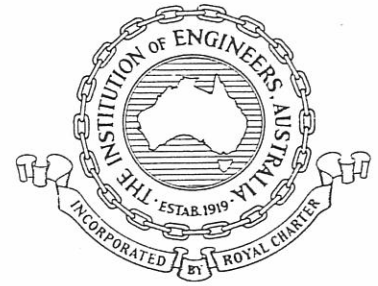


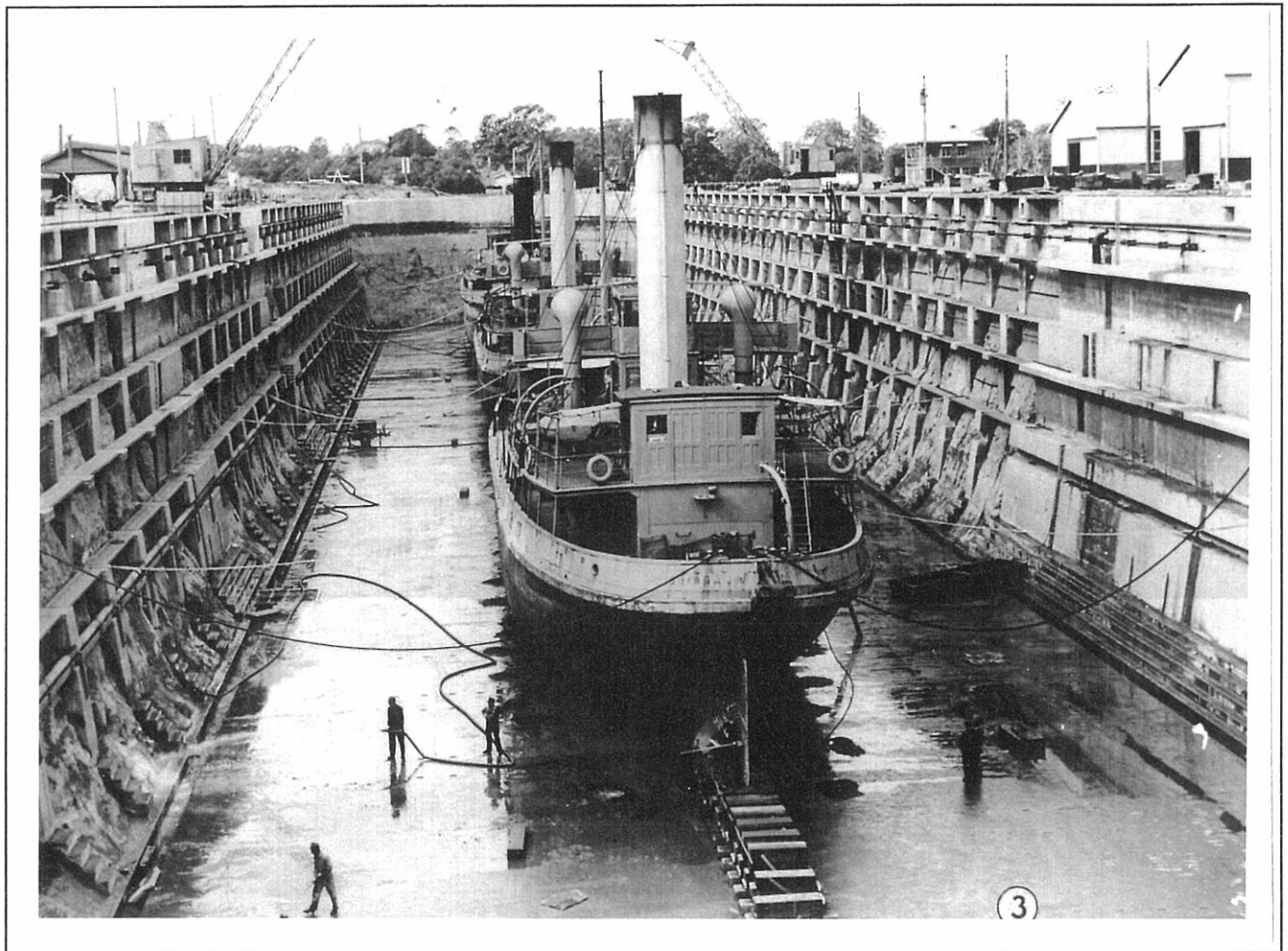
THE INSTITUTION OF ENGINEERS, AUSTRALIA
NATIONAL COMMITTEE ON ENGINEERING HERITAGE

PLAQUING PROGRAM

HISTORIC ENGINEERING MARKER



CAIRNCROSS DOCK



The first docking, June 1944

OPENED 16th SEPTEMBER 1944

CLOSED 1987

REOPENED 3rd AUGUST 1995

The Institution of Engineers, Australia

Queensland Division

HERITAGE PANEL

THE PLAQUING OF CAIRNCROSS DOCK

(Historic Engineering Marker)

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The Institution of Engineers, Australia
Queensland Division

HERITAGE PANEL

CAIRNCROSS DOCK PLAQUING PROPOSAL
(Historic Engineering Marker)

1. Preamble

Construction of Brisbane's second dock, at Cairncross, started under wartime emergency conditions in September 1942. The first docking was on 22 June 1944. The official opening ceremony was on 16 September 1944. Major refurbishment was completed in 1976. After seven years of closure, the dockyard is again operational, under the management of a private consortium, Keppel Cairncross Shipyard Limited.

2. Background

2.1 Location.

The Cairncross complex lies at the northern end of Thynne Road, Morningside, at the downstream end of the Hamilton Reach of the Brisbane River. It is 12km from the Fisherman Island container terminal at the mouth of the river. It is the furthest downstream of all Brisbane's graving docks. Its location in relation to other docks, past and present, is shown on the accompanying plan.

2.2 The Name.

Officially titled at the start of its life as the Brisbane Graving Dock, it has for most of its existence been known as Cairncross Dock. Early maps of the Brisbane River show a feature on the South bank at this location identified as Cairncross Rocks. The dock was cut into this formation. Cairncross Rocks was named after William Cairncross, a successful Brisbane businessman during the 1840s. He built Colmslie House at Bulimba.¹ As recently as 1959 Cairncross was the name of a locality within the Bulimba Electorate.² The name nowadays is reserved for the dockyard, as the locality has disappeared and forms part of the suburb of Morningside.

2.3 Other Brisbane Docks.

Cairncross is Brisbane's second dock. The first was constructed in the 1880s at South Brisbane and remained in continuous service until the 1970s. It now forms a major part of the Queensland Maritime Museum, the development of which started in 1973. The third dockyard, completed in the 1960s and operated by Evans Deakin at Kangaroo Point, is now reduced to a marina. There is a fourth privately owned dockyard at Bulimba, of lesser capacity than that of South Brisbane.

3. History

3.1 Planning and Design.

When it was decided in 1934 to bridge the river at Kangaroo Point and construct wharves in the Hamilton Reach, the Queensland Government saw cause to consider construction of a large graving dock capable of accommodating ships of the size then using the port. The South Brisbane Dock, able to accommodate vessels of up to only 128m (420ft), had been for some 40 years inadequate to service the docking needs of the vast majority of shipping using the port.³

Planning was replaced by emergency action when the war came to Queensland's doorstep in early 1942. When Darwin was bombed on 19 February 1942, the urgent need for a graving dock in Brisbane capable of repairing naval and merchant ships was recognised. The Battle of the Coral Sea was waged between 5th and 8th March 1942. Just over one week previously, on 26 February, the Allied Works Council was established. J R Kemp, Commissioner of Main Roads and Co-ordinator-General of Public Works, was appointed Deputy Director of Allied Works, responsible for work in Queensland and the Northern Territory. He appointed a Board to advise and consult with him on matters of design and construction of the dock, in close liaison with officers of the Royal Australian Navy. The Chairman of the Board was WHR Nimmo, Chief Engineer of the Stanley River Works Board.³ Up to that time, that board's sole function had been the design and construction of what came to be known as Somerset Dam, started in about 1932. The dam was still incomplete in 1942, but had some useable water storage capacity. The dam works were closed down, and the work force was re-deployed to design and construction of the dock. Design requirements were finalised on 19 October 1942. Design of the caisson and river works, including the breast wharf immediately upstream of the dock, was by the Queensland Department of Harbours and Marine. While WHR Nimmo was prominent as chairman of the Board, no individual engineer can be credited with the overall design of the dock. Design was effectively by a committee.⁴

Design requirements included:

Length 244m (800ft), width at sill level 33.5m (110ft), depth 14.3m (47ft). Sill level RL -9.1m (-30ft). (Ships the size of the Cunard Line *Mauretania* were envisaged as using the dock).

The main dewatering pump, the 838mm (33in) centrifugal dredging pump once used in the (1900) suction dredge *Hercules*, was driven by a triple expansion steam engine of 1306kW (1750 HP), the engine (and two of the four boilers) also from the dredge *Hercules*. The other two boilers were recovered from the (1913) battle cruiser *HMAS Australia* before it was scuttled after World War I. Two 375mm (15in) and one 150mm (6in) dia. electric centrifugal pumps comprised the provisional plant. There were to be a 40 tonne fixed crane and two 3 tonne mobile cranes.

The caisson was to be of the steel floating type, using 19mm (0.75in) plate.²

3.2 Construction.

Construction was directed by C M Calder of the Main Roads Commission, (Construction Engineer) and managed by E L Richard of the Stanley River Works Board (Construction Manager), who also had considerable input to the design.

Several tractors, scoops and bulldozers were assembled, only to be allocated to service in battle areas and eventually replaced by equipment from Somerset Dam and Mackay Harbour Works. The workforce reached a peak of 850 during the excavation and concreting stages. Most were accommodated in tents near the works site. Excavation totalled 270,000m³ (350,000 cu yd), mostly sandstone. Approximately 30,600m³ (40,000 cu yd) of concrete were placed.³ The decision not to line the walls of the dock was taken by J R Kemp himself.⁴

The total expenditure was \$2,470,930 (£1,235,465), of which the Commonwealth paid \$850,000 (£425,000) and the State the balance.⁵

As constructed, with the caisson on the outer sill, the clear length of the dock was 263.2m (863ft 7in), some 19m (63 ft) longer than originally planned. With depth over the sill of 9.1m (30ft) at LWST, the dock could accommodate ships in excess of 35,000 gross tonnage.

