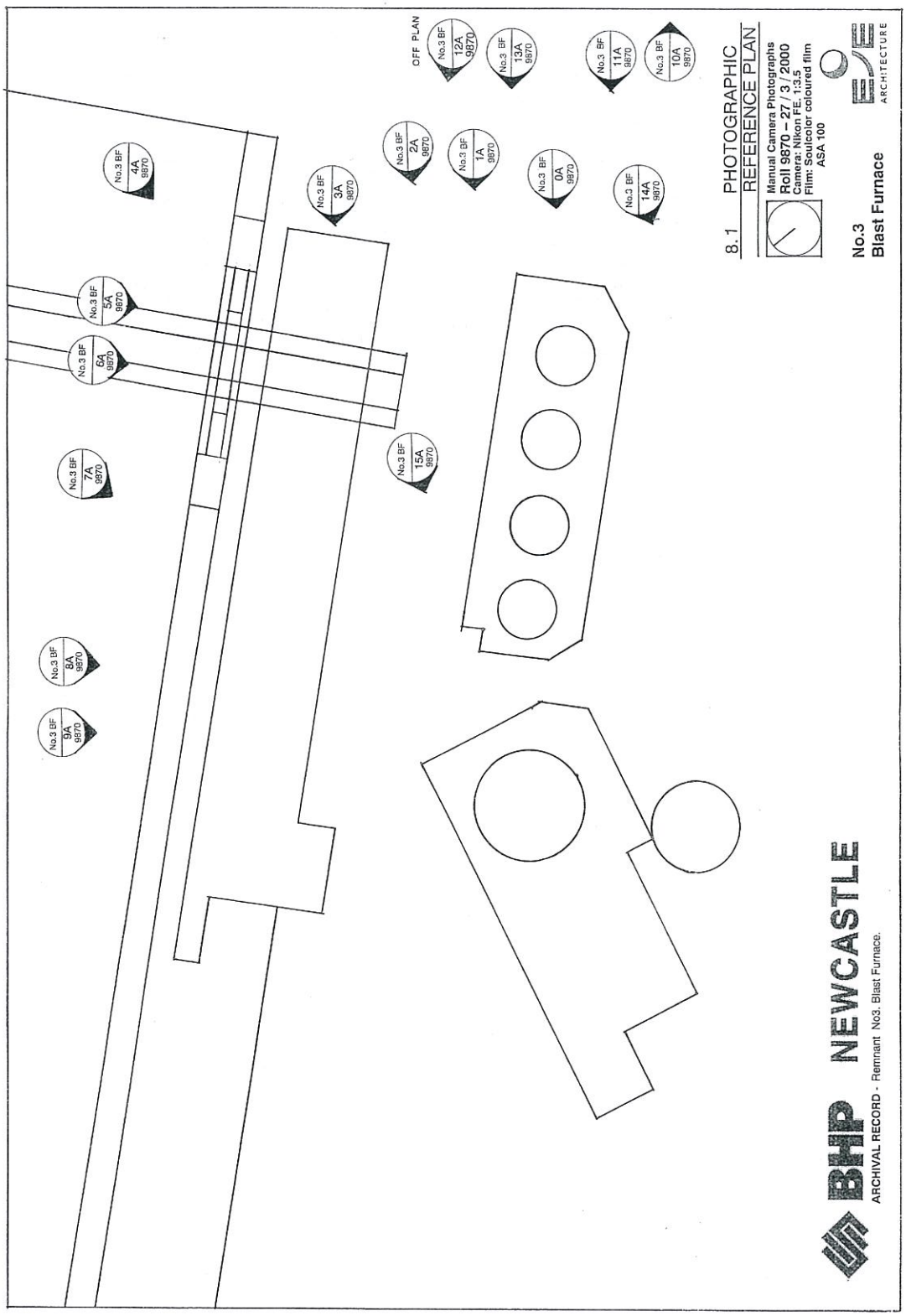
Neg No	Figure No	Description
12A	6.22	CHF Interior - Eastern elevation showing slag drain.
13A	6.23	CHF Interior – Eastern elevation slag tap hole drill.
14A	6.24	CHF Interior – Detail of tap hole drill Northern side of bustle main.
15A	6.25	CHF Interior – Detail of cooling pipe work to staves North side of bustle main.
16A	6.26	CHF Interior – Detail of mud/clay gun (S.A. Paul Wurth, Luxembourg)
17A	6.20	Eastern elevation of number 4 blast furnace from cast house floor.
20	6.21	Eastern top view of slag granulation plant.

