Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed

DEVELOPMENT OF FACILITIES— STAGE 3, AT *HMAS STIRLING*, WA

(Twelfth Report of 1997)

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA
1997

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(Thirty-Second Committee)

Mr Wilson Tuckey MP (Chairman)[1]
Mr Colin Hollis MP (Vice-Chairman)

Senate	House of Representatives
Senator Paul Calvert	Mr Richard Evans MP
Senator Alan Ferguson	Mr John Forrest MP
Senator Shayne Murphy	Mr Ted Grace MP
	Mr Michael Hatton MP[2]

1 Replaced Mr Neil Andrew MP as Chairman on 4 September 1997
2 Replaced The Hon Michael Lee MP on 26 June 1996

Committee Secretary: Bjarne Nordin

Inquiry Secretary: Michael Fetter

Administrative Officer: Lynette Sebo

EXTRACT FROM THE *VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES*

No. 85 dated 15 May 1997

PUBLIC WORKS—PARLIAMENTARY STANDING COMMITTEE—REFERENCE OF WORKS—DEVELOPMENT OF FACILITIES—STAGE 3, AT HMAS STIRLING, WA

Mr Jull (Minister for Administrative Services), pursuant to notice, moved—That, in accordance with the provisions of the *Public Works Committee Act 1969*, the following proposed works be referred to the Parliamentary Standing Committee on Public Works for consideration and report: Development of facilities—Stage 3, at *HMAS Stirling*, WA..

Question-put and passed.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

Development of facilities—Stage 3 at HMAS *Stirling*, WA

On 23 September 1997, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for consideration and report the proposed development of facilities—Stage 3 at HMAS *Stirling*, WA.

THE REFERENCE

1. The terms of the reference were as follows:

> *The development of HMAS* Stirling *reflects a strategic need to support major fleet units operating in the Indian Ocean and minor fleet units generally operating closer to the coastline.*
>
> *The proposed development encompasses the provision of: new and modified operational support facilities, including the provision of associated engineering services in support of the Government's decision to base half of the Australian fleet at HMAS* Stirling.

2. When referred to the Committee, the estimated out turn cost of the proposed development was $19 million.

THE COMMITTEE'S INVESTIGATION

3. The Committee received a written submission from the Department of Defence (Defence) and took evidence from Defence officials at a public hearing held at HMAS *Stirling* on 5 November 1997. The Committee also received a written submission from the Garden Island Preservation Society and took evidence from a representative of the society at the public hearing. Prior to the hearing the Committee inspected HMAS *Stirling*, including the sites proposed for elements of the proposed Stage 3 development.

4. The Committee also received written submissions from the following organisations:

- Australian Heritage Commission;
- Environment Australia;
- Commonwealth Fire Board;

- WA Department of Conservation and Land Management;
- WA Aboriginal Affairs Department; and
- WA Department of Environment Protection.

5. Witnesses who appeared before the Committee at the public hearing are listed in APPENDIX A. The Committee's proceedings will be printed as Minutes of Evidence.

BACKGROUND

Location

6. HMAS *Stirling* is a major naval Base located on Garden Island, Cockburn Sound, about 60 kilometres by road south of Perth. The island is 1,214 hectares in area, nine kilometres from north to south and two kilometres east to west. The island is linked to the mainland by a causeway. Rockingham, the nearest major population centre on the mainland, is about 11 kilometres from the island.

7. Freehold title to Garden Island for defence purposes was acquired by the Commonwealth during the First World War. Coastal artillery positions were developed on the Island before the Second World War and other fortifications were constructed during the War. A garrison was stationed on the Island during the War. Investigation of the siting of a naval support facility at Cockburn Sound were conducted in the late 1960s.

Role of HMAS *Stirling*

8. HMAS *Stirling* provides operational, logistics, administrative, personnel and recreational support for assigned and visiting warships as well as port, berthing, ship side and administrative services. The *Collins* class submarines will be home ported at *Stirling*.

9. At present, the Base supports 2,433 naval and civilian personnel. By the year 2004 when half the Australian fleet is home ported there, this is expected to increase to approximately 3,160.

10. Support demands are expected to rise early in the next century when the number of home-ported major units is planned to increase from 10 to about 14. These units are expected to include seven frigates (*FFGs* and *ANZAC* ships), six submarines and one fleet support vessel, together with associated ship borne

helicopters. Ship and shore based personnel numbers will increase commensurately.

Development of HMAS *Stirling*—Involvement by the Committee

11. The development of HMAS *Stirling* has spanned almost three decades and has involved a number of stages. The Public Works Committee has been involved in this process. The Committee has calculated, from previous reports on the development of naval facilities on the island, that total expenditure so far, in 1997 prices, has been $459 million.

12. Development commenced in 1970 when the Committee examined and reported on the construction of the Point Peron/Garden Island Causeway *(Committee's Twenty-second Report of 1970 — Parliamentary Paper 191/1970)*. This project was the preliminary step towards the Base of shore based naval facilities on Garden Island and involved the construction of a 13,500 foot causeway to link Garden Island with the mainland at Point Peron. The scope of the work examined by the Committee, estimated to cost $9 million ($61.6 million in 1997 prices)[1], involved the following elements:

- a 2,100 foot southern approach rockfill mole;
- a 1,000 foot low level trestle bridge;
- a 6,200 foot central section of armoured rockfill mole;
- a boat channel 100 foot wide, dredged to 12 feet below water ordinary spring tide;
- a 2,020 foot long high level bridge with a 40 foot clearance over the boat channel; and
- a 2,400 foot northern approach rockfill mole.

13. Also included in the scope of the causeway works was a 24 foot roadway, a 5 foot walkway, water, power and communication services and road lighting.

14. In recommending that the work should proceed, the Committee concluded that:

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1 Expressed in average June quarter 1997 prices by using the implicit price deflator for gross non-farm product. This implicit price deflator is a general measure of price change and is used in the Budget papers to convert actual prices to real prices.

- Garden Island was a suitable location for the establishment of a naval support facility in WA; and
- the construction of the causeway was the most appropriate means of obtaining access to the Island from the mainland.

15. Substantial development of Defence infrastructure on the Island commenced in 1972, following the Committee's inquiry into the proposed construction of a naval support facility, to be known as HMAS *Stirling* (*Committee's Seventh Report of 1972 — Parliamentary Paper 37/1972).*

16. The proposal examined by the Committee, estimated to cost $30 million ($179.1 million in 1997 prices), involved the provision of infrastructure to support up to four escort vessels and three submarines for operational periods of up to 12 months without docking. It encompassed the following elements:

- maritime works, wharves, workshops, stores and offices;
- a large ship wharf, small boat camber and slipway to accommodate ships and support craft;
- barracks, recreational and medical accommodation;
- an armament depot and armament jetty with submarine arming facilities;
- an operational headquarters;
- communications facilities; and
- engineering services.

17. Stage 1 involved the establishment of initial facilities to cater for a permanent naval presence on the West Coast and was largely completed by the time the Base was commissioned in July 1978. These facilities enabled the home porting of three Destroyer Escorts, one *OBERON* class submarine, one hydrographic ship and three patrol boats, as well as providing for a variety of other naval support activities.

18. The provision of specialised facilities for the training of submariners at HMAS *Stirling* was the subject of an inquiry by the Committee in 1985 when it examined and recommended the construction of a submarine escape training facility *(Committee's Sixth Report of 1985—Parliamentary Paper 265/1985).* The facility, estimated to cost $10.3 million ($16.1 million in 1997 prices), included the following elements:

- a submarine escape training tank incorporating a submarine escape module;
- a shallow training module;
- support services for the submarine escape training tank and the shallow training module;
- an eight level, reinforced concrete building to house the tank, associated teaching areas and support services; and
- siteworks, building and engineering services.

19. The Navy commenced the training of submariners in the facility in January 1989.

20. The most significant and large scale development of facilities at the Base was the subject of an inquiry by the Committee in 1989 *(Committee's Sixteenth Report of 1989—Parliamentary Paper 490/1989).* This development, known as Stage 2, comprised more than 35 individual projects ranging from additional accommodation and recreational facilities to new workshops, administrative buildings and wharf facilities as well as a submarine school. It also involved the enhancement of existing maintenance, supply, operational, port berthing and shipside facilities to enable the home porting of additional ships and submarines at HMAS *Stirling*. The estimated cost of the Stage 2 works was $135.6 million at April 1989 prices ($159.1 million in 1997 prices).

21. The need for the further development of the Base was a direct consequence of the Government's intention to move half of the Australian fleet to HMAS *Stirling*. This is the concept of a two ocean navy. In recommending that the project should proceed, the Committee concluded:

- as a consequence of the Government decision to relocate half of the RAN fleet to Western Australia, there is a pressing need for additional facilities;
- Commonwealth and State agencies considered the social consequences of the expansion of the Base and supported continued monitoring by relevant agencies to ensure that adequate services and facilities are provided to meet the requirements of naval personnel and their families;
- the provision of good quality housing for naval personnel relocating to the Base was a major priority and supported

attempts by the Defence Housing Authority to integrate naval families into the wider community; and

- a high degree of consultation and cooperation had occurred between Commonwealth, State and local government bodies and expressed the hope that this would continue.

22. The Committee also recommended that environmental reviews of projects in accordance with the provisions of the *Environment Protection (Impact of Proposals) Act 1974* should be completed before projects are referred to it for examination.

23. Further development of the Base, estimated to cost $40.54 million at December 1993 prices ($43.4 million in 1997 prices), was the subject of an inquiry by the Committee in 1994 (*Committee's Fourth Report of 1994*). The scope of the proposed works was:

- a helicopter support facility;
- a small arms range;
- upgrading of the power house;
- F-44 AVCAT fuel storage expansion;
- training facilities;
- trials and research support facility;
- torpedo maintenance facilities; and
- extension of the submarine training and systems centre.

24. The Committee's report on the reference supported the need for the continuation of the development of HMAS *Stirling* but expressed reservations about the need for a small arms range on the Island. The reported recommended:

- Defence investigate the use of a simulated firing range which could be used in conjunction with Army firing ranges on the mainland;
- Defence continue discussions with the Western Australian Fire Brigade and the Commonwealth Fire Board about the adequacy of fire protection during all stages of the proposed works;

- Defence discuss cultural heritage issues with the National Trust of Australia (WA);
- the appointment of a non-government environment representative to the Garden Island Environmental Advisory Committee; and
- Defence continue surveys for Aboriginal relics in areas intended for development on the Island and continue discussions, where appropriate, with the Western Australian Department of Aboriginal sites.

25. The Committee also commended Defence for its policy of propagating trees and shrubs native to Garden Island in the nursery at HMAS *Stirling* and for action taken to preserve the unique environment on the Island.

26. Stage 2 (four phases) reflected the Government's decision in 1987 to develop *Stirling* as a base to support up to half the Fleet and provided additional facilities to support destroyers/frigates, additional submarines, and other support craft. Stage 2 also took into account the transition from destroyers to frigates, and a new submarine class.

Progress of development and performance of buildings

27. The Committee questioned Defence about progress of construction of elements of Stage 2 and the performance of buildings constructed, in view of the hot maritime climate at HMAS *Stirling*. Defence recognised these factors, especially the high cost of maintenance and the consequent need for the inclusion of through life costings into designs. These are therefore factors which require significant consideration in design briefs. In terms of the performance of buildings so far constructed, Defence believes they are performing well in respect of structural integrity and maintenance.

28. A number of components of Stage 2 remain to be completed. The magnetic treatment facility is under construction. The living in accommodation has not proceeded. A review of accommodation relating to serving members without families has been completed and is being examined to determine the most appropriate means of meeting accommodation requirements at *Stirling*.

29. The report foreshadowed the need for further development of facilities known as Stage 3. The need for and extent of these works are the subject of this report.

Defence White Paper

30. The 1994 Defence White Paper 'Defending Australia' affirmed the earlier Government decision to base half the Australian Fleet at HMAS *Stirling*. The development of HMAS *Stirling* reflects a strategic need to support major fleet units operating in the Indian Ocean and minor fleet units generally operating closer to the coastline.

Defence Efficiency Review

31. The Report of the Defence Efficiency Review (1997) noted that the disposition of Defence assets and personnel was oriented around three principles. These were a chain of airfields in the north of Australia, an increased Army presence in the north, and two ocean fleet basing. It concluded that this framework for long term force disposition was sound.

32. The documents cited by Defence as forming the basis of the two ocean navy were, at the time of the public hearing, outdated or limited in scope to an examination of efficiencies. The Committee was aware of successful fishery and sovereignty patrols, involving the apprehension of vessels illegally fishing for Patagonian Toothfish in sub Antarctic waters off Heard and McDonald Islands, by HMAS *Anzac*, which is home ported at *Stirling*. Waters off Macquarie Island, immediately to the south of Hobart, are also known to contain Patagonian Toothfish and other living marine resources. The Committee therefore questioned Defence about the practicalities of using vessels from *Stirling* to undertake fisheries patrols in these waters, if they are too remote from *Stirling* and the validity of the of the concept of a two ocean navy. Defence advised that the strategic review, which was currently under consideration by Cabinet, would not be at variance with further development of facilities at *Stirling*. Any responsive patrols by naval vessels to surveillance sitings around Macquarie Island would be dealt with by ships based in Sydney.

THE NEED, PROPOSED WORK AND BENEFITS

33. Defence believes further development of HMAS *Stirling* is required to enable projected home porting of additional fleet units and an increase in related support activities. Also, accommodation deficiencies, brought about by higher personnel numbers, need to be rectified. Changes to conditions of service have resulted in inadequacies in the existing facilities.

Outline

34. Defence believes there is a need to improve operational support facilities, training facilities, logistic support facilities and personnel support facilities.

- operational support
  - extension to clearance diving facilities
  - new emergency operations centre and duty watch accommodation
  - improvements to the operational headquarters
- training
  - new flight deck procedural trainer
- logistics support
  - extensions to the armament, weapons and equipment depot
  - fuel management facilities
  - extension of the naval stores warehouse
- personnel support
  - extension of the health centre
  - extension of general amenities and indoor recreation complex
  - new short term personal effects storage facilities
  - additional carparks and carpark security measures

Planned development

35. The Committee questioned Defence about the thoroughness of their planning of facilities. Defence advised the Committee that since the Base was commissioned in 1978, planning decisions have been influenced by Government policies, the major being the two ocean navy, which led to further development. Defence also advised that the designs of existing buildings lend themselves to extension and therefore have a degree of flexibility.

36. The following paragraphs describe deficiencies and inadequacies in current facilities, a description of the proposed works and the benefits which Defence believes will result from the works.

Clearance diving facilities

37. Clearance divers carry out underwater tasks such as mine counter measures, demolition, underwater battle damage repair, wreck clearance and construction, often in hazardous conditions. A high level of continuation training and support of operations is required to maintain individual skills and safety standards.

38. The present facilities were built to support a clearance diving unit of 47 personnel. Rationalisation and amalgamation of clearance diving team activities and functions has resulted in an increase to 71 personnel. The present facilities are overloaded, with particular strains being placed on training areas, equipment maintenance and storage areas, and on staff amenities.

39. The deficiencies could be overcome by providing additional accommodation for the unit. Defence believes that the unit is appropriately located and it would be inefficient to provide the additional accommodation required at another site, even if such were available.

40. The Committee questioned Defence about the future of naval diving clearance teams located at HMAS *Waterhen* in Sydney. The Committee's report on HMAS *Waterhen* facilities modernisation, Waverton, NSW *(Committee's Third Report of 1993—Parliamentary Paper 13/1993)* recommended the construction of a supply and clearance diving building for Reserve Diving Team 5 and Clearance Diving Team 1. Defence advised that part of the two ocean basing policy is to have diving teams on both the east and west coasts. The size of the teams varies, and has varied over time. The requirement for teams on both coasts remains nevertheless.

