



THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

R E P O R T

relating to the proposed construction of a

WEAPONS WORKSHOP

at

H.M.A. NAVAL DOCKYARD, GARDEN ISLAND,

SYDNEY, NEW SOUTH WALES.

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WEAPONS WORKSHOP, H.M.A. NAVAL DOCKYARD, GARDEN ISLAND,
SYDNEY, N.S.W.

REPORT

On the 10th August, 1961, His Excellency the Governor-General in Council referred to the Parliamentary Standing Committee on Public Works for enquiry and report to the House of Representatives, the proposal to erect a Weapons Workshop at H.M.A. Naval Dockyard, Garden Island, Sydney, N.S.W. The Committee have the honour to report as follows:-

General

1. The Committee viewed the site of the proposed building and inspected the installations at H.M.A. Naval Dockyard, Garden Island, with particular reference to those activities which will move to the new workshop. Evidence was taken from representatives of the Department of Works and the Department of the Navy.

Historical

2. When Garden Island was taken over from the Royal Navy in 1913, the facilities consisted of repair shops for refit work, a naval store depot, a sub-depot for torpedo gear and gun-mountings, administrative buildings and the depot ship PENGUIN. Construction of the Captain Cook Graving Dock, which was officially opened in 1945, involved reclaiming some 30 acres from the sea, thus linking Garden Island with the mainland at Potts Point.

3. The dockyard area has been developed over the years and the proposal before the Committee is to erect a workshop for the

maintenance of modern weapons and weapons systems. This is one of the buildings included in the Navy's plan for buildings, wharves and additions associated with the dock, approved by the Government in 1946.

The need for a new weapons workshop

4. The Weapons Division has the responsibility of testing and setting-to-work all repaired equipment and new weapons equipment in ships in Sydney. The work of the division involves the repair of gunnery, torpedo and anti-submarine mountings and control systems, and it is responsible for the repair of hydraulic systems, high pressure air systems, aircraft catapults and arresting gear, optical equipment, cameras, precision instruments and submarine periscopes.

5. The introduction of modern weapons and weapons systems with their complex electronic computers, remote-power-controlled gun mountings and associated electronic devices, has made it increasingly difficult in existing buildings to meet the highly specialized maintenance and testing requirements of the fleet.

6. The value of weapons equipment.- The total value of weapons equipment which will be maintained from the Garden Island Dockyard is £18,000,000. During a refit of a Daring class destroyer work would be carried out on equipment worth approximately £1,000,000.

7. Existing workshop accommodation.- The increasing range of expensive test equipment has left less space available for the overhaul and maintenance of weapons equipment. Space is now so short that some refitting work has to be carried out under canvas or in the open.

8. Work-bench conditions in the machine shop are crowded and there is a need to give greater access to machines. There is an acute shortage of space in the electrical department where a large amount of testing equipment for radio and radar is in store because there is no workshop space available for it.

9. A team of skilled technicians and technical officers test, tune and set to work weapons systems. In general, because of lack of space, power and test stands, this work is now carried out when equipment is returned to ships. Failure of components on ship test may involve removal from ships for investigation and further repair. The inability to carry out these tests before refitting to ships could be uneconomical and time consuming. Many compartments in a ship are difficult of access and removal of components can be a major item in repair costs.

10. It is proposed to provide space to allow all this testing to be carried out ashore. Offices for the testing staff will also be provided.

11. It is not possible at present to achieve centralization and co-ordination of weapon repair facilities. These facilities, which are at present scattered throughout the dockyard area and which would be brought together in a new workshop building, are:-

- (a) The erecting shop at the north-east corner of Garden Island, now used for the repair and assembly of gun mountings, fire control directors, asdic domes and such other large items as can be passed through the entrance doorway.
- (b) An open area in front of the weapons machine shop where large items of equipment which cannot be fitted into the existing shops are repaired.
- (c) The fitting shop above the weapons machine shop used for hand work on mechanical components and their assembly.
- (d) A dust-proof room beside the erecting shop which is used for the repair, under clean conditions, of mechanical and hydraulic computing mechanisms.
- (e) The electronics workshop on the south edge of the Captain Cook Dock area now used for all weapon electronics, for asdic and echo-sounding equipment previously repaired outside the dockyard, and for

the repair of asdic transducers.

- (f) The optical and instrument repair workshop on the highest point of Garden Island.
- (g) The submarine periscope workshop on the southern edge of the dockyard and almost a mile by road from the supervising optical shop.

12. In order to provide more space, more modern facilities and improved workshop conditions and to permit the repair and maintenance of expensive and highly complex weapons equipment to be centralized and better co-ordinated, there is an urgent need to erect a new weapons workshop.