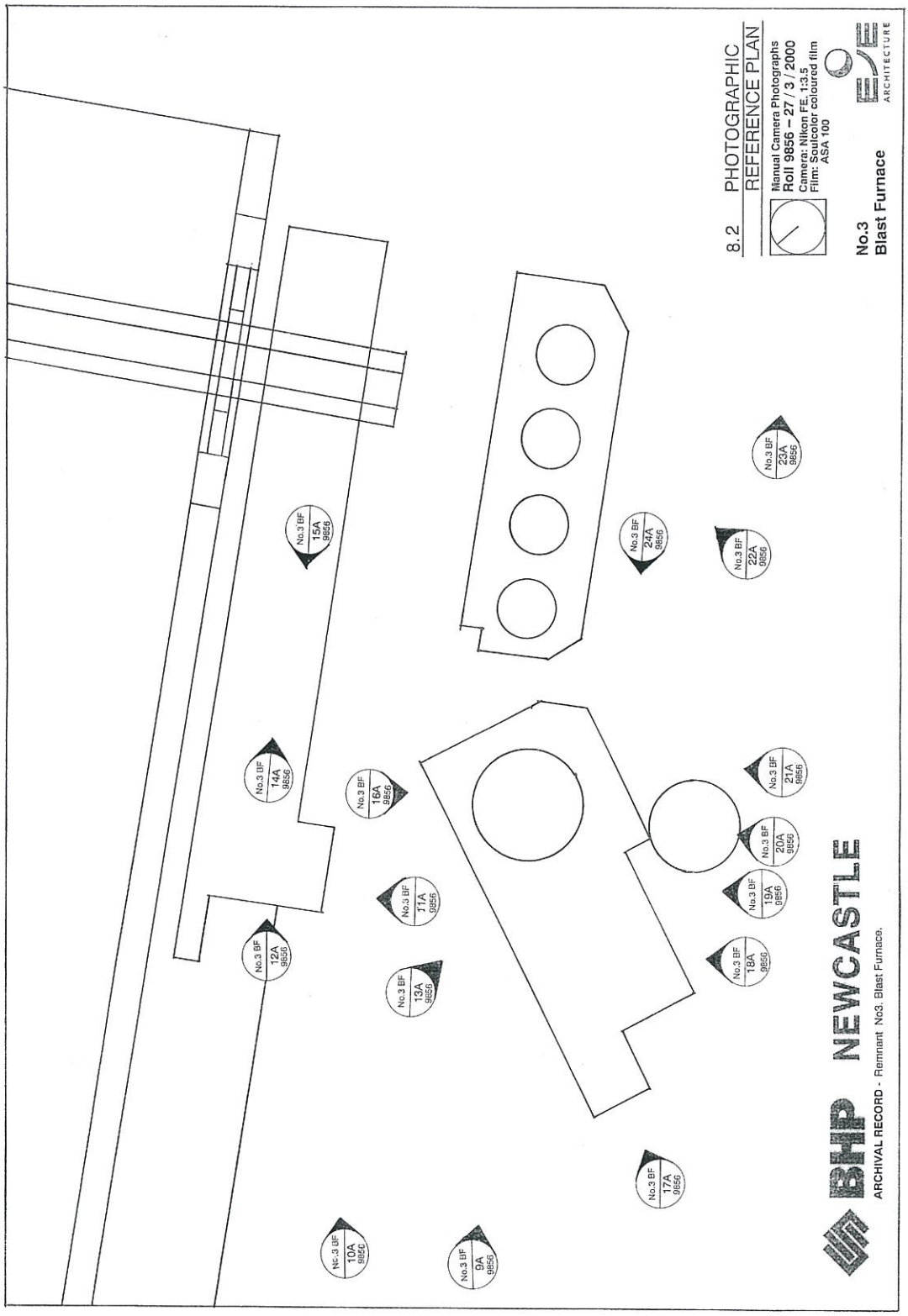
Digital photographs

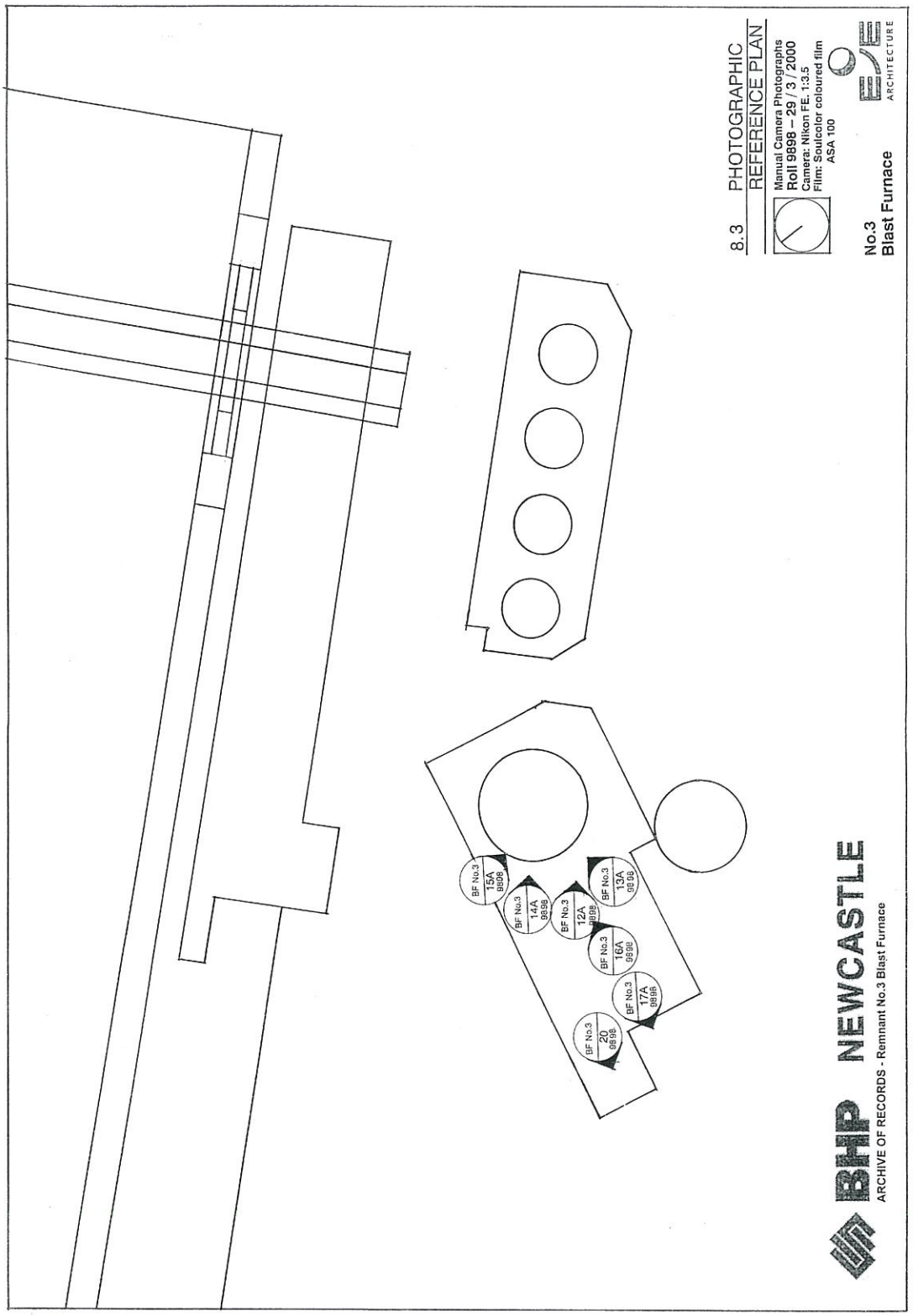
06/03/00
Camera: Kodak DC-120 Zoom 38 – 114

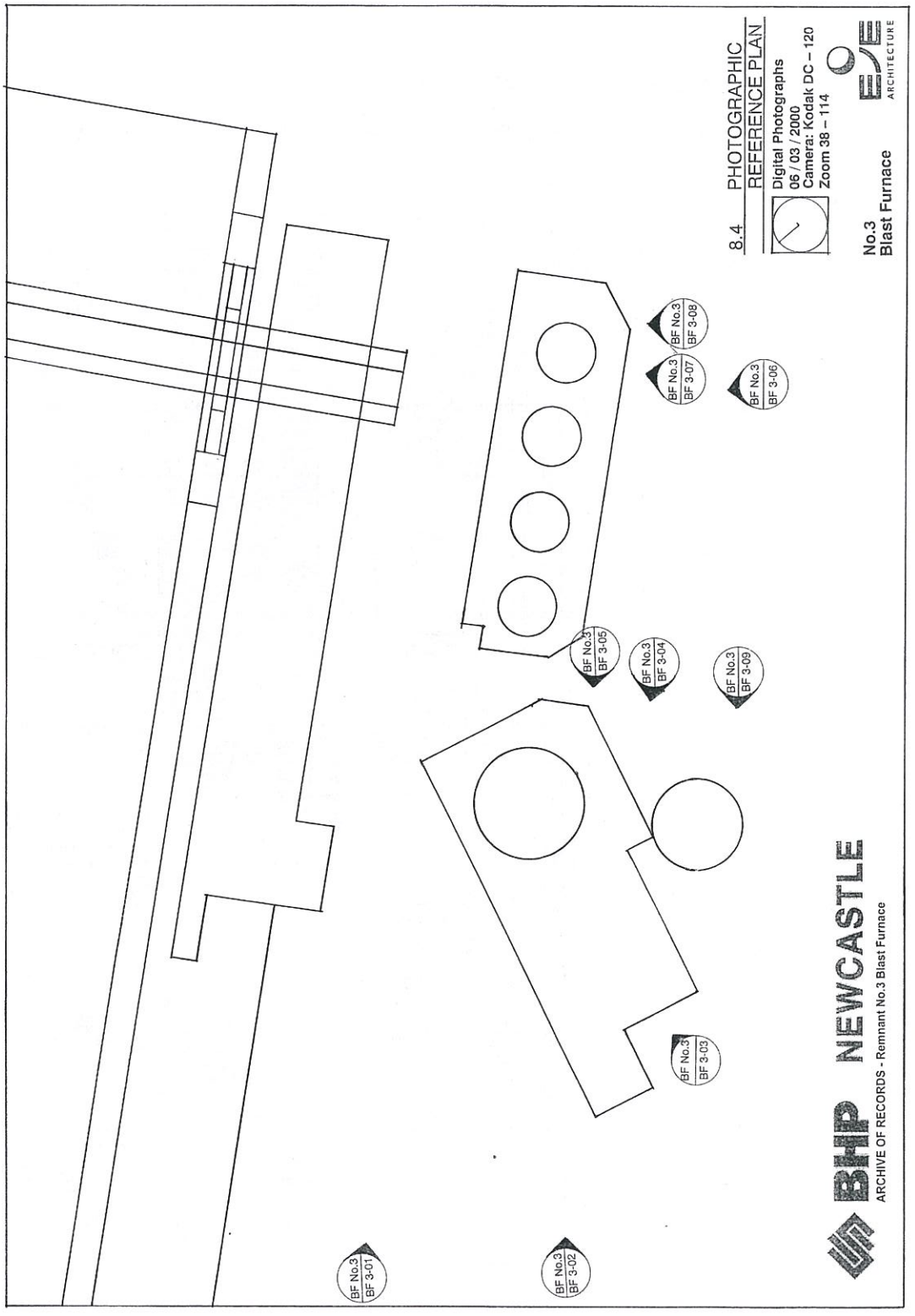
Photo No.	Figure No.	Description
BF-3-01	6.1	General West elevation.
BF-3-02	6.2	West elevation blower pipe work on right hand side.
BF-3-03	-	North Eastern elevation.
BF-3-04	6.8	East elevation dust catcher in foreground.
BF-3-05	-	Detail East elevation.
BF-3-06	6.10	South elevation of Cowper furnaces.
BF-3-07	6.11	Detail South elevation of Cowper Furnace (lower level).
BF-3-08	-	Detail South elevation of Cowper furnace (upper level).
BF-3-09	-	South/West detail of dust catcher.

8.0 PHOTOGRAPHIC REFERENCE PLAN




8.2 PHOTOGRAPHIC REFERENCE PLAN
Manual Camera Photographs
Roll 9856 – 27 / 3 / 2000
Camera: Nikon FE, 1:3.5
Film: Soulcolor coloured film
ASA 100
No.3
Blast Furnace
EJE ARCHITECTURE
No.3 BF 15A 9856
No.3 BF 14A 9856
No.3 BF 16A 9856
No.3 BF 12A 9856
No.3 BF 11A 9856
No.3 BF 13A 9856
No.3 BF 10A 9856
No.3 BF 9A 9856
No.3 BF 17A 9856
No.3 BF 18A 9856
No.3 BF 19A 9856
No.3 BF 20A 9856
No.3 BF 21A 9856
No.3 BF 22A 9856
No.3 BF 24A 9856
No.3 BF 23A 9856
BHP NEWCASTLE
ARCHIVAL RECORD - Remnant No3. Blast Furnace.