Proposal

41. Extension by 470 square metres and some internal reconfiguration of the existing facilities is proposed.

42. The Committee questioned the functionality of the facility following the provision of the extension and suggested that it would be more appropriate if a new facility were constructed. Defence advised that provision of a new facility would be "cost prohibitive". The proposed solution is favoured by Defence for the following reasons:

- the new construction—extensions—are not significant in comparison with the existing floor area;
- options available are limited for expansion in other directions because:
  - the clearance diving teams use the pavement area between the wings of the building for equipment transfers. This remains a working area which cannot be closed off
  - to create another wing to the east or west is not readily possible, given the road system and other limitations such as rooflines and services
  - provision of a second floor would be cost prohibitive and functionally not acceptable;
- the new offices and support areas a very close to the main entrance and therefore functionally appropriate
- the facility retains its various zones for operational effectiveness. The clearance diving teams store, maintain and transfer considerable amounts of equipment regularly. For this reason, wet and dry areas need to be separated; and
- the users have made specific mention of the pavement area between the wings as a priority area for training, operational, storage and security reasons.

43. Defence therefore believes the 470 square metre extension and the refurbishment of some existing areas offers the most cost effective solution to provide the necessary functional working areas.

Benefits

44. Extension of the clearance diving facilities will lead to an improvement in the operational effectiveness of the clearance diving team. Additionally, reducing accommodation congestion will have a positive effect on staff morale.

Emergency operations centre and duty watch accommodation

45. Command and control of emergency operations at the Base is exercised from a centralised operations centre. Emergency operations include direction of fire fighting activities, control of oil spills, and coping with natural disasters. During the course of these operations, participation on site by external agencies

such as the WA Police, State Emergency Services, and Fremantle Port Authority, may be required.

46. Personnel are required on duty at all times to respond to security needs, the berthing of ships, and emergencies, including response to on board incidents on berthed ships. Outside normal working hours, personnel are rostered as the 'Duty Watch' to perform the required functions.

47. The present emergency operations centre is housed in the front reception area of the Police services building. This arrangement cannot accommodate all the personnel required to be on hand during emergencies, and the area occupied is inappropriately configured to support the equipment and functions involved. A purpose designed emergency operations centre for HMAS *Stirling* is therefore required.

48. Facilities presently used to accommodate duty watch personnel are scattered throughout the Base, making it difficult to locate members when they are required. The use of a beeper recall system for duty personnel has been trialed but has proven unreliable, and the use of a broadcast system over the Base is impractical. Centralised duty watch accommodation is therefore required to ensure reliability of response, and to minimise response times.

49. Defence believes there will be advantages in the collocation of the two functions as follows:

- duty watch will generally provide the first response in emergency situations;
- the emergency operations centre could be utilised to manage duty watch personnel; and
- duty watch sleeping accommodation could be utilised by personnel from external agencies called in an emergency.

Proposal

50. A new building of about 820 square metres to house the emergency operations centre and 30 duty watch personnel is proposed.

51. The Committee questioned the difference between duty watch and security personnel and the incidence of emergencies including fires and other accidents.

52. Defence advised that security personnel are Naval Police and are part of the complement of the Base. They are involved in naval investigative tasks and physical security including:

- random security patrols;
- control access; and
- man the emergency operations centre on a 24 hour basis.

53. Duty watch personnel comprise a number of occupations who assist in the berthing of ships, manning small boats and bolster the emergency response.

54. Defence advised that the Base has comprehensive emergency response resources in terms of personnel and material. Accidents have occurred, but these have not involved the handling of ammunition, nor the loading and unloading of ships. Defence also acknowledged that there have been fuel spills. The emergency response on each occasion halted the spread of spills and provided the necessary cleanup.

Benefits

55. The new emergency operations centre and duty watch accommodation will result in improved coordination of Base emergency operations, responses to alerts, and reaction to critical out of hours activities. Defence believes the provision of the facility will contribute to the operational effectiveness of the Base.

Improvements to the operational headquarters

56. Overall command of maritime activities in the West is exercised from the operational headquarters building at HMAS *Stirling*. Command functions for the submarine squadron based at HMAS *Stirling* is performed in a separate dedicated headquarters building (Asset B80). The two buildings are adjacent and considerable movement of personnel occurs between the buildings in the course of their duties.

57. The increase in fleet units home ported at HMAS *Stirling* has resulted in an increase in operations staff at the operational headquarters. Additionally, new information network equipment needs to be installed within the building.

58. The additional 30 operations staff could be accommodated in the operational headquarters building by providing new accommodation for the psychology and public relations sections in the proposed extensions to the

health care centre and general amenities complex respectively. Improved security measures within the building are needed also.

59. The lack of physical connection and access control between the two buildings present impediments for personnel moving between them, especially in adverse weather conditions.

Proposal

60. The proposed works include:

- improvements to security measures including installation of access control swipe readers at appropriate points, and
- provision of a covered walkway between the two buildings.

Benefits

61. Relocation of the psychology and public relations staffs from the operational headquarters will enable operational staff to be housed in the vacated areas. This measure, together with changed access between the two main operational buildings, will lead to operational improvements.

New flight deck procedural trainer

62. Helicopters are operated from the *FFG* and *ANZAC* frigates. Proficiency training is undertaken in the control, marshalling, and handling of on board helicopters. A flight deck procedural trainer is a land based mock-up of a frigate's flight deck.

63. Defence advised that HMAS *Stirling* based aviation support personnel presently undertake their necessary training on the flight deck procedural trainer at HMAS *Albatross*, Nowra, NSW. This entails travel costs to and from *Albatross* and productivity losses while the personnel are away. The situation will be exacerbated in the future with the increasing numbers of frigates being home ported at HMAS *Stirling*.

64. There is no comparable commercial training available. An economic evaluation has indicated that productivity improvements and travel cost reductions resulting from the provision of a local flight deck procedural trainer will outweigh its cost.

Proposal

65. The proposed works involve the provision of a replica of a frigate's helicopter landing deck and associated hangar facade and control room. The facility is proposed to be located at the western end of the existing runway, and the hangar facade and control room will be rail mounted to facilitate its retraction when the runway is in operation

66. The Committee questioned the cost, design and utilisation of the proposed facility.

67. Defence advised that the facility was the subject of a number of studies during 1994/5 and a value management study in 1997. The proposed design solution attempts to obtain training as close to reality as possible. The estimated cost of this component of the works is $560,000. A significant element of the overall cost is for the provision of power to the proposed site.

68. Defence also advised that although some elements of the overall cost can be attributed to making the structure mobile, these are relatively minor. The alternative, involving the provision of a fixed structure, would require significant fence realignment and land clearing to achieve appropriate approaches in the predominant wind direction. The disadvantages of this are that it would incur significant costs and have a major impact on the environment.

69. Defence advised that a fixed structure was originally proposed several years ago, but because of environmental impacts of such a structure, a movable structure is now favoured. Defence did, however, advise the Committee that other aspects, such as localised wind turbulence, will need to be assessed during detailed design development and the optimum solution in terms of structure and location will need to be revisited. This may require relocation of the site to the north-east with a permanent structure and would be subject to an environmental impact assessment. The final siting will remain within the helicopter zone identified in the Master Plan.

70. Defence advised that 210 personnel per annum will be trained on the proposed facility. This estimate is based on the number of air capable ships and the requirement for helicopter control officers, flight deck marshallers and the flight deck team (30 personnel per ship) for initial and continuation training at various times. For these reasons, the facility will be used almost on a weekly basis.

Benefits

71. Provision of a flight deck procedural trainer would bring cost savings, as well as allowing for greater flexibility with the programming of training for aviation support personnel.

Extensions to the armament, weapons and equipment depot

72. The RAN armament, weapons and equipment depot is responsible for the receipt, storage, issue, inspection, and maintenance of explosive ordnance as required by the RAN at HMAS *Stirling*. In addition, it provides some storage and management of explosive ordnance for the Army.

73. A total of 12 staff operate the depot from an office/amenities block on the depot site. The unit has four workshops where explosive ordnance is processed and repaired, one of which is used by the Army. Trucks used in the movement of explosive ordnance require a designated safe area while awaiting unloading or while convoys are being formed. Mechanical handling equipment, such as forklifts and tractors used in the movement of explosive ordnance, is housed in a small garage when not in use.

74. Several deficiencies within the depot have been identified. The depot office and amenities building was originally built for five staff. Workloads at the depot have increased and 12 personnel now use it, leading to overcrowded conditions. Staff numbers are expected to rise by several more in the near future. Defence believes additional accommodation is needed.

75. Re-licensing of the depot to regulations based on NATO safety principles resulted in Hazard Division (HD) 1.2 licences being withdrawn from two of the four explosive workshops, limiting both the capacity and flexibility of workshop useability. Most gun ammunition used on *FFG* and *ANZAC* ships is HD 1.2. The increasing number of these ships being home ported at HMAS *Stirling* is substantially lifting the requirement for work on this class of ordnance resulting in the need for additional explosive workshop facilities.

76. Due to the re-licensing of the depot to regulations based on NATO safety principles and associated safety distances, trucks loaded with explosive ordnance are unable to be parked within the depot. Trucks are parked in designated locations outside the depot perimeter, but are required to be constantly guarded whilst loaded with ordnance resulting in the need for a new ordnance vehicle holding yard within the explosives zone.

77. Since the closure of Newington, the rationalisation of ordnance storage at Kingswood, and the home porting of additional fleet units at HMAS *Stirling*, the depot's storage and handling commitments are increasing. Additional items of mechanical handling equipment have been established, and garaging for these expensive units is required to ameliorate the effects of the harsh environmental conditions at HMAS *Stirling*.

Proposal

78. The following new facilities within the RAN armament, weapons and equipment depot are proposed:

- a traversed new office and amenities building of approximately 200 square metres designed to accommodate up to 12 personnel. The existing office and amenities building will be retained. The two buildings will meet the total accommodation requirement without infringing explosive safety principles;
- a new explosive workshop of about 150 square metres. The traversed and fenced workshop will be located and licensed for HD 1.2 ordnance;
- a fenced and traversed explosive vehicle holding yard of approximately 50 by 30 metres will be located within the explosive zone of the depot. It could accommodate four semi trailers; and
- an extension of the existing mechanical handling equipment garage to accommodate four additional units. The extension will include a small workshop for vehicle maintenance.

79. The Committee asked Defence if there would be any dangers associated with four large trucks, loaded with ordnance, being parked for short periods in close proximity to each other. Defence assured the Committee:

> *...one would equate the amount of ordnance on those four vehicles as an appropriate element in terms of very low risk...The other aspect that our ordnance expert indicated was that it is also the most cost effective way of storing the ordnance. The other option is to separate them [the trucks] storing them at more than one location. That is quite expensive in terms of both capital costs and security aspects, bearing in mind the low risk associated with it. (Minutes of Evidence, public hearing 5 November 1997, p 89)*

Benefits

80. Defence advised that the various new and extended facilities at the armament, weapons and equipment depot will improve ordnance handling activities, and facilitate compliance with ordnance safety regulations. The provision of the works will result in increased operational efficiency.

Fuel management facilities

81. The fuel storage facility is used to store, filter, and dispense fuel to naval vessels. In addition, berthed ships are regularly defuelled before maintenance and before a refit is undertaken, or in the event that fuel has become contaminated. Removed fuel is required to be quarantined in separate tanks until it can be tested, cleaned and settled as required, before reuse. A fuel testing laboratory is associated with the fuel storage facility to ensure that dispensed fuel meets required standards.

82. The HMAS *Stirling* fuel installations lack all the appropriate features to enable the desired management of defuelled products. A self propelled water and fuel lighter is used for short term storage of limited quantities of fuel. The lighter is also used to hold other liquid waste products from vessels prior to disposal.

83. Fuel taken on the lighter is tested to determine its suitability for reissue. Fuel may be suitable for reuse by the types of vessel from which it was removed. Alternatively, the removed fuel may be suitable for vessels which can use fuel of less stringent specification. For example, fuel taken from *FFGs* and *ANZAC* ships may be used in Destroyer Escorts or *OBERON* Submarines.

84. Should fuel taken onto the lighter be unsuitable for immediate reuse, or if the fuel is suitable for reuse but there is no ship in port requiring that standard of fuel immediately, the fuel is transferred by road tankers for contractor reprocessing at Kwinana. Some defuelling exceeds the storage capacity of the Lighter and this necessitates the fuel being immediately returned to the contractor. It is costly to have fuel returned to the contractor. These costs are likely to increase in the future as the number of ships home ported at HMAS *Stirling* increases, and the types of ships change to those requiring fuel of a higher specification.

85. An economic evaluation undertaken by Defence showed that the provision of fuel management facilities on HMAS *Stirling*, where defuelled products can be quarantined, pending classification, cleaned, settled and reissued, will be cost effective. In undertaking that evaluation, it was recognised

that a small proportion of defuelled products might be deteriorated to such a degree as to preclude reuse in naval vessels.

86. Another deficiency in current facilities relates to the testing of fuel products. The existing fuel testing laboratory is capable of conducting preissue and weekly tests on diesel fuel, but not the more complex tests on ships' fuel nor testing of aviation fuel. Those tests are undertaken by contract, and delays are experienced in obtaining test results. The delays necessitate the subject fuel being quarantined until the results are provided, thus tying up tank capacity. The problems will be overcome by extending the existing fuel testing laboratory so that all required testing could be performed on site.

Proposal

87. The provision of additional above ground bunded fuel storage tanks, having a total capacity of 4,000 cubic metres, is proposed. The installation will incorporate receipt and delivery lines, fuel cleaning equipment, and environmental control measures. The tanks will be one of 2,000 cubic metre and two of 1,000 cubic metre capacity, thus allowing for flexibility in holding fuel of different classifications, and facilitating tank maintenance.

88. An extension of about 70 square metres is proposed to the existing fuel quality control laboratory incorporating laboratory areas, an office and staff amenities.

Benefits

89. New fuel management facilities and extension of the fuel testing laboratory will facilitate handling of fuel returned from vessels, and testing of aviation fuel. Operating cost savings will be achieved by not having to dispose of significant quantities of fuel to contractors.

Extension of the naval stores warehouse

90. The on base naval stores warehouse is presently used to store items required for ships' inventory and refit staging, and for the processing of repairable items. The latter function requires large processing areas to allow systematic technical assessment of returned equipment in order to classify the items as serviceable, repairable or beyond economical repair. At each step in the process, items move through a series of physical quarantine areas.

91. The projected increase in fleet units to be home ported at HMAS *Stirling* will result in an increased demand for equipment storage in support of the ships.

92. The introduction of a policy to repair items at their point of failure where possible, will necessitate items being held in store for longer periods while they are being assessed technically and awaiting assignment to repair contractors. This will eliminate the need to return all items to a central east coast depot for processing, although some items will still be returned to the East Coast for repair. Defence advised that more repairs will occur in Western Australia under the new repair policy.

93. Implementation of the refit planning and logistic support services initiative, whereby long lead time items required for ship refits are procured well ahead of the commencement of refits, will improve the scheduling and efficiency of refits but will require the provision of an expanded refit staging store capacity. Additionally, the planned movement to HMAS *Stirling* of increased numbers of ship equipment modification kits will place further demands for equipment storage.

94. There is a need for 1,300 square metres of additional warehousing space together with some associated administrative accommodation. This storage needs to be available close to the point of removal from ships and equipment return. Hence, the possibility of leasing warehouse space at Rockingham, or the use of any spare capacity that might become available on another Defence Base in the Perth area has been discounted. Extension of the existing naval stores warehouse will enable collocation of related activities.

Proposal

95. The proposal involves an extension to the existing naval stores warehouse together with a small increase in office space. The Committee questioned the basis of increasing the size of the warehouse by 1,300 square metres. Defence advised that this area was arrived at by extrapolating requirements from additional vessels to be home ported at *Stirling*. It is also based on the concept of repair at point of failure. This requires the sorting of defective stores items from ships, reviewing the inventories of individual ships and a refit staging store which involves assembling stores for a ship entering refit.

Benefits

96. Initiatives to improve the management of naval stores will be facilitated through the availability of additional warehousing space.

Extension of the health centre

97. The role of the health centre is to provide medical and dental care for HMAS *Stirling* and lodger unit personnel, and for ship's companies of vessels berthed at HMAS *Stirling*.

