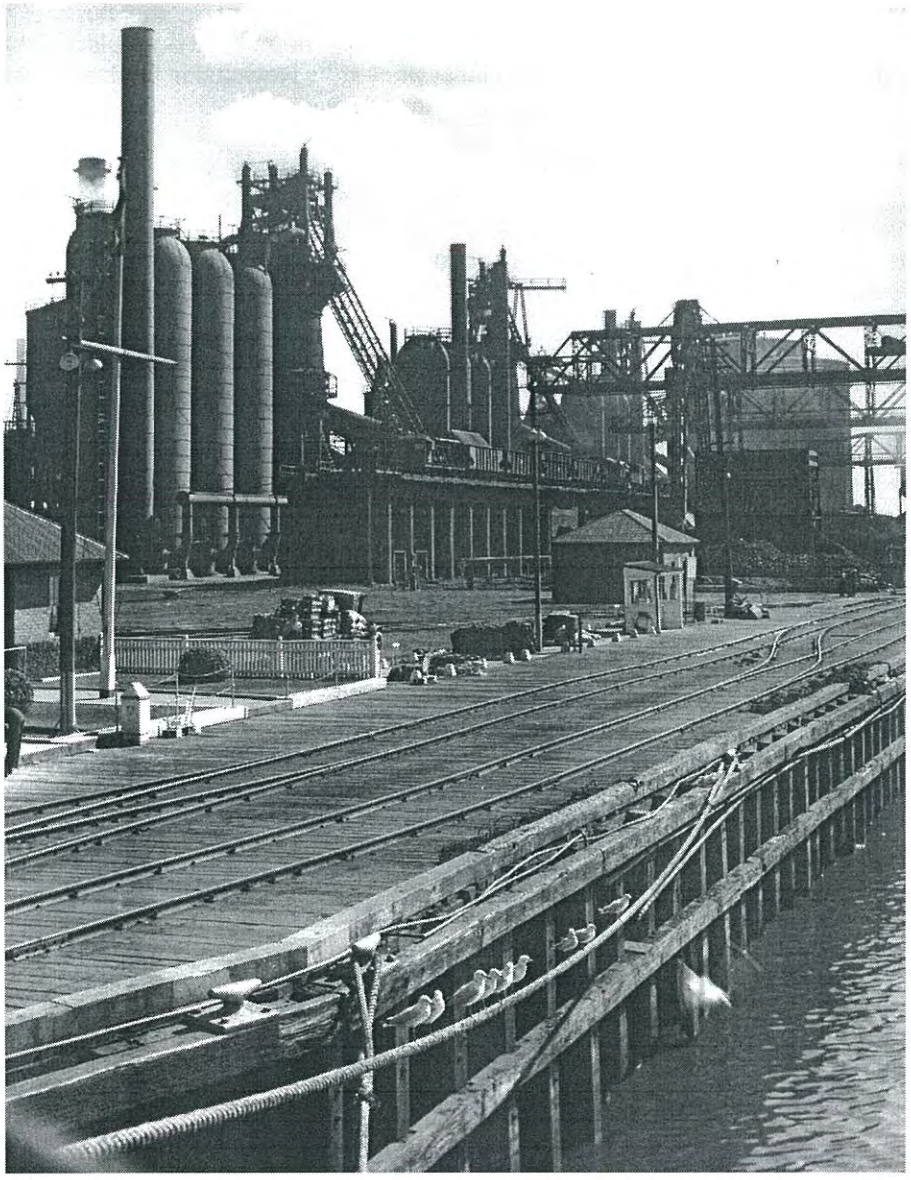


Figure 3.5: View west along wharf with shipping office in the left-hand side of the foreground and blast furnaces in the background. C1938.
Source: BHP Archives (Ref. No. – 2)

Six months later, it was reported that the timber beneath No.1 Berth was in poor condition and its replacement with a steel superstructure as soon as possible was recommended. Three 35' sections of steel superstructure had already been fitted to No.2 Berth and it was proposed to carry out similar work on 156 ft. of No.3 Berth under the bottle-neck points and crossings, and to renew rail crossings. This area of the wharf was subjected to particularly hard work, as it carried practically all the wharf shunting.

In order to prevent damage to the salt water fire main, originally situated on the top of the wharf, the main was reinstalled under the wharf. During this period, timber on the wharf face was renewed and reconditioned.[13]

During the following year, wharf maintenance continued to be a significant item as 49 piles were renewed throughout the full length of the wharf. Selected turpentine piles were used, "averaging 60' long, of good girth, and altogether of first-class quality, bark intact, and from comparison may be said to be better than the original piles driven."

[13] Report for the half year ended 30 November 1937, p.189,

For experimental purposes, three piles were fitted with Monier pipes in the hope of preventing attack by teredo worms. All new piles driven were marked and numbered on a plan of the wharf for record purposes.[14] The teredo worm is particularly virulent in Newcastle Harbour, where timber piles are generally destroyed at water level in less than thirty years.[15]

The original wharf and berthing facilities satisfied all unloading requirements until the early 1950s, despite the fact that steel production had risen from an initial output of 45,000 tons in 1915 to 1,000,000 tons per year in the 1940s. In 1948 the first of four bulk carriers of 12,500 tons capacity, known as the "Yampi" Class, was commissioned. The last to be commissioned, the "Iron Wyndham", came into service in 1953.

At this time, the dredged depths at the Ore Wharf and in the adjacent swinging basin were being maintained at 26' below low water. While major difficulties could be avoided by careful programming of shipping, (berthing ships at high tide and unloading up to 10,000 tons before low water) from the late 1950s the size of bulk carriers began to increase rapidly with a corresponding increase in loaded drafts.

During reconstruction of the ore unloader runways in 1959, the wharf side of the runway, which had originally been built integrally with the wharf, was redesigned as an independent structure, with provision in the piling design for a future dredged depth of 35 feet. The timber wharf deck on the river side of the runway was left intact and attached to the new runway structure.

By 1964, difficulties were being experienced in maintaining adequate supplies of raw materials because of limitations in the size of vessels which could be accommodated at the bulk discharge berth. Since 1959, considerable thought had been given to the design of a new wharf and it was finally decided to support the ore yard independently from the wharf structure by carrying out extensive piling on the riverside of the storage yard, for the full length of the yard and approximately one third of its width. Earth pressures from the ore heaps were extremely high, so it was decided to drive the piles to full bearing on the sandstone bed to minimise the risk of a slip developing. A total number of 464 piles, varying in length from 45 to 65 feet, were driven.

The piles under the new wharf consisted of a 30" internal diameter steel caisson with ½" wall thickness. These were socketted into the sandstone and a full length, prefabricated reinforcing cage was placed inside the caisson, extending into the socket. The pile was then filled with 3,000 psi concrete. The piles were driven through holes in the existing deck, and pile driving had to be arranged to fit in with the shipping programme to maintain an operational wharf.

Service mains, comprising fresh water, compressed / salt water for fire service, were suspended from the underside of the wharf deck and ran the full length of the berth. Outlet branches were provided, terminating in sumps at the wharf face. Access to these mains was provided by a timber walkway attached to the underside of the transverse beams.[16]

In the early 1970s there was a significant failure of the 18" x 18" precast piles, driven in 1958 to supporting the front ore bridge runway. As a result, in the centre section of the wharf the runway sank between 4" and 6" and moved north approximately 2". To maintain the ore bridges in operation, the front rails were packed up to horizontal and new piles were driven in front of and behind the front runway beam. A cross member was then inserted to support the ore bridge runway.[17]

The whaves have continued to be an essential part of the steelworks from before its inception to after the last steel ingot had been produced in 1999.