8.3 PHOTOGRAPHIC REFERENCE PLAN
Manual Camera Photographs
Roll 9898 – 29 / 3 /2000
Camera: Nikon FE. 1:3.5
Film: Soulcolor coloured film
ASA 100
No.3
Blast Furnace
EJE ARCHITECTURE
BF No.3 15A 9898
BF No.3 14A 9898
BF No.3 12A 9898
BF No.3 13A 9898
BF No.3 16A 9898
BF No.3 17A 9898
BF No.3 20 9898
BHP NEWCASTLE
ARCHIVE OF RECORDS - Remnant No.3 Blast Furnace


8.4 PHOTOGRAPHIC REFERENCE PLAN
Digital Photographs
06 / 03 / 2000
Camera: Kodak DC – 120
Zoom 38 – 114
No.3
Blast Furnace
EJE ARCHITECTURE
BHP NEWCASTLE
ARCHIVE OF RECORDS - Remnant No.3 Blast Furnace
BF No.3 BF 3-01
BF No.3 BF 3-02
BF No.3 BF 3-03
BF No.3 BF 3-04
BF No.3 BF 3-05
BF No.3 BF 3-06
BF No.3 BF 3-07
BF No.3 BF 3-08
BF No.3 BF 3-09

9.0 DIAGRAMMATIC RECORD & DRAWINGS

Figure 9.1: No3 Blast Furnace
General Arrangement – Plan (1967)
Source: BHP Drawing ref: 84709/1. BHP Archives ref – W005/053/1246

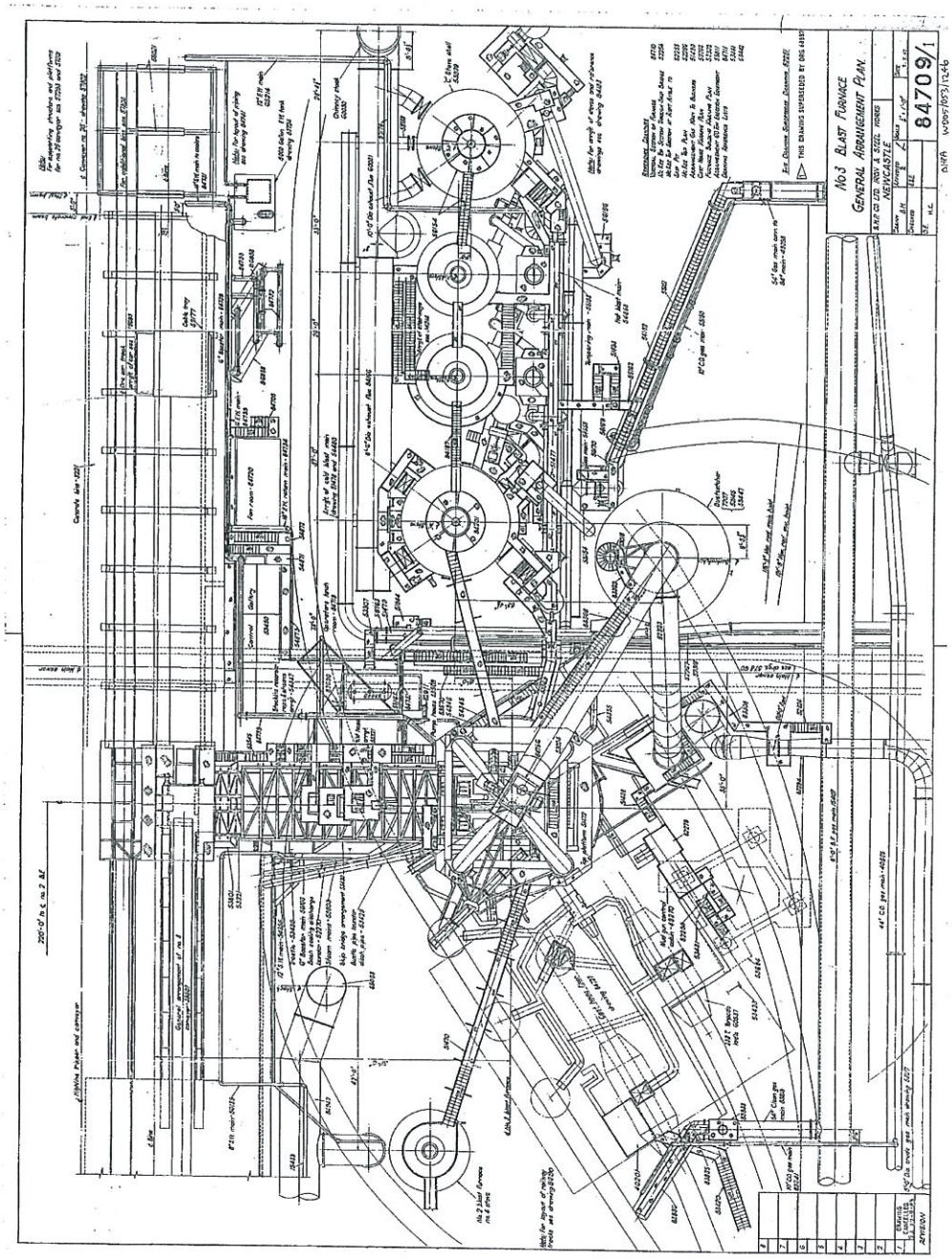


Figure 9.2: No3 Blast Furnace

General Arrangement – Elevation (1960)
Source BHP drawing ref: 55244. Archives ref – W005/053/967

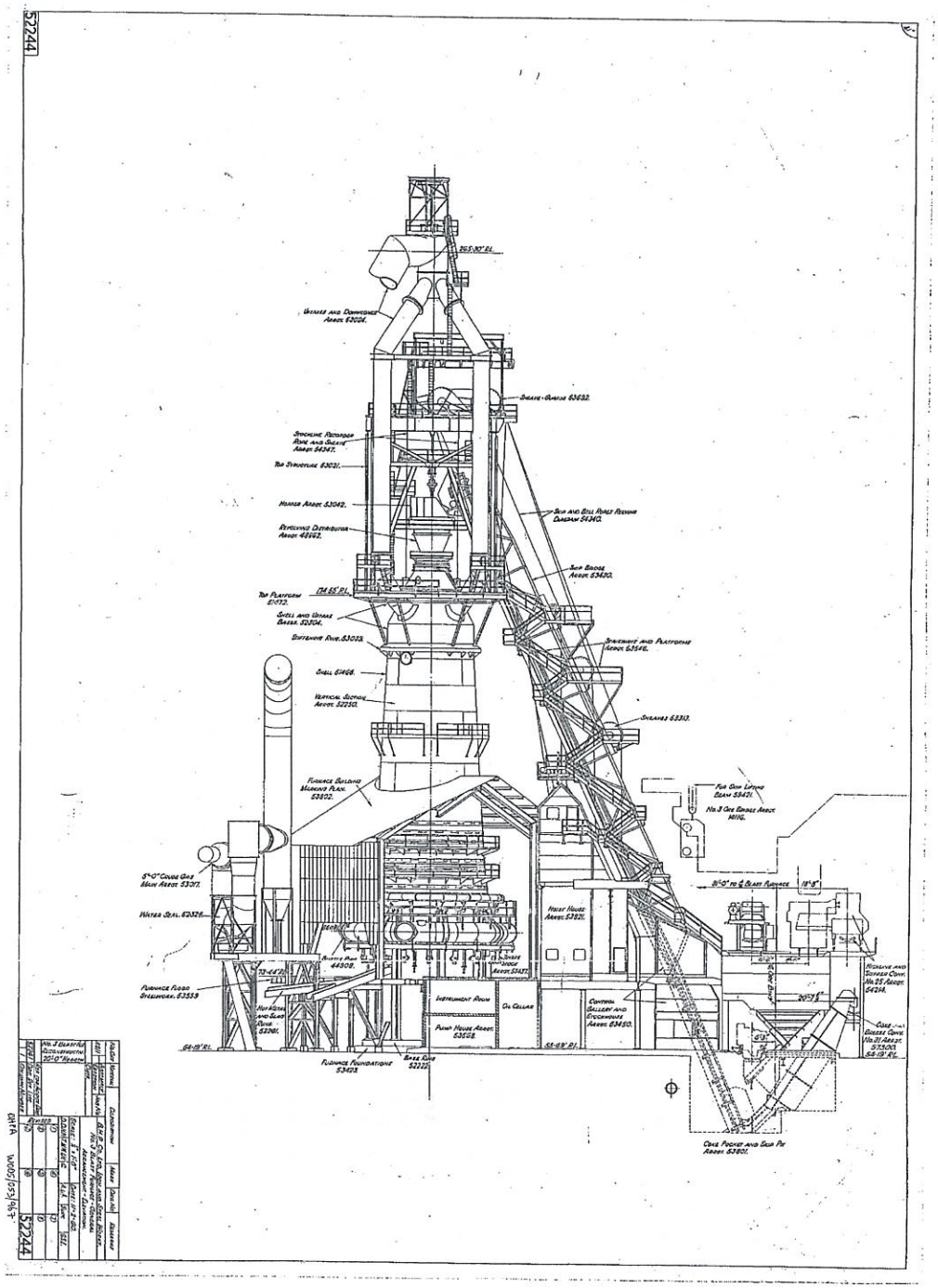


Figure 9.3 No3 Blast Furnace
General Arrangement – Plan (1985)
Source BHP drawing ref: 159000/2