The site

13. It is proposed to erect the workshop on a site near the main entrance to the dockyard and alongside the fitting-out wharf. A rocking platform, which provides a means of testing gunnery equipment under rolling conditions similar to those experienced at sea, is located on the site. It is intended to incorporate this equipment in the new building.

14. Foundations.- The building area is on reclaimed land which comprises some 40 feet to 50 feet of heterogeneous fill consisting mainly of sandstone rubble as well as sand, bricks and ashes, together with a small proportion of silt and clay.

15. Marine silt underlying the rubble is about 40 feet thick. It has been heavily loaded for the past 20 years and will have reached a fairly stable condition of consolidation. Solid sandstone under the marine silt of the seabed is at a depth of 80 feet to 90 feet below ground surface.

16. Evidence was given that as the rubble layer will spread the weight of the building over a wide area of silt, the additional loading should not cause undue settlement. It was also stated that by the use of suitable footings designed for a low bearing capacity

any problems with foundations could be eliminated even though the building is to be erected on reclaimed land.

17. The site of the proposed building is well located in relation to the fitting-out wharf with its associated cranes and the fact that it is on reclaimed ground should not present any insoluble problems.

The proposed building

18. The proposed building consists of a workshop area and an amenities block planned as a separate entity in order to permit maximum flexibility within the workshop for possible re-arrangement of plant and machines to meet any changing needs of weapons systems.

19. The design.- The design of the building is "L" shaped, the wings being 80 feet wide and approximately 150 feet long in one direction and 190 feet in the other.

20. The building is divided into two sections. The section further from the wharf will cover a larger ground area and will comprise ground and first floors with a small mezzanine area, and the one nearer the wharf will be three storeys in part, with a mezzanine in addition. Floor levels have been arranged to suit the requirements of cranes and other equipment.

21. Building materials and finishes.- The proposed building is to be of steel frame encased in concrete, with concrete slab floors and low pitched continuous metal troughing to roofs. External cladding will consist of face brickwork with metal window and door frames and rendered columns. Walls will be cement rendered internally where necessary, and ceilings under concrete slabs will be "off formwork". Top floor ceilings will be insulated beneath the roof sheeting. Where possible, demountable type partitions will be used.

22. Defence Business Board.- The proposal has been referred to the Defence Business Board and the business advisor has concluded that, subject to the Department of Works being able to overcome the technical difficulties of foundation construction within the present estimate, there is no business reason why the project should not proceed.

23. The layout.- The ground floor is to contain the heavy fitting and test area, the fitting shop, the power room in which various frequencies and voltages will be produced, the electrical repair and fitting shops, the stripping and repair area, small offices and tool stores.

24. The rocking platform will be within the heavy fitting and test area, its position locating the 20 ton crane. The area will also be served by a 5 ton crane. These cranes will be capable of lifting equipment removed from ships at the fitting-out wharf by the existing 40 ton crane.

25. The first floor will contain the electronics workshop, the electronic equipment test and tune area and the fine instrument repair workshop. Another fine instrument workshop is to be located immediately above.

26. Vibration.- Evidence was given that vibration from some of the heavy equipment would be inevitable. However, apparatus which would be affected would have infrequent use and cranes and other vibration-producing equipment would be halted when necessary. This would not disorganise workshop operations.

27. Numbers to be employed.- Allowing for new weapons likely to be supplied when the workshop is completed and for equipment becoming obsolete, 200 weapons staff would be employed in and from the new building.

28. The amenities block.- As already mentioned, the amenities block is planned as a separate building in order to permit flexibility within the workshop to meet possible changing needs of weapons systems.

Separation also permits the use of a lighter class of structure and avoids too close an association between working and amenities areas.

29. This separate building will contain change rooms, lunch rooms and washing and toilet facilities for 200 employees of the proposed workshop, and, to cater for other trades staff who work in the area, toilets and wash basins only, for a further 200. These provisions will be in accordance with standards laid down in regulations applicable to other industries in New South Wales.

30. The ground floor of the amenities block will contain toilets and washing facilities for workers from ships undergoing refit. Toilets, washing facilities and locker rooms for the occupants of the weapons workshop will be on the first floor and lunch rooms for these people will be on the second floor.

31. Equipment in the lunch rooms will be limited to hot water urn, sink and pie warmer, there being a fully equipped cafeteria within a short distance of the proposed building.

32. The block will be connected to the workshop at first floor level by an open gallery which will also serve as a fire escape.

33. Engineering services.— Engineering services will include air conditioning, filtered air and exhaust ventilation to various areas of the workshop. Compressed air and hot water are to be provided and three pendant control gantry cranes of 20 tons, 5 tons and 2 tons capacity are to be installed. There will also be two electric hoists of 2 ton capacity and one manual hoist of 5 ton capacity.