[14] Report for the half year ended 30 November 1939, p.188.
[15] Information provided by E. Melville, Newcastle Port Corporation, April 2000.
[16] "Reconstruction of Raw Materials Unloading Berth at Newcastle Steelworks", unpublished notes for a talk presented to the June 1966 meeting of the Newcastle Division of the Institution of Engineers, p.2-6.
[17] Information provided by E. Melville, former Chief Engineer, Energy Services, BHP and D. Ruddell, former Chief Construction Engineer, BHP.

Figure 3.6: Loading Pig Iron from the Wharf to the "Iron Baron".
Source: Jay, C (1999: 129) BHPA N3040/51

3.1 The Structure

The wharf structures vary from steel and concrete to timber, but no parts, with the possible exception of some abandoned cut off piles, appear to date before World War II. Repairs and replacements over the years seem to have been carried out using whatever materials were to hand. Even in the timber-decked section at the eastern end universal beams no older than about 30 years were used for the supporting structure and there was no evidence of better trades practice in bridge and wharf carpentry.

Condition

The wharves are generally in poor condition.

Steel conditions & 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.

4.0 STATEMENT OF HERITAGE SIGNIFICANCE

The Wharves is identified within the group identification forming Part B of Schedule 4 (Port Waratah – BHP Steelworks and Office) of "The Hunters Heritage" – Hunter Regional Environmental Plan 1989. It is identified individually within Schedule 4 of The Newcastle Local Environmental Plan 1987 as having an item of State – level heritage significance. (This ascribed level of significance is consistent with the level of significance determined in the Port Waratah Steelworks Conservation Plan prepared by EJE Architecture in 1991). The item does not fall within a Conservation Area and is not included on the State Heritage Register. The following Assessment of Significance has been undertaken to reflect current NSW Heritage Act, Heritage Amendment Act and Burra Charter requirements.

Historic Significance

Although very little, if any, of the original timber construction remains, these early wharves are a reminder of the importance of the harbour in David Baker's decision to build the steelworks at Newcastle. As the site where raw materials were unloaded and, before the construction of the product wharves, where finished product left the works, the wharves played an essential role in the overall functioning of the steelworks. Structure from subsequent period remains interpretable.

The Original Timber Wharves not only represent the first element in the development of the Newcastle Steelworks, they form an important artefact that traces the development and growth of shipping into Newcastle from 1913 to the present and as such form a Heritage item of Regional Significance.

Further, because of the importance of the wharves in the receipt of raw materials and despatch of finished products over the life of the Newcastle Steelworks, they illustrate a continually developing support element to the manufacture of iron and steel and thus the continuity of industrial processes of highest-level Significance. Although earliest fabric has been either concealed or lost, subsequent wharf fabric elements exist and are capable of describing the evolution of the structure over at least the last three quarters of a century. For this reason the Wharves show a continuity of a specific activity and therefore have a STATE level of historic significance.

Aesthetic Significance

The wharves are not associated with any particular technical innovation or achievement and are not aesthetically distinctive. For this reason they do not have Aesthetic Significance.

Social Significance

The Original Timber Wharves are associated with the development of iron and steel making on the Newcastle steelworks site provide an important link with the creation of work and the social fabric of Newcastle. They are integral with the identification of the steelworks site and, with the remainder of the site, are held in high esteem by generations of BHP workers and the wider community. As such they have REGIONAL Social Significance.

Technical Significance

Archival information and photographs illustrate the growth of the Original Timber Wharf as an important datum in the development of Newcastle as a port. The item has high level potential to reveal historical/archaeological information of value.

A regionally significant benchmark site, the timber wharves demonstrate the evolution of the 'quick response' of relatively simple technology employed on structures where alterations have to be made quickly within the framework of a continuing operation. While the old structure is no longer in evidence and the more recent structure does not contain evidence of unique technology, the whole is nevertheless of regional uniqueness and thus is of 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

Baker, D. "Reminiscences of the Broken Hill Proprietary Company's Adventure in Steel", *The BHP Review,* October 1935

***Fifty Years of Industry and Enterprise**: Jubilee Edition, BHP Review,* 1935

"Reconstruction of Raw Materials Unloading Berth at Newcastle Steelworks", unpublished notes for a talk presented to the June 1966 meeting of the Newcastle Division of the Institution of Engineers, in possession of the author.

***Report** from the Select Committee on Newcastle Iron and Steel Works Bill,* 31 October 1912

General Manager's Report, Half year ending May 1913.

Newcastle Steelworks, Half Yearly Reports:
30 November 1916,
30 November 1917,
30 November 1925,
31 May 1928,
31 May 1936,
31 May 1937,
30 November 1937,
30 November 1939.

Discussions with: D. Ruddell, Former Chief Construction Engineer, Newcastle Steelworks
E.Melville, Former Chief Engineer, Energy Services, Newcastle Steelworks and employed since 1983 by Newcastle Port Corporation (formerly MSB).

6.0 SELECTED PHOTOGRAPHS

Figure 6.1 View South East. Shows 2nd and 3rd Wharf extensions and general wharf buildings

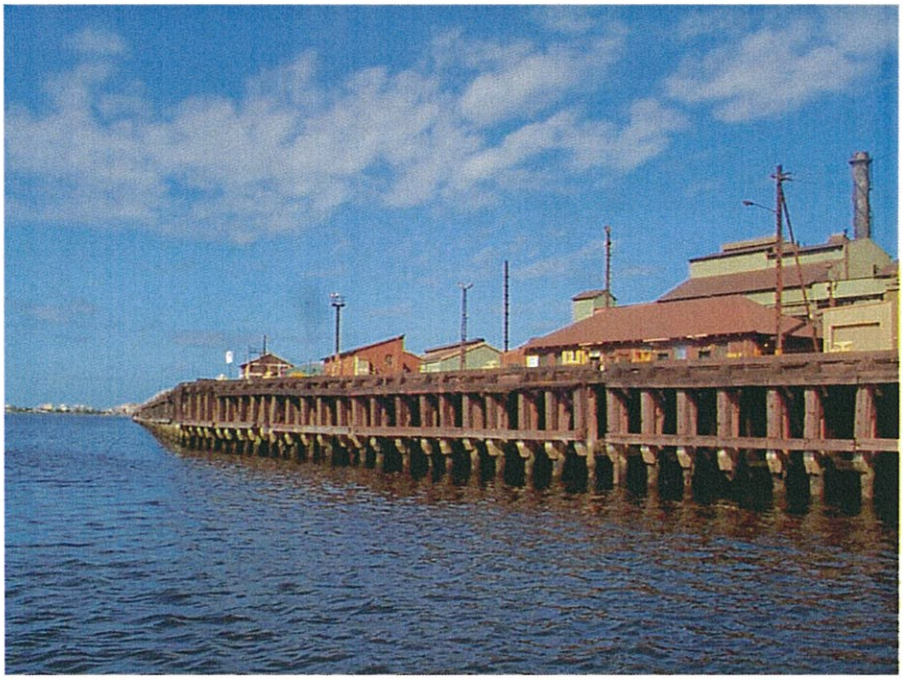


Figure 6.2 View South/ East. Shows location of second wharf extension. Original wharf offices with hip roof to centre left of image

Figure 6.3 View South. Shows area of East end of original timber wharf location. No portion or structure of original timber wharves remains.

