



1968

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

REPORT

relating to the proposed extension of
**SUBMARINE MAINTENANCE
FACILITIES**
Cockatoo Island, New South Wales

BY AUTHORITY

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

EXTENSION OF SUBMARINE MAINTENANCE FACILITIES,
COOKATOO ISLAND, NEW SOUTH WALES

R E P O R T

By resolution on 11 September 1968, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report a proposal for the extension of submarine maintenance facilities at Cookatoo Island, New South Wales.

The Committee have the honour to report as follows:

THE COMMITTEE'S INVESTIGATION

1. The Committee received written submissions and drawings from the Departments of the Navy and Works and took evidence at a public hearing in Canberra from representatives of these departments. We inspected the site of the proposed work in 1967 when investigating the proposal for the rebuilding of Sutherland Wharf.

THE REFERENCE

2. The proposal referred to the Committee is designed to provide modern submarine refitting facilities for the Oberon class submarines now coming into service with the Royal Australian Navy. Essentially it requires the construction of two new buildings in the Fitzroy Dock area and major modifications to another. One new building will be used as a mechanical and electrical assembly and testing shop and the other will house a weapons shop, mast shop, clean transit store, lay-apart stores, accommodation for

naval personnel and amenities for dockyard employees. The building to be modified will allow the establishment of a hydraulic pipe cleaning and testing facility.

3. Alterations and extensions to associated engineering services will also be necessary as will resiting of some dockyard facilities to enable the sites for the new buildings to be cleared. The proposal also includes replacement of some unserviceable equipment.

4. The cost of the work is estimated at \$4.7 million.

COCKATOO ISLAND DOCKYARD

5. Cockatoo Island, an island of over 37 acres, is situated in Sydney Harbour over two miles west of the Harbour Bridge. It is devoted entirely to ship building and ship repair work, its history as a dockyard dating back to the days of the early settlers.

6. The island was acquired by the Commonwealth in 1913, and since 1933 it and its facilities have been leased to Cockatoo Docks and Engineering Company Pty Ltd., a subsidiary of the Vickers Group, which operates the dockyard as a commercial venture. The terms of the lease bind the company to maintain the efficiency of the establishment as a dockyard for naval purposes, and to give priority when required to naval or other defence work.

7. The Company is responsible for day to day maintenance of the facilities on the island, but the Commonwealth carries out major maintenance necessitated by ordinary wear, age and obsolescence. The lease allows the Commonwealth to construct new buildings and wharves and instal new machinery.

8. The facilities on the island, which include wharves, building slips, dry docks, heavy engineering workshops, stores and administrative buildings are generally fairly old but the dockyard provides an essential service for naval vessels and commercial shipping. We saw evidence that the stage has been reached when major maintenance and improvements have become essential. An initial part of this work is the reconstruction of the Sutherland Wharf about which the Committee reported to Parliament on 7 September 1967.

9. Future Development A firm of production engineering consultants was commissioned jointly by the Navy and the Company to survey the physical resources of the dockyard and to make recommendations for improving its working efficiency and capacity. Based on the consultant's recommendations, an overall plan has been prepared for modernisation and development and apart from those facilities required for submarine refitting is still under consideration by the Naval Board and other interested departments. The Committee were assured that the works in the present reference are consistent with the consultant's recommendations and will not conflict with any development plans which the Navy might propose.

THE NEED

10. The "F" class submarines, which have been on loan from the Royal Navy, have been refitted at Cockatoo Island Dockyard except for work on radio, sonar and torpedo control systems, gyro compasses, masts and main batteries which has been carried out at the Garden Island Dockyard. The last of these submarines is scheduled to go out of service in January 1969.

11. The present facilities at Cockatoo Island for the refitting of submarines are minimal and are long overdue for improvement or replacement. The deficiencies of the facilities and the fact that some essential work has had to be carried out at Garden Island have only been tolerable because of the short remaining period of service of the "T" class submarines.

12. There is a need for new submarine refitting facilities at Cockatoo Island to replace the present obsolescent equipment and accommodation and to enable refitting of the more complex and sophisticated vessels coming into service. For this task improved workshops, additional specialist plant and test equipment is required. For more effective control and management, there is also a need for the services now provided at Garden Island to be available at Cockatoo Island.