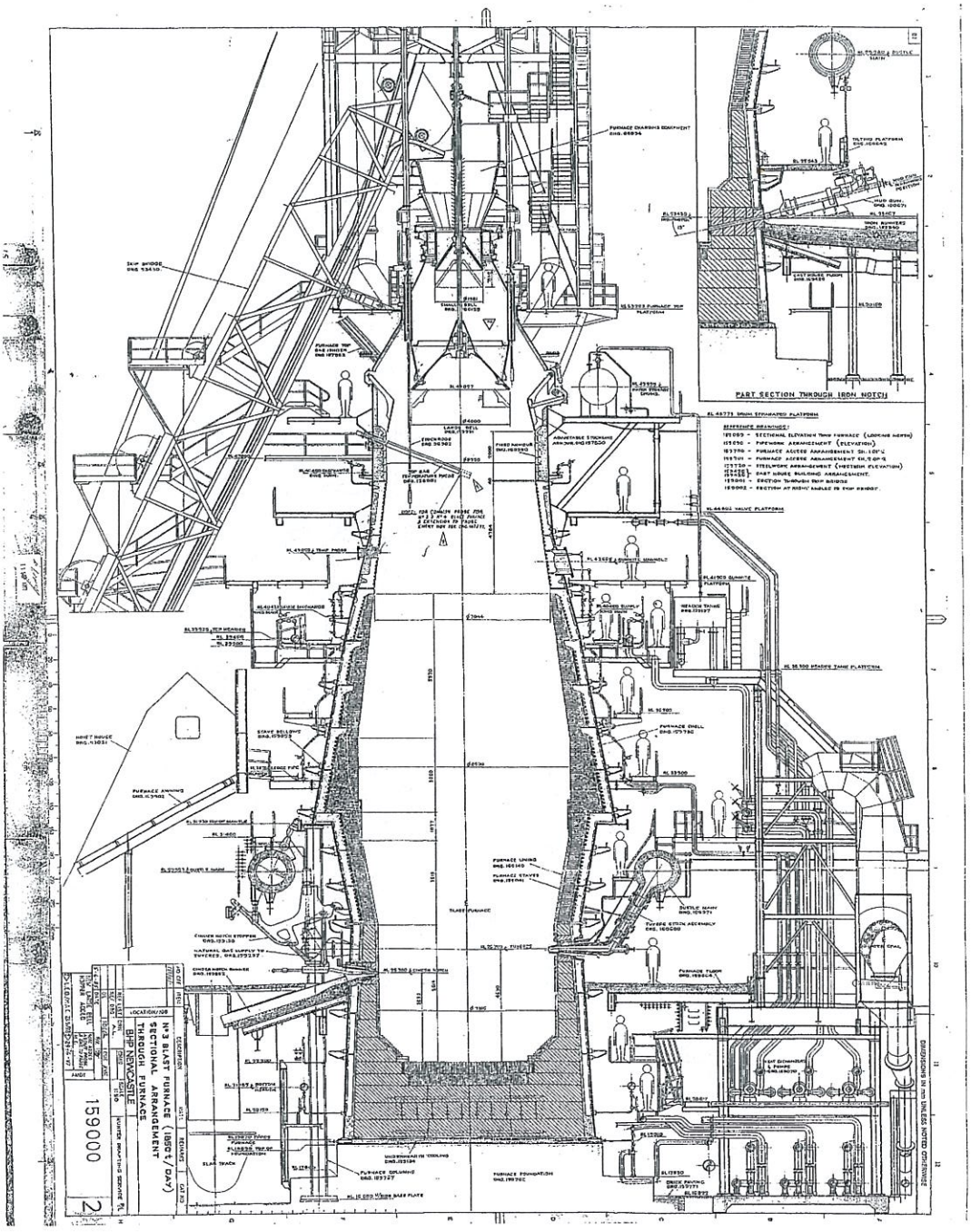


Figure 9.4 No3 Blast Furnace
Vertical Section through Furnace
Vertical Section through Furnace
(As blown in 1925)

Source BHP drawing ref: F6366/B

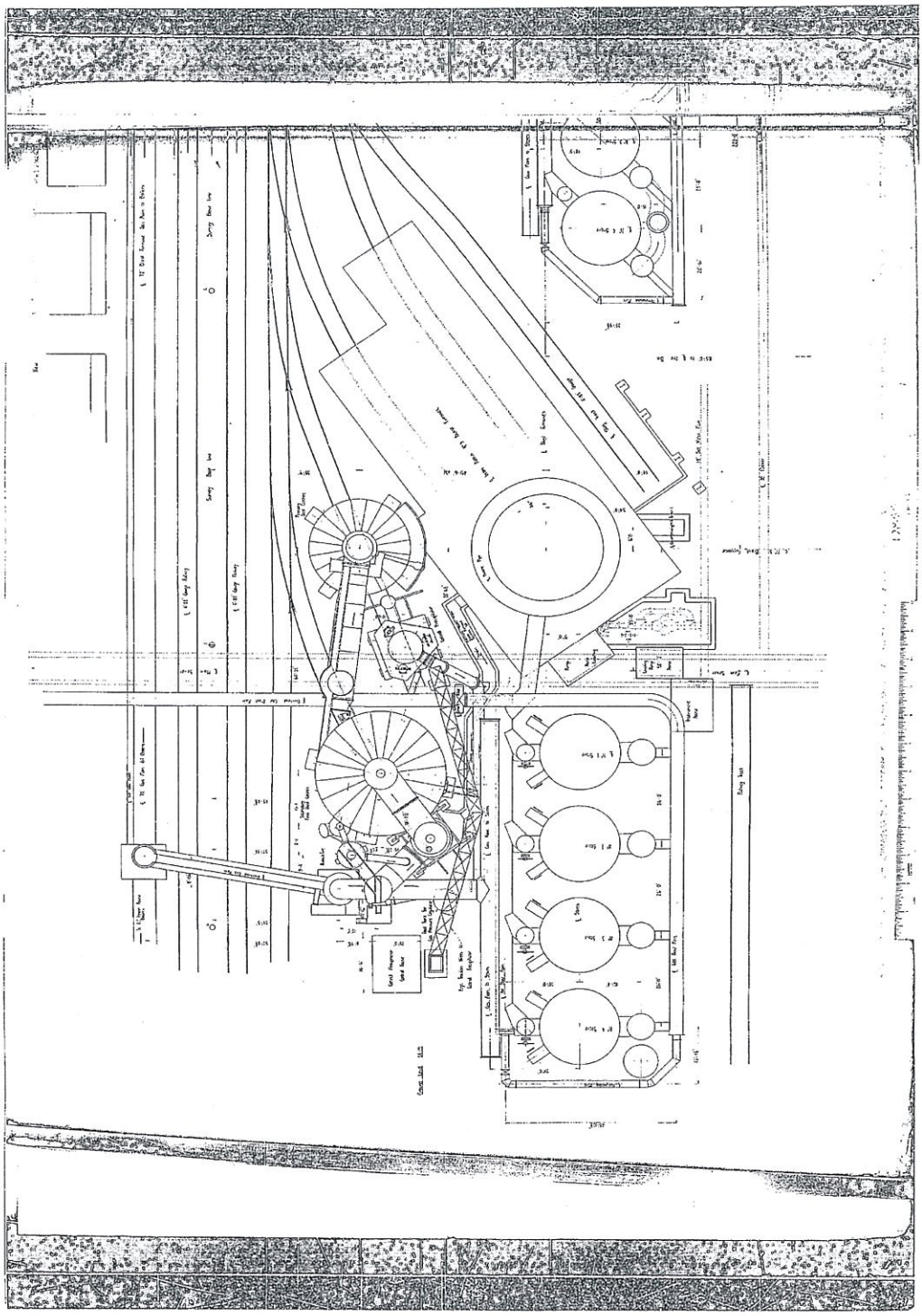


Figure 9.5 No3 Blast Furnace
Vertical Section through Furnace
(As blown in 1926)
Source BHP Drawing ref: F6366/A and B