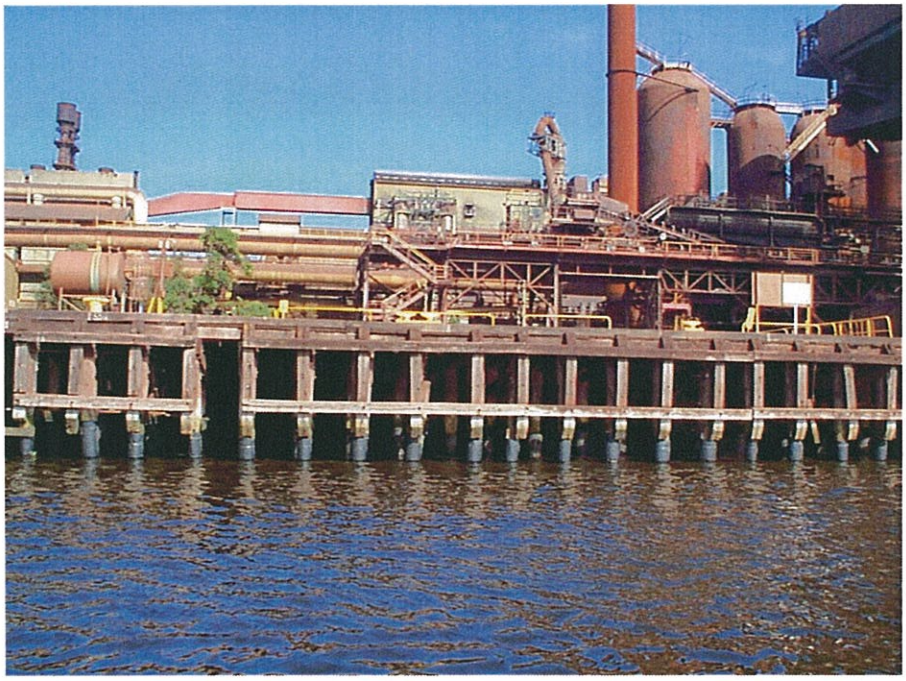


Figure 6.4 View West. Wharves with ore bridge cranes to left.

Figure 6.5 View North- west. Ore bridge crane at junction between timber and concrete wharf areas.

Figure 6.6 View South/East. Shows junction of recent re-piled section with membrane collars and older section beyond.

Figure 6.7 View South. Shows newer piling with rubber membrane collars and granular fill.

Figure 6.8 View South. Detail of more recent capsil detail and steel beam.

Figure 6.9 View South. Steel beam left and timber beam right. Some piles eaten through completely.

Figure 6.10 View South Shows Wharf surface level access stair and junction of walkway under ore wharf to the left.

7.0 NEGATIVE REFERENCE LIST

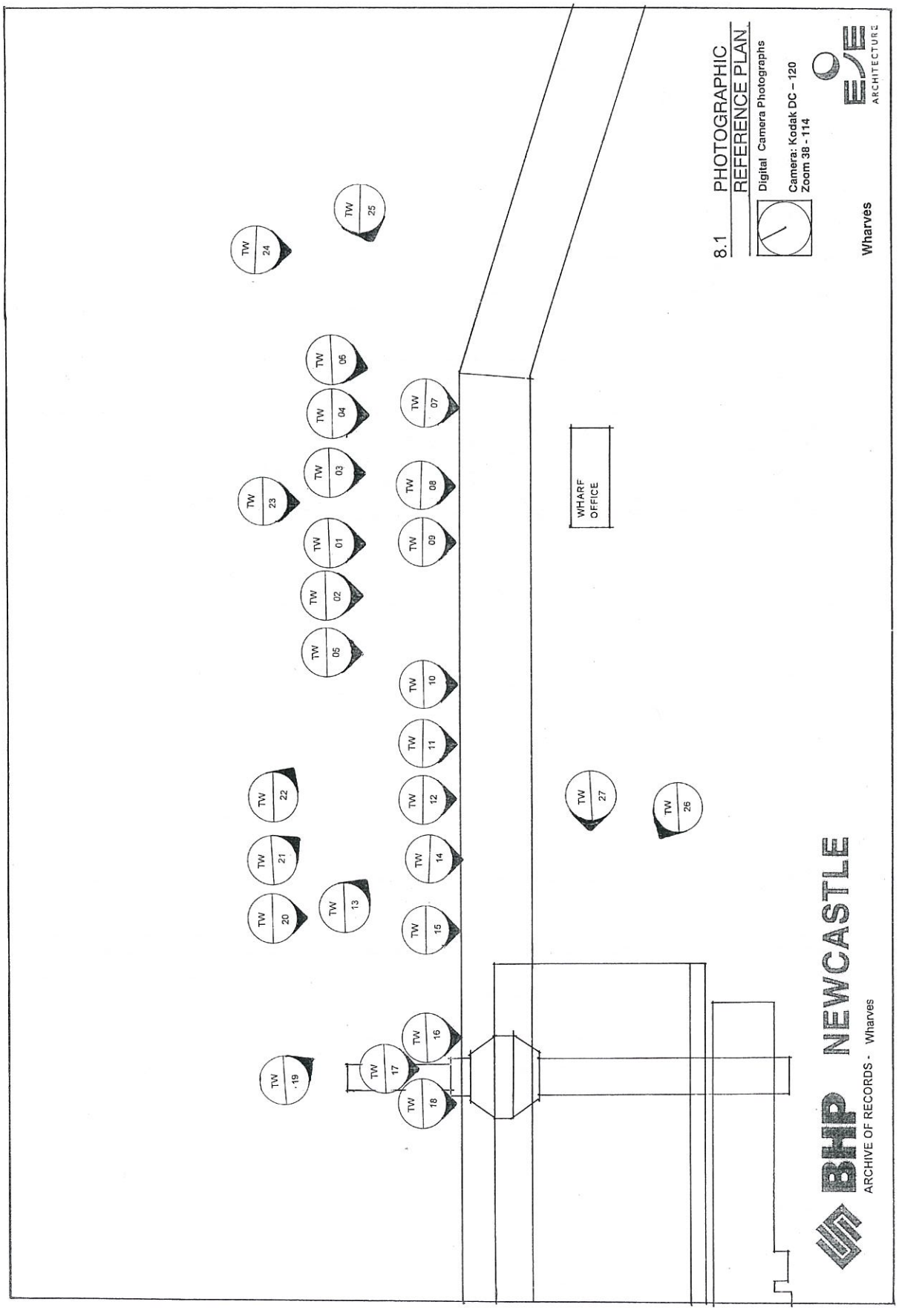
The following information relates to the complete set of negatives taken for the recording of this building. Under each Roll Number is a table containing the negative numbers and a description of each frame taken of that roll. The roll and negative numbers, position and direction of frame taken are referenced 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.