98. The specific medical functions of the health centre are:

- operation of a 14 bed inpatient facility;
- outpatient care;
- alcohol and drug program and counselling;
- occupational health and safety advice;
- industrial hygiene services;
- occupational patient medicine;
- public health;
- physiotherapy;
- pharmaceutical services;
- medical stores;
- medical testing and surveys;
- pathology support;
- first aid training;
- sea training group support;
- operational relief;
- ships departmental inspections;
- radiology; and
- hyperbaric medical support.

99. The existing health centre was built in 1978. Extensions were constructed in 1991, to meet increased requirements anticipated at that time.

100. Increasing demands on medical and dental services, brought about by additional ship and shore staff numbers, and by the greater use of HMAS *Stirling* facilities by visiting ships, have resulted in the present facilities being unable to accommodate all the required activities. This situation will be exacerbated as additional fleet units are home ported at HMAS *Stirling* and shore based numbers increase further.

101. Some expedient measures have been taken to relieve the accommodation difficulties. Two demountable huts are being used to house occupational health and safety and accounts staff, various areas within the facility are being utilised for purposes other than for which they were designed, and some amenities are being shared between staff and patients. These temporary arrangements present both operational and clinical impediments.

102. The psychology section has been accommodated in the operational headquarters, occupying space that is now required to accommodate additional operations staff.

103. Defence considered greater use of external civilian medical facilities but this was discounted for the following reasons:

- medical related services performed at HMAS *Stirling*'s health centre are provided to meet Service and operational requirements;
- taking economies of scale into account, the cost of providing bed spaces for inpatient care is less at HMAS *Stirling;* and
- the use of external outpatient services would involve extensive travel and loss of productivity.

104. Defence therefore believes that in order to overcome existing and projected further deficiencies, there is a need to rationalise and extend the health centre.

Proposal

105. It is proposed to extend the existing health centre building by approximately 1,400 square metres and to refurbish and rationalise internal areas of the building.

106. The Committee asked to be provided with a breakdown of the major reasons for admissions to the facility. Defence advised that assembling this information would not be an easy task. In general terms, however, medical staff

usually deal with healthy people and the reasons for admissions would be minor ailments and injuries.

107. Defence places considerable emphasis on preventive medicine, which involves routine annual medical surveys of all personnel. This stance is considered by Defence to be more comprehensive than that expected in the civilian community. Additional surveys are undertaken for more specialist personnel. For example, clearance divers need to be medically cleared before they are permitted to dive beyond specified depths; personnel who undergo training in the submarine escape training facility also have specific medical survey requirements; and aircrew also have particular survey requirements.

108. The Committee also questioned if proposed extensions to the medical centre are evidence of poor forward planning. Defence advised that the need has arisen due to increased numbers of personnel requiring access to medical facilities and that when the facility was planned, the designers had the foresight to predict that extensions would be required and most of the facilities in the medical centre are therefore extendable.

Benefits

109. Defence believes extension of the health centre will enable the required medical and dental treatments commensurate with the expanded activities of the Base to be performed in appropriate permanent facilities. Staff morale should improve as a result. Provision of new accommodation for the psychology section within the health centre, a more appropriate location for the section, will enable accommodation vacated in the operational headquarters to be used for expanded management of operational activities.

Extension of general amenities and indoor recreation complex

110. Amenities and recreational facilities are provided on military establishments for the relaxation and entertainment of off duty personnel. Dependants also have access to many of these facilities.

111. After hours recreation facilities presently comprise traditional messes that provide lounge, bar and dining facilities, or the gymnasium. A need exists for the provision of an alternative recreational venue in an alcohol free environment to cater for increasing numbers of personnel who live on the Base or on ships and who do not have access to transport to freely leave HMAS *Stirling*. The current recreational facilities do not cater adequately for these personnel.

112. The changing nature of living in personnel has a significant effect on the scale of facilities required. Trainees, minors and uninhabitable ships' personnel have priority for living in accommodation. Training commitments at HMAS *Stirling* have increased resulting in a higher proportion of living in members, being trainees who live in for a variable duration. On the other hand, the number of permanent living in personnel has diminished. The majority of personnel now living in are those who have left accommodation interstate or are ships' crew requiring temporary accommodation. As their stay at HMAS *Stirling* varies anywhere between two days and six months, they rarely bring items such as televisions, stereos or computers. Often they do not have their own vehicles and have transport difficulties due to the isolation of HMAS *Stirling*, which is not serviced by public transport.

113. In addition, the existing facilities do not adequately provide for the recreational needs of personnel living on board ships berthed at HMAS *Stirling*. Shipboard living restricts the possessions these personnel will normally have for their own entertainment, if shore based.

114. Improvements to the all ranks recreational facilities deemed necessary include:

- a 200 seat auditorium/cinema (for additional use as a Base briefing room);
- a video games area;
- an indoor sports area (for darts, pool, and table tennis);
- a multi screen satellite channel lounge; and
- library extensions incorporating a computer centre with Internet access.

115. The existing general amenities facility proposed for extension has inadequate stock storage space and some deficiencies of an occupational health and safety nature. These deficiencies require rectification irrespective of whether the facility is extended as a recreational centre.

116. The public relations office is presently accommodated in cramped conditions on the first floor of the operational headquarters building. Expansion of the Base operations activities is proposed and it is necessary to relocate the Public Relations staff to new premises. No alternative accommodation is available on Base, and their relocation into new premises close to the proposed new Base auditorium/cinema will have the advantage of ready access to the

auditorium for media and other briefings which are conducted by the public relations personnel.

Proposal

117. Extension of the existing general amenities building by about 1,400 square metres is proposed. The extension will incorporate recreational facilities, improvements to the food preparation areas, a Base auditorium/cinema, and accommodation for the public relations staff. The Committee was assured that the extent of proposed recreational facilities was discussed and considered by personnel.

New short term personal effects storage facilities

118. Single members' personal effects are stored at public expense as a condition of service. Many sailors posted to HMAS *Stirling* or ships home ported there arrive with considerable quantities of furniture and effects that cannot be stored onboard or elsewhere at the Base. Some accommodation blocks do have limited boxroom storage, but this is proving inadequate for the type of goods many naval personnel now take with them on posting.

119. Other personnel joining HMAS *Stirling* have come from a 'living out' situation where they have accumulated additional furniture and personal effects and find they have nowhere to store these items on the Base. Whilst they have an entitlement for public storage, this can only be provided away from the Base at present. Many personnel have indicated a desire for ready access to their possessions, especially those personnel without their own transport.

120. Defence considers it will be sensible to trial the provision of self storage facilities on the Base for use by both ship and shore based personnel. These facilities are becoming more readily available within the wider community.

Proposal

121. Two separate multiple storage facilities are proposed, each with individual units ranging in area from three square metres to eight square metres. The total area of each facility will be in the order of 350 square metres. One of the facilities will be located adjacent to the existing carpark west of the Diamantina Wharf, and the other adjacent to the existing long term carpark. The Committee was assured that both storage facilities will incorporate features to reduce the detrimental effects of local climatic conditions on stored possessions.

122. The Committee nevertheless questioned the basis of:

- the provision, by Defence, of these storage facilities and if the private sector could be involved in a trial for the provision of similar facilities; and

- the suitability of the design of the facilities.

123. Defence believes that involving the private sector in the provision of "you lock it" type storage for living in personnel would not be appropriate. The nearest major centre to *Stirling* with this type of storage is Rockingham, some distance from the Base. The storage facilities are regarded as an amenity which, until now, has been denied to single living in members. The type of possessions which require storage are used for recreational purposes by living in personnel such as motor cycles, surf boards and diving equipment, for which easy access is required.

124. In terms of the suitability of the design of the proposed facilities, Defence advised that similar storage areas have been constructed at other locations for permanent living in personnel such as at RAAF Base Richmond, where they work extremely well and have therefore been well received.

Additional carpark and carpark security measures

125. Ship and shore based personnel, visitors, and contractors are provided with carparking. Carparks used for long term parking, such as for ships' crews, are normally provided with increased security.

126. Deficiencies in carparking arrangements are twofold:

- with the increased number of personnel at HMAS *Stirling*, a shortfall of 200 carparking positions is predicted.

- carparking allocated for crews at sea is not sufficiently secure. Despite a man proof fence and security lighting being provided around the carpark, incidents of forced entry into vehicles have occurred.

127. Defence therefore, believes a new carpark for two hundred cars in the vicinity of Diamantina Wharf, and enhancement of the security arrangements around the existing long term carparks are needed.

Proposal

128. The 200 additional carparks will form an extension to the existing main carpark. The improved security arrangements around the fenced long term

carpark will take the form of an electronic surveillance system that will be monitored at the security control panel.

129. The Committee questioned Defence about the estimated cost of the storage areas as well as the proposed security measures. Defence advised that the costs are realistic, given the extent of the proposed work which involves the provision of storage facilities, security fences and appropriate security devices.

Benefits

130. Defence believes extension of the general amenities and indoor recreation complex, provision of some short term personal effects storage facilities, and improved security measures around the long term carparks are expected to lift morale, especially for ship based personnel.

131. Provision of new accommodation for the public relations staff within the general amenities complex will enable accommodation vacated in the operational headquarters to be used for expanded management of operational activities.

Committee's Conclusions

132. The development of naval operational and support facilities at HMAS *Stirling* has spanned almost three decades and has involved the expenditure of more than $450 million in 1997 prices.

133. Development has reflected the dynamics of Defence policy in relation to the home porting of warships at HMAS *Stirling*.

134. Recent changes in Defence policy, including the 1987 announcement of the two ocean navy, has led to requirements for additional or enlarged facilities to accommodate increased demands, some of which have been provided as a result of an examination by the Committee in 1994.

135. A need exists to further improve operational support, training, logistics and personnel support facilities at HMAS *Stirling* either by the provision of extensions to existing facilities or through new construction to accommodate the home porting of half of the Australian fleet.

136. With the exception of the proposed clearance diving facilities and the flight deck procedural training facility, and based on the evidence received, the extent of the proposed work can be justified as meeting anticipated requirements.

Committee's Recommendations

137. Facilities required and proposed for the naval diving clearance teams should be reviewed. The review should include the benefits of the construction of a new facility at a more suitable location.

138. The siting of the flight deck procedural trainer should be reviewed, in relation to overall cost, including the provision of power, without compromising safety or the realism of training scenarios.

DESIGN

Standards

139. Where appropriate, the design of new facilities will conform to the relevant sections of:

- the Building Code of Australia (BCA);
- relevant current Australian Standards and Codes;
- the Defence Fire Protection Engineering Manual (FACMAN 2);
- the Defence Security Manual (SECMAN);
- *Environment Protection (Impact of Proposals) Act 1974*;
- Workplace Health and Safety Act and Regulations; and
- WA Sewerage and Water Act.

Design approach

140. The approach adopted for the design of the proposed facilities has incorporated the following considerations:

- the provision of austere, cost effective and utilitarian facilities of energy efficient design suitable for the rigours of the climate and marine environment, and of a style compatible with surrounding facilities;
- adoption, where possible, of conventional construction techniques and materials, in particular those commonly used by the construction industry in the area;

- utilisation of durable materials that combine long life with minimum maintenance;
- recognition of limitations of land availability, security requirements, functional relationship to existing facilities, and operational determinants; and
- recognition of occupational health and safety aspects impacting on the well being of personnel using the facilities.

Fire protection systems

141. All construction and fire protection requirements will, as a minimum, be in accordance with the provisions of the BCA, FACMAN 2 and all other applicable Codes and Standards. FACMAN 2 details Defence fire protection policy for asset and building function protection.

142. The levels of fire protection specified are above BCA requirements and have been determined by a risk assessment and risk management approach to fire protection.

143. Defence will require certification from a suitably qualified certifier, that the design and construction meet the requirements of the BCA, FACMAN 2, relevant Codes and Standards and any additional State, Local Government and Defence requirements.

144. The local fire brigade will be invited to comment on the project, visit the site and offer comment to ensure that the brigade's operational requirements are met.

145. Any recommended departures from BCA requirements in relation to the project will be technically assessed by Defence specialist fire protection staff. Agreed departures, ensuring an equivalent or higher level of protection than BCA requirements, will require written approval at Director General level.

146. Successful tenderers will be required to produce a quality assurance plan to clearly show how BCA, Australian Standards and any additional Defence requirements in relation to fire protection/fire safety, will be met and the required standards for construction/installation maintained.

147. The Commonwealth Fire Board noted that although details of the fire safety and fire protection systems are not available at this stage, the nature of the facilities may require more stringent measures than those contained in the BCA. The Commonwealth Fire Board assumed that reference to FACMAN 2

and other relevant codes and standards will provide the appropriate specifications for the protection of facilities. Defence noted the Commonwealth Fire Board's submission.

Energy management and lighting

148. The design of all power supply, electrical and mechanical equipment will include an assessment of energy use applying life cycle costing techniques and power demand analysis. Facilities will incorporate building management systems, metering and other provisions to measure and monitor energy use and to allow regular energy audits.

149. To reduce energy consumption, lighting is to be controlled, where possible, by photoelectric switches in conjunction with time switch schedules. This is to include provision of personnel sensor controlled lighting to amenities and other intermittently occupied areas. Lamps are to be high efficiency fluorescent, compact fluorescent or discharge type. External lighting is to be designed to minimise glare and colour distortion. Solar hot water systems are to be used where practical and cost effective. Consideration will be given to the control and/or monitoring of building services from the existing energy management system.

Precautions against legionella

150. As air cooled airconditioning systems are proposed, no specific precautions against legionella are considered necessary. Potable water will be below the temperature range where legionella can breed to levels affecting health.

Buildings, workshops, and storehouses

151. New buildings and workshops will be steel framed structures placed on a stiffened concrete floor with high level footings. Generally, buildings will be masonry clad, although metal cladding will be used with some workshops and storehouses.

152. Building extensions will follow the form and structure of the parent building.

153. Where annexes abut storehouses, common walls will be designed to achieve a two hour fire rating.

154. Buildings will be provided with tiled or metal decked roofs.

155. Office areas will be carpeted, with steel framed stud wall partitions, and airconditioned to comfort levels and with acoustic treatment to ceilings and windows and generally to commercial office standards.

156. Workshops will incorporate concrete floors, vinyl clad in specific instances, generally with airconditioning of internal areas, as well as exhausting from specified areas where paints, solvents and adhesives are being used. Some workshops will be mechanically ventilated.

157. Storage areas will generally be mechanically ventilated. Floors will be either slip resistant concrete or vinyl depending on the nature of the equipment to be stored.

158. Lunchrooms will be airconditioned with additional exhausting in food preparation areas. Floors will be vinyl clad and walls will be painted plasterboard or masonry.

159. Window glazing will address the issues of thermal efficiency, acoustics, and control of natural lighting and screened, and in some cases tinted for sun protection.

Airconditioning

160. The design of airconditioning systems will take into account heat loads generated by equipment to be contained within the work areas. All airconditioning and mechanical ventilation systems will be designed with energy saving features including variable air flow, external air intake under appropriate temperature conditions, and a total building management operating system for optimum plant control.

Electrical

161. Electrical supplies will be drawn from the Base underground electrical distribution system. Main switchboards will be separately housed and segregated, and will incorporate surge protection on the incoming supply. Load shedding devices will be installed to disconnect non essential loads under emergency conditions to ensure that critical work areas are provided with electrical power from the powerhouse.

Communications

162. Voice and data communications will be linked to the Base communications network.

Security

163. Security and fire detection will be incorporated into the Base security and fire alarm systems and monitored at the main security control panel.

Hydraulics

164. Water and sewerage connections will be made to the existing Base systems.

Signs

165. Standardised signage will be provided at each facility.

Carparking

166. Carparking and access roads to commercial standards will be provided at new facilities, and additional carparking positions provided at facilities being extended to meet increased population demands.

Landscaping

167. Landscaping, incorporating low maintenance plantings suitable for the area, will be provided around buildings where necessary.

Fuel installation

168. The fuel storage tanks will be anchored and bunded to contain any possible spilt fuel. The tanks will be internally coated to prevent corrosion. Any metallic tank surface in contact with soil will be externally coated and protected to minimise corrosion.