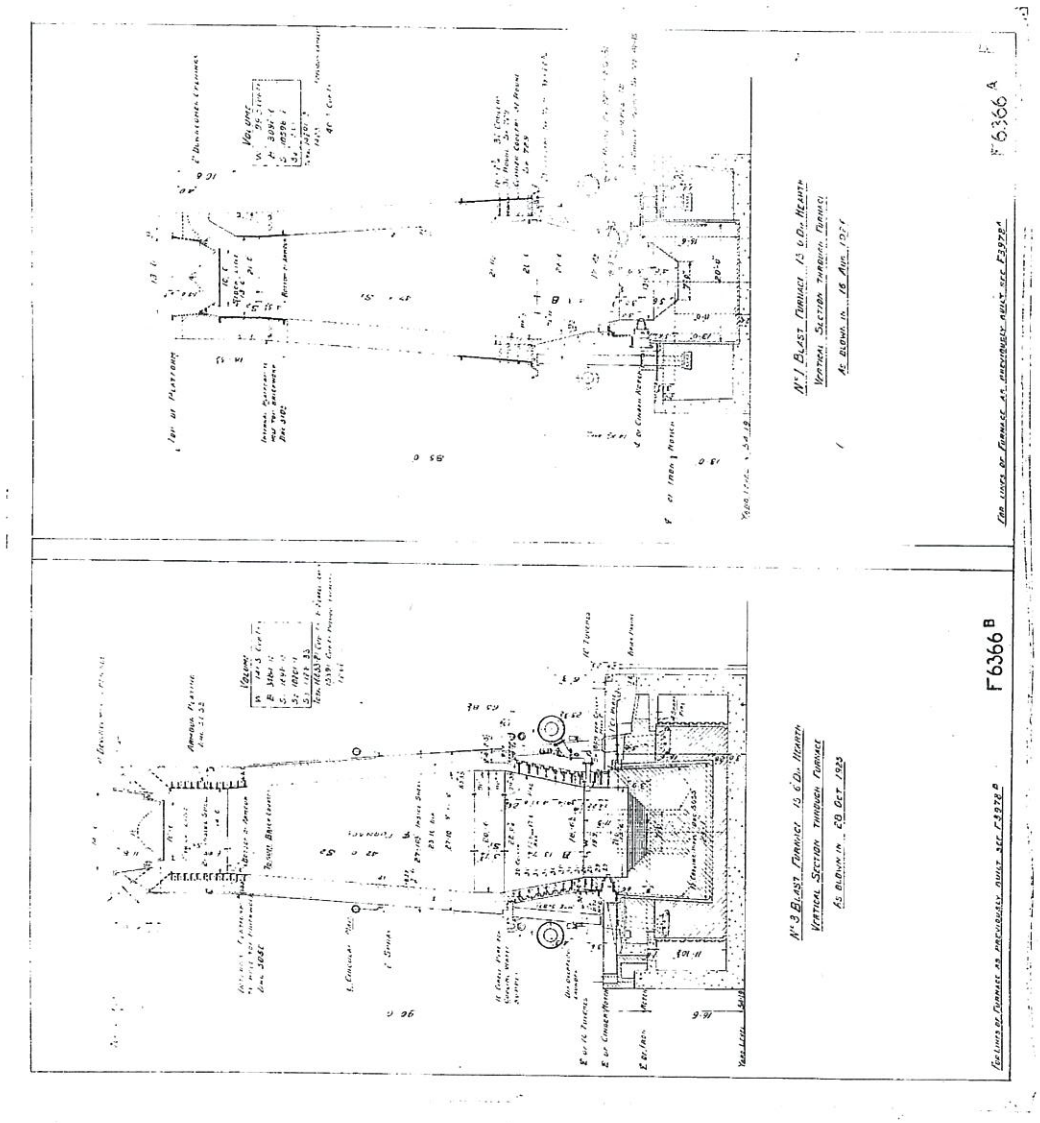
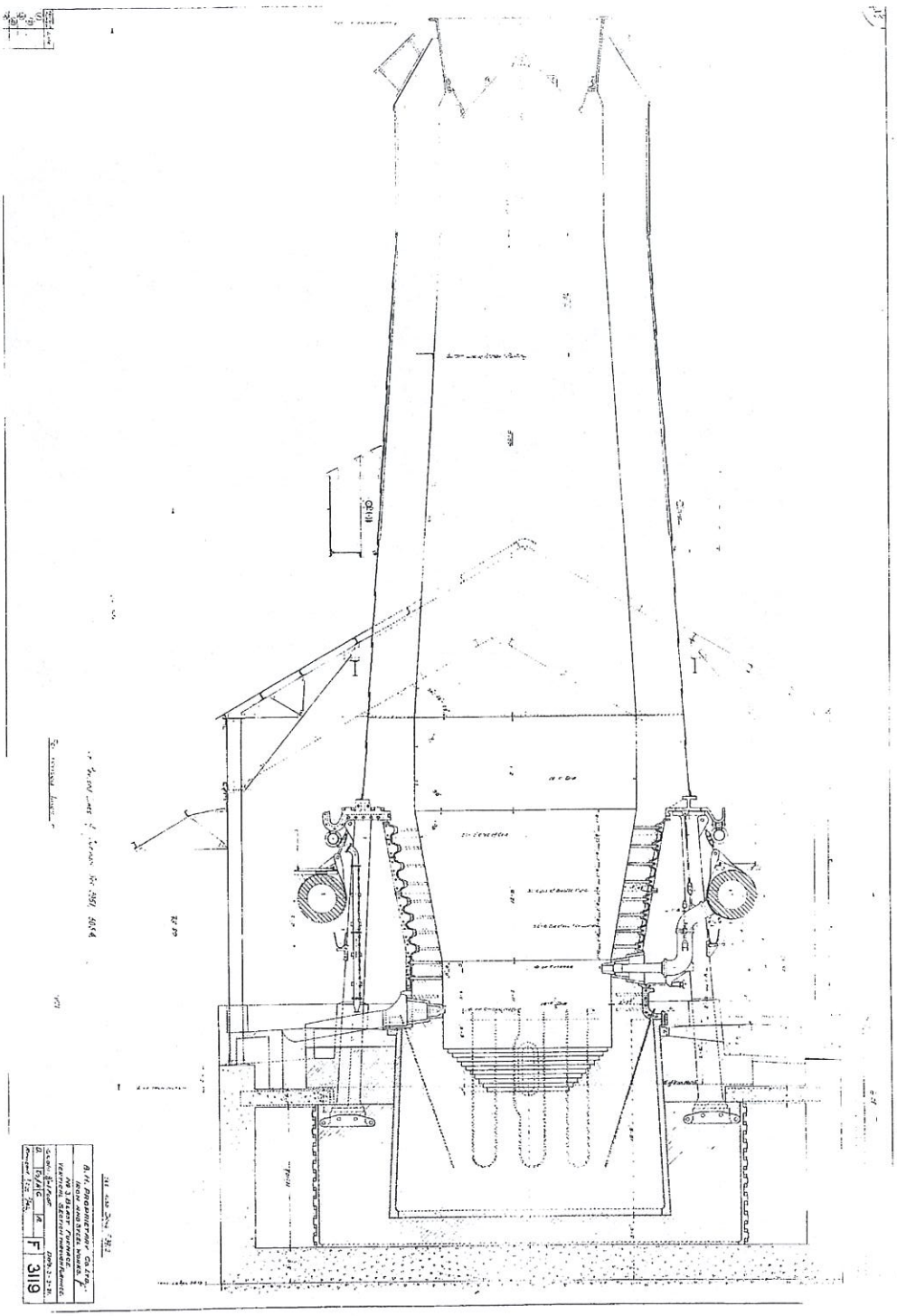