Digital photographs

Camera: Kodak DC-120 Zoom 38 – 114

Photo No.	Figure No.	Description
TW-01	-	Timber Wharves looking south. Shows piling with framing similar to original construction. Shows sheet metal piling to retain earth backfill. Tidal zone worm action on piles evident
TW-02	-	View South. Shows bracing and section of dilapidated walkway without hand railing
TW-03	-	View looking South.
TW-04	6.8	View South. Detail of more recent capsil detail and steel beam
TW-05	-	View South. Non original capsil bracket and bracing fixtures
TW-06	-	View South of part of walkway and wharf level access.
TW-07	-	View South. Wharf structure with suspended service pipes "fire main"
TW-08	-	View South. Lapping structure and packing
TW-09	6.9	View South. Steel beam left and timber beam right. Some piles eaten through completely.
TW-10	-	View South. Outflow of large concrete drain through sheet piling.
TW-11	-	View South. Concrete drain outflow. Note rubber membrane and granular fill at tidal zone in attempt to reduce worm activity
TW-12	6.7	View South. Shows newer piling with rubber membrane collars and granular fill.
TW-13	6.6	View South/East. Shows junction of recent re-piled section with membrane collars and older section beyond.
TW-14	-	View South near ore bridge wharf junction. Shows older style sheet piling retaining to earth fill.
TW-15	-	View South. Shows older sheet piling retaining with some steel and timber structure.
TW-16	-	View South. Shows junction of timber wharf with ore bridge (concrete) wharf
TW-17	6.10	View South Shows Wharf surface level access stair and junction of walkway under ore wharf to the left.
TW-18	-	View South. Shows last generation of piles cut off around high tide mark.
TW-19	-	View South of timber wharves. Junction of timber and concrete wharves. Shows ore bridge to the right.
TW-20	6.3	View South. Shows area of East end of original timber wharf location. No portion or structure of original timber wharves remains.
TW-21	6.2	View South/ East. Shows location of second wharf extension. Original wharf offices with hip roof to centre left of image
TW-22	6.1	View South East. Shows 2nd and 3rd Wharf extensions and general wharf buildings
TW-23	-	View South. 2nd Extension area with wharf offices (hip roof) BOS and Power Department roof lines in background
TW-24	-	View South. Area at A.C. Pumphouse.
TW-25	6.4	View West. Wharves with ore bridge cranes to left.
TW-26	6.5	View North- west. Ore bridge crane at junction between timber and concrete wharf areas.
TW-27	-	Timber Wharves looking west. Ore bridge store area.

8.0 PHOTOGRAPHIC REFERENCE PLAN



9.0 DIAGRAMMATIC RECORD AND DRAWINGS

Figure 9.1 Wharf Arrangement – Plans, Section, Elevation & Detail (1913)
Source: BHP drawing. Ref – W14

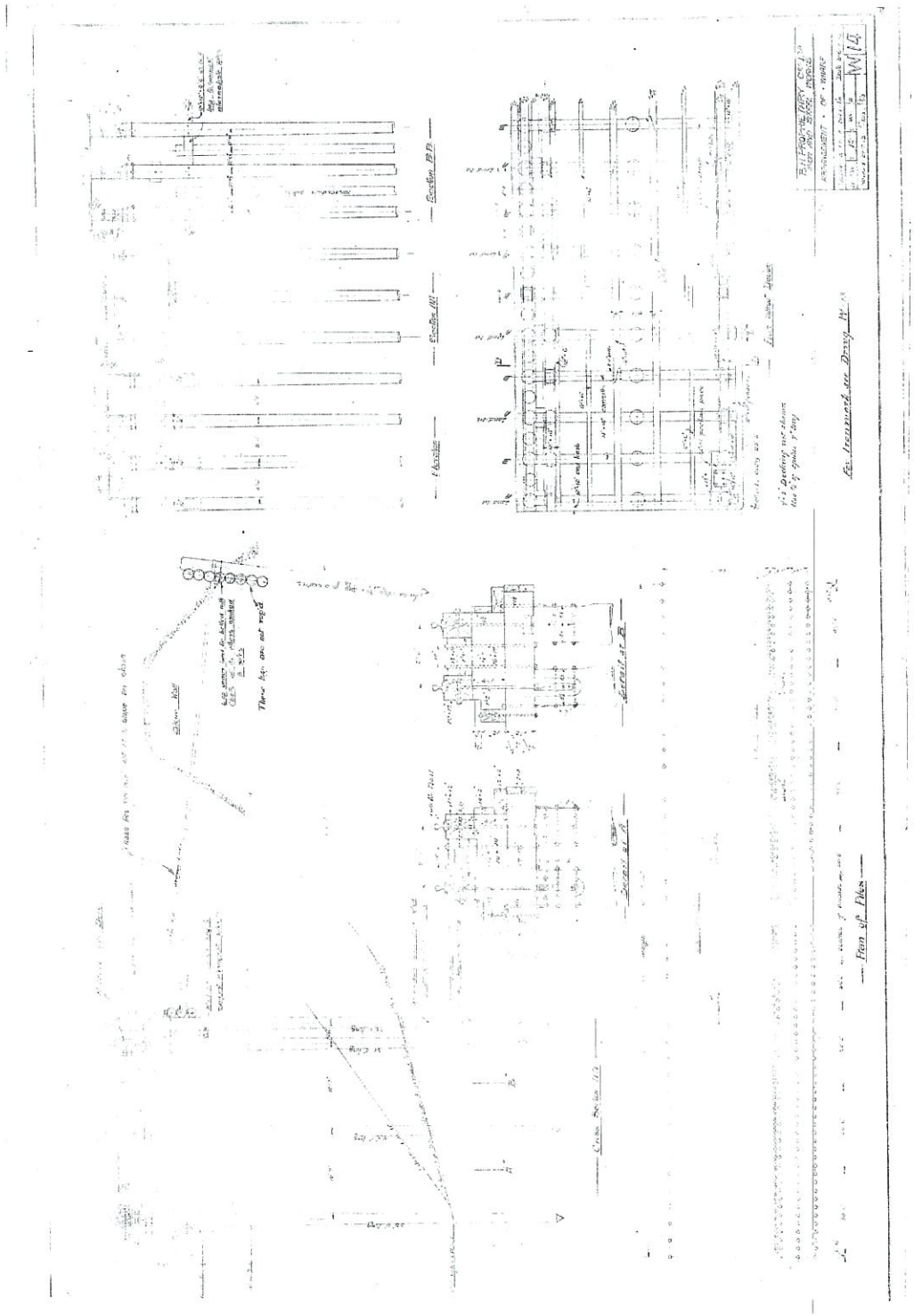


Figure 9.2 Shipping Wharf Arrangement – Plan, Section & Elevation (1913)
Source: BHP drawing. Ref – W17