The caisson was constructed by Evans Deakin (Pty) Ltd.

3.3 Operation.

During the war period, the dockyard was very valuable as a defence facility. By agreement with the Commonwealth Government, the dockyard was the property of the State of Queensland, but docking priority was determined during the war and for twelve months after by the competent Commonwealth authority.⁵

In post-war years, the dock was used mainly for repairs and maintenance of merchant shipping and vessels of the Department of Harbours and Marine. It became a distinct asset to the Port of Brisbane, to the State of Queensland, and to the east coast of Australia. However, in all its period of operation by the Queensland Government, profitability was seldom achieved. In 1952/53 and 1966/67, modest surpluses were recorded.³

Profitability considerations aside, the dockyard continued to provide a service to shipping until its closure in 1987.

Some gross tonnage and vessel throughputs include: 457,000 (126 vessels) up to 31 May 1946; 685,043 (194 vessels) up to 30 June 1948;⁶ 150,460 in 1948/49 (38 vessels); 98,615 in 1959/60 (26 vessels); 34,372 in 1962/63 (46 vessels); 28,987 in 1966/67 (37 vessels); 539,356 in 1970/71 (35 vessels); 429,814 in 1971/72 (32 vessels).³

3.4 Refurbishment.

The main pumping machinery, which arrived as part of the dredge Hercules in 1900, was deemed by 1961 to be too old for further service. Pump and steam engine were replaced by two electrically driven pumps, more than doubling the pumping capacity and improving dewatering flexibility.

Later in the decade, the Department of Harbours and Marine commissioned a study by Sir William Halcrow and Partners of the need for ship repair and dry docking facilities in the Port of Brisbane. This led to Cabinet approval, on 18 April 1967, of expenditure of \$3,365,000 on modernising the Cairncross Dockyard. On 7 August 1967, Cabinet approved the engagement of Sir William Halcrow and Partners to design and supervise the improvements.³ The total approved scheme provided for docking of large bulk carriers of up to 60,000 DWT, the largest then being operated by Australian owned companies.

The proposed development included: (a) a new slipway for ships of up to 2500 tonnes; (b) a new fitting-out wharf 305m (1000ft) long; (c) new cranes, compressors, buildings; and (d) new power, water, air and sewerage services. Contracts were let during 1969/70. Modernisation was virtually complete by June 1973, apart from the craneage, which was completed by June 1976.

3.5 Later Operations.

During 1972/73, the bulk carrier Clutha Capricorn, of 85,129 DWT, and 255m long, was successfully docked, with only 8 metres of length and 2.1 metres of width to spare.

Regrettably, the same ship was locked in dock for 39½ days in 1974 due to an industrial dispute. This was one of many through the years which contributed to the decision which eventually led to the closure in 1987.

While the dockyard may be regarded in some quarters as a monument to Australia's unenviable reputation for industrial disputes, it is much more important as a live, working demonstration of outstanding engineering achievement, some of it in challenging circumstances.

The ownership and control of the dockyard complex passed from the Department of Harbours and Marine to the Port of Brisbane Authority when it started to function as a separate authority in December 1976.

4. The Future.

There is now every indication that, under its new management by Keppel Cairncross Shipyard Limited, Cairncross Dock will regain its reputation as a major and historic asset to the Port of Brisbane, to Queensland and eastern Australia. A \$16 million refurbishment is expected to bring the dock back into commission in the third quarter of this year.

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3. Harbours & Marine, Port & Harbour Development in Queensland from 1824 to 1985, ed. Davenport, M W. Department of Harbours & Marine Queensland.
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5. Cairncross Graving Dock, Brisbane. Brier, E. Technical Paper presented to the Heritage Panel of the The Institution of Engineers, Australia, Queensland Division on 11 April 1994.
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C.A.H. Oliver
11 April 1995

5. Statement of Significance

The dock is a product of wartime ingenuity and illustrates, 50 years after the second World war, the heights of achievement that the engineering profession could reach under the duress and exigencies of war. A major public work, with 85,000 dwt capacity, the dock was designed and constructed in a little over two years. It met an urgent wartime need for increased docking and ship repair capacity to supplement the capacity of the existing dock in South Brisbane. It gave over a year's service during the Pacific war, in contrast to its larger counterpart at Garden Island in Sydney, which was not completed until after the end of the war.

While the dock has a strong association with several important engineers, including CM Calder, Sir John Kemp and WHR Nimmo, no individual engineer can be credited with the overall planning, design or construction of the dock. It is a live and substantial monument to the achievements of engineers working in the service of the Allied Works Council.

It is notable for its adaptability for over forty years to the needs of ship repair, starting out as a wartime facility with steam-powered pumping engines and then adapting to modernisation after several years of peacetime civil operation by the Queensland Government. The high quality of its original construction was a major factor in this robust work being as adaptable as it has proven.

The dock, with its concrete chimney, is a landmark for Brisbane River traffic, and has been for over 50 years. It is an important element in the industrial riverscape of the lower Brisbane River.

6. Proposed plaque wording

CAIRNCROSS GRAVING DOCK

First planned in 1934 and built by the Allied Works Council for the Queensland Government during a period of unprecedented war strain between September 1942 and June 1944, the 263m long dock gave valuable wartime service before becoming a major peacetime asset for the Australian shipping industry. The dock's restored viability 50 years after its commissioning is a tribute to the foresight of engineers who planned, designed, constructed, operated, maintained and subsequently refurbished it.

Dedicated by The Institution of Engineers, Australia
 The Port of Brisbane Corporation
 Keppel Cairncross Shipyard Limited

.....May/June 1995

HARBOURS & MARINE

**PORT & HARBOUR DEVELOPMENT
IN QUEENSLAND FROM 1824 TO 1985**

DEPARTMENT OF HARBOURS & MARINE QUEENSLAND



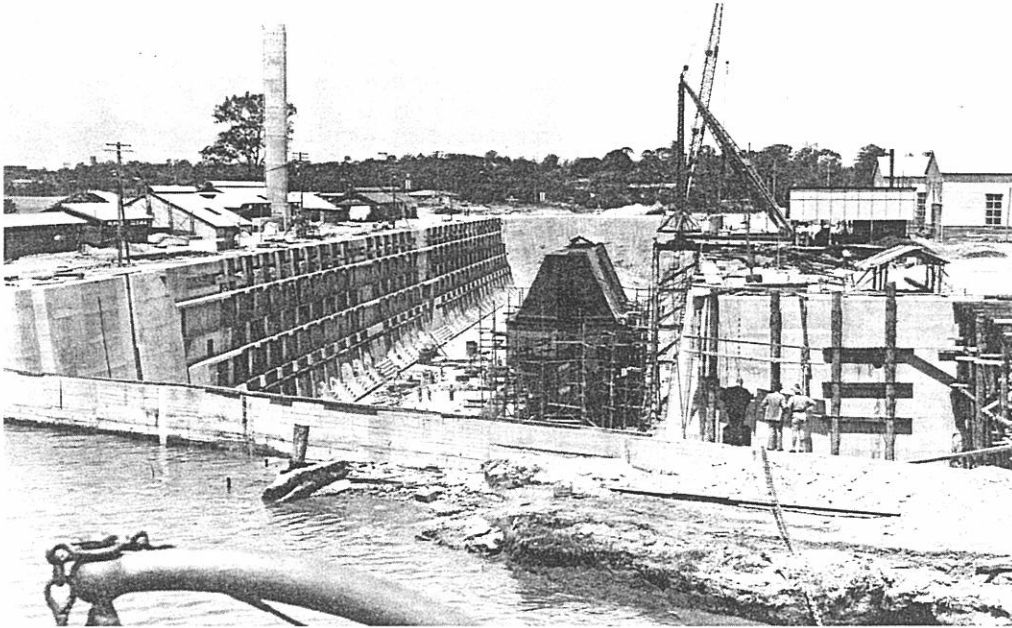
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Cairncross Dock under construction, 14 February, 1944.

Viewed from a dredge at the entrance, can be seen the cofferdam at the river end of the dock, the nearly completed dock and the caisson under construction.

Photograph courtesy Mrs C.M. Calder.

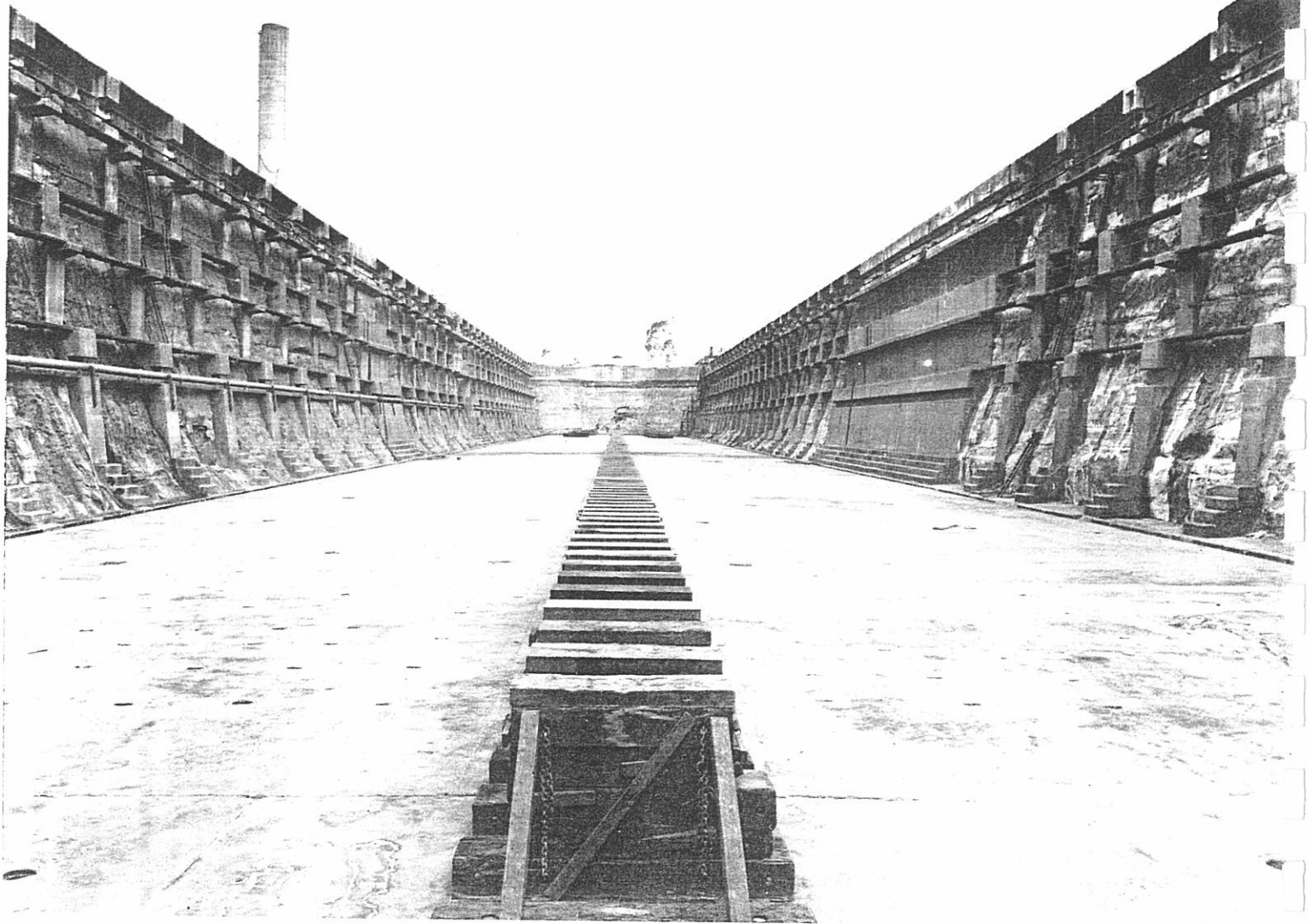
Brisbane Graving Dock (Cairncross Dock)