Figure 9.6 No3 Blast Furnace
Vertical Section through Furnace

Source BHP drawing ref: F3119



10.0 HISTORIC PHOTOGRAPHIC RECORD

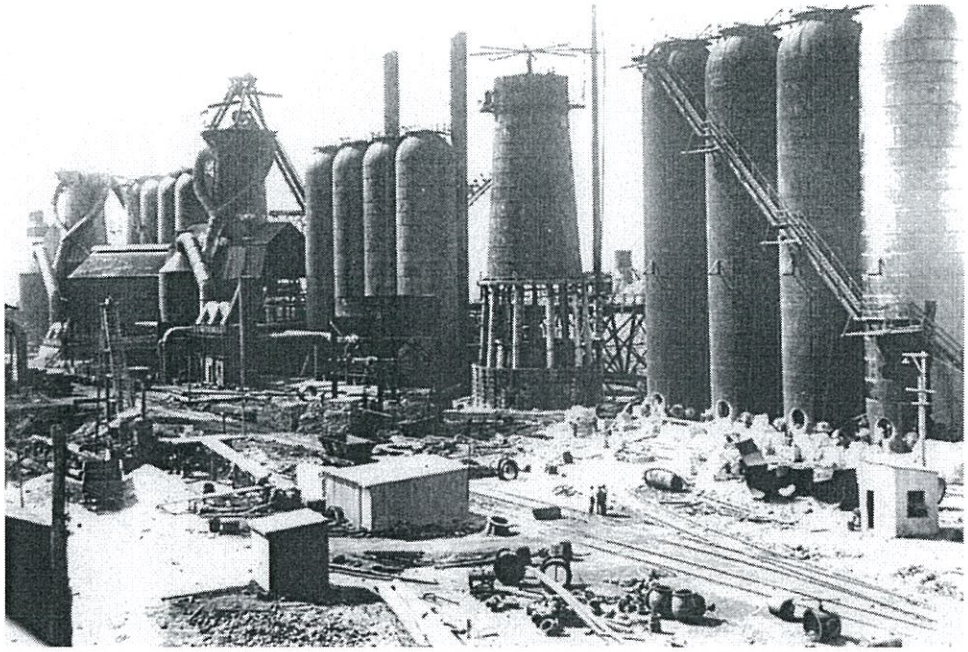


Figure 10.1: Construction of No 3 Blast Furnace, 1921
Source: (Sansom 1999: 21)

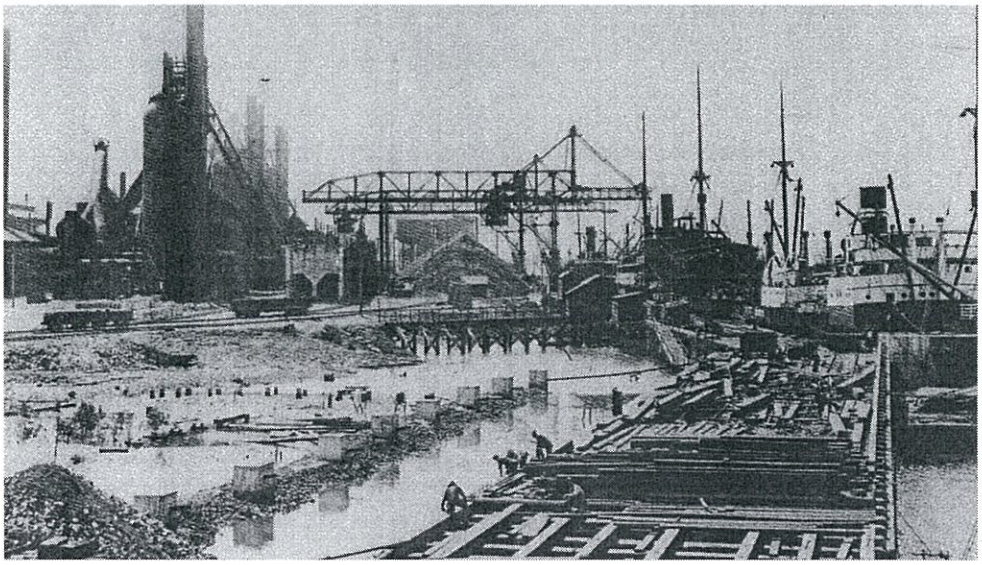


Figure 10.2: No 3 Blast Furnace and Wharf extensions, 1922
Source: Jay (1999: 65)

Figure 10.3: No3 Blast Furnace. C.1938.
Source: BHP Archives ref (No.20)

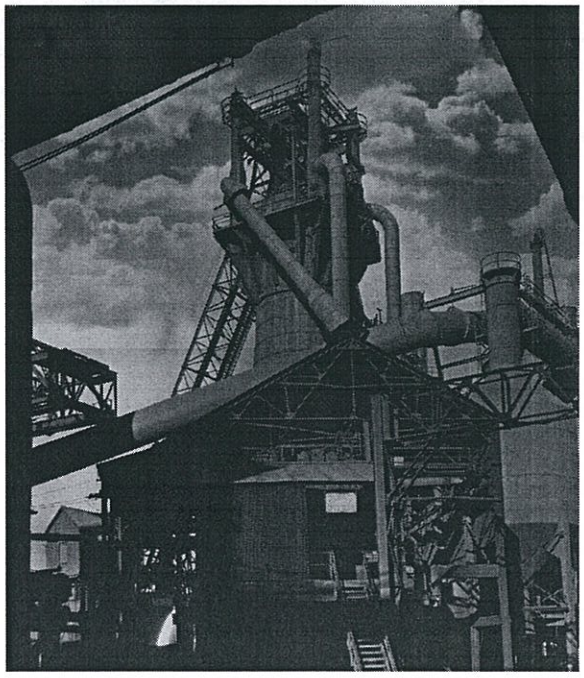


Figure 10.4: No3 Blast Furnace (to left) taken from wharves.c.1938.
Source: BHP Archives ref (No.2)

11.0 FULL FORMAT PHOTOGRAPHC RECORD

All images in this section are provided by Albert Erzetich - Black & White Photographic Record
Camera: Linhoff 5"x4" negative format view camera with wide angle and telephoto lenses
Film: Kodak T–max 100 or 400

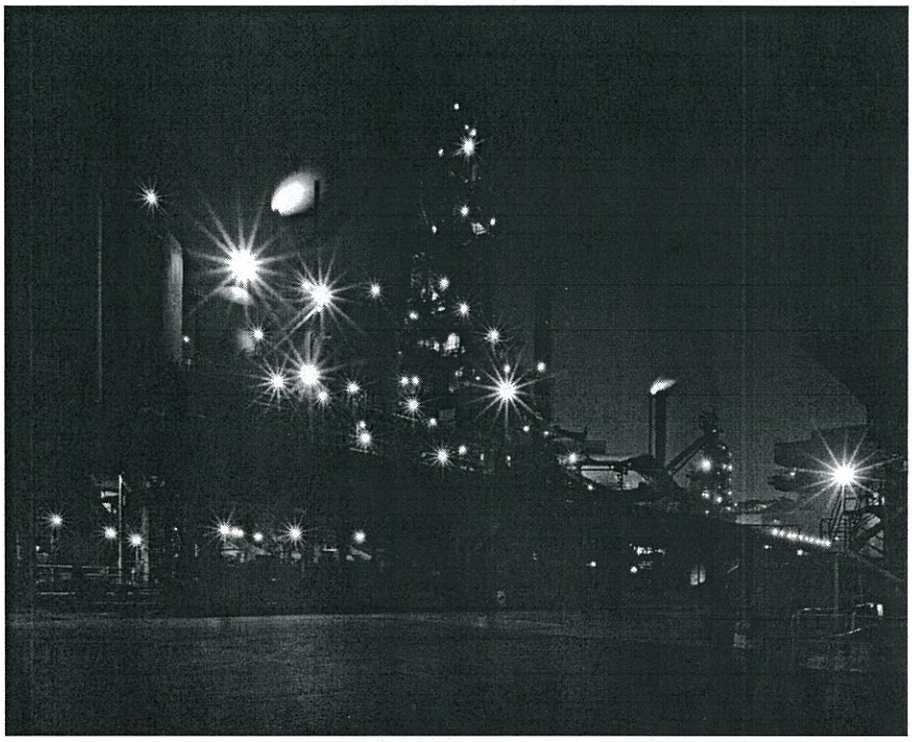


Figure 11.1 Night view of No 3 Blast Furnace from Ore Bridge
Source: Erzetich, no 001, ref no B08/09