169. Tanks will be inter connected to allow fuel transfer between tanks and the existing installation. Pipelines will be provided to off load and dispense fuel. Low carbon steel or stainless steel pipework will be used. Larger size low carbon steel pipes, more than 100 mm in diameter, will be internally coated. Smaller pipes, less than 100 mm in diameter, will be stainless steel. All buried pipelines will be externally coated and protected against corrosion.

170. A fuel filtration system will be installed to clean fuel, and to keep it clean. Waste products will be collected in a 'dump tank' and removed by a contractor.

171. The fuel distribution system will incorporate automatic control systems for fire prevention and emergency response. Also, automation will be

considered for remote operation of key isolation and control valves. The control equipment will include a mimic panel depicting the operational status of the entire fuel installation.

172. A system to detect fuel leaks from tanks will be incorporated into the design. Adequate spill containment and environmental management systems, for example oil/fuel interceptors, will be incorporated into the facility's drainage system. Monitors and alarms to identify any leakage from the fuel storage tanks will be incorporated into the installation control system. Interceptor pits will be provided on drainage lines.

Engineering services

173. New services will be constructed to normal commercial standards.

MASTER PLANNING

174. Siting of facilities will be in accordance with the Master Plan developed for HMAS *Stirling*.

175. The Committee asked Defence about the stages in the preparation of the Master Plan. Defence advised that the general concept of the Master Plan, as originally envisaged in the 1970s, remains intact. The Plan has been amended on a number of occasions and the current version is based on planning to the year 2010. The Master Plan for the Island was reviewed during 1997. Essentially, master planning involves the reservation of real estate based on perceptions of likely eventualities during the next ten to 20 years.

176. The Master Plan does not take into account individual facilities and their design. It is restricted to activities and their location as well as, engineering services required to link facilities. The design of facilities is undertaken separately.

MANPOWER IMPLICATIONS

177. The Base population figures, now and in the future, are provided below.

Personnel	1997	1997	2004
Naval – Sea	1343	1510	1630
Naval Shore	810	960	1130
Total Naval	2153	2470	2760
Civilian employees	280	340	400
Civilian contractors	15 - 20	15 - 20	15 - 20

COST AND TIMINGS

Cost

178. The out turn cost of this project is $19 million. This includes construction costs, professional fees and charges, furniture and fittings, construction contingency and a predicted indexation adjustment over the construction period.

179. The Committee questioned Defence about the basis of funds in the construction budget set aside for contingencies. Defence advised that the process of internal scrutiny of projects within Defence is very rigorous to ensure that all elements of cost are appropriate. If allowances for contingencies and overall costs are too high, projects which facilities planners would wish to be considered as high priority works would not be included in the extensive capital works program.

Timings

180. Subject to Parliamentary approval, it is planned to call tenders in early 1998, with the aim of having the construction completed by April 1999. Priority will be given to projects directly impacting on fleet units projected to be home ported at HMAS *Stirling*.

Construction workforce

181. An average of about 70 personnel will be directly employed on construction activities during the 14 month construction period. In addition, it is anticipated that construction will generate further off site job opportunities in the prefabrication of components, and the manufacture and distribution of materials.

Local economy

182. Defence advised the Committee that the Base contributes about $200 million into the local economy each year. The Committee questioned Defence about the extent to which local industry will be involved in the project. Defence advised that policy on the awarding of contracts involves two stages: first, the calling of expressions of interest by way of advertisements in the press; secondly, the shortlisting of prime contractors and requests for tenders. A successful contractor is then appointed. The prime contractor could be a national or a local company. Defence also advised that based on experience, the prime contractor would make use of local resources and it is likely that local subcontractors would be used. In response to questioning about guarantees of payments to subcontractors, Defence advised that there will be a requirement in

contract documents for the contractor to demonstrate that subcontractors have been paid before receiving the next payment from Defence.

ENVIRONMENT AND HERITAGE

Environmental management of Garden Island

183. Environmental management of Garden Island began in 1972 following the Committee's report on the first stage of the development of HMAS *Stirling* and the establishment of a Commonwealth-State Garden Island Working Group. The Group released a Land Management Plan in 1979, to be implemented by the Commanding Officer of the Base under the guidance of the Garden Island Environmental Advisory Committee (GIEAC). The Land Management Plan was upgraded in 1993 to an Environmental Management Plan (EMP). This plan includes coverage of Controlled Naval Waters around Garden Island and the environmental management of naval facilities on the island.

184. The Committee believes the record shows that Defence has established an exemplary record in the environmental management of the Island. It is worth mentioning that this outstanding record comes at considerable cost. Defence estimates that the annual cost of environmental management of the Island is at least $430,000. It is also worth mentioning that the GIEAC has commenced publishing an annual report on the conservation and protection of the environmental values of the island and its surrounding waters while providing for Defence use and public appreciation.

Public access

185. The Committee questioned Defence about the future of public access to the Island in the context of the presence of major Defence assets, the fragile environment, increased pressures from recreationists and the cost of environmental management in its broadest form and more specifically, controlling access by patrols.

186. Defence advised the Committee that people are discouraged from extending their activities beyond the shore except in areas where facilities have been provided. Defence believes the northern end of the island is very dangerous, with thick bush which is impenetrable in many places.

Environmental impact of proposal

187. Defence advised that extensive investigations were carried out to guide the planning, design and implementation for the Stage 1 development of HMAS *Stirling*.

188. The Stage 3 works were the subject of an extensive study, undertaken for Defence by Gutteridge Haskins and Davey Pty Ltd. This study examined each component on the proposed work against the following factors:

- proposed development;
- justification;
- proposed site;
- existing environment;
- potential impacts and safeguard measures; and
- monitoring (where relevant).

189. This study was submitted to the GIEAC which, after consideration, agreed in general with the choice of sites and proposed procedures to minimise development impacts but requested further consideration of a number of components of the proposed works. These were:

- the location of the vehicle holding yards in the explosive ordnance area; the GIEAC recommended that the location be carefully chosen to avoid or minimise the loss of *Melaleuca lanceolata* trees;
- in relation to the explosive ordnance workshop:
  - the building be placed as far west as possible within the development zone, to maximise location on areas already cleared
  - the new perimeter fence line follow the existing survey clearance lines
  - access to the site for clearing and construction be restricted to the north-west along the wide swathe already cleared and that disturbance to forest on other sides of the building site be strictly minimised; and
- in relation to the site for the flight deck procedural trainer: the coastward extension of the impact be minimised in the design requirement and by minimising construction damage.

190. These recommendation were accepted by Defence and the study and the recommendations form the basis of the Environmental Certificate of Compliance for the project.

Heritage

191. No Aboriginal sites have been recorded on Garden Island, although three artefacts (flakes) have been located which date from a time before the island was separated from the mainland. There is no evidence, in the form of middens or campsites, of Aborigines inhabiting Garden Island. The local Nyoongah Aborigines were not sea faring, and the absence of surface water will have precluded their permanent settlement on the island.

192. In 1994, Garden Island was proposed for listing on the Register of the National Estate (RNE) for its natural and cultural heritage values. Cliff Head, the first site of settlement of the Swan River colonists, is separately listed on the RNE. Access to the site is controlled, and its management is covered by environmental procedures already in place.

193. Annual inspections are conducted of the physical condition of heritage areas and materials. This includes the condition of tracks to the remains of the gun positions and other Second World War structures on the island.

Australian Heritage Commission

194. The Australian Heritage Commission (AHC) confirmed that the whole of Garden Island, excluding the main Base facilities of HMAS *Stirling* on the southern part of the island, is listed on the RNE.

195. A number of components of the proposed works fall within the protected area. These are the office and amenities block, the vehicle holding yard, the explosives workshop and the mechanical handling equipment garage in the explosives ordnance area, located on the north of the island. The sites for these proposed works have already been subjected to development and the AHC believes that the works are unlikely to have significant impact on the value of the National Estate.

Environment Australia—Environment Protection Group

196. Environment Australia—Environment Protection Group, noted that the proposed works at HMAS *Stirling* would accord with the EMP, which resulted from an assessment of the Public Environment Report, produced in 1989, under the provisions of the *Environment Protection (Impact of Proposals) Act 1974*.

197. The EMP includes provisions to minimise clearing of natural vegetation and hence loss of fauna habitat, consistent with functional requirements. Implementation of the EMP is supervised by the Environmental Manager and is reviewed by the GIEAC.

Environment Australia—Biodiversity Group

198. The Biodiversity Group consulted various individuals in relation to the proposed works and advised that it is satisfied that the project will not impact adversely on the environment provided the work is carried out in accordance with the EMP.

WA Aboriginal Affairs Department

199. The West Australian Aboriginal Affairs Department (AAD) agreed that there are no recorded Aboriginal sites on Garden Island. However, the AAD submitted that some sites may have existed below the surface, having been covered when the island rose above sea level and was cut off from the mainland. The recent discovery of fish traps in Lake Richmond near Rockingham, providing evidence of former Aboriginal habitation of the mainland area closest to the Island. The AAD therefore suggested that an archaeologist monitor excavations for the development, to ensure that no Aboriginal sites are impacted.

200. Defence advised, in response, that an independent study undertaken in 1996 for the HMAS *Stirling* Stage 2 development identified limestone cliffs on the island's western coast as the only landscape with the potential of past Aboriginal occupancy. This area is not affected by the current proposals. Defence believes that as the only Aboriginal artefacts found on the island have originated from the west coast cliffs, it would seem unduly cautious to require that excavations for the current developments be monitored by an archaeologist.

Department of Environmental Protection

201. The West Australian Department of Environmental Protection submitted that the following precautions should be taken with the current proposed development:

- construction impact should be minimised, including vegetation clearing;
- additional above ground fuel storage tanks should be bunded so that any leaks or spillages are fully contained; and

- the construction and future operation of facilities proposed should be in accordance with the EMP for HMAS *Stirling* and Garden Island.

202. Defence confirmed that the above measures will be taken during construction and operation of the proposed facilities.

Garden Island Preservation Society

203. The Garden Island Preservation Society Inc (GIPS) made a number of comments and raised a number of queries on the proposed works, some of which relate to the environment. In summary these encompassed:

- location and use of the flight deck procedural trainer. The GIPS suggested that the provision of this facility, adjacent to the helicopter support facilities may be the precursor to fixed wing aircraft operating from the Island. Defence assured the Committee that the facility will continue to be used only for rotary (helicopter) type aircraft. In relation to the proposed site of the facility, it should be mentioned that the GIEAC considered this matter and recognised that no reasonable alternative sites were available. The GIEAC also noted that the end of the island on which it is proposed to construct the facility supports stands of *Pittosporum phylliraeoides*, sometimes called "cheesewood", an unusual vegetation community of Garden Island and that no stands are close to the proposed development site;
- expansion of the ordnance storage facilities. Defence advised that this expansion is required to satisfy changes in NATO safety criteria. The proposed works will enable the facilities to be used to their design capacity and accommodate the increase in personnel, equipment and inventory required to support the expanded home ported fleet. The GIEAC has made a number of recommendations in relation to the siting of structures, fencing and site management during construction;
- involvement of the GIEAC in the development of the proposal. All recommendations made by the GIEAC in response to the study of environmental impacts commissioned by Defence have been adopted for this proposal;
- overcapitalisation in Defence facilities—many activities undertaken by uniformed personnel on Garden Island could be

undertaken away from the island through outsourcing. Defence was one of the first departments to enter into outsourcing through its commercial support program. Defence is therefore conscious of the benefits of outsourcing in terms of core and non-core activities which has resulted in a significant reduction of Defence personnel. The requirement of sufficient positions for shore positions naval uniformed personnel remains to enable personnel to be rotated from ship to shore. This normally involves personnel spending one and a half to two years at sea and, depending on rank, between one to two years ashore; and

- public access. Issues arising from the management of public use of the island have been identified in the GIEAC's first annual report.

Committee's Conclusion

204. The Department of Defence has an exemplary record in the environmental management of Garden Island and has demonstrated a commitment, within operational constraints, towards the conservation and protection for public use of the environmental values of the Island.

CONSULTATION

205. Defence advised that the following authorities have been or will be consulted in relation to the Stage 3 development proposal:

- Federal and State Government representatives for the area;
- Council of the City of Rockingham;
- Water Corporation;
- Garden Island Environmental Advisory Committee;
- Telstra;
- Western Power;
- Environmental Protection Authority;
- Department of Transport;
- Fremantle Port Authority; and

- WA Fire and Rescue Service.

FUTURE WORKS

206. Defence advised the Committee that the provision of *ANZAC* and *FFG* propulsion control simulators for procurement as capital equipment items is presently under review. These simulators would be used to train marine engineering personnel in the operation of the propulsion control systems and the maintenance of the control consoles. Their provision would obviate the need for HMAS *Stirling* based personnel to use the facility at Garden Island, Sydney resulting in travel cost savings and improved personnel availability. An extension to the training centre in the order of 250 square metres would be required to accommodate the Simulators.

207. The Committee was advised that no further major works proposals for HMAS *Stirling* are identified in the Defence five year development program. Defence did, however, advise that it is envisaged that development of further operational facilities, which remain to be endorsed, may be necessary in the first decade of the next century. Facilities that might be required include additional workshops, storehouses, extensions to some support facilities, and improvements to living accommodation and recreational facilities.

Committee's Recommendation

208. The Committee recommends the proposed development of facilities — Stage 3 at HMAS *Stirling*, WA. at an estimated out turn cost of $19 million.

CONCLUSIONS AND RECOMMENDATIONS

209. The Committee's conclusions and recommendations and the paragraphs in the report in which there occur are set out below:

1. The development of naval operational and support facilities at HMAS *Stirling* has spanned almost three decades and has involved the expenditure of more than $450 million in 1997 prices. (Paragraph 132)

2. Development has reflected the dynamics of Defence policy in relation to the home porting of warships at HMAS *Stirling*. (Paragraph 133)

3. Recent changes in Defence policy, including the 1987 announcement of the two ocean navy, has led to requirements

for additional or enlarged facilities to accommodate increased demands, some of which have been provided as a result of an examination by the Committee in 1994. (Paragraph 134)

4. A need exists to further improve operational support, training, logistics and personnel support facilities at HMAS *Stirling* either by the provision of extensions to existing facilities or through new construction to accommodate the home porting of half of the Australian fleet. (Paragraph 135)

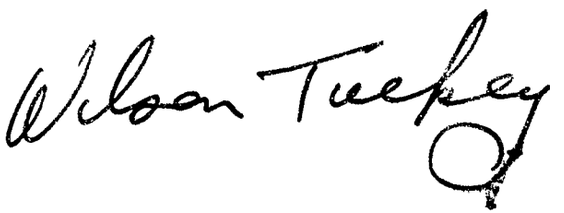
5. With the exception of the proposed clearance diving facilities and the flight deck procedural training facility, and based on the evidence received, the extent of the proposed work can be justified as meeting anticipated requirements. (Paragraph 136)

6. Facilities required and proposed for the naval diving clearance teams should be reviewed. The review should include the benefits of the construction of a new facility at a more suitable location. (Paragraph 137)

7. The siting of the flight deck procedural trainer should be reviewed, in relation to overall cost, including the provision of power, without compromising safety or the realism of training scenarios. (Paragraph 138)

8. The Department of Defence has an exemplary record in the environmental management of Garden Island and has demonstrated a commitment, within operational constraints, towards the conservation and protection for public use of the environmental values of the Island. (Paragraph 204)

9. The Committee recommends the proposed development of facilities — Stage 3 at HMAS *Stirling*, WA. at an estimated out turn cost of $19 million. (Paragraph 208)



Wilson Tuckey MP
Chairman

20 November 1997

APPENDIX A

WITNESSES

JOHNSON, Mr Clark Gregory, President, Garden Island Preservation Society (Inc), C/- 159 Scarborough Beach Road, Mount Hawthorn, WA

KABLE, Commodore Garvon Paul, Director General Maritime Development, Department of Defence, Canberra, ACT

KENNEDY, Air Commodore James Frederick George, Director General Project Delivery, Department of Defence, Canberra, ACT