With the war in the Pacific being fought almost on Queensland's doorstep there was a need, not only for building facilities for ships, but a repair facility which could cope with damaged vessels which managed to make port. The Allied Works Council was in charge of the work and the site chosen was on the southern bank at the lower end of Hamilton Reach.

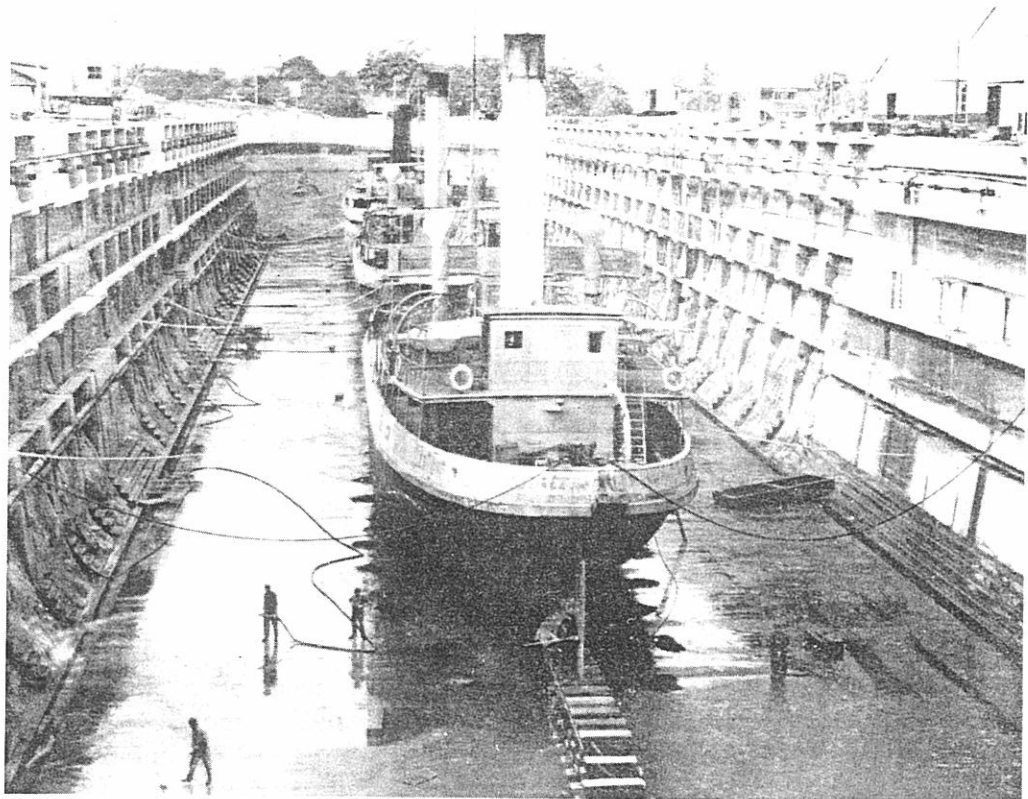
The Department was closely associated with the construction of this graving dock and two of the Department's officers were members of the Board of Engineers controlling the design and construction. The design of the caisson was provided by the Department and its construction was supervised by Departmental officers. A breast wharf for berthing vessels when entering and leaving the dock was designed and constructed by the Department. The dredging at the dock entrance and approach was done by the *Platypus II*, and at the gate the rock drilling barge blasted the rock adjacent to the dock entrance. The steel caisson was built inside the dock.

On 1 March 1944, the Premier of Queensland, the Honourable F.A. Cooper, M.L.A., performed the ceremony of admitting water into the dock and, later, the Attorney-General, the Honourable D.A. Gledson, M.L.A., started one of the dewatering pumps. By 18 May the caisson was sufficiently completed to be placed in its slot and the dock pumped out with the 15 in. auxiliary drainage pumps. On 22 June 1944, with the *Remora* in the van, followed by the *Dugong* and *Seal*, these ships entered the dock, the caisson was placed in position and the vessels successfully docked. After this the depth of water in the entrance was progressively increased and by September full advantage could be taken of the dock's potentialities. The Department of Harbours and Marine assumed the management and control of the new dock.

On 16 September 1944, the Brisbane Graving dock, better known as Cairncross Dock, was officially opened by His Excellency the Governor of Queensland, Sir Leslie Orme Wilson, in the presence of the Honourable the Premier of Queensland, F. A. Cooper, M.L.A., the Honourable the Minister for the Army, the Honourable Francis Forde, M.P., and the Honourable the Treasurer of Queensland, E. M. Hanlon, M.L.A. The *River Fitzroy*, a 9,000 ton merchant ship



Cairncross Dock.
Looking from the caisson along the empty dock.

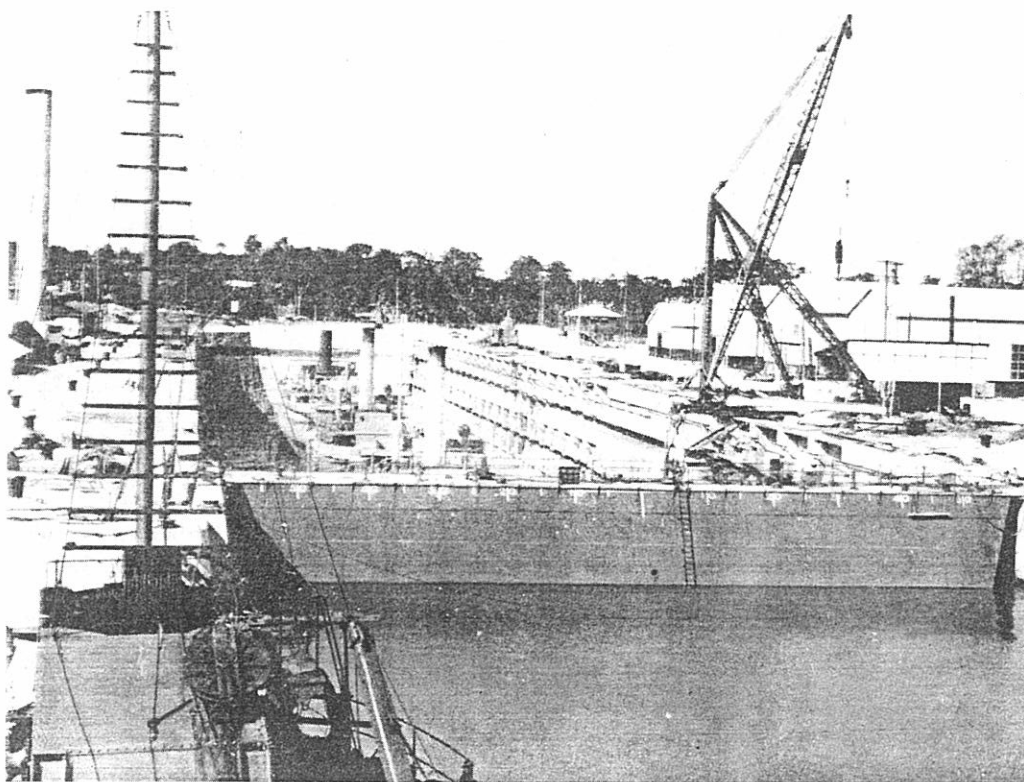


Suction dredge 'Remora', and steam hopper barges 'Dugong' and 'Seal' in Brisbane Graving Dock (Cairncross Dock), 22 June, 1944.



Going into dock.

The passenger vessel, 'Fairisky', entering Cairncross Dock. The dock caisson is berthed in the open position.



On 22 June, 1944, with the 'Remora' in the van, followed by the 'Dugong' and 'Seal', these ships entered Cairncross Dock, the caisson was placed in position and the vessels were successfully docked.