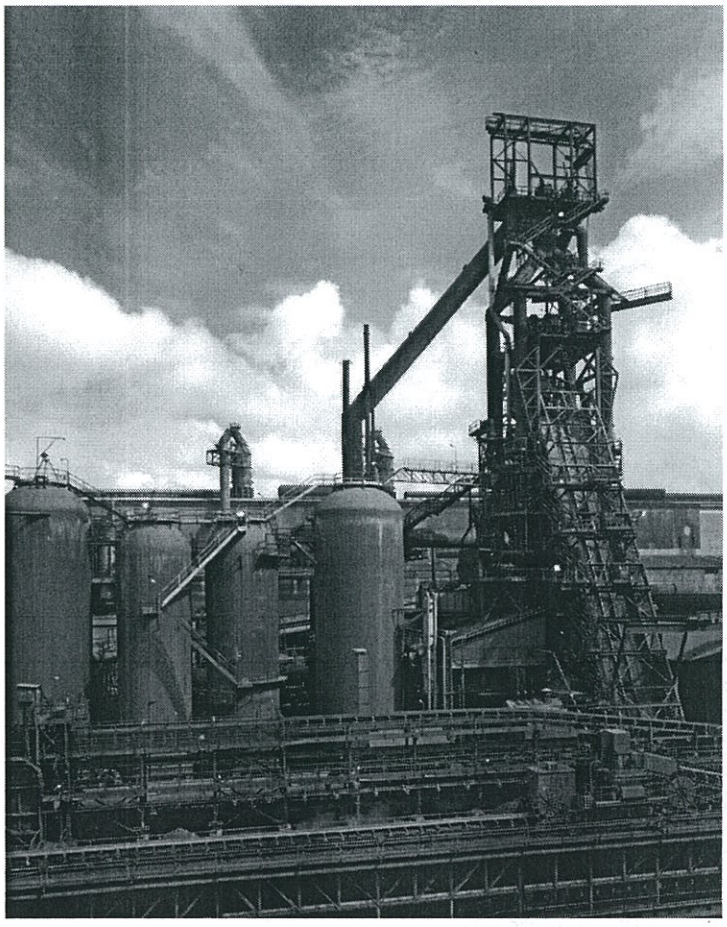


Figure 11.2: No 3 Blast Furnace and Gas Holders
Source: Erzetich, no 008, ref no B04/10

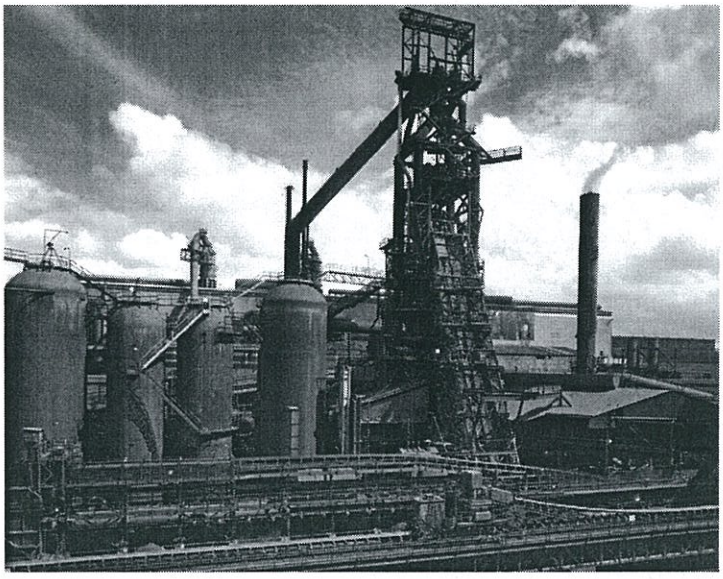


Figure 11.3: No 3 Blast Furnace
Source: Erzetich, no 009, ref no B04/08

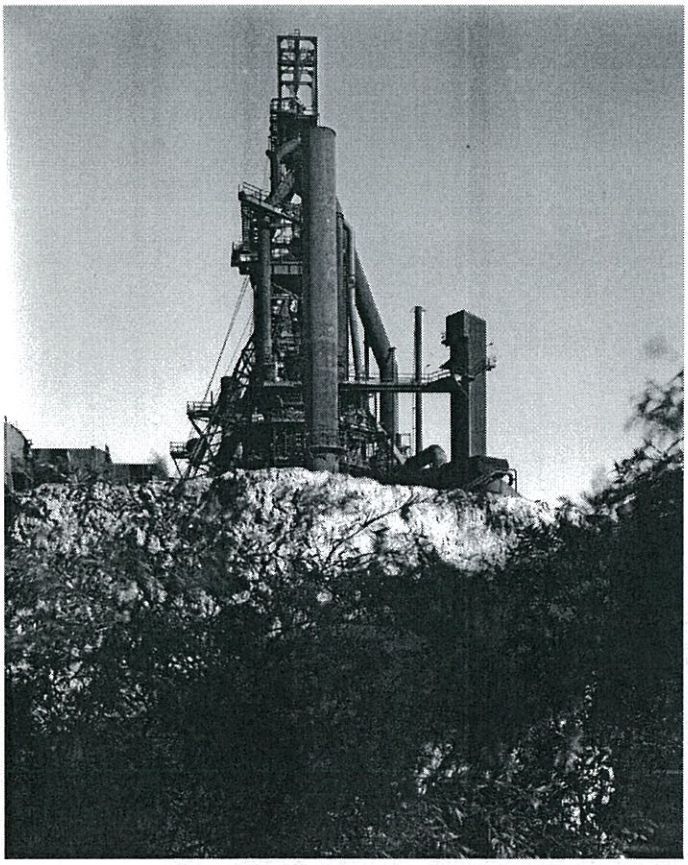


Figure 11.4: No 3 Blast Furnace behind No 1 "Button"
Source: Erzetich, no 015, ref no B06/01

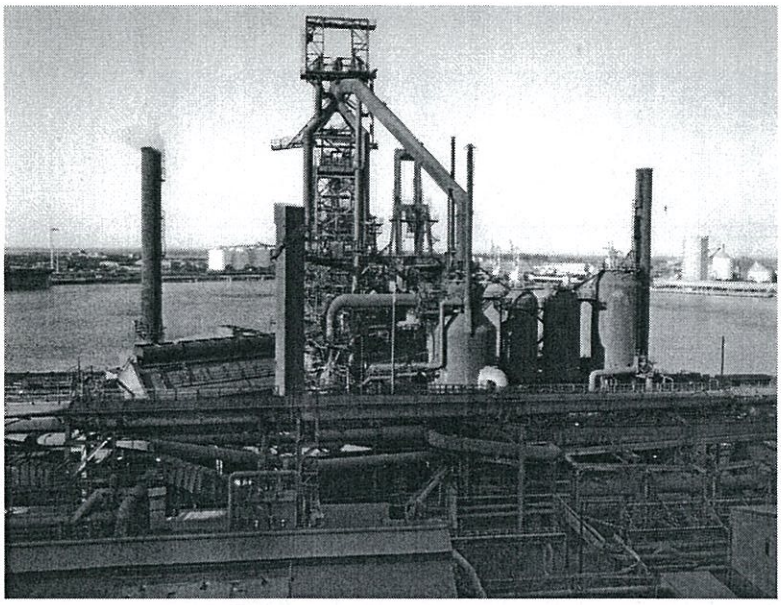


Figure 11.5: No 3 Blast Furnace from South
Source: Erzetich, no 017, ref no B19/14

Figure 11.6: No 3 Blast Furnace From North/West
Source: Erzetich, no 020, ref no B19/08

Figure 11.7: No 3 Blast Furnace From North/West with torpedo ladles in foreground.
Source: Erzetich, no 022, ref no B120/42