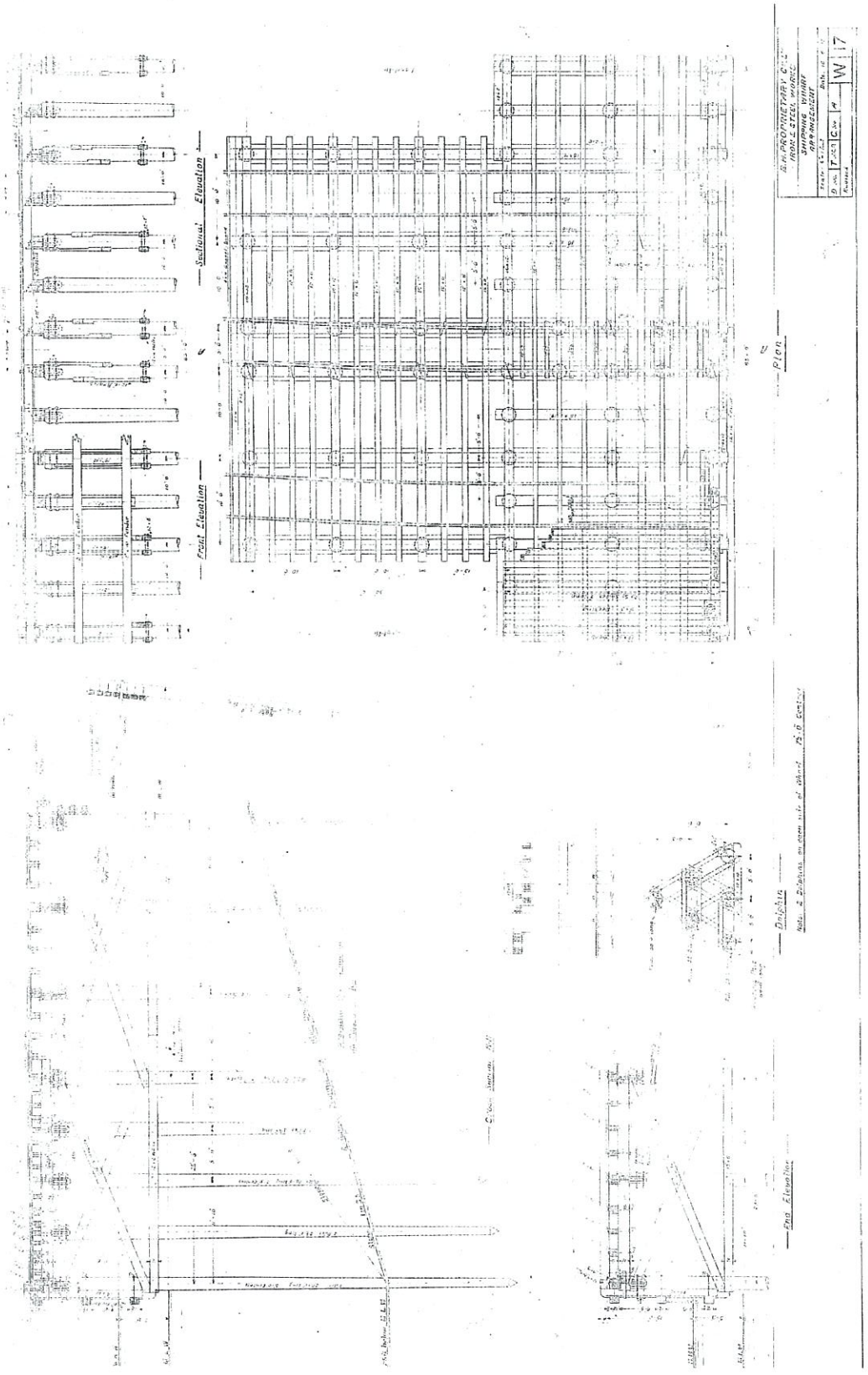


Figure 9.3 Shipping Wharf Iron Work – Details (1913)
Source: BHP drawing Ref – W18

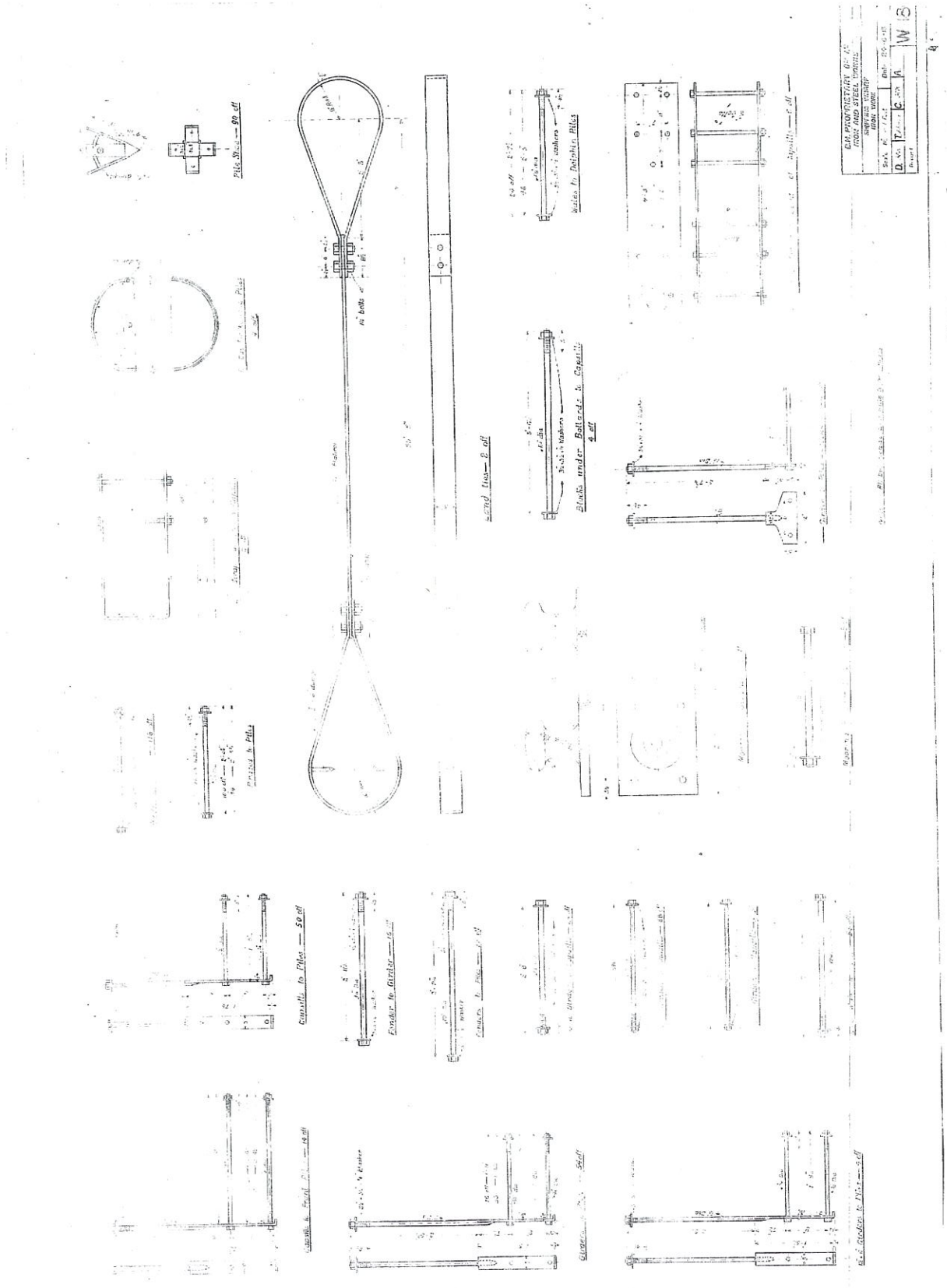


Figure 9.4 Slipway for Launches – Plan, Elevation & Details (1916)
Source: BHP drawing. Ref – 1306