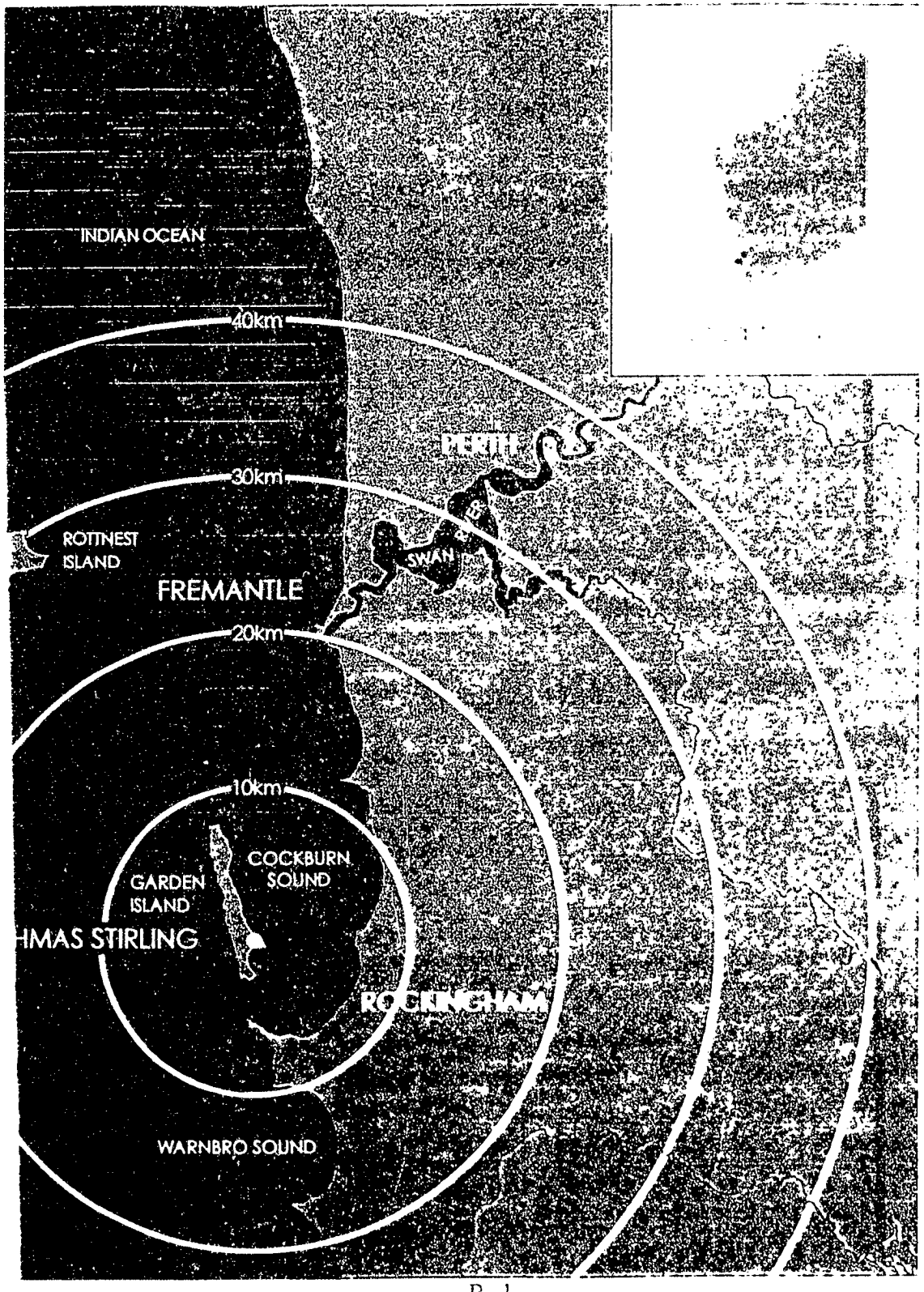
TOOTH, Wing Commander John Marsden, Project Director (A), Department of Defence, Canberra, ACT

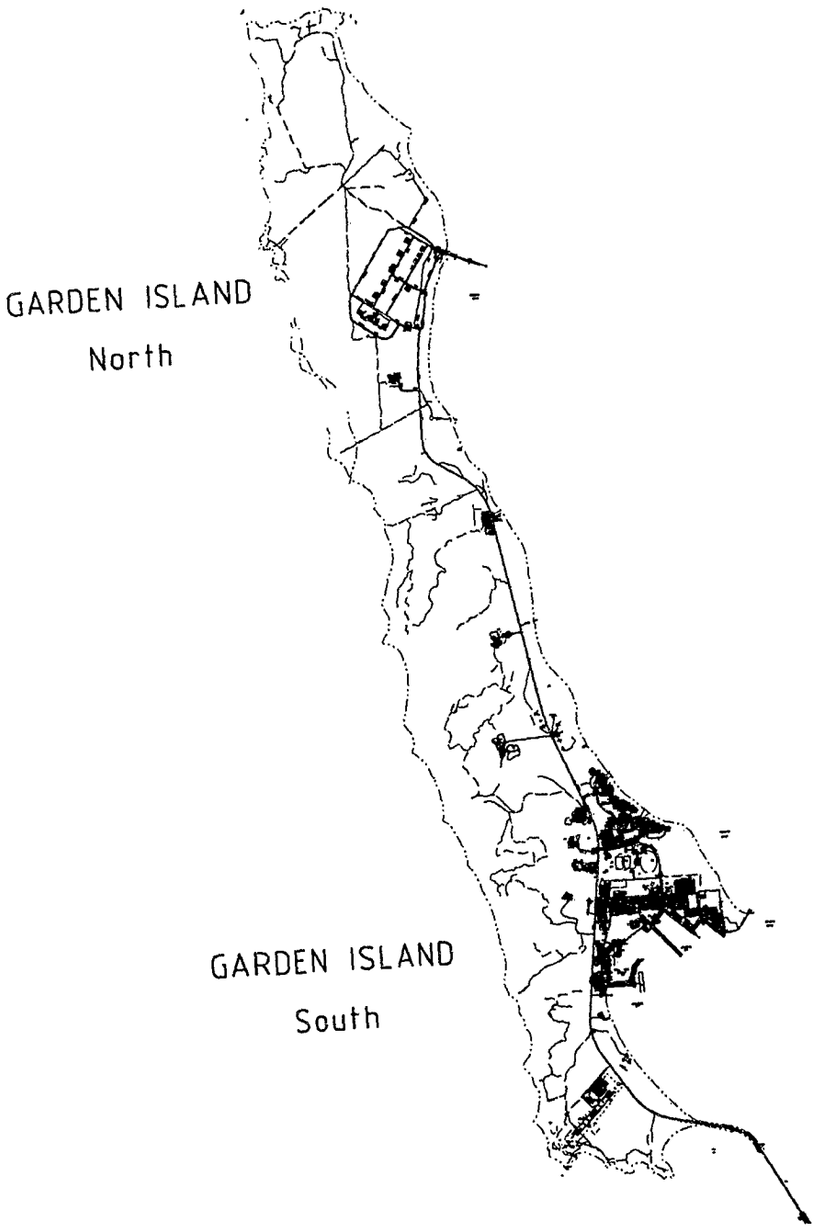
TROTTER, Commodore Robert Neil, Commodore Fleet Bases, HMAS *Stirling*, WA.