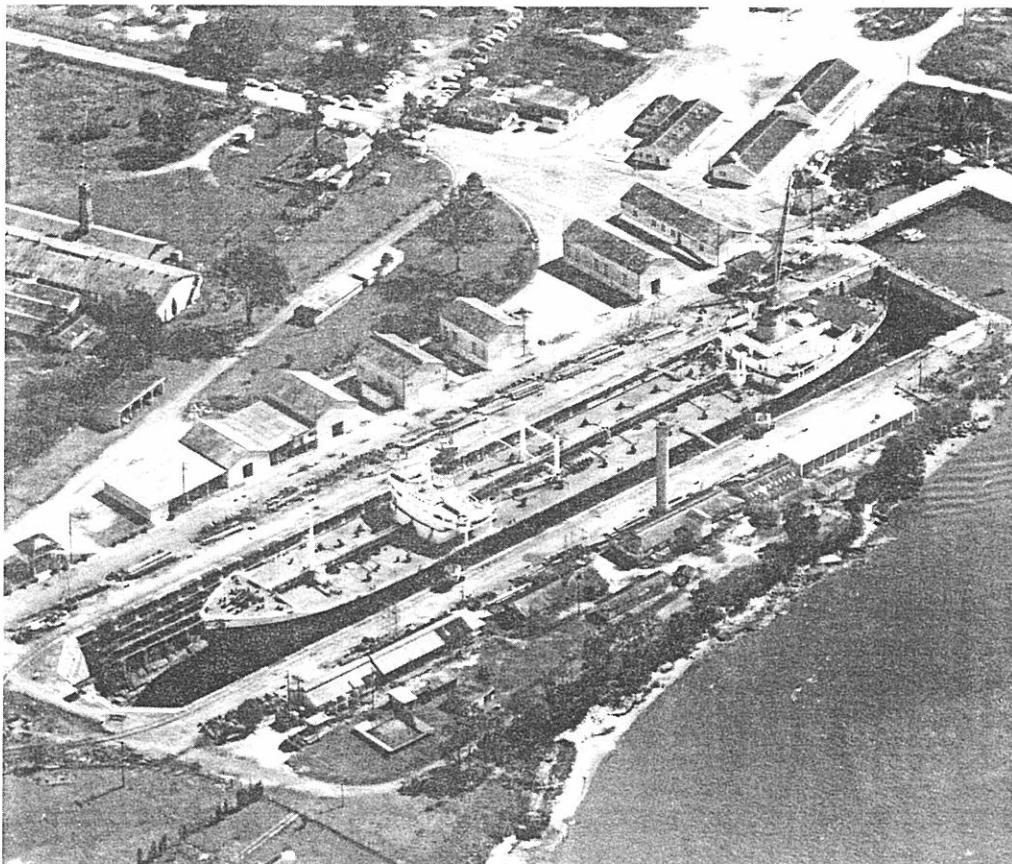
built at the new shipbuilding yard on the banks of the Brisbane River at Kangaroo Point by a Brisbane engineering firm, and the U.S.S. *Corondelet* were in the dock at this time.

The clear length of the dock with the caisson on the outer sill was 863 ft. 7 in., the width at the level of the blocks 110 ft., and the depth over the sill at L.W.S.T. 30 ft. As the mean Spring rise of tide at the dock entrance was 6 ft. 7 in., the dock could accommodate ships larger than the famous Cunard liner *Mauretania*, the overall length of which was 771 ft., beam 89 ft., gross tonnage 35,677. The main dewatering pump unit was not new. It consisted of a triple expansion steam engine, two boilers and a 33 in. centrifugal pump which had been taken from the cutter suction dredge *Hercules* and two more boilers from the battle cruiser H.M.A.S. *Australia* (1913). The *Hercules* had been purchased by the Queensland Government in 1900.

From July 1945 to June 1946 the Brisbane Graving Dock was continually employed and 79 ships docked. The ships included aircraft carriers, submarine mother ships, tankers, assault vessels, and other smaller craft used in the war in the Pacific Ocean; 23 were H.M. ships, 16 H.M.A. ships, 11 dredges and the remaining 29 were miscellaneous other vessels.

The *Platypus II* extended the dredged area to provide for an extension to the breast wharf in 1946, and also widened the approach to the dock entrance while the rock drilling barge carried out drilling and blasting in the vicinity of the caisson — drilling in all 718 holes to an average depth of hole of 7 ft. 6 in.

During the war period the dock proved to be of very great value as a defence facility and in post-war years it was, naturally, utilised for the repair of merchant ships, becoming a distinct asset to the Port of Brisbane and the state. By 1948 a number of tankers and some Port Line vessels were using the dock and, Brisbane being by then the terminal port for many overseas shipping lines, ships were



Cairncross Dockyard with a tanker in dock.
Photograph taken before the dockyard was upgraded in 1967.

using the docking facilities prior to their return overseas. During the year July 1948 to June 1949 the *Esperance Bay* and *Moreton Bay* were docked, having a gross tonnage of 14,204 and 14,193 respectively and in all 38 vessels were docked having a gross tonnage of 150,460 tons.

Another well-known passenger vessel to use this dock was the motor vessel *Kanimbla*. The *Kanimbla* took the ground near Caloundra during a blinding rain squall on the morning of 14 June 1951 and practically the whole of the bottom on the port side, from the keel to the turn of the bilge, suffered serious damage. The major repair work required was carried out in this dock and the vessel returned to service.

The *Kanimbla's* long stay in dock helped make the dock's operation profitable for the year 1952/53 when the earnings were £120,563.12s.1d, and the expenditure £119,877.4s.10d. This dock had not previously shown a profit; in 1951/52 the earnings were £78,340.11s.4d and the working expenses £100,020.1s.2d, a considerable deficiency and the question of raising the charges was seriously considered, but Cairncross Dock was a valuable asset to the Port of Brisbane, and indeed, to the east coast of Australia, and its charges were kept in line with southern docks. The very nature of the service rendered to ships made it costly. Vessels using the dock usually entered it for 2 or 3 days only, for the work of cleaning and painting the hull. The task of docking and undocking was costly and only the days that a vessel was in dock were profitable to the Department, but these were few in number. When and if shipping companies could be persuaded to use Brisbane for extensive overhauls and repairs to their vessels then the dock could, it was hoped, be expected to show a profit. The Department was able to do most of the cleaning and painting required on the ships but major repairs and overhauls were always carried out by one of the large engineering firms in Brisbane.

By 1954 the Western Australian Government annually sent the vessel *Koolinda* from Fremantle to Brisbane for drydocking and the A.U.S.N. Company frequently used the dock for its own vessels and Australian Shipping Board ships running under that Company's agency.

South Brisbane Dock

The ship repair work at South Brisbane Dry Dock had greatly increased during the war necessitating, besides additional wharfage, the erection of extensive machine shops on land adjacent to the Brisbane Milling Company; the scheme was sponsored by State and Commonwealth Governments. A bomb-proof shelter was built over the engines and boilers to ensure this important equipment would not be damaged in any air attack and the dock put out of action.

In the 12 months ended June 1943 the South Brisbane Dry Dock was a very busy place. In all 88 vessels were docked; included in this number were 28 submarines, 12 H.M.A. Navy vessels, 15 U.S. Navy vessels of various types, 11 merchant vessels, Commonwealth lighthouse steamer *Cape Leeuwin*, coral dredge *Hercules* and the motor vessel *Darra* for the Allied Works Council. In the 12 months ended June 1946 only 47 vessels were docked; 21 of these were Government vessels, mainly dredge plant, 11 were H.M.A. ships, 4 were H.M. ships, 4 U.S. vessels and 7 others.

So busy was the dock, that the regular dockings of the Department's dredge plant was seriously interfered with and opportunity was taken to use Peters Slip at Kangaroo Point to slip the plant on the few occasions when the slip was available.

The proximity of this dock to the city area and the easy access to repair shops made it very suitable for the repair of the dredge plant and other ships of similar size. After the war the dock continued to be used for the smaller type of ships, including the Department's dredge plant and pilot vessels. The repair base adjoining this dock which was constructed during the war was vacated by the

and two trailer mounted fire pumps. Progress in the safety campaign resulted in an award being made to the crane drivers for reaching a total of 2,000 accident-free working hours.

One notable vessel using South Brisbane dock during 1966/67 was the American submarine *Tiru* which had been damaged after grounding on a reef off North Queensland. A number of Japanese fishing vessels also used the dock. In fact it was occupied for 330 days that year and of a total of 37 vessels of 28,987 gross tons, 17 of 19,718 gross tons were non-Governmental vessels and the dock again showed a small profit.

The search for oil around the Queensland coast resulted in use of the dock by vessels engaged in geophysical exploration, and three of these vessels used the dock during 1968/69, viz. *Dantylor Biloxi*, *Bayou Chico*, and *Rio das Contas*. Two R.A.N. minesweepers, H.M.A.S. *Hawk* and *Gull*, also made use of dock services and berthing facilities for self maintenance and refit lay-up.

The dock continued to operate and make a profit in 1969/70. The major activity at South Brisbane Dock during that year was, rather ironically, the docking and repair of the caisson from Cairncross Dock. This caisson had not been docked since it was first constructed during the war, although internal repairs were constantly carried out together with external maintenance above the water line. It was essential that more extensive repairs be put in hand and this entailed docking the caisson at South Brisbane.

It seemed as though the old dock was to work usefully until its retirement. During 1969/70 the dock was occupied for a period of 321 ship days which included 77 days when two ships were concurrently in dock and for the year this dock showed a profit of \$115,386.

Most of the Department personnel and equipment from South Brisbane Dock were transferred to Cairncross Dockyard during December 1971 and after that time the South Brisbane Dock was operated under control from Cairncross Dockyard.

Operations at South Brisbane dock ceased during 1972/73. The last commercial docking was of the coral carrying barge *Cementco* followed by the docking of the clam dredger *Tridacna* and tug *Seagull* together, in August 1972. The keel blocks were removed, the caisson returned and tied back in position, and the dock left flooded with the sluice valves open. All plant and equipment was removed with the exception of the 25 tonne stiff leg derrick crane. The site and buildings were transferred to the Land Administration Commission on 27 April 1973. Since that date the site has been used as a base by the Queensland Maritime Museum Association.

Cairncross Dockyard

The Brisbane Graving Dock, more usually referred to as Cairncross Dock, continued to operate at a loss in 1960. The work in the dock varied from cleaning, scraping and painting, to the inspection of anchor cables and the examination and repair of underwater fittings. During the 12 months period 1959/60, 26 ships were docked having a total gross tonnage of 98,615 gross tons of which 9 were State Government vessels and 17 of 97,396 gross tons were non-Government vessels. During the following 12 months only 15 ships used the dock, although one of these ships, *Cape Ortegat* 6909 gross tons required extensive repairs due to the vessel having been ashore on a reef in the Solomon Islands. The reduction in the number of ships using the dock was partly due to the Metal Trades overtime ban, which increased the time that ships spent in dry dock undergoing repairs, and also the time taken to dewater the dock.

When this dock was completed in 1944 it was fitted with the triple expansion steam engine and a dredging pump once used in the suction dredge *Hercules*. The *Hercules* had arrived in Queensland in 1900 and consequently by

1961 the machinery was deemed too old for further service — the boilers were already working under reduced pressure and the pump was inefficient. The pump was replaced by two new pumps driven by electric motors. The pumping capacity was increased from 55,000 gallons per minute to 116,000 gallons per minute and the rate of dewatering the dock could be readily varied to suit cleaning down of the ship in dock. The dock could be dewatered in 4 hours compared with the time of 8 hours previously.