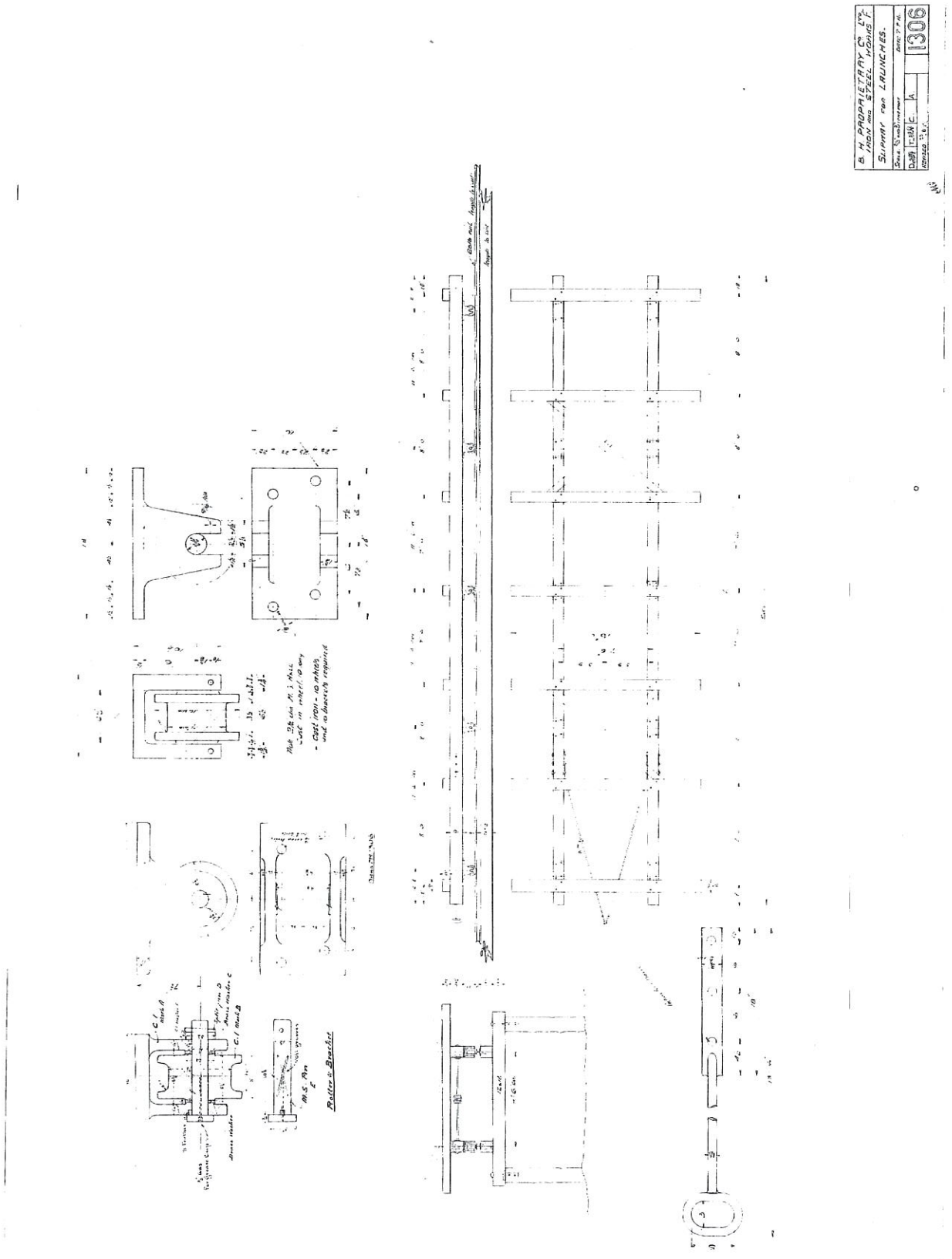
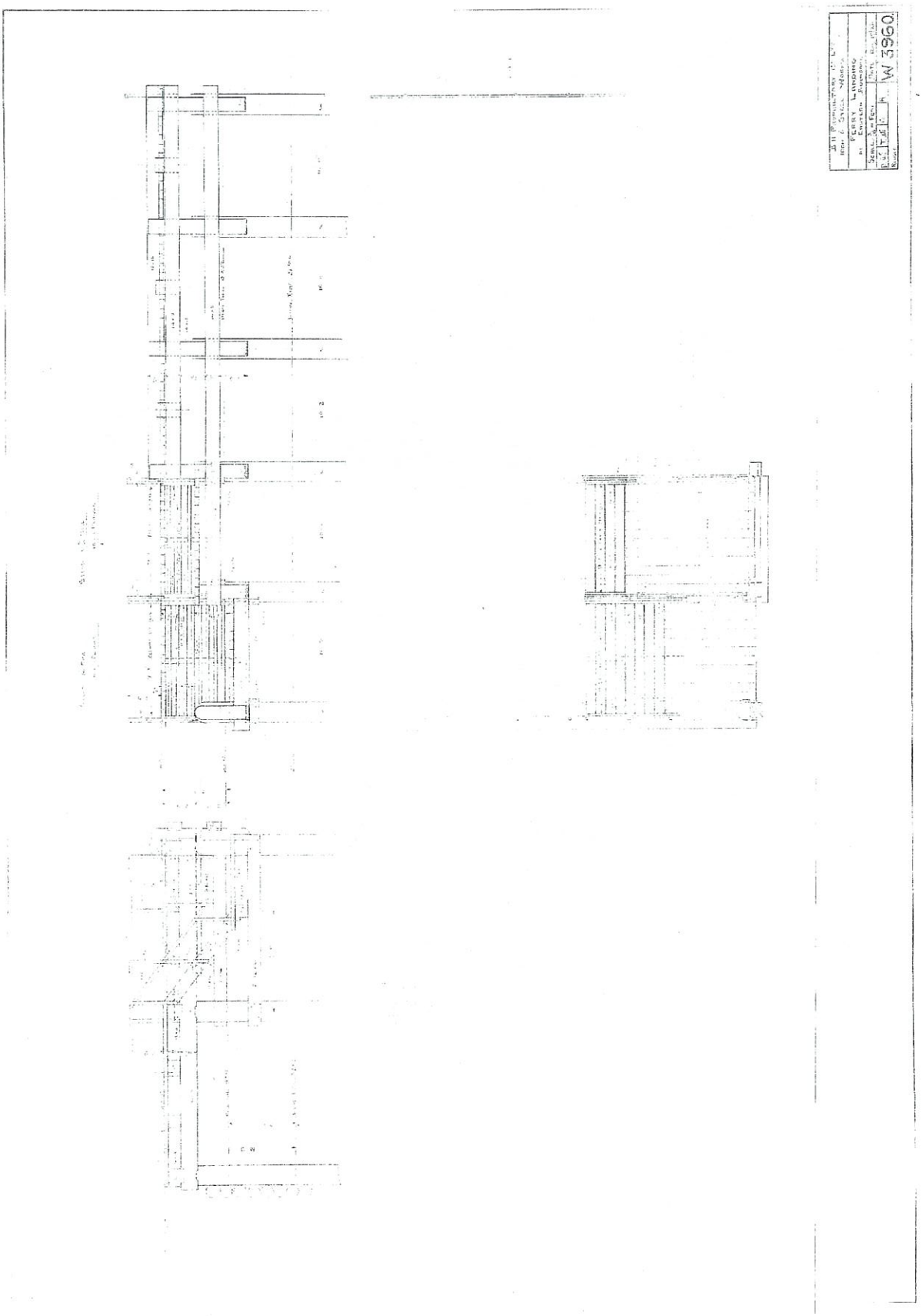


Figure 9.5 Ferry Landing at Eastern Boundary – Plan & Elevation (1922)
Source: BHP drawing. Ref – W3960



