

*Parliamentary Standing Committee on Public Works*

## REPORT

relating to the

# FURTHER DEVELOPMENT OF HMAS *STIRLING*, GARDEN ISLAND, WA.

(Fourth Report of 1994)

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA  
1994

The Parliament of the Commonwealth of Australia  
Parliamentary Standing Committee on Public Works

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Garden Island, WA.

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**MEMBERS OF THE PARLIAMENTARY STANDING  
COMMITTEE ON PUBLIC WORKS**

*(Thirty-First Committee)*

Mr Colin Hollis MP (Chairman)  
Senator Paul Henry Calvert (Vice-Chairman)

**Senate**

Senator Bryant Robert Burns  
Senator John Robert Devereux

**House of Representatives**

Mr John Neil Andrew MP  
Mr Raymond Allen Braithwaite MP  
Mr Russell Neville Gorman MP  
Mr Robert George Halverson OBE MP  
Hon. Benjamin Charles Humphreys MP

**SECTIONAL COMMITTEE ON THE FURTHER DEVELOPMENT  
OF HMAS *STIRLING*, GARDEN ISLAND, WA.**

Mr Colin Hollis MP (Chairman)  
Mr Russell Neville Gorman MP (Vice-Chairman)  
Hon. Benjamin Charles Humphreys MP

Committee Secretary: Peter Roberts  
Inquiry Secretary: Denise Denahy  
Secretarial Assistance: Patricia Grice

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

No. 56 dated Wednesday, 23 February 1994

**3 PUBLIC WORKS-PARLIAMENTARY STANDING  
COMMITTEE-REFERENCE OF WORK-FURTHER  
DEVELOPMENT OF HMAS *STIRLING*, GARDEN  
ISLAND, WA.**

Mr Sciacca (Parliamentary Secretary to the Minister for Administrative Services), pursuant to notice, moved-That, in accordance with the provisions of the *Public Works Committee Act 1969*, the following proposed work be referred to the Parliamentary Standing Committee on Public Works for consideration and report: Further development of HMAS *Stirling*, Garden Island, WA.

Debate ensued.

Question-put and passed.

## PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

### FURTHER DEVELOPMENT OF HMAS *STIRLING*, GARDEN ISLAND, WA.

By resolution on 23 February 1994 the House of Representatives referred to the Parliamentary Standing Committee on Public Works for consideration and report to Parliament the proposed further development of HMAS *Stirling*, Garden Island, WA.

#### THE REFERENCE

1. HMAS *Stirling*, located on Garden Island, 60 kilometres by road south of Perth, provides maintenance, supply and operational support for assigned and visiting warships as well as port, berthing, ship-side and administrative services. Additionally, it will become the home base for the COLLINS Class submarines. The overall development of HMAS *Stirling* comprises three stages. Stage 1 was largely completed in 1978 with additional works progressing through to Stage 2, which covers the development from 1989 to 1996. Stage 3 extends the development from 1996 to 2000. This proposal, which continues Stage 2 development, will provide additional operational, logistic, maintenance and training support prior to the planned Stage 3 development.

#### THE COMMITTEE'S INVESTIGATION

2. On 24 March 1994 the Committee appointed a Sectional Committee comprising Mr C Hollis, Mr R Gorman and the Hon B Humphreys to undertake this inquiry.

3. The Committee received a written submission from the Department of Defence (Defence) and evidence was taken from its representatives at a public hearing at HMAS-*Stirling* on Wednesday 20 April 1994. Prior to the public hearing the Committee inspected existing facilities at HMAS *Stirling*.

4. The following organisations also presented submissions and appeared before the Committee at the public hearing:

Conservation Council of WA

- . City of Rockingham Chamber of Commerce
  - . Department of Aboriginal Sites (WA)
  - . National Trust of Australia (WA)
  - . Garden Island Preservation Society
  - . Wildflower Society of WA.
5. Submissions and letters were also received from the following:
- . Intelligent Lighting Controls
  - . The Royal Australian Institute of Architects
  - . Energy Conservation Systems Pty Ltd
  - . The Institution of Engineers
  - . Department of Minerals and Energy WA
  - . Commonwealth Department of Primary Industries and Energy
  - . Commonwealth Fire Board
  - . Commonwealth Environment Protection Agency
  - . Department of Environmental Protection
  - . Australian Heritage Commission (AHC)
  - . ACROD
  - . Murdoch-University
  - . Royal Australian Artillery Historical Society of WA (Inc)
  - . City of Rockingham.



6. A list of witnesses who gave evidence at the public hearing is at Appendix A. The Committee's proceedings will be printed as Minutes of Evidence.

## **BACKGROUND**

### **Garden Island**

7. HMAS *Stirling* is located on Garden Island, Cockburn Sound and is 60 kilometres by road south of Perth. Cockburn Sound provides one of the most sheltered anchorages on the south-west coast of Western Australia. Garden Island, nine kilometres by two kilometres, has a total area of 1214 hectares and is joined to the mainland by a 4.2 kilometre causeway which was completed as part of Stage 1. Rockingham is the nearest mainland city, located 11 kilometres from HMAS *Stirling*. The climate on the island is similar to Perth with hot dry summers and mild wet winters. Annual rainfall is 830 mm.