A tender by Harris James Pty. Ltd. for £26,519 was accepted on 19 May 1964 for the erection of a new brick toilet and shower block for use by personnel off ships in dock — a long needed improvement.

Notable amongst the dockings in 1965/66 was the 49,500 tons bulk ore carrier *Darling River* owned by the Australian National Line. This vessel was about the largest that could be accommodated in the dock, and was intentionally designed so as to be able to dock at Cairncross. The other notable docking during that year was the Australian National Line vessel *Timbarra* which occupied the dock for a period of 61½ days while major repairs to the underside of the hull were carried out. This ship had been extensively damaged at the entrance to Newcastle Harbour.

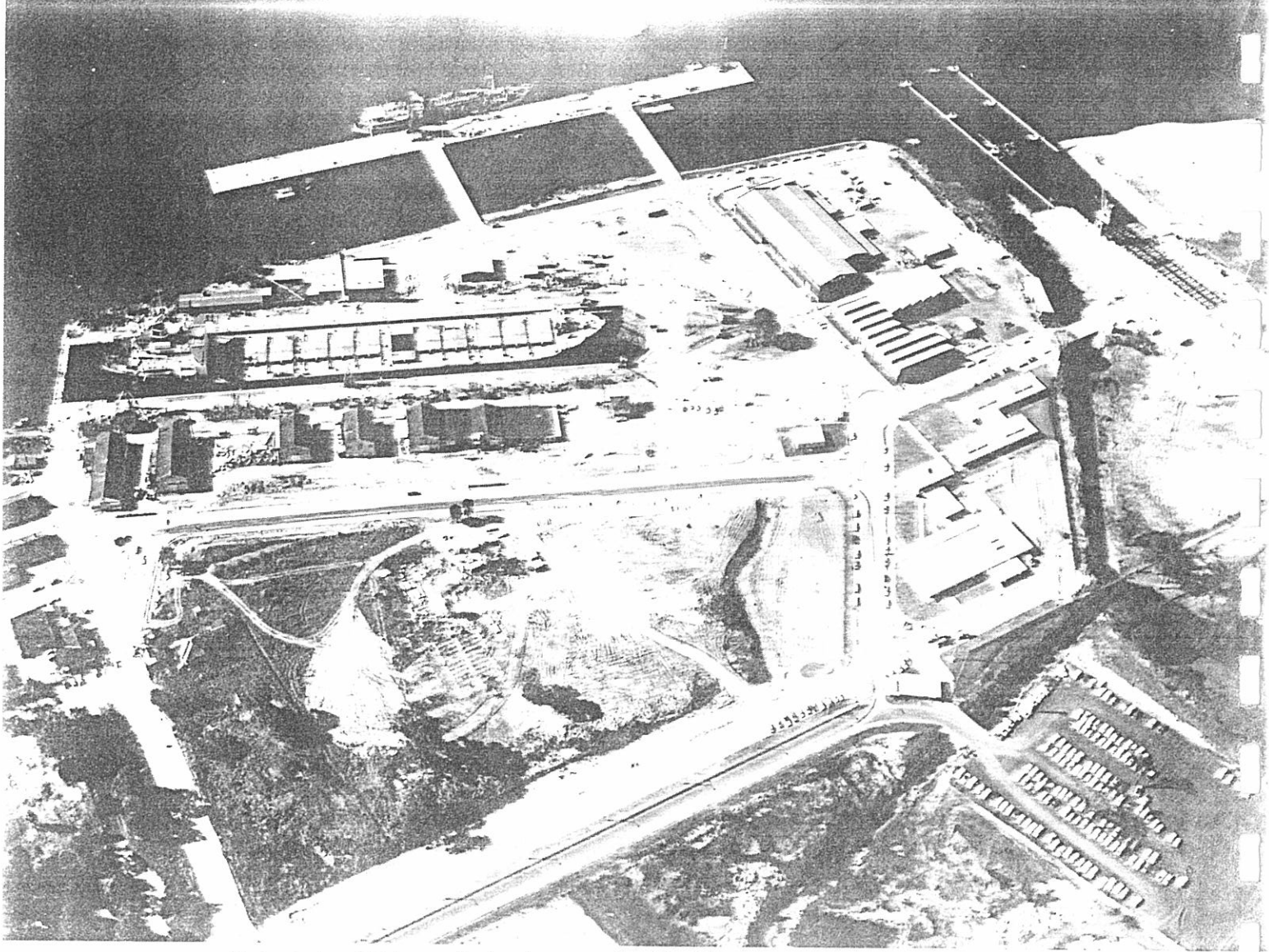
Dockings of note in 1966/67 included the *Esso Macquarie*, which used the dock for a period of 33 days for repair of very major hull damage caused by a collision with a wharf at Port Stanvac in South Australia during a severe storm; and the *Mittagong*, which used the dock for a period of 30 days for repairs to hull damage caused by grounding at the entrance to Newcastle Harbour.

The many and significant changes in shipyard practice throughout the world, the large bulk carriers being constructed and designed for the Australian trade and the growing volume of large vessels visiting Queensland ports added to the decision to close down South Brisbane dock. This prompted the Department to propose a full scale investigation into the need for ship repair and dry docking facilities in the Port of Brisbane and a firm of Consulting Engineers. Sir William Halcrow and Partners of London, was commissioned to carry out a study. Following receipt of this report, Cabinet, on 18 April 1967, approved the expenditure of \$3,365,000 for the modernising of Cairncross Dockyard. Provision was made for leasing of land within the area at Cairncross to private ship repair contractors for the erection of workshops. Subsequently on 7 August 1967, Cabinet approved that the firm of Sir William Halcrow and Partners be engaged to design and supervise the carrying out of dockyard improvements. The work comprised the provision of heavy lift cranes, 1,200 ft. of fitting out quay and a berth dredged to 32 ft. at L.W.S.T., a dock service lift, improved services in the dock area, and additional workshop buildings, administration building and other facilities.

The total approved scheme, for \$5,550,000, provided for a full modern docking complex capable of docking large bulk carriers of a deadweight tonnage of up to 60,000 tons which were the largest bulk carriers then being operated by Australian owned companies. Included in the proposed development were:—

- A new slipway for 2,500 ton ships
- New fitting-out wharf 1,000 ft. long
- New power, water, air and sewerage services
- New buildings (workshop, amenities, canteen, office)
- New cranes
- New compressors.

Construction was programmed over a period of 4 financial years and by June 1969 tenders had been called for the construction of a 60 ft. span bridge over Perrin Creek, which was designed by the Department, and registration of tenderers had been invited, both in the United Kingdom and in Australia, for companies experienced in design and manufacture of slipway equipment.



Modernisation of Cairncross Dockyard was completed in 1972.
 From left to right: Bulk carrier in the dock: new fit-out wharf: workshops: slipway: administration building (centre right) and car park (right foreground).

By June 1970 contracts had been let for the following major works:—

Construction of fitting out wharf 1,000 ft. long	
[Contractor — John Holland (Queensland) Pty. Ltd.]	\$1,363,137
Construction of 2,500 ton slipway	
[Contractor — John Holland (Queensland) Pty. Ltd.]	\$ 959,114
Construction of Industrial Buildings	
[Contractor — R. & N. Statham Limited]	\$ 770,822
Construction of earth works within the dock area	
[Contractor — A.L. Hamblin Constructions Pty. Ltd.]	\$ 145,000

The complex was planned to make it the most modern commercial dock in Australia and at least equal to overseas standards although it was restricted in that ships with a beam wider than 106 ft. could not be practicably docked. In 1970 with shipbuilders planning larger ships for use on the Australian coast in connection with the crude oil and bulk minerals trade the Department investigated the demand for widening and lengthening the dock. This widening and lengthening, which it was estimated would cost \$2,500,000, could not be justified on economical grounds because there was then no known existing demand. A proposal made some 10 years earlier, to place another caisson to divide the dock across at roughly mid length, making it more convenient, quicker and more economical for docking one or two smaller ships, was re-examined but was discarded.

The dock caisson had, during the 25 years since its construction, some plating and internal framing replaced and repaired but by 1969 was in need of a thorough inspection and overhaul. The caisson was docked in South Brisbane dock by adopting special measures, consisting of the addition of a rigid skirt welded on each side of the caisson extending below the water at about the normal light draught line and kept filled with air from a compressor on deck, to give additional buoyancy to the caisson and thus reduce the draught to allow it to be floated over the sill at South Brisbane dock.

The caisson repairs carried out included the replacement of the seal timbers around the ends and bottom where, it was anticipated, they would have been destroyed by borer attack, but contrary to expectations a significant proportion of these timbers on the bottom of the caisson did not need replacement as their condition over the 25 years had not deteriorated at all. Other repairs included reconditioning of all machinery, valves, and electrical wiring, as well as cleaning and painting the ballast tank surfaces with anti-corrosive paint. Improved safety controls were introduced and the general condition of the caisson was greatly improved.

The work was completed, despite some measure of industrial trouble, in sufficient time to have the caisson replaced at Cairncross Dock with the minimum of interference to the programme of docking. The final cost of the repairs was \$188,000.

In March 1970 the cutter suction dredge *Saurian* started dredging for the Cairncross Slipway, which was being constructed under contract. To obtain uniform stable foundation conditions for the slipway, a dredged cut in firm clay and sandstone was required. These materials placed severe demands on *Saurian*'s cutters, ladder and hydraulics and maintenance costs on the dredge were heavy.

By late in 1970 A.U.S.N. (Australia) Pty. Limited had commenced operation in their new workshops on a site inside the dock area leased from the Corporation of the Treasurer. By this time the policy had been adopted that the Department would be responsible for the docking and undocking and normal hull cleaning and painting, but any other hull or engine maintenance or overhaul required would be carried out by the vessel owner under private contract.

Unfortunately in 1972 the usage of the dock was decreasing, the number of vessels fell from 35 in 1970/71 to 32 in 1971/72 and the total gross tonnage dropped from 539,356 to 429,814. The average size of ship also fell from 15,410 gross tons to 13,431 gross tons, due firstly to the cancellation of the docking of large vessels during a period of industrial unrest, and, secondly, to some increased use of Cairncross Dock by smaller vessels due to the pending closure of South Brisbane Dock and the limitation of access to it due to the construction of the Captain Cook Bridge.