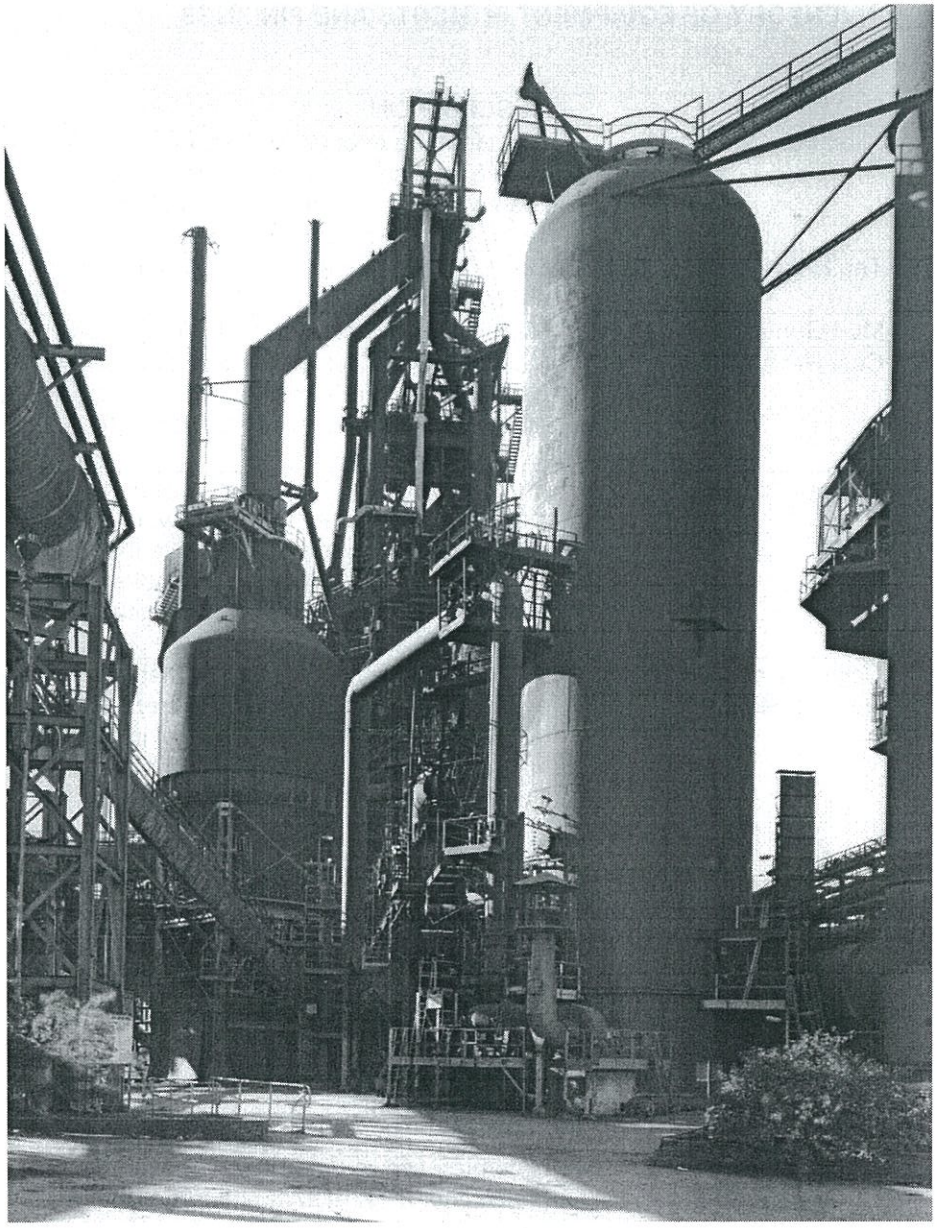


Figure 11.8: No 3 Blast Furnace From South.
Source: Erzetich, no 023, ref no B19/04

12.0 INVENTORY OF EQUIPMENT FITMENTS AND FINISHES

ITEM	DESCRIPTION	ORIGIN DATE
Blast Furnace Hearth	Steel framing to concrete footing with brick & cooling block (stave) lining. Also lined with armour plated steel. Fitted with salt water cooling system pipes.	1985 (re-built)
Tap Holes	Openings from which molten iron and slag ore drained from the hearth.	1985 (second hole added)
Mud Gun & Tapping Drill	Machinery to block and unblock tap holes.	
Cast House Floor	Main platform at which furnace tap holes are opened to drain molten iron and slag. Molten iron is channelled away from this level to the separation pits.	1985 (added) 1989 (addition)
Torpedo Ladle	Long, slender "torpedo"- like vessel made of welded plate steel, for the moving of the molten iron along rail tracks to the steel making departments. The ladle was mechanically rotated along its longitudinal axis to transfer its contents.	
Cowper Regenerative Air Heating Stoves	Four (4) large cylindrical metal plated ovens lined internally with "checkers" (2.5 inches diameter refractory bricks) in which air was pre-heated to 1050 degrees C. This hot air was then blown into the furnace. Note: The second stove from the west is noted as being of riveted steel plate construction, which therefore establishes it as being one of the original stoves. (1921) In c.1940 the stoves as well as being relined with circular bricks, were each fitted with pressure burners, fans, and instrumentation.	1922 & c.1960
Bustle Main	Large steel pipe which ran around the circumference of the furnace at cast house floor level feeding the hot air from the cowper stoves to the tuyeres.	c.1985
Tuyeres	An injecting pipe off the bustle main which directly fed the hot air blasts into the furnace.	c.1985
Gas Cleaning Facility	The original facility installed in c.1967 was replaced c.1970 with a "Bischoff" scrubber.	c.1970
Coke Conveyor and Raw Materials Bin	The raw materials bin is a long and large reinforced concrete, steel framed structure adjacent to the blast furnace and parallel to the wharf / harbour. The bin consisted of a number of compartments holding the material to be fed into the blast furnace. Automation of the transferring of the raw materials took place in 1993.	c. 1920
Larry Cars (2)	Situated on a rail line directly beneath the raw material bins, the Larry car was a mobile container, which carried the raw material along to the blast furnace. The	Pre c.1960

	materials were loaded into the car via a series of chutes from the material bins above.	
Skip Bridge & Skip Cars	The skip bridge is a large steel framed structure which runs from the ground and up diagonally to the top of the furnace. The bridge supports a pulley system of two containers (skip cars), which were loaded with the raw materials from the Larry car then rose up the bridge to deposit the material into the furnace.	c.1960
Revolving Distributor	A revolving "drum" like container into which the raw materials from the skip cars were loaded. The drum which basically sealed the top of the furnace created an "air – lock" effect while the materials were deposited into the top of the furnace, stopping dust from being emitted uncontrollably.	c.1960
Dust Catcher	A large cylindrical drum fed dust emissions from the top of the blast furnace via uptakes and downcomer pipes. The "Ross" dust catcher consists of a funnel, which allowed the sediment dust to drop into a retention bay. The retention bay's entry is covered by a heavy fabric screen, which prevented dust from escaping into the adjacent thoroughfares. The dust was removed from the retention bay. The catcher was fitted with dust reduction equipment (pug mill and replaced discharge valve) in 1992.	1929
Slag Granulator	Machinery of Paul Wurth design which processed the streams of hot slag by spraying it with high pressure water, turning the by-product into a granular material. The granulated slag after going through rotary drums then travelled away via conveyor.	1989
McKee Top?	Cap to the blast furnace which improved the distribution of furnaces charges.	c.1960

13.0 APPENDICES

13.1 Appendix A: Manual camera negatives and photos

13.2 Appendix B: Digital images Proof Page and disk

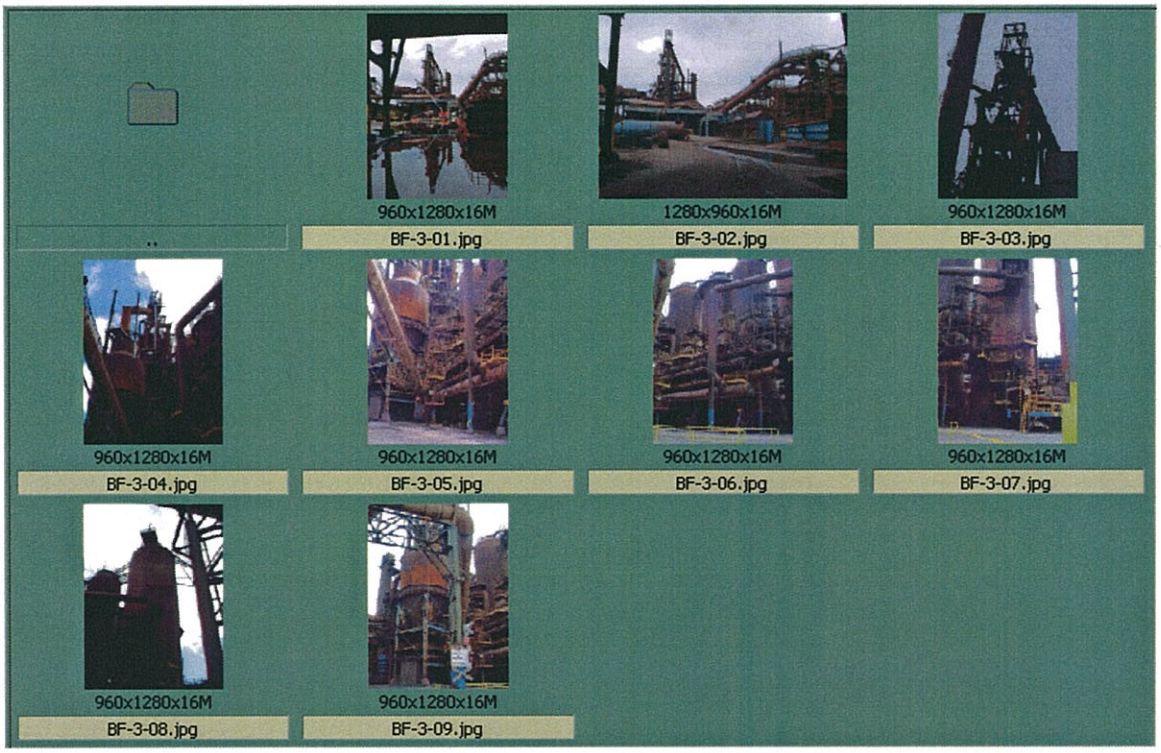
13.3 Appendix C: Archive Drawing Register Disk

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 B: Digital images Proof Page and disk

Refer to the final Archive Report master copy, to be submitted to the NSW Heritage Office, for the digital images disc.



13.3 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".