10.0 HISTORIC PHOTOGRAPHIC RECORD

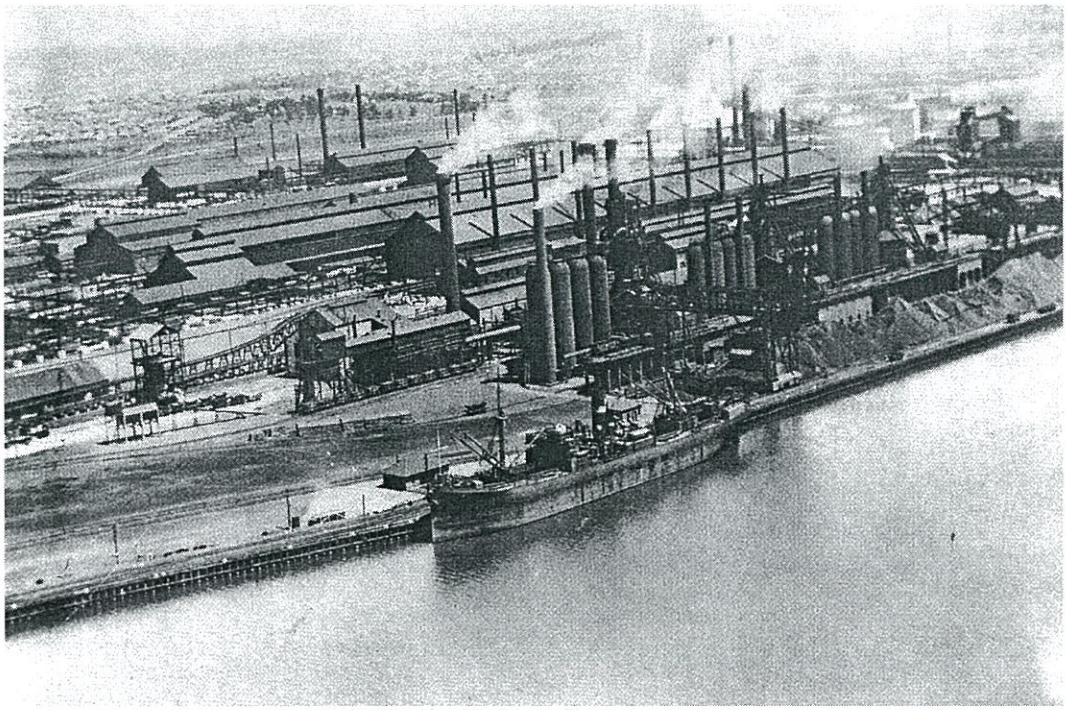


Figure 10.1 Aerial view of Wharf with Blast Furnaces, c1932.
Source: Cranney (1999: 91)

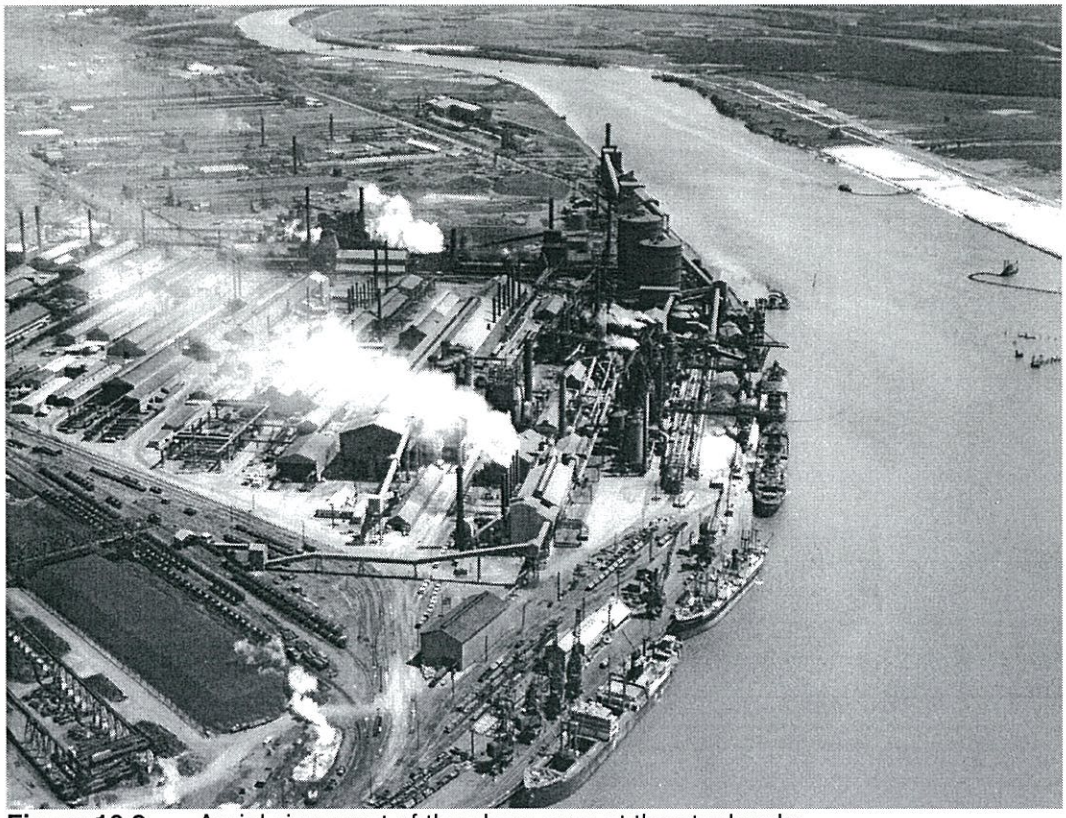


Figure 10.2 Aerial view west of the shore area at the steelworks
Source: BHP Archive. Ref – 3547/231063-D

11.0 FULL FORMAT PHOTOGRAPHIC RECORD

Figure 11.1: BHP Timber Wharf Ore Bridge Department (View East)
Source: Albert Erzetich No.004 Ref- B05/26

Figure: 11.2 2nd last ship to offload ore at Bridge Department. Photograph shows ore bridges in operation offloading ore.