13. For the Oberon class submarines a continuous programme of refitting will be necessary from 1971. The period between now and then provides the opportunity to improve the facilities at Cockatoo Island for this purpose.

THE PROPOSED BUILDINGS

14. Site Submarines being refitted are placed in the Fitzroy Dock which is situated in the south-eastern corner of the island. The sites for the two new buildings are just to the north-east and the south of this dock and are therefore conveniently located for their purpose. As the pipe-cleaning and testing facility will be used for refitting surface ships as well as submarines, it is appropriate that it be located towards the north-eastern corner of the island.

15. The Committee agree that the sites selected are suitable.

16. Construction Staging As the site for the mechanical and electrical assembly and testing shop is already occupied by buildings housing useful items of plant and facilities, it will be necessary to relocate these before demolition. This will necessitate alterations to five other buildings and means that the work in this reference must be carried out in two phases.

17. The first stage is to comprise

- modification of the tool room to house the canteen, dining room and canteen staff amenities with consolidation of tool room facilities;
- internal re-arrangement of the boiler shop to accommodate plant moved from other buildings and some new machinery;
- alteration of the foundry to locate the apprentice boilermakers' training section, bricklayers' workshop, riggers' shop, fitting-out store and spray painting;
- housing of the physical test laboratory in the markers' office;
- modification of the blacksmiths' shop to accommodate the builders', engineers' and electrical maintenance stores.

18. The Committee noted that this work must precede the new construction if the operation of the dockyard is not to be disrupted and must also be substantially completed before the second stage can commence.

19. Design of New Buildings The building for mechanical and electrical assembly and the testing shop will be 295 ft by 145 ft. It will be a two-storey structure designed for a further floor over part of the area should this prove necessary. The structural frame will be a strong element in

the elevational design. The ground floor will house the submarine refit working areas and has been designed on work flow principles, handling the refitting of mechanical items from the southern end, and electrical items from the north. After complete overhaul and refit, these elements converge on a common exit for installation. The south-eastern side will house a new substation and associated electrical equipment. The first floor is largely devoted to change and wash rooms, and lunch rooms but there will be some offices and a plant room space.

20. The second building, which will house the various equipment shops and stores, and provide accommodation and amenities, occupies an area of 165 ft by 163 ft. It is planned in two sections, one being a substation/amenity block 90 ft by 35 ft, separated by an I-shaped light area from the main workshop building. The substation/amenity section will be a three-storey unit whilst the main building will have two storeys but with structural provision for an additional floor if required. Again, the structural frame will be a strong element in the elevational design. The main building is divided into two areas with separate entrances and stairways. The western half of the ground floor will house radio, radar and electronic workshops and the mast workshop. The eastern half is to accommodate stores and offices. Above this on the first floor will be offices for Navy and dockyard supervisory staff together with living quarters for naval personnel including mess rooms and a central galley.

21. Electrical equipment will be installed on the ground floor of the substation building while the two floors above will accommodate lunch rooms and amenity areas.

22. The forge building will be modified to accommodate the pipe cleaning and testing facility.

23. Structure Both the new buildings will have a structural steel frame. As well as being the most suitable type of construction, a steel frame provides flexibility for future alterations or additions. Floors will be of reinforced concrete and at roof level, where a future third storey is proposed, the roof will be framed up on a reinforced concrete slab designed as a future floor.

24. Due to the nature of the site conditions, it is proposed to construct the buildings on concrete piers founded on rock, which occurs at depths between 30 ft and 50 ft.

25. Materials and Finishes Materials and finishes have been selected with due regard to economy and function. The structural frame will be featured in the elevations with an off-form concrete finish. Infill panels will be face brick. Roofs will be of coated metal supported on timber framing whilst windows will be of anodised aluminium. Externally, the buildings will have an appearance appropriate to their function.

26. Internally, floors will generally be covered with heavy duty linoleum but where a tougher finish is required, wood float concrete or concrete with an epoxy finish will be used. Toilet floors will be ceramic tiled. Walls will be mostly cement rendered and painted. Other areas will have wall finishes appropriate to their function such as face brick, ceramic tiles and metal wall cladding. Ceiling materials will include prepainted suspended zinc-coated steel, corrugated aluminium foil and painted off-form concrete. Plastic laminate faced false ceilings will be used in toilets.