It was evident that the most critical factor affecting an owner's decision to dock a vessel at Cairncross Dockyard was the likely occurrence of industrial disputes. These disputes resulted in lost time of 1,218, 1,542 and 2,454 man days in 1969/70, 1970/71 and 1971/72 respectively. No repair facility, or for that matter any other business, could be operated successfully with delays of this magnitude.

The tanker *Amanda Miller*, 39,059 gross tons (65,748 D.W.T.), was docked at Cairncross by her builders in 1971/72 and was the largest vessel to dock there up to that time. The tanker *P.J. Adams*, 33,979 gross tons (55,676 D.W.T.), which had been 'jumboised' to 809 ft. 3 in., was the longest vessel which had been docked at Cairncross. These records did not stand for long as the bulk carrier *Clutha Capricorn* 48,947 gross tons (85,129 D.W.T.), built at Whyalla, 838 ft (255.43 m) long, 106 ft. 3 in. (32.39 m) beam, was docked by her builders during 1972/73. This vessel approached the maximum size of ship able to use the dock which was 263.2 m long and 35.5 m wide at block level. Other dockings of interest in that year included the *Baknes*, 31,241 gross tons, which was docked

fully loaded with mineral sand at a draught of 31 ft. 4 in. (9.5 m) for repair of rudder damage, caused when being swung in the river during departure from Messageries Wharf, and the *Darling River* which was docked for 27½ days for major bottom repairs after hitting a rocky outcrop when entering Bell Bay, Tasmania.

The new dockyard complex was formally opened by the Premier of Queensland, the Honourable J. Bjelke-Petersen, M.L.A., on Friday, 21 April 1972. The fitting out wharf had become operational in October 1971 but, at this time, the 2,549 tonne slipway was not complete as the work had been subject to considerable delays due to difficulties encountered in the construction of the underwater section. The slipway was commissioned during September/October 1972 when the 3 side-delivery barges, and the *Trochus* and *Echeneis* were slipped as part of the testing programme. The first commercial slipping was the *John Burke* on 15 November 1972. Eleven private vessels totalling 8,046 gross registered tons, and 4 items of Departmental plant totalling 680 gross registered tons, were slipped for painting and repair up to the end of June 1973.

By June 1973 the modernisation work at Cairncross Dockyard had been virtually completed, although there still remained the purchase and installation of a 51 tonne dockside crane and a 30 tonne fitting out wharf crane. Four 5 tonne capacity dockside loco-cranes were in operation by June 1973.

The expansion programme was commenced in 1969 and by June 1976 in excess of \$9 million had been spent to give the dockyard greatly improved cranes, services and ship repair facilities. All that remained was to induce the ship owners to use the facilities available.

Although dock charges were increased in August 1974, the high level of inflation resulted in heavy increases in costs and, in addition, industrial disputes with dockyard and contractors' employees and between maritime Unions and shipping companies seriously affected dock utilization and the dock continued to show a loss. The largest vessel to use the dock during 1974, the *Clutha Capricorn*, was locked in dock for a period of 39½ days due to an industrial dispute between the Engineering Company carrying out the repairs and the Metal Trades union.

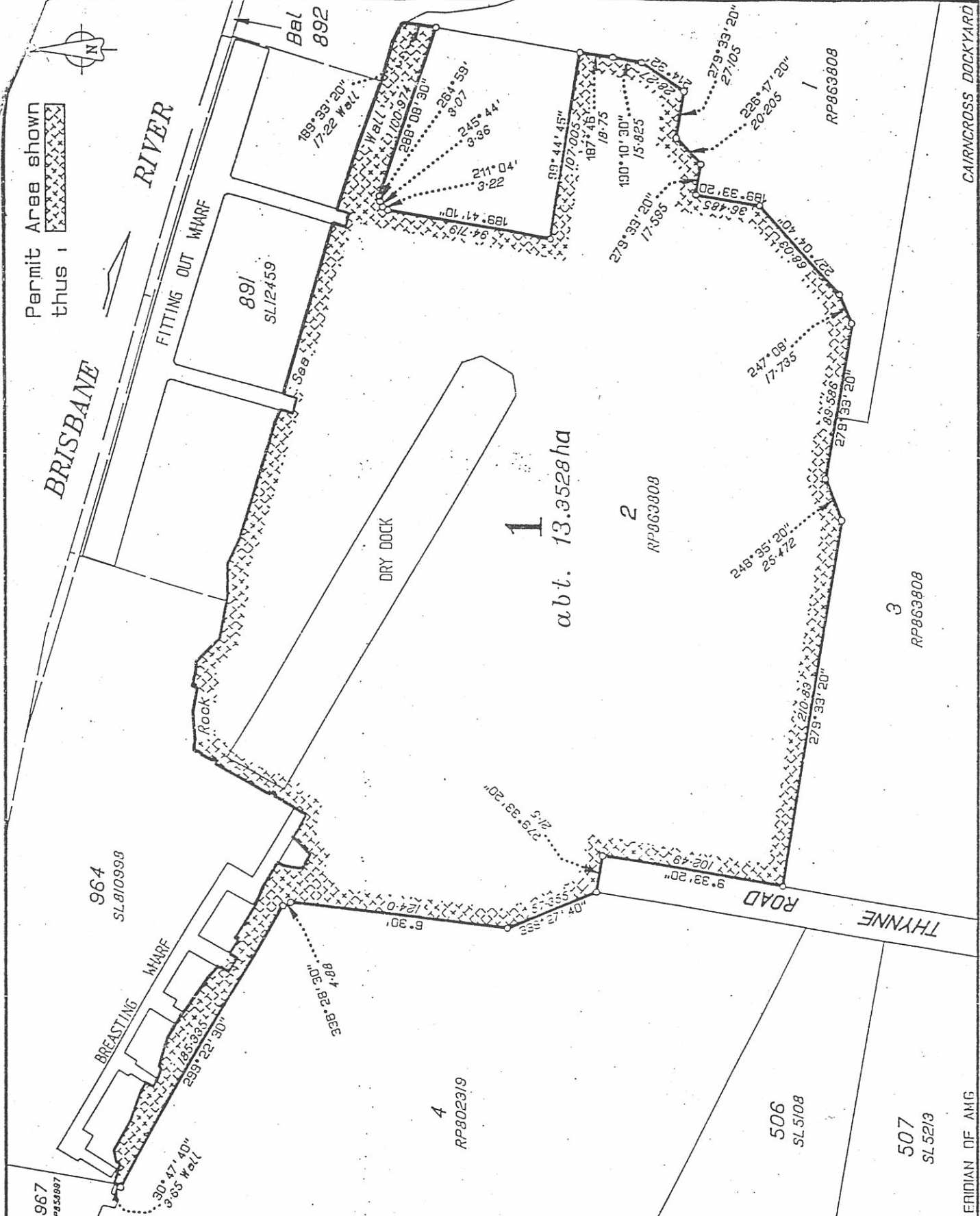
The ownership and control of the Cairncross dockyard complex passed from the Department of Harbours and Marine to the Port of Brisbane Authority when that Authority began to function as a separate Authority in December 1976.

Training Walls and Kangaroo Point Quarry

In 1960 there remained two walls, at Bulwer Island and Fisherman Islands, to complete the development of the lower Brisbane River walls although some of the walls, such as at Lytton and Parker Islands, still needed to be raised and finished off.

The Department's quarry at Kangaroo Point continued to provide stone for the river walls, for boat harbour protection and for use for private river bank protection. Where rock from the quarry was made available to owners of riverfront properties for bank protection it was delivered to the property at a very reasonable rate. The owner was required to construct the wall. In the 12 months of the fiscal year 1960/61, 12,290 tons of rock was quarried. This was about an average of the quarry's annual output so in 1962 it was decided to make a careful assessment of the stone still available at the quarry. Development at Kangaroo Point at the top of the cliff was such that, to cut the face of the cliff further would endanger roads and buildings. The rock in the quarry itself had been excavated to well below river level and the quantity of good stone remaining within the lease boundary was diminishing.

A stone and gravel revetment of approximately 1,200 ft. of river frontage was completed during 1964/65 to prevent the erosion of sand reclamation of the Amoco tank farm area. Construction work on the Bulwer Island training wall was