APPENDIX B

PROJECT PLANS

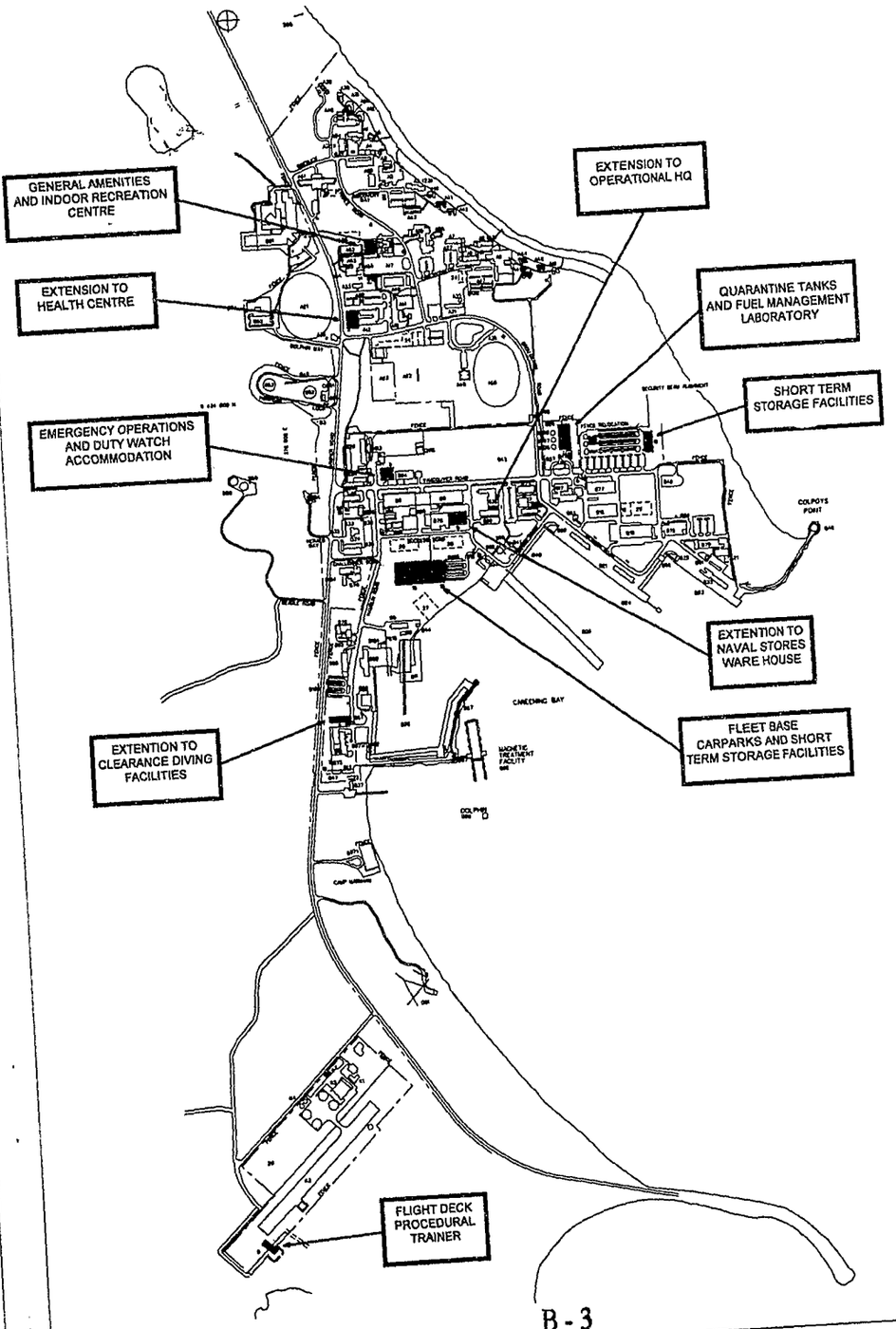
Page


INDIAN OCEAN
40km
30km
ROTTNEST
ISLAND
FREMANTLE
20km
10km
GARDEN
ISLAND
COCKBURN
SOUND
HMAS STIRLING
WARNBRO SOUND

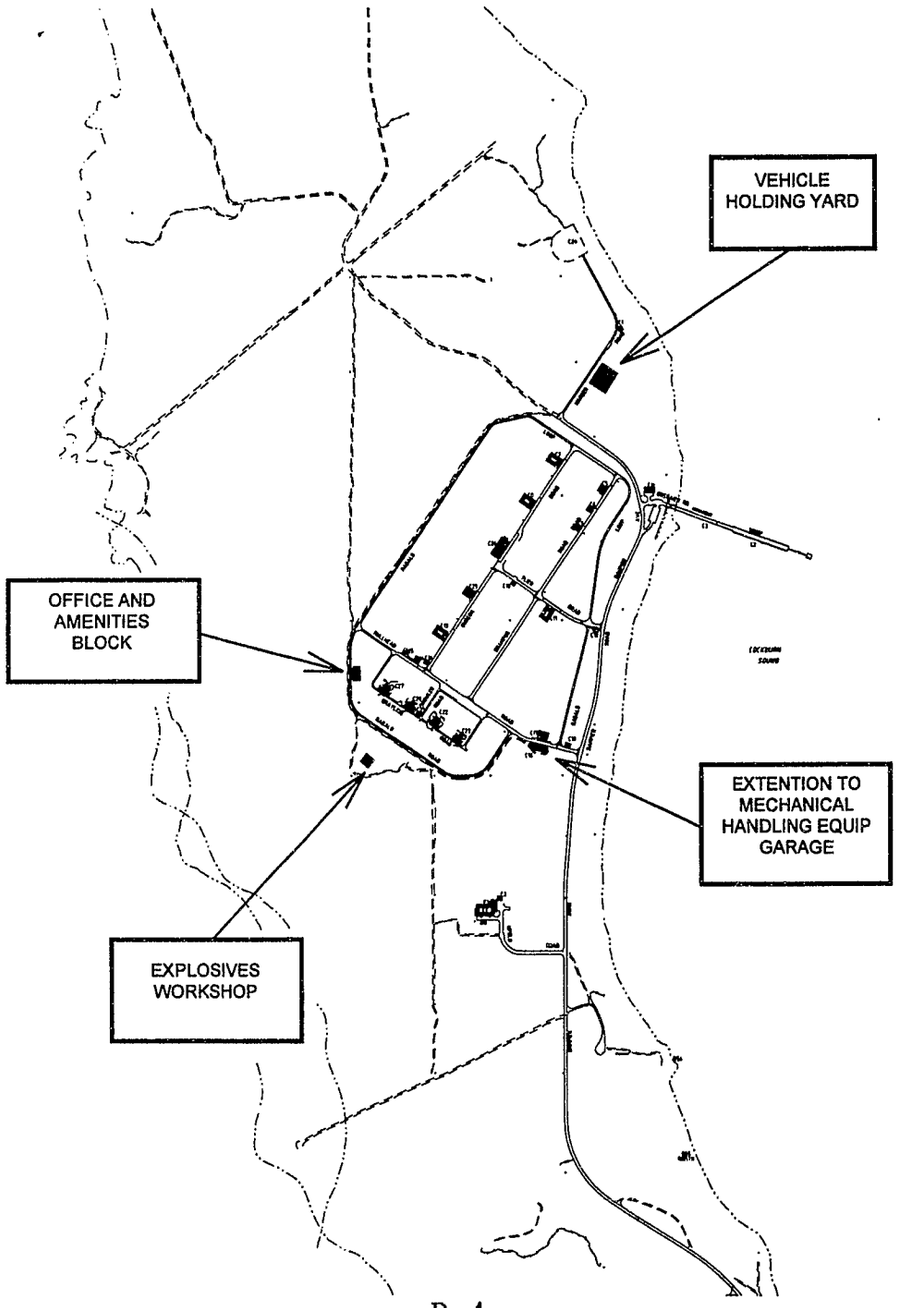


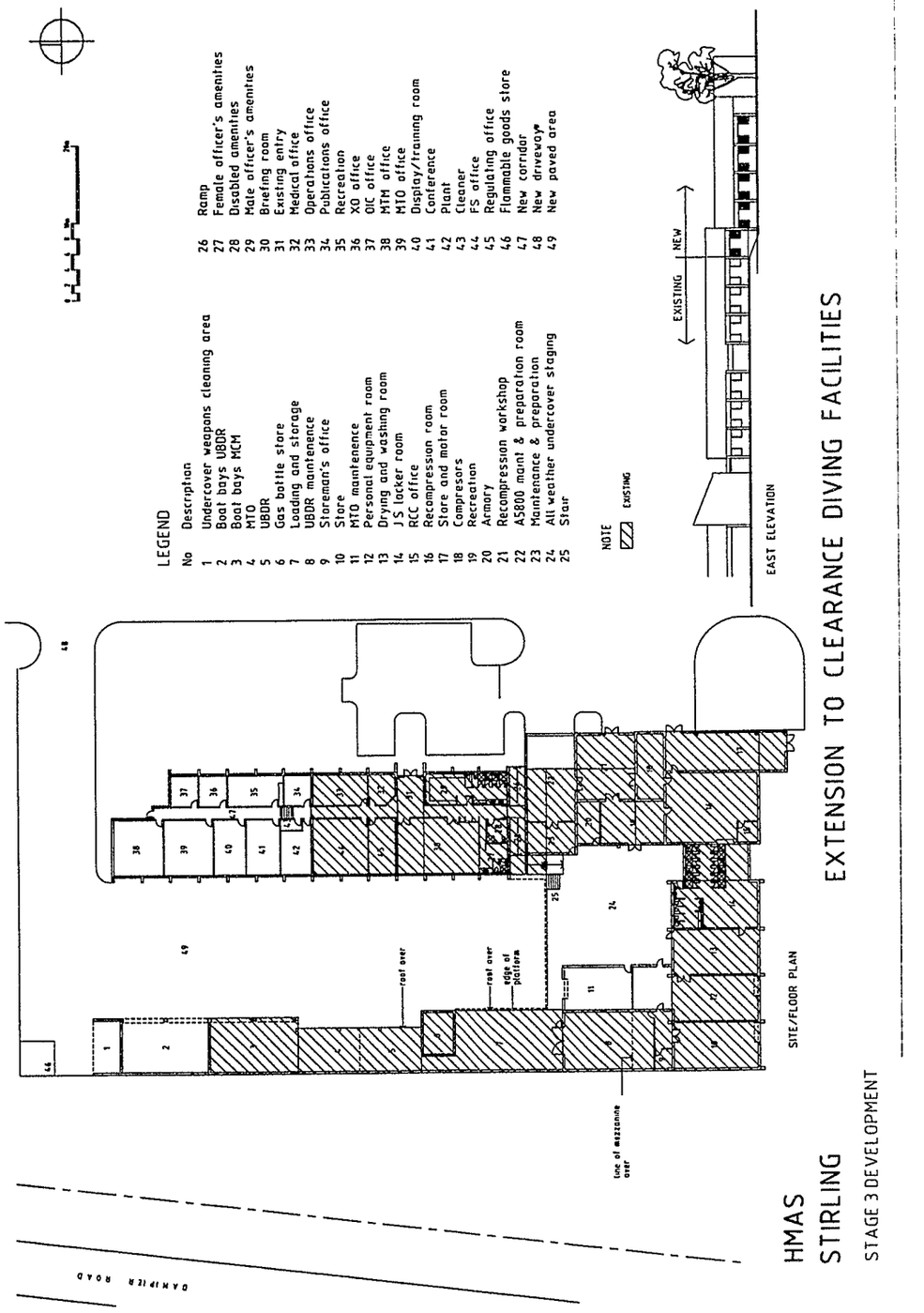
LOCATION PLAN

LOCALITY PLAN - SOUTHERN ZONE

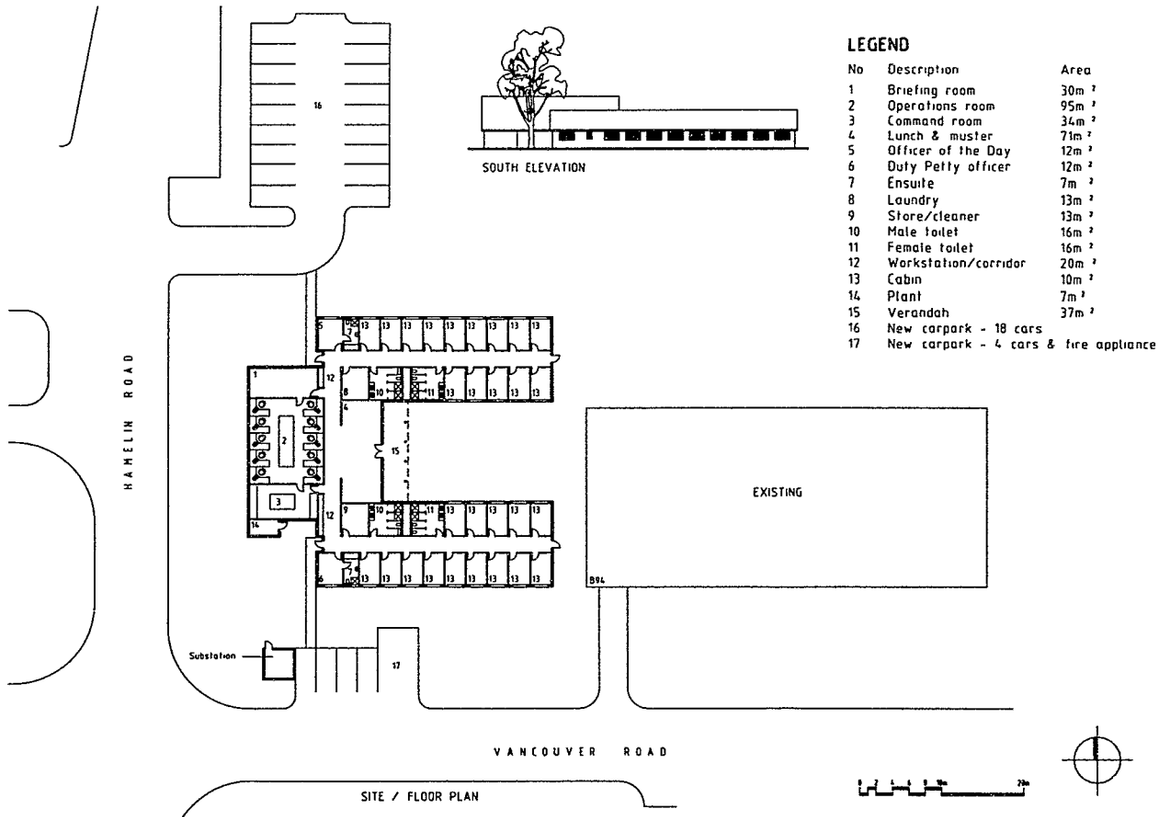


LOCALITY PLAN - NORTHERN ZONE





B-6



LEGEND

No	Description	Area
1	Briefing room	30m ²
2	Operations room	95m ²
3	Command room	34m ²
4	Lunch & muster	71m ²
5	Officer of the Day	12m ²
6	Duty Petty officer	12m ²
7	Ensuite	7m ²
8	Laundry	13m ²
9	Store/cleaner	13m ²
10	Male toilet	16m ²
11	Female toilet	16m ²
12	Workstation/corridor	20m ²
13	Cabin	10m ²
14	Plant	7m ²
15	Verandah	37m ²
16	New carpark - 18 cars	
17	New carpark - 4 cars & fire appliance	

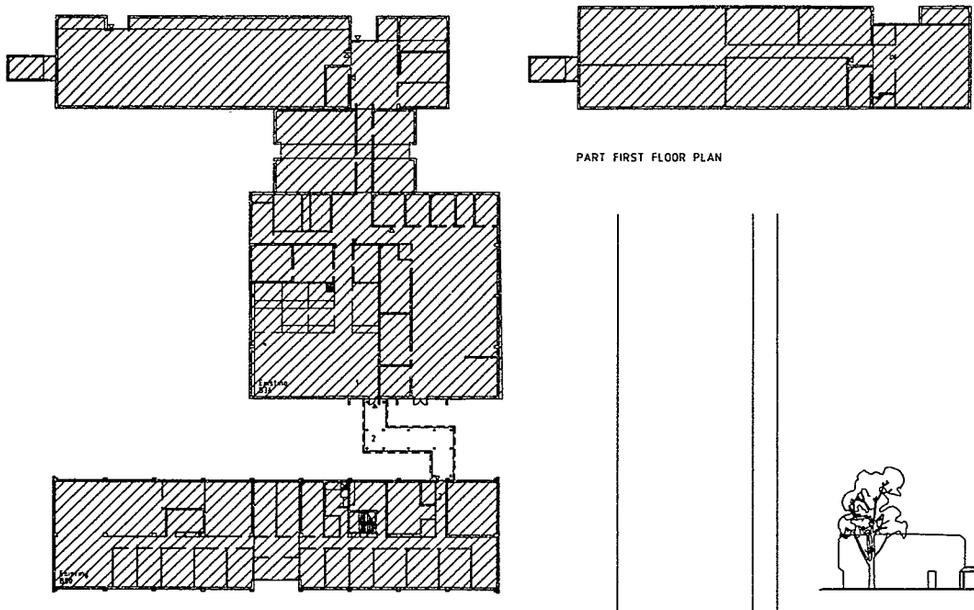
HMAS

STIRLING

STAGE 3 DEVELOPMENT

EMERGENCY OPERATIONS CENTRE AND DUTY WATCH ACCOMMODATION

B-7



LEGEND

No	Description
1	Operations room
2	Covered walkway
3	Existing corridor
4	Existing operational areas
▽	Access control point

NOTE

▨ EXISTING

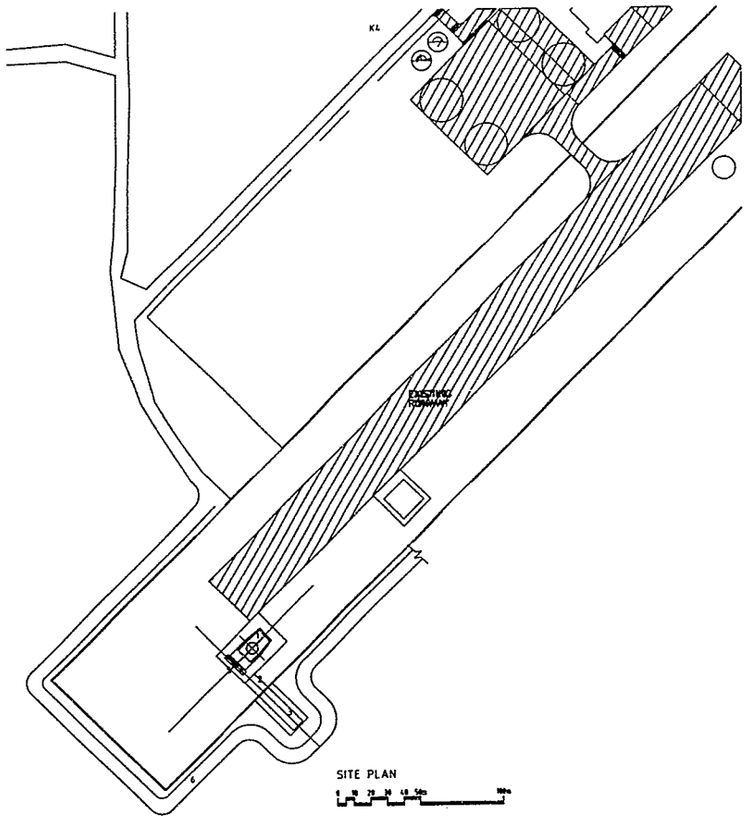
HMAS

STIRLING

STAGE 3 DEVELOPMENT

EXTENSION TO OPERATIONAL HEADQUARTERS

B-8



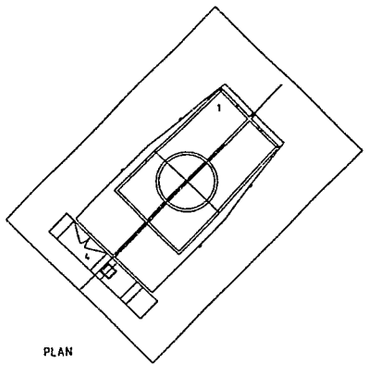
SITE PLAN

LEGEND

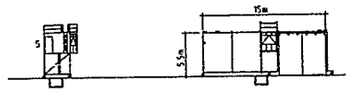
No	Description	Area
1	Flight deck procedural trainer	300m ²
2	Retraction path	240m ²
3	Retraction compound	1049m ²
4	Hanger facade	75m ²
5	Control room	9m ²
6	Existing service road & fence amended	

NOTE

EXISTING



PLAN

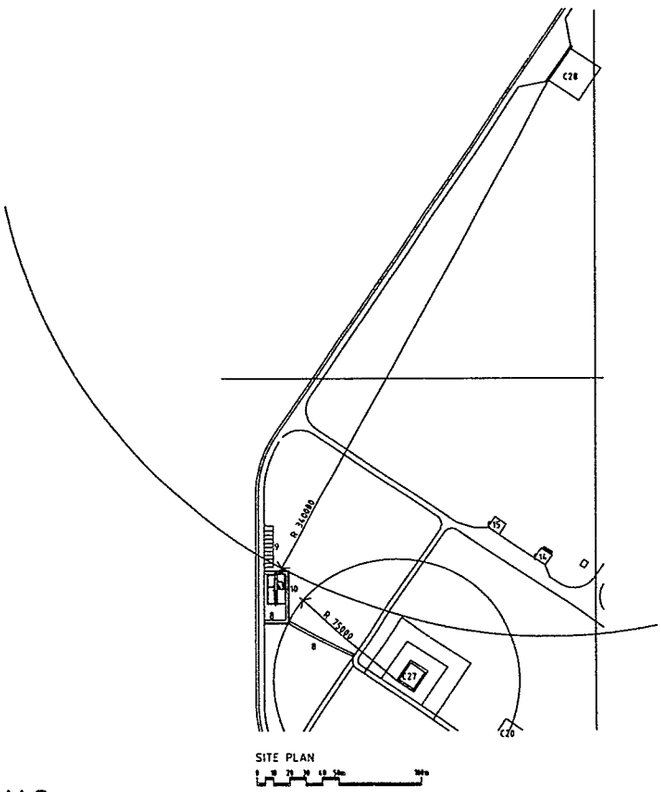


S/E ELEVATION N/E ELEVATION

HMAS
STIRLING
STAGE 3 DEVELOPMENT

FLIGHT DECK PROCEDURAL TRAINER

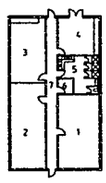
B-9



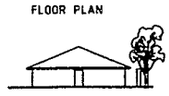
SITE PLAN

LEGEND

No	Description	Area
1	Office	45m ²
2	Training/Instruction	44m ²
3	Lunch room	34m ²
4	Store room	23m ²
5	Amenities	20m ²
6	Cleaner	3m ²
7	Corridor	24m ²
8	New access path	
9	New carpark 10 bays including disabled	
10	Concrete traverse	



FLOOR PLAN



SOUTH ELEVATION

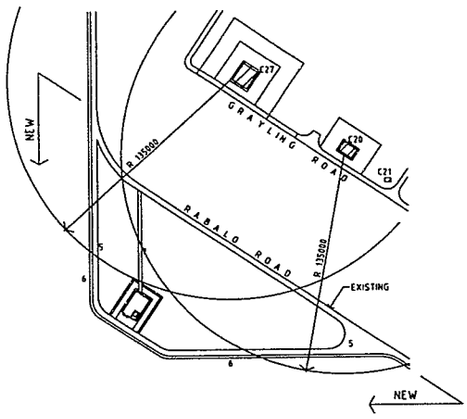
HMAS
STIRLING
STAGE 3 DEVELOPMENT

ARMAMENT OFFICE AND AMENITIES BLOCK

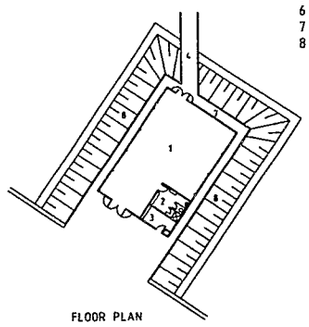
B-10

LEGEND

No	Description	Area
1	Workshop	132m²
2	Toilets	12m²
3	Change room	8m²
4	Tunnel	
5	New access road	
6	New fence	
7	New concrete access path	
8	Earthen traverse	