34. Electric power will be derived from a nearby substation and will be taken to the power room in which will be installed equipment to provide the special voltages and frequencies required in the workshop. Normal light and power facilities will be provided as required.

35. Fire protection.— Fire protection will include thermal alarms to the amenities block, automatic fire sprinklers and hand extinguishers throughout the workshop area and fire hydrants as required.

36. Air conditioning and ventilation.- Two small areas are to be air conditioned. One will be alongside the fine instrument repair workshop where optical components will be assembled; the other will be in the electronics workshop where the repair of gyros will be undertaken. Each of these areas will be served by a package plant.

37. Mechanical ventilation will be needed for a small area between the fitting shop and the cleaning and stripping section, because it is in the centre of the floor area.

38. Because of the irreparable damage that dust can cause to moving parts of mechanical and hydraulic computing mechanisms, dust-free conditions are required in the stripping and testing area. Air filtration will be by means of high efficiency fabric type filters.

39. Future expansion.- The building has been planned to deal with new equipment to be supplied to the fleet until 1970. Such known equipment will remain in service for at least 10 years from that date and the workshop could therefore be expected to be efficient at least until 1980.

40. The design of the building will permit expansion to the south at some future date.

41. Space is to be available at ground floor level in the amenities block for locker rooms and additional ablution facilities should they be required for other dockside workers in the future.

42. The Committee have concluded that in planning the building adequate provision has been made for the future.

43. The evidence reveals that the Department of the Navy is satisfied with the proposal which is considered to provide the best possible solution to the problems of weapons repair. The Committee recommend construction of the building to the size, design and layout proposed.

44. Construction time.- It has been estimated that from the time instructions to proceed with the proposal are given approximately 13 months would be required to complete contract documents, invite tenders and accept a contract. Construction time is estimated to be 18 months.

45. Estimates of cost.- The estimated cost of the proposal is £420,000, made up as follows:-

		£
Building work		229,000
Foundations		67,000
Electrical		41,000
Hydraulic		13,000
Mechanical		
Air conditioning	5,000	
Ventilation	13,000	
Hot water supply and drinking water coolers	1,600	
Sprinkler system and fire extinguishers	10,000	
Compressed air supply	1,000	
Cranes and hoists	<u>29,400</u>	60,000
Road Works (including ground floor weapons workshop)		10,000
		<u>£420,000</u>

Use of vacated space

46. When space now used by the activities which will move to the new building is vacated, it will be occupied by other dockyard departments whose needs have grown with the advent of modern ships.

47. With the exception of one end to be retained for asdic transducer repairs, the electronics workshop will be resumed by the electrical department where there is now an acute shortage of space. This will enable, among other things, the installation of testing equipment for radio and radar which is at present in store.

48. The erecting shop and dust-proof room will be used to extend the gunnery equipment store so that repaired gun mountings and control equipment can be maintained and tested regularly in readiness for immediate issue to ships.

49. It is proposed to convert the optical shop to an apprentices training school where concentrated on-entry training could be given to apprentices joining the dockyard. At present they are trained in their trade workshops where they have limited opportunities to work at machines. It has been claimed that a training school will give the necessary machine training without interference to the production work of the dockyard and will enable apprentices to be engaged in productive work more quickly.

50. Movement from the large fitting area above the machine shop will enable small lathes and light machinery in the machine shop below to be installed there. This will give greater freedom and permit a re-layout of the existing machine shop where there are crowded work-bench conditions at present.

51. The Committee are satisfied that the space which will become vacant when the new workshop is completed will be put to good use.

Summary of recommendations and conclusions

52. The Committee's recommendations and conclusions, arrived at after studying the evidence and material submitted, are set out below. The paragraph quoted alongside each recommendation and conclusion refers to the relevant portion of the report.

	<u>Paragraph in report</u>
(1) There is an acute shortage of workshop space at H.M.A. Naval Dockyard, Garden Island	7, 8, 9
(2) It is not possible, at present, to achieve centralization and co-ordination of weapons repair facilities	11
(3) There is an urgent need to erect a new weapons workshop	12
(4) The site is well located and the fact that it is on reclaimed land should not present any insoluble problems	17
(5) Adequate provision has been made for the future in the plans	42
(6) Construction of the building to the size, design and layout proposed is recommended	43
(7) The estimated cost of the proposed workshop is £420,000	45
(8) Space which will become vacant when the workshop is completed will be put to good use	51.

Allen Fairball

(Allen Fairball)
Chairman

Office of the Parliamentary Standing
Committee on Public Works,
Parliament House,
Canberra, A.C.T.