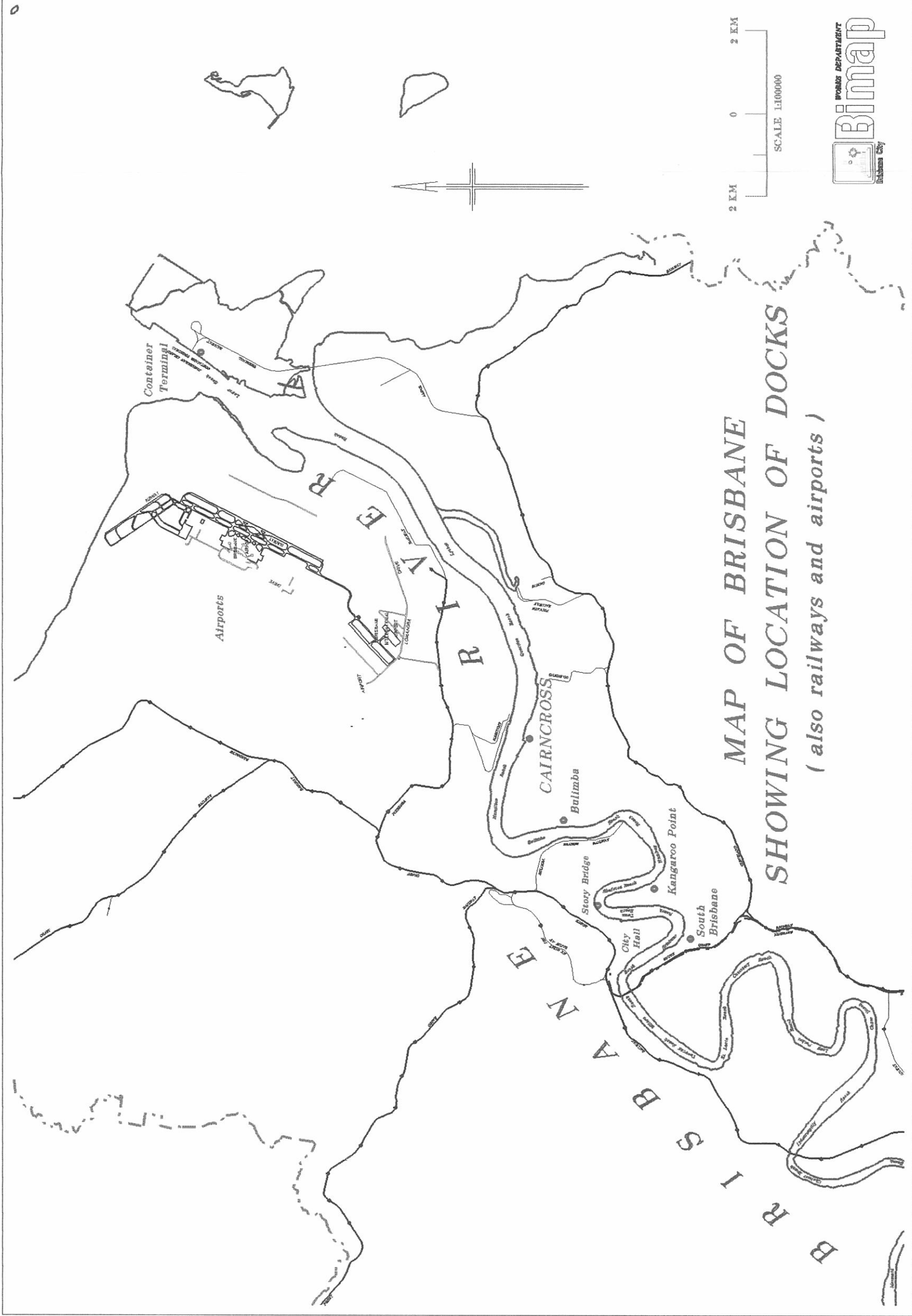
PORT OF BRISBANE AUTHORITY

DRAWN *SCN* CHECKED *SJL*
L. J. [Signature] 11.2.94
 MAN. TECHNICAL SERVICES DATE
 MAN. ADMIN. & PROPERTY DATE
 CHIEF EXECUTIVE OFFICER DATE

**PLAN OF LOT 1 ON
 PBAS20871**
 Parish of BULIMBA
 County of STANLEY

1 : 3000 SCALE (metres) L-108-16 FILE REFERENCE

PORT CENTRE
 369 ANN STREET
 BRISBANE, QLD
 4000
 Ph: (07) 833 0833
 Fax: (07) 833 3591
 GEOGRAPHIC IDENT.
 - 2 - L108
 DRAWING NUMBER
S 20871



MAP OF BRISBANE
SHOWING LOCATION OF DOCKS
(also railways and airports)



2 KM 0 2 KM
 SCALE 1:100000

0

MARITIME ENGINEERING (1994) PTY LTD

A subsidiary of Keppel Cairncross Drydock Australia Ltd

NEWS RELEASE

APRIL 1994

Drydock To Be Revitalised

The following news release was distributed to media outlets in Australia and overseas on Tuesday, March 22, 1994.

Keppel shows faith in Australian ship repair industry

The signing of an Agreement to Lease today (Tuesday, March 22, 1994) between the Port of Brisbane Authority and Keppel Cairncross Drydock Australia Ltd, signals the commencement of a \$16 million project to bring the 85,000dwt Cairncross Drydock at Bulimba in Brisbane back into commission by the third quarter of 1994.

Keppel Cairncross Drydock Australia Ltd is a joint venture company formed by Singapore-based public company, Keppel Corporation Limited, which is a widely diversified conglomerate with core businesses in ship repair and shipbuilding, rig building, property, banking and financial services, engineering and shipping, and Australian shareholders including shareholders of the Brisbane-based Maritime Engineering Group.

Keppel Corporation Limited owns a 60% share in the new joint venture, while Australian shareholders hold the balance.

In Brisbane for the signing, Mr Loh Wing Siew, Managing Director of Keppel Corporation Limited said the occasion was the culmination of more than a year's hard work and negotiations among various parties.

"Keppel Corporation welcomes the opportunity to play a part in re-activating the ship repair capability in Brisbane and henceforth the Port of Brisbane will be able to provide a comprehensive range of port services to the world shipping community," Mr Loh said.

He said the improvement in industrial relations and the business environment had played a part in the company's decision, as had the fact that Cairncross was the largest dock in the Southern Hemisphere, the availability of a skilled workforce, good infrastructure systems and a stable government.

"We at Keppel are confident that with our technical and management expertise, financial resources and worldwide marketing network, we will be able to develop Keppel Cairncross Drydock to serve domestic shipowners and also international shipowners trading in the region," Mr Loh said.

He said Keppel Cairncross was the third overseas shipyard to be added to the Keppel worldwide network this year, the first being Keppel Bason in Vietnam, followed by Philseco in the Philippines.

"With the addition of Keppel Cairncross, Keppel will be operating eight yards outside its home base in Singapore — three in the Philippines, one each in Vietnam, India, the United Arab Emirates, and the United States of America," Mr Loh said.

Mr Loh also introduced Mr K. C. Leong, currently the Executive Director of Singmarine Industries, a publicly listed company and a member of the Keppel Group. Mr Leong, who has been responsible for setting up a number of drydocks around the world will take up the position of Managing Director of Keppel Cairncross Drydock Australia Ltd.

Mr Trevor Remphrey, a director of the newly formed company and a key link in the negotiation of the joint venture, said on completion of the work, Cairncross Drydock would be a 24 hour integrated marine ship repair and refurbishment facility, providing a "Panamax" width drydock specifically targeted at the international commercial shipping industry.

Senior Executives

Leong Kang Chuen is a director of both Keppel Cairncross Drydock Australia Ltd and Maritime Engineering (1994) Pty Ltd and will take up the position of Managing Director of the refurbished drydock facility on its completion.

Prior to being seconded to the position of Managing Director of Keppel Cairncross Drydock Australia Ltd, Leong Kang Chuen, 51, was Executive Director of Singmarine Industries Ltd, where he had overall responsibility for the operations of some twenty companies involved mainly in shiprepair, shipbuilding, marine engineering and marine leisure activities.

Trained as a marine engineer, Leong Kang Chuen joined Keppel Shipyard in 1969 and has gained extensive experience in shipyard operations, shipyard construction and shipyard re-activation programs.

In 1986, he participated in the reactivation of Mitsubishi Shipyard which closed in 1985. This was followed by the secondment of Leong Kang Chuen to Madras in 1987 where he spent more than three years building a completely new shipyard and managed it as its President. He returned to Keppel in 1991 to take up his appointment as General Manager of Operations, subsequently being appointed Executive Director of Singmarine.

Mr Bill Pennell and Mr Trevor Remphey have been appointed directors of Keppel Cairncross Drydock Australia Ltd.

Mr Bill Pennell was also a director of Maritime Engineering and Doherty Pettit Pennell and his career in the shipping industry spans 40 years. As a qualified marine engineer he has worked with major shipping companies based in Australia and England including James Patrick & Co., Burns Philp & Co., R.W. Miller & Co., Evans Deakin Industries and Howard Smith Industries.

Since joining Doherty Pettit Pennell in 1981, Bill has acted as a non-exclusive Marine Surveyor for a number of the world's major shipping underwriters, including Bureau Veritas, Germanischer Lloyd and Registro Italiano and also acts as a surveyor for the American Bureau of Shipping and Lloyds Agents & Salvage Association. He has supervised the construction and repair of independently owned and operated vessels. Qualifications: Chartered Engineer (registered

Mr Trevor Remphey is experienced in electronics and the installation of instrumentation for a number of industry applications including shipping, oil and mineral refining, brewing and sugar refining. The major part of his 37 year career has been spent with Honeywell Limited and since 1962 has held a variety of technical and administrative senior management roles in Adelaide and Brisbane.

During his career with Honeywell, Trevor was responsible for negotiating many multi-million dollar contracts including the supply and installation of automation systems for seven LNG bulk carriers constructed in Japan, the largest contract of its kind in the world. He has also successfully negotiated international contracts between Honeywell and organisations based in Europe, Japan and Korea.

Mr Bob Hopwood and Mr Brian Doherty have been appointed directors of Maritime Engineering (1994) Pty Ltd.

Mr Bob Hopwood has been involved in engineering for over forty years, commencing in 1953 when he held the position of Marine Engineer for Cunard White Star, followed by a period as Supervisory Engineer on the construction of the third stage of the Tennyson Powerhouse in Brisbane.

In 1964 he joined Australian United Steam Navigation where he was leading hand for all aspects of in-water and drydock ship repair, leading to his promotion to General Foreman in charge of 200 personnel. In 1983 Bob joined Maritime Engineering Pty Ltd and was responsible for co-ordinating the successful take-over of Evans Deakin's marine operations, while also working with other directors to build the company into one of Queensland's leading ship repair operations.

Mr Brian Doherty was a director of Maritime Engineering and Doherty Pettit Pennell and in addition to establishing the marine surveying and engineering arm of the business in 1981, played a key role in the establishment of other companies within the Doherty Pettit Pennell Group, including the successful ship repair and barge construction operation which trades as Maritime Engineering.

During his 36 year career, Mr Doherty has worked as a marine engineer for leading Australian and international companies including Burns Philp & Co., BHP and BP Australia. Since 1969 he has concentrated on marine surveying and has worked for the Federal Government's Department of Transport and on an exclusive basis with the American Bureau of Shipping. He has also worked on a non-exclusive basis with Bureau Veritas, Det Norske Veritas and Registro Italiano.

Technical Information Cairncross Dockyard

General

Cairncross has the capacity to handle vessels up to 85,000 dwt.

The dockyard was built during World War II and officially opened on 16 September 1944. Since 1969, about \$10 million has been spent to improve its facilities, including:

- four (5 tonne) travelling rail cranes, and a 50 tonne travelling portal crane to service the dry dock;
- complete updating of services including fresh and salt water reticulation, ballasting and fire pump system, compressed air, electricity and telephone networks;
- construction of a 306.7m fitting out wharf with complete services, including a 30 tonne travelling crane; and
- construction of an administration building, canteen and workers' amenities blocks.

Dimensions of Dry Dock

LENGTH		263.2m
BREADTH:	at block level	33.5m
	at coping level	38.9m
DEPTH:	over sill at port datum	9.1m
	of dock	15.5m

The approach to the dock was dredged to 7.8m port datum.