ENGINEERING SERVICES

27. Mechanical Workshops, clean rooms and stores which have a particular requirement will be air conditioned. Ventilation and heating will be provided in the mechanical and electrical assembly shops, balancing room, functional testing shop, noise test cells and drying rooms, whilst other areas will be mechanically ventilated. A vacuum cleaning service will be provided on the ground floor of each new building.
28. *Lifting equipment including cranes and hoists will be installed in both new buildings and in the proposed pipe cleaning and testing building. As the lifting equipment in the training school building, the boiler shop and the maintenance stores building is unserviceable, new electric overhead travelling cranes are to be installed in these buildings also.*
29. Electrical Electricity is supplied by the Sydney County Council through high voltage submarine cables which have sufficient capacity to cope with the additional loads expected to be imposed by the new facilities.
30. The capacities of the substations in the building housing the boiler shop, coppersmith and sheet metal workshops will be increased to supply power to the additional electrical equipment to be installed. A temporary substation will be installed at the Destroyer Wharf to maintain supply during construction. As noted above substations will be built into each of the new buildings.
31. Generally, fluorescent lighting will be installed. General and special purpose outlets will be provided as required at appropriate points.

32. Hydraulic The island is supplied with fresh water from the Metropolitan Water Sewerage and Drainage Board system by means of duplicate submarine mains, which discharge into elevated and ground level storages. These are of sufficient capacity to meet essential requirements for domestic, industrial and fire fighting purposes should the supply system fail. New buildings will be connected to the existing mains.

33. Sewerage At present sewage is discharged directly to the harbour either in the raw state or after preliminary treatment in septic tanks. However, the Maritime Services Board and the State health authorities will no longer permit such discharges without a substantial improvement in the quality of the effluent and would prefer disposal to the Metropolitan Water Sewerage and Drainage Board system.

34. To meet these requirements, it is planned to construct a modern sewage treatment plant on the southern side of the island. However, discussions are also being held to determine the feasibility of pumping sewage into the Board's system on the mainland and although it will be some time before a decision can be made, allowance has been made in the estimates to cover either treatment on the island or disposal to the mainland system. The most satisfactory and economical method will be adopted after the feasibility study has been completed.

35. Civil Engineering These works will include filling and regrading two unused slipways south of Fitzroy Dock, construction of small retaining walls, concrete paved areas and minor roadworks.

36. Fire Protection Hose reels, fire hydrants and sprinkler systems will be provided in accordance with the practice adopted for naval establishments and as agreed between the Departments of the Navy and Works and the State authorities.

37. Committee's Conclusion The Committee recommend the construction of the work in this reference.

ESTIMATE OF COST

38. The estimated cost of the proposed work when referred to the Committee was \$4.7 million made up as follows:

	\$
Phase 1	465,000
Phase 2	
Building No. 1	1,850,000
Building No. 2	1,550,000
Building No. 3	100,000
External engineering services	735,000
	4,700,000

PROGRAMME

39. If an early approval to proceed is given, it is proposed to call tenders for Phase 1 in November 1968 and Phase 2 in February 1969. May 1969 and October 1970 are the respective target dates for completion.

RECOMMENDATIONS AND CONCLUSIONS

40. The summary of recommendations and conclusions of the Committee is set out below. Alongside each is shown the paragraph in the report to which it refers.

Paragraph

1. THE PRESENT FACILITIES AT COCKATOO ISLAND FOR THE REFITTING OF SUBMARINES ARE MINIMAL AND ARE LONG OVERDUE FOR IMPROVEMENT OR REPLACEMENT.

	<u>Paragraph</u>
2. THERE IS A NEED FOR NEW SUBMARINE REEQUIPPING FACILITIES AT COOKATOO ISLAND.	12
3. THE SITES SELECTED FOR THE PROPOSED NEW FACILITIES ARE SUITABLE.	15
4. THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	37
5. THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$4.7 MILLION.	38

F. O. Chanby

(F.O. CHANBY)
Chairman

Parliamentary Standing Committee on Public Works,
Parliament House,
CANBERRA.

10 October, 1968.