Source: Albert Erzetich No.005 Ref- B15/38

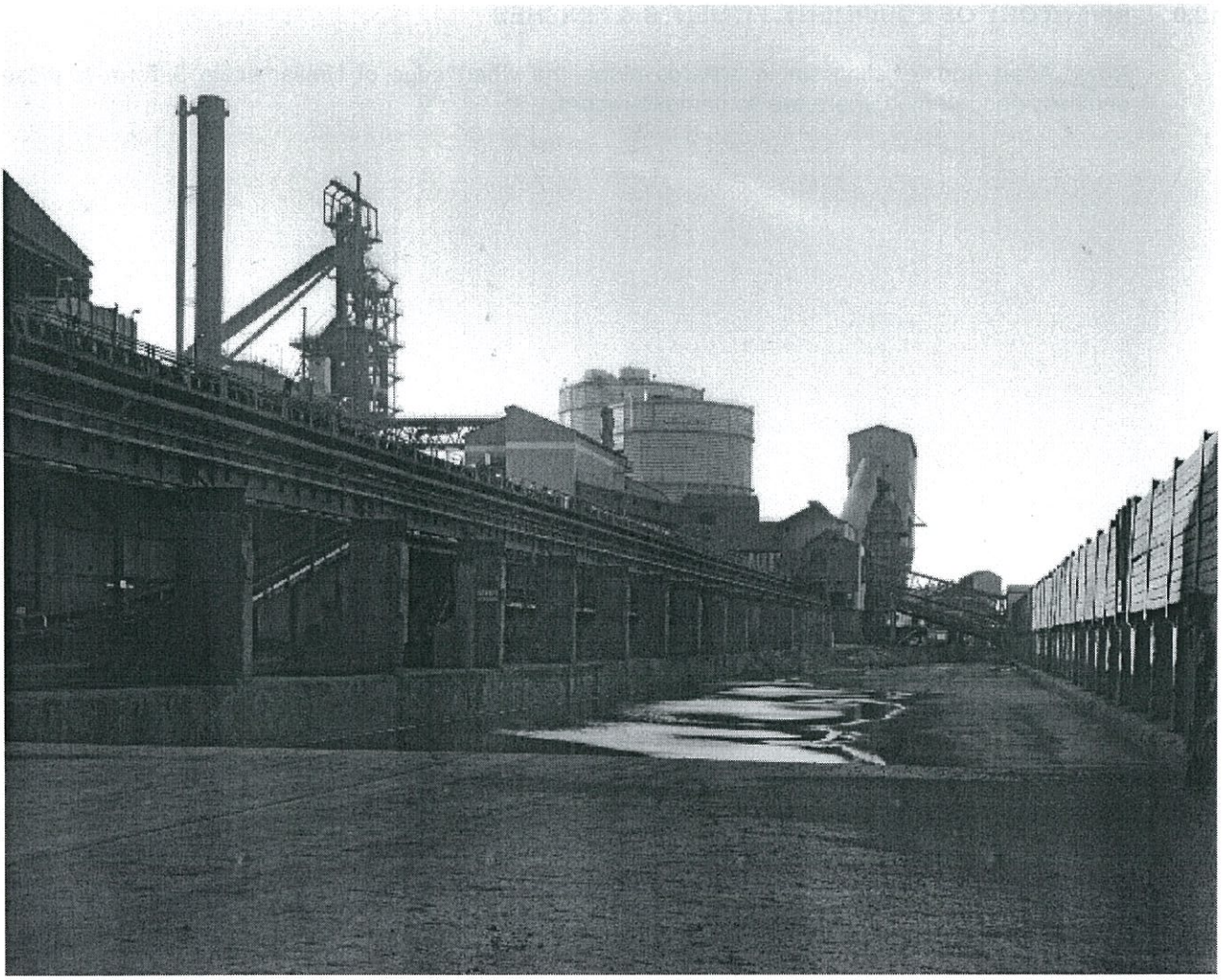


Figure 11.3: Ore Bridge ore holding bays.
View shows No.4 Blast Furnace, gas holders and sinter plant departments.
Source: Albert Erzetich (Photo. No.007) Ref- B15/03

12.0 INVENTORY OF EQUIPMENT, FITMENTS & FINISHES

Note: Apart from existing single bollards along the wharf edge of similar scale & form to those originally documented, there are no items to record.

13.0 APPENDICES

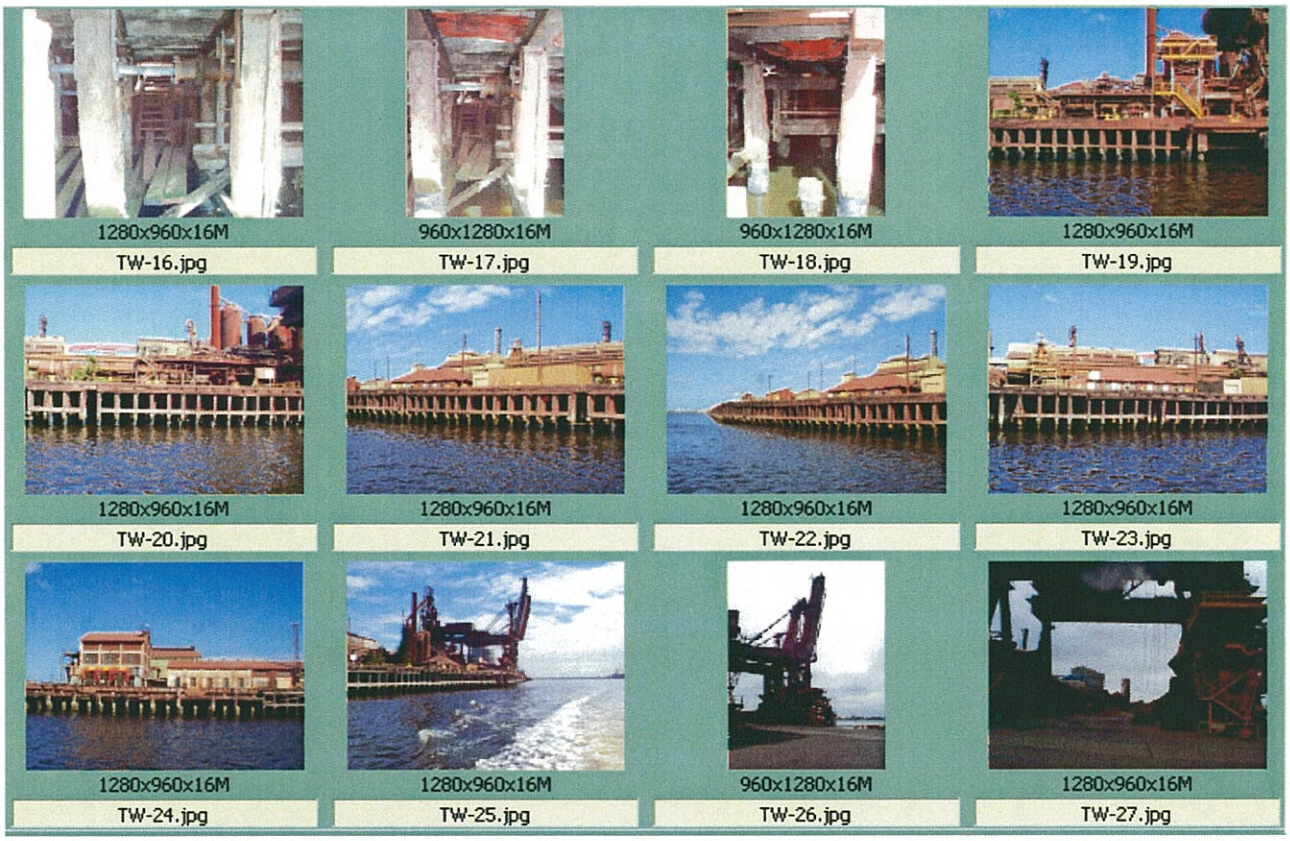
Appendix A: Manual camera negatives and photos – N/A

Appendix B: Digital images and disk

Appendix C: Archive Drawing Register Disk

13.1 Appendix A: Manual camera negatives and photos – N/A
13.2 Appendix B: Digital images and disk

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


1280x960x16M
TW-16.jpg
960x1280x16M
TW-17.jpg
960x1280x16M
TW-18.jpg
1280x960x16M
TW-19.jpg
1280x960x16M
TW-20.jpg
1280x960x16M
TW-21.jpg
1280x960x16M
TW-22.jpg
1280x960x16M
TW-23.jpg
1280x960x16M
TW-24.jpg
1280x960x16M
TW-25.jpg
960x1280x16M
TW-26.jpg
1280x960x16M
TW-27.jpg

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"