Dock Capacity

The maximum vessel size which can be comfortably accommodated in the dry dock is 255m in length, 32.3m moulded breadth, and 7.6m draft in docking condition.

All vessels using the dry dock rest on a 1.875m high cradle of blocks. Blocks and foundations are capable of supporting vessels up to 263t/lin.m. The dock's portal crane can lift up to 50 tonnes.

Workshops

Workshops are close to the graving dock and fitting out wharf within the security area.

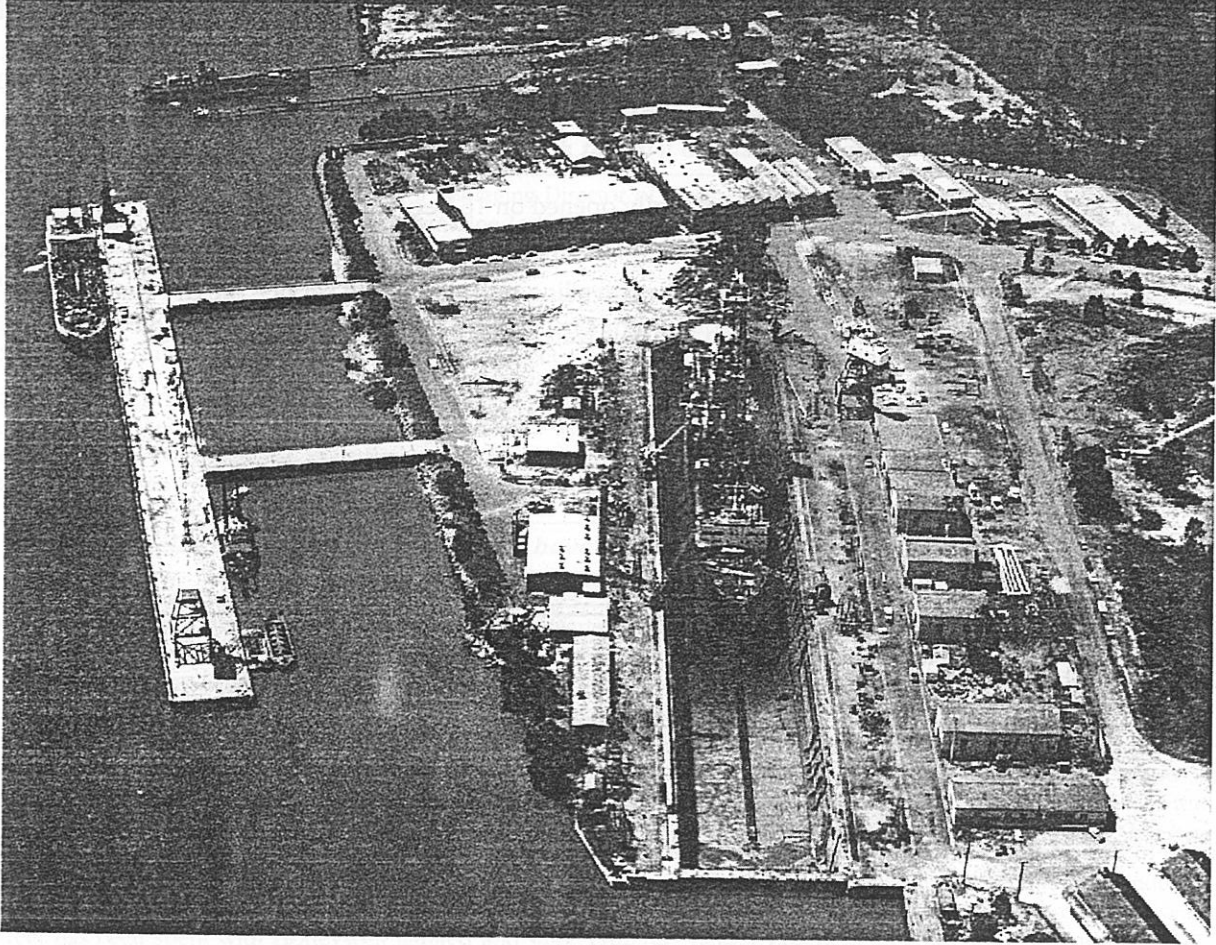
Amenities

Facilities are available for officers and crew. A large canteen area on site could provide meals for up to 400 people.

Fitting Out Wharf

The face of the fitting out wharf is 306.7m long and, between the ends of the wharf and the approaches, two lengths of 112.2m and 75.6m are provided for small vessels. A service gallery carries electricity, fresh water, salt water and compressed air to any vessel at any fitting out berth.

Cairncross Drydock when Operational in 1983



Brisbane plans to re-open Cairncross Dockyard *The Staff of Maritime Engineering Pty Ltd*

established in Brisbane, Queensland in 1979, continues to provide a full range of ship repair and maintenance services for shipping.

Responsive and experienced tradespeople provide in-service, in-water repairs, including:

- engine repair
- boilermaking
- plumbing
- fitting and turning
- electrical and electronic servicing
- rigging, cleaning and painting

The company's already extensive engineering facility has been significantly expanded as a result of a joint venture with Singapore-based conglomerate,

Keppel Corporation Limited

which is expected to result in the re-instatement of the

85,000dwt Cairncross Drydock in 1994.

All enquiries about this world-class facility are welcomed.

Maritime Engineering (1994) Pty Ltd, Cairncross Dockyard, Thynne Road, Morningside.
PO Box 415 Bulimba, Qld, 4171. Telephone: +61 7 399 5533 Facsimile: +61 7 399 6164

20 SEP 1994



Keppel Cairncross Shipyard Limited

ACN 059 830 287

(A member of the Keppel Group, Singapore)

Office:

Thynne Road, Morningside
Brisbane, Qld 4170, Australia
Tel: 07 227 0888 Fax: 07 399 6164

Mailing Add:

P.O. Box 425, Bulimba, Qld 4171, Australia

12 September 1994

The Chairman
Heritage Panel
The Institution of Engineers, Australia
Queensland Division
447 Upper Edward Street
BRISBANE QLD 4000

Dear Sir

PROPOSAL TO ERECT A COMMEMORATIVE PLAQUE AT CAIRNCROSS DOCK

Your recent letter on this subject refers.

Approval in principle is hereby given to your proposal to place an Historic Engineering Marker at the Cairncross Drydock facility.

Details of the location of the plaque and the unveiling ceremony will be the subject of further communications closer to the event.

for KEPPEL CAIRNCROSS
SHIPYARD LTD

Leong Kang Chuen
MANAGING DIRECTOR

for the PORT OF BRISBANE
CORPORATION

Greg Martin
CHIEF EXECUTIVE OFFICER

Commemorative Plaque Nomination Form

9th September 1994

Commemorative Plaque Sub-Committee
The Institution of Engineers, Australia
11 National Circuit
BARTON ACT 2600

From: Heritage Panel
General Branch
Queensland Division

The following work is nominated for an Historic Engineering Marker award:

CAIRNCROSS DRYDOCK

Thynne Road, MORNINGSIDE, QLD 4170

Grid Reference: 6963778N 507372E AMG

Owner: Port of Brisbane Authority,
Port Centre, 369 Ann Street, BRISBANE Q 4000

Lessee: Keppel Cairncross Drydock Australia Ltd

In support of the nomination the following information and documentation is provided:-

1. Presentation originally submitted on 09 June 1994, edited to improve appearance, and now including a statement of significance. Attached to the original of the report were extracts, including photographs, from "Harbours and Marine", reference 2 in the report, pp 541-545. The attachments to the original presentation are not resubmitted.
2. A copy of Port of Brisbane Authority Drawing No S20871, showing the land area of the dockyard, being Lot 1 on PBAS20871, dated 11.2.94.
3. A plan of the lower reaches of the Brisbane River, showing the location of Brisbane's docks/docksites, railway lines, the Brisbane Airport and the Fisherman Island container terminal.
4. A promotional news release, April 1994, notable principally for its 1983 aerial photograph of the dock and dockyard in use.
5. A letter from the proprietors of the dockyard, authorising the proposed plaquing.

The nominating body, in anticipation of this nomination being approved, has started organising a suitable presentation/unveiling ceremony.

CAHOLIN

Chairman of Nominating Panel

Paltemer

Secretary of Nominating Panel

Keppel Cairncross Shipyard Limited
Inauguration
Thursday, August 3, 1995
Program of Events

10.50am

Arrival of Official Guests

The Honourable Wayne Goss, MLA, Premier of Queensland
and
The Honourable Goh Chee Wee, Minister of State for Trade & Industry,
Republic of Singapore

11.00am

Commencement of Inauguration Ceremony

Speech by Mr Loh Wing Siew,
Chairman of Keppel Cairncross Shipyard Limited
Speech by Minister Goh Chee Wee
Speech by Premier Wayne Goss

11.15am

Unveiling of Inauguration Plaque

11.20am

Presentation of Gifts

11.25am

Tour of Shipyard

Flooding of Drydock
Historic Marking of Cairncross Drydock

11.45am

Luncheon Reception

1.30pm

Official Ceremony Ends

RECORD OF PLAQUING CEREMONY



The freshly unveiled Plaque, fixed to the Pump House wall.

Pictured (l to r) are the Inauguration Ceremony Co-Ordinator Ms Carmel Devenish, Queensland Premier Wayne Goss, the Institution's Queensland President Mike Marley and Keppel Cairncross Managing Director K C Leong.

The Plaquing ceremony was performed in conjunction with the ceremony for the Inauguration of the Keppel Cairncross Shipyard Limited, on Thursday 3 August 1995. The plaque was unveiled by The Honourable Wayne Goss, MLA, Premier of Queensland.

The Inauguration and Plaquing ceremonies were attended by the Honourable Go Chee Wee, Minister of State for Trade and Industry, Republic of Singapore, Mr Loh Wing Siew, Chairman of Keppel Cairncross Shipyard Limited and 350 invited guests.

The plaque reads:

HISTORIC ENGINEERING MARKER

CAIRNCROSS GRAVING DOCK

This 263 metre long dock was built between September 1942 and June 1944 by the Allied Works Council for the Queensland Government during a period of unprecedented war strain. The dock gave valuable wartime service before becoming a major peacetime asset for the Australian shipping industry. Its restored viability 50 years after commissioning is a tribute to the foresight of engineers who planned, designed, constructed, operated, maintained and subsequently refurbished the dock.

Dedicated by the Institution of Engineers, Australia
1995