SITE PLAN



FLOOR PLAN

SOUTH WEST ELEVATION

NOTE

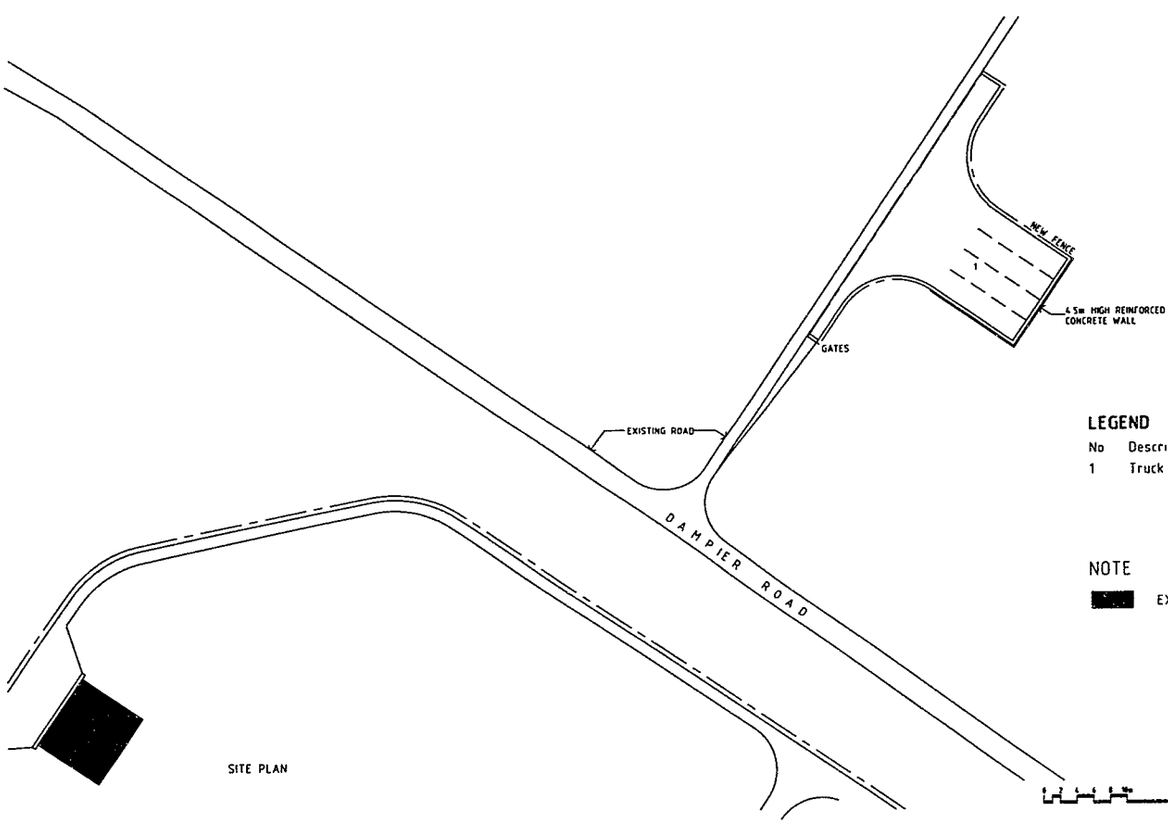
EXISTING

HMAS
STIRLING

STAGE 3 DEVELOPMENT

ARMAMENT ADDITIONAL EXPLOSIVES WORKSHOP

B-11



LEGEND

No	Description	Area
1	Truck parking	2100m²

NOTE

EXISTING

SITE PLAN

HMAS
STIRLING

STAGE 3 DEVELOPMENT

ARMAMENT VEHICLE HOLDING YARD

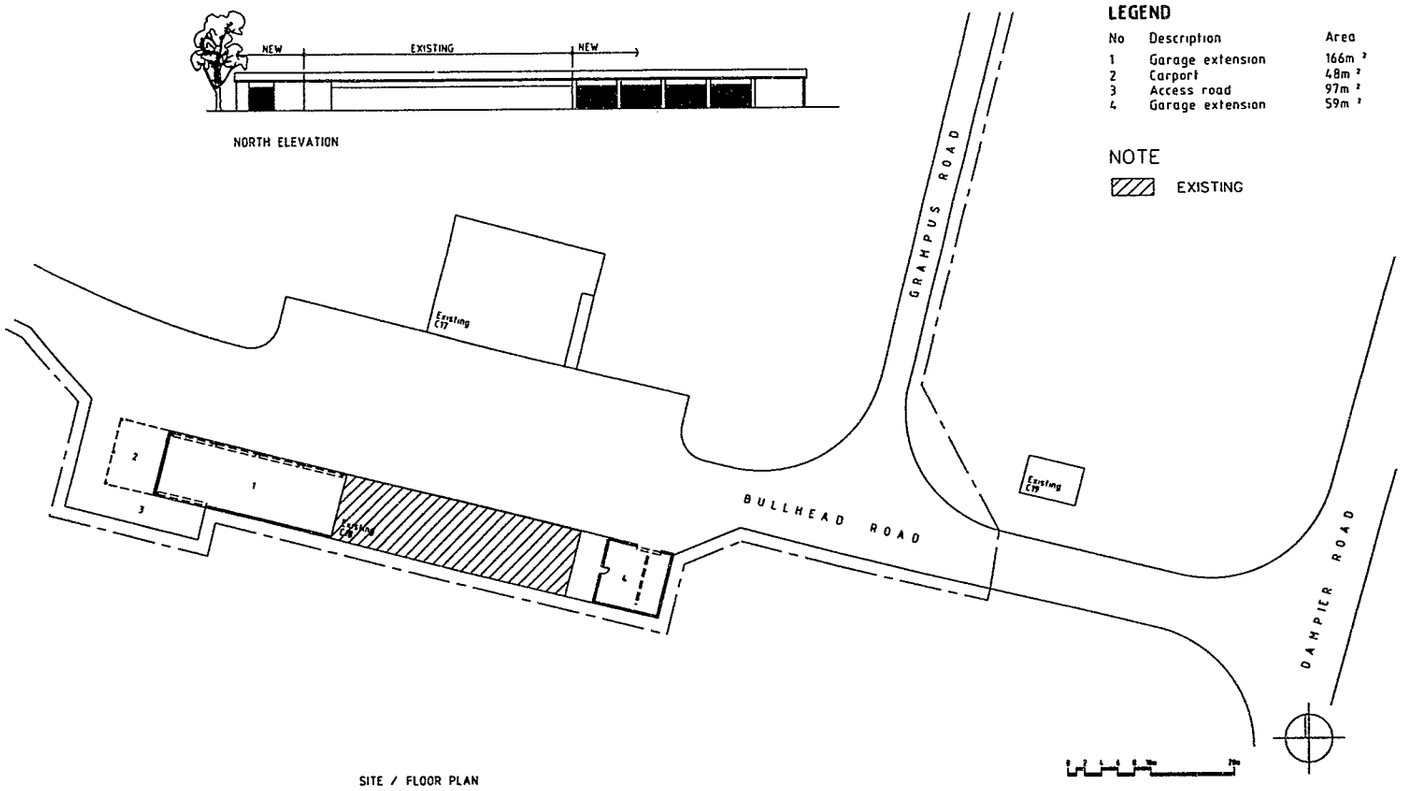
NORTH ELEVATION

LEGEND

No	Description	Area
1	Garage extension	166m ²
2	Carport	48m ²
3	Access road	97m ²
4	Garage extension	59m ²

NOTE

EXISTING



SITE / FLOOR PLAN

R_12

HMAS
STIRLING

STAGE 3 DEVELOPMENT

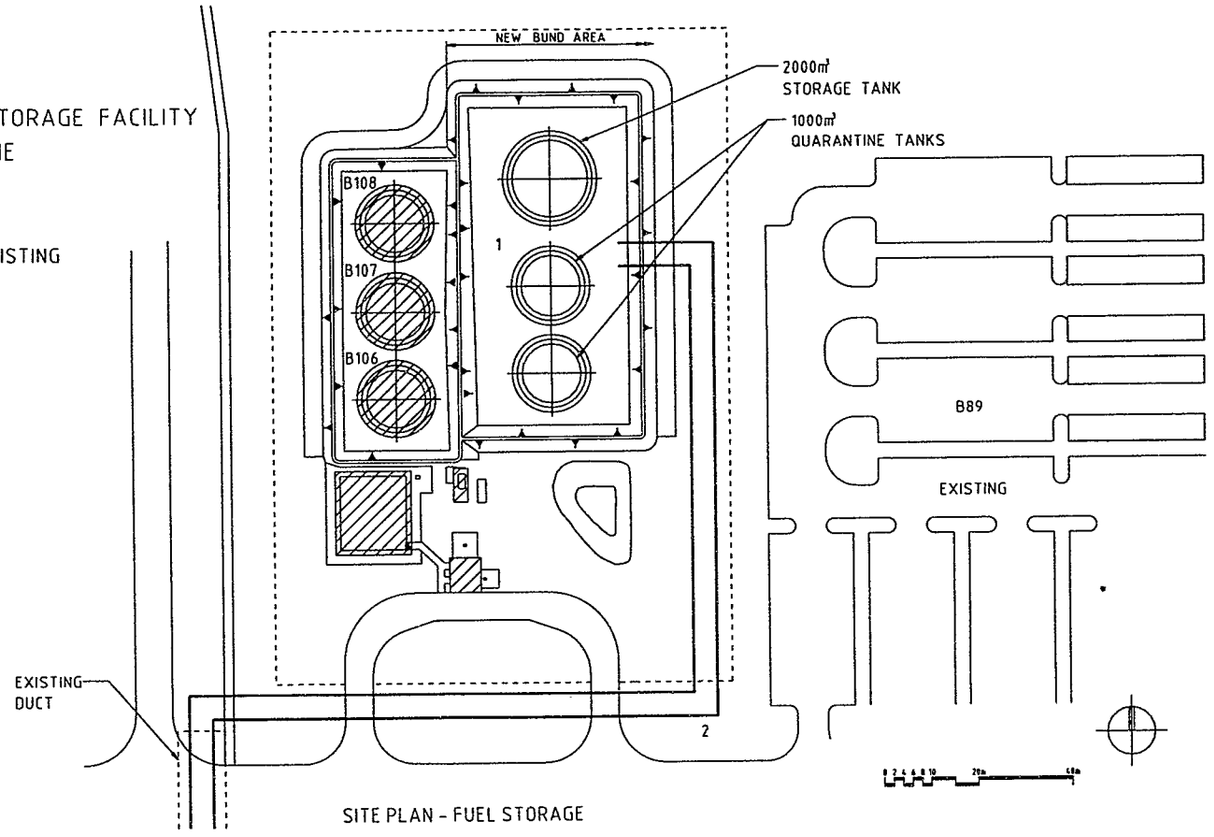
ARMAMENT MECHANICAL HANDLING EQUIPMENT GARAGE EXTENSION

LEGEND

1 - FUEL STORAGE FACILITY
2 - PIPELINE

NOTE

EXISTING



SITE PLAN - FUEL STORAGE

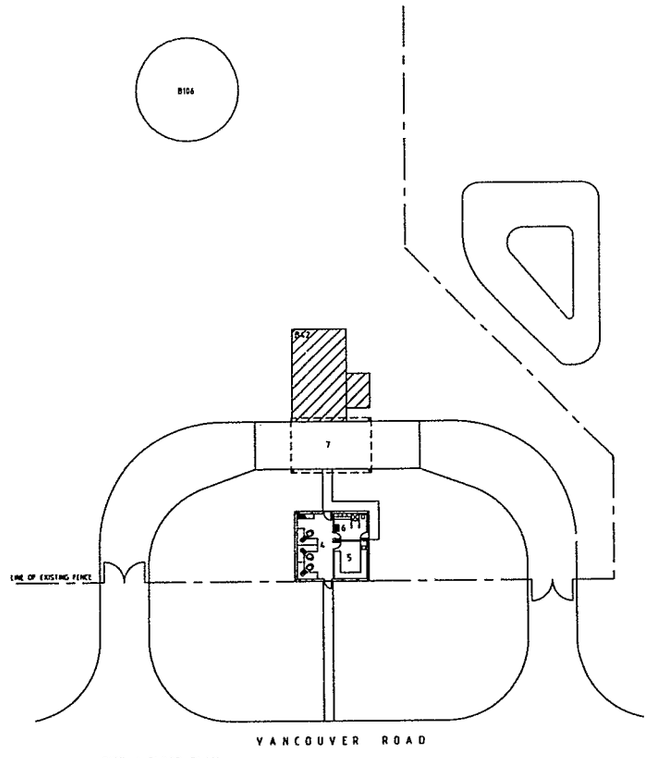
R_13

HMAS
STIRLING

STAGE 3 DEVELOPMENT

FUEL STORAGE FACILITY

B-14



SITE / FLOOR PLAN

LEGEND

No	Description	Area
4	Office	35m ²
5	Laboratory	19m ²
6	Amenities	13m ²
7	Canopy	

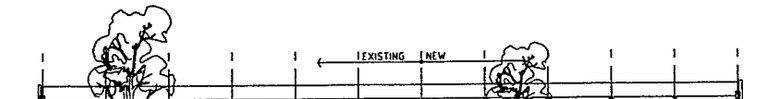
NOTE
▨ EXISTING

SOUTH ELEVATION

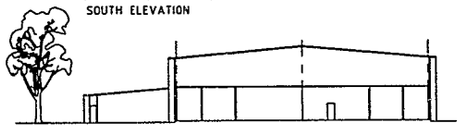
HMAS STIRLING
STAGE 3 DEVELOPMENT

FUEL LABORATORY

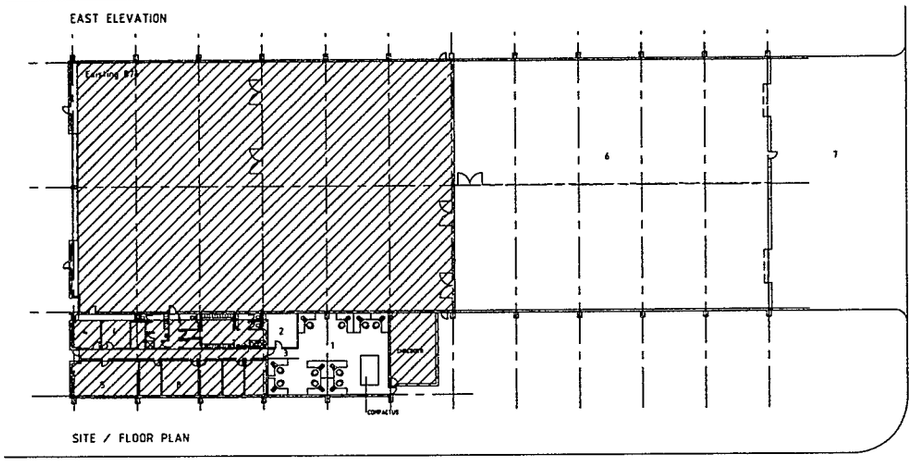
B-15



SOUTH ELEVATION



EAST ELEVATION



SITE / FLOOR PLAN

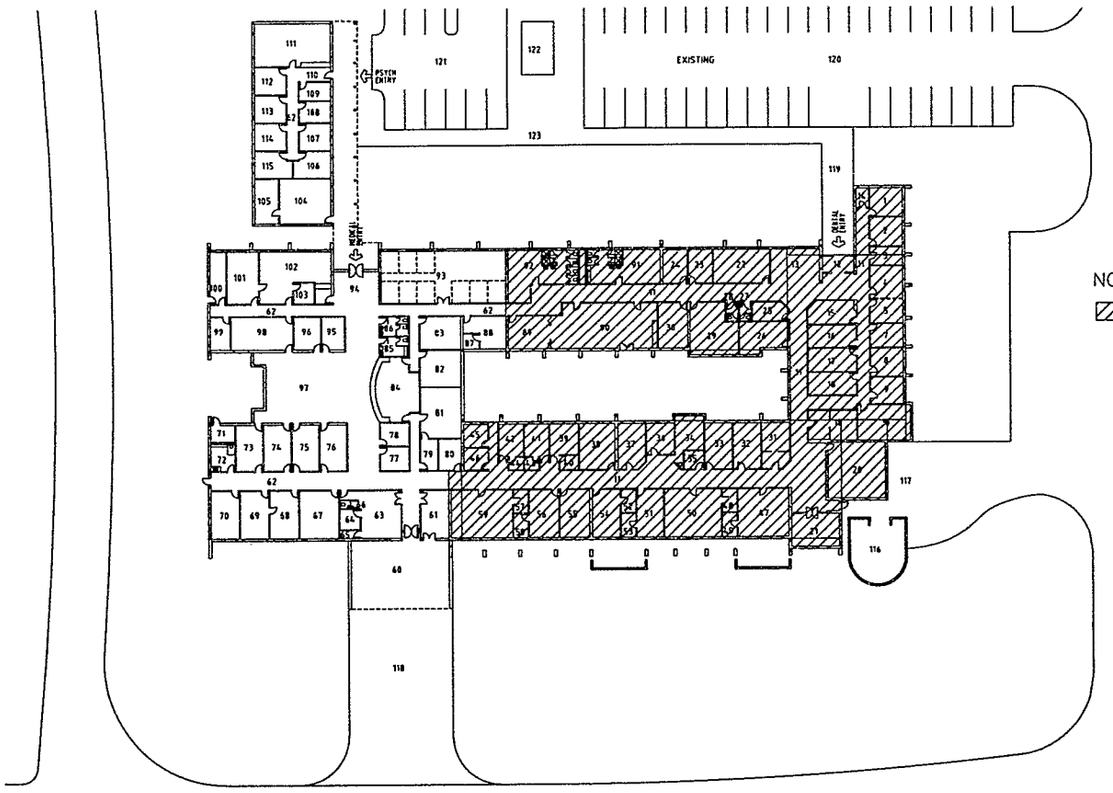
LEGEND

No	Description	Area
1	New open plan office	126m ²
2	New office	16m ²
3	Corridor	4.4m ²
4	Existing office (2 off)	
5	Existing office	
6	B76 extension	1183m ²
7	Loading area	
8	Crew room existing	

NOTE
▨ EXISTING

HMAS STIRLING
STAGE 3 DEVELOPMENT

EXTENSION TO NAVAL STORES WAREHOUSE

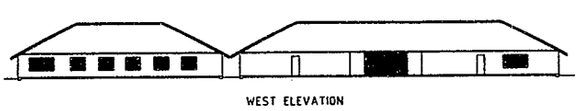


B-16

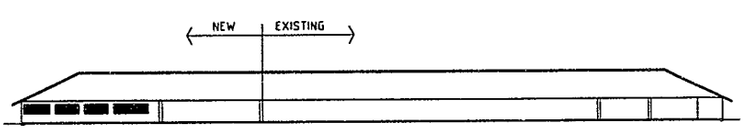
HMAS

STIRLING
STAGE 3 DEVELOPMENT

EXTENSION TO HEALTH CENTRE



WEST ELEVATION



NORTH ELEVATION

B-17

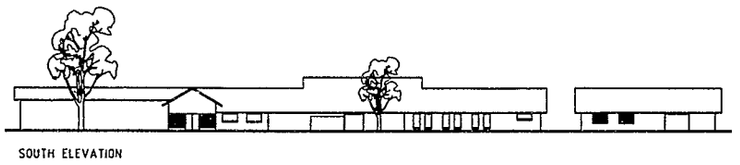
HMAS

STIRLING
STAGE 3 DEVELOPMENT

EXTENSION TO HEALTH CENTRE

LEGEND

No	Description
1	SDO
2	Dental Surgery 1
3	Dark Room
4	Dental Surgery 2
5	CSSD
7	Dental Surgery 3
8	Dental Surgery 4
9	Dental Hygiene
10	Plant Room
11	Corridor
12	Entry (Dental)
13	Waiting
14	Store
15	Dental Surgery 5
16	Dental Surgery 6
17	Oral Surgery
18	Recovery
19	Male Toilet & Change
20	Dental Laboratories
21	Dental Fleet Storage
22	Dental Administration
23	Dental Registrars Office
24	Dental Consulting Room 1
25	OPG
26	Dental Consulting Room 2
27	Toilet
28	Toilet
29	DO Office
30	Dental Store & Archives
31	Female Toilet & Change
32	Kitchen
33	Treatment
34	Linen Store
35	Bathroom
36	Nurses Office
37	Pan Room
38	Patient Common Room
39	Duty MO Cabin
40	Ensuite
41	1 - Bed Ward
42	1 - Bed Ward
43	Ensuite
44	Ensuite
45	Laundry
46	Unisex Toilet
47	4 - Bed Ward
48	Ensuite
49	Ensuite
50	4 - Bed Ward
51	2 - Bed Ward
52	Ensuite
53	Ensuite
54	2 - Bed Ward
55	Nurses Station
56	2 - Bed Ward
57	Ensuite
58	Ensuite
59	2 - Bed Ward
60	Ambulance Bay
61	Emergency
62	New Corridor
63	X-Ray
64	X-Ray Office
65	X -Ray Darkroom
66	X -Ray Patient Toilet
67	Senior Medical Officer
68	Human Services/Safety Officer
69	Accounts/ Typing
70	Archives
71	Plant
72	Medical Officers Toilet
73	Medical Officer 4
74	Medical Officer 3
75	Medical Officer 2
76	Medical Officer 1
77	Specialists
78	Surveys
79	CSSD
80	Duty MO Cabin
81	Minor Operations
82	Medical Records
83	Chief Petty Officer Medical
84	Reception
85	Male Toilet
86	Female Toilet
87	Audio
88	ECG Medical
89	Meeting Room
90	Lunch Room/ Training
91	Male Change
92	Female Change
93	Physiotherapy
94	Entry (Medical)
95	Visiting Medical Officer
96	Medical Officer 5
97	Waiting
98	Treatment Room
99	Plant Room
100	Cleaners Store
101	Bulk Medical Store
102	Dispensary
103	Pharmacy Office
104	EMU Office
105	EMU Laboratory
106	Drug & Alcohol Counsellor
107	Psychologist
108	Test Room
109	Waiting Room
110	Entry (Psychology)
111	Clerical
112	Senior Psychologist
113	Psychologist 2
114	Psychologist 3
115	Psychologist 4
116	Service Area
117	Service Access
118	Ambulance Area
119	Access Path
120	Existing Parking
121	Existing Parking Reduced
122	Service Building
123	New Access Path



NOTE
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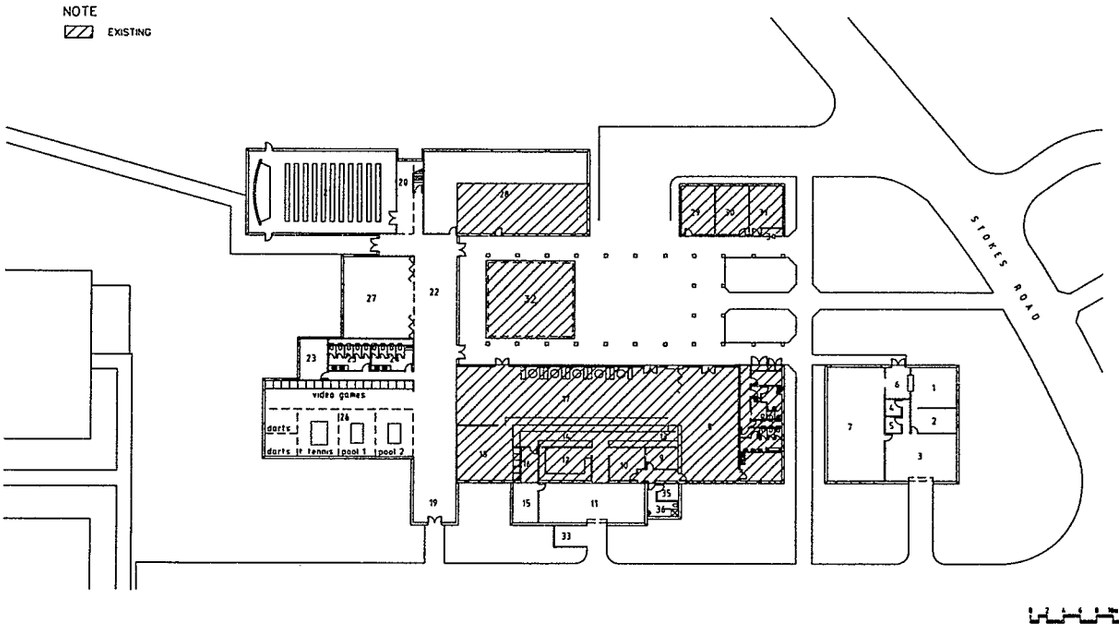


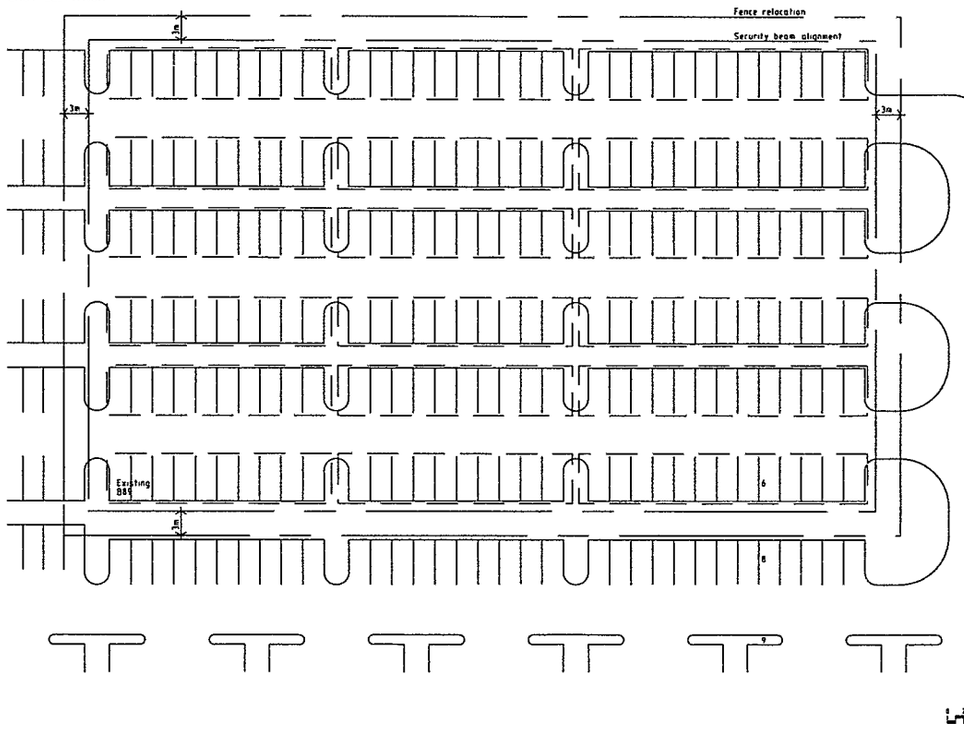
LEGEND

No	Description	Area
1	Admin office	28m ²
2	Public relations office	17m ²
3	Public relations store	52m ²
4	Brew room	4m ²
5	Secure store	4m ²
6	Foyer	12m ²
7	Display room	99m ²
8	Community meeting room	101m ²
9	Office	11m ²
10	Wash	17m ²
11	Store	61m ²
12	Prep	26m ²
13	Bank	13m ²
14	Servery	38m ²
15	Cool room	15m ²
16	Fridges	15m ²
17	Lounge/dining	193m ²
18	Mini-mart	48m ²
19	Foyer	26m ²
20	Projection above	20m ²
21	Auditorium	182m ²
22	Lounge/video games	84m ²
23	Plant room	17m ²
24	Male toilets	15m ²
25	Female toilets	15m ²
26	Pool \ video games	170m ²
27	TV room	80m ²
28	Library	202m ²
29	Canteen managers office	25m ²
30	Hairdresser	25m ²
31	Manager hotel services	23m ²
32	Covered area	103m ²
33	Service yard	10m ²
34	ATM	3m ²
35	Cleaner	5m ²
36	Canteen staff amenities	10m ²

B-18

HMAS
STIRLING
STAGE 3 DEVELOPMENT

GENERAL AMENITIES AND INDOOR RECREATION COMPLEX



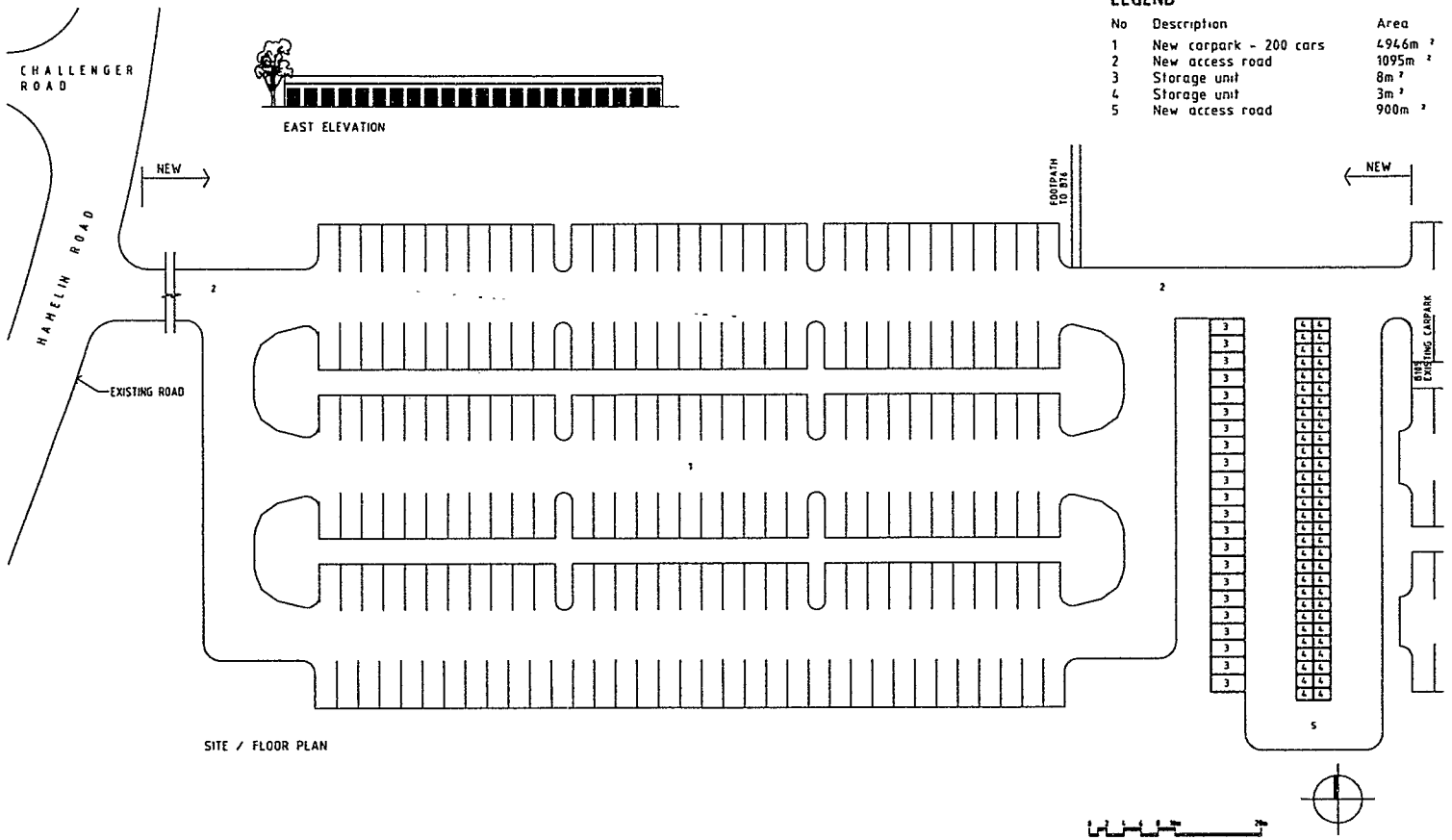
LEGEND

No	Description	Area
3	Storage unit	8m ²
4	Storage unit	3m ²
6	Security system	
7	New access road	945m ²
8	Existing parking relocated	
9	Existing islands amended	

B-19

HMAS
STIRLING
STAGE 3 DEVELOPMENT

CARPARK SECURITY & SHORT TERM STORAGE FACILITIES



B-20

HMAS

STIRLING
STAGE 3 DEVELOPMENT

NEW CARPARK & SHORT TERM STORAGE FACILITIES