### **Zone and Master Plans**

8. The Base has been developed in accordance with Zone and Master Plans prepared for Stage 1. The Zone Plan allocates land for facilities development. Each zone, which is related to specific functions, provides flexibility for detailed internal development into the future. The component of the Master Plan indicating development and zones areas may be found at Appendix B.

## **THE NEED**

9. The need to further develop HMAS *Stirling* stems from the Government's Two Ocean Navy concept. This requires the provision of a secure base on the western seaboard to support major fleet units operating in the Indian Ocean and minor fleet units which operate generally closer to the coastline.

### **Two Ocean Concept**

10. In recognition of these factors and the strategic importance of further developing HMAS *Stirling*, the then Minister for Defence the Hon. K Beazley MP tabled the "Fleet Base Relocation Study Report" in Parliament on 25 February 1987. Mr Beazley, in his tabling statement announced that:

- the Government recognises that the defence of Australia requires an increased naval presence in the west and that the East Australia Fleet Base cannot remain in Sydney Harbour indefinitely
    - the Government is committed to further developing HMAS *Stirling*, thereby making a Two Ocean Navy a reality. The development of HMAS *Stirling* reflects a strategic need for maritime operations to be conducted from the west as well as the east coast and the consequent need to ensure that maintenance support is available in the west
    - it is the Government's intention to move half the fleet to HMAS *Stirling* and further specific proposals now need to be considered in the light of the overall defence program.
11. In May 1993 the total base personnel was 1951. This is expected to increase to approximately 3000 personnel over the next 10 years. HMAS *Stirling* cannot currently provide the required facilities to accommodate the increase in personnel and necessary functions as the WA home-porting plan for ships proceeds. Resultant infrastructure expansion is in accordance with the Navy Corporate Plan.
12. The facilities proposed to support the Base, the assigned ships and associated personnel, are represented in the current HMAS *Stirling* master plan and are within the boundary of the Base on Commonwealth land.
13. In summary the program is as follows :
- Stage 2 - up to 1995/96. During this period existing deficiencies will be rectified and additional infrastructure provided progressively, to support further home-porting at HMAS *Stirling*
  - Stage 3 - 1996 to 2000. During this period some additional facilities will be needed to complete implementation of the Two Ocean Basing plan.
14. The provisional WA home-porting program is contingent on there being no consequential changes to the strategic situation, resource allocation or operational development requirements and reflects the most recent Navy planning.

## **Role of HMAS *Stirling***

15. HMAS *Stirling*, providing maintenance, supply and operational support for warships will also become the home base for the six COLLINS Class submarines. Other related infrastructure in support of the submarines has been completed, including the Submarine Escape Training Facility (SETF) and the Submarine Training and Systems Centre (STSC). The extension to the STSC forms part of the current proposal. The following requirements will be necessary:

- **maintenance** - there will be an increase in intermediate level maintenance undertaken, due to the home-porting of additional destroyers, submarines and support craft. There will be an increase in planning, ordering and contract co-ordination associated with the provision of maintenance work beyond the current establishment
- **operational support** - there will be an increased requirement for control, co-ordination and planning of operational training programs, recovery of exercise weapons, damage control and fire fighting continuation training and specialist ship survivability and sea safety (S4) training
- **administration support services** - administrative staff functions will increase to assist all ships and directly support non-self accounting units e.g. submarines. A general increase in support activities and maintenance services is necessary
- **scientific research and development** - in support of the COLLINS Class submarines and other Naval units, there will be an ongoing need for operational analysis, software developments, combat systems support, research and development
- **training** - with the increased naval population planned for Western Australia, there will be an increased request for dedicated facilities for technical, leadership, management and computer training.

## **Current deficiencies**

16. HMAS *Stirling* cannot presently provide facilities to support the increase in the Naval fleet nor the COLLINS Class submarines.

17. Present deficiencies include:

- . inadequate power supply capacity
- . inadequate storage capacity of F-44 AVCAT fuel for ship and shore-based helicopters
- . shortage of training facilities
- . lack of support for the COLLINS Class submarines - in particular for guided weapons and systems maintenance, scientific research and development and training
- . lack of a facility for small arms training with all activities external to the base.

18. Provision for additional works to overcome some of the foregoing deficiencies and provide in part for home-porting were initiated in Stages 1 and 2. This included appropriate infrastructure and services, together with waste management systems.

## **Committee's Conclusions**

19. A need exists to continue the development of HMAS *Stirling* to provide a secure base on the western seaboard to support major and minor fleet units home-ported there due to the Government's Two Ocean Navy concept.

20. A need also exists to provide operational support for the COLLINS Class submarines which will be based at HMAS *Stirling*.

## **THE PROPOSAL**

21. The proposed facilities will provide additional operational, logistic, maintenance and training support prior to the planned Stage 3 development. The development is to support the needs of the approved concept of a Two Ocean Navy.

22. The works proposed for this stage of the development are being

incorporated partially with Stage 2 Phase C, Stage 2 Phase D and an extension to the existing STSC. These are in advance of the previously planned Stage 3 development.

23. Works within this proposed development include:

- Stage 2 Phase C . helicopter support facility
- Stage 2 Phase D . small arms range
- . power house upgrade
- . F-44 AVCAT fuel storage expansion
- . training facilities
- . trials and research support facility
- . torpedo maintenance facilities.

Extension of the Submarine Training and Systems Centre.

24. These facilities will supplement the HMAS *Stirling* facilities previously completed or currently under construction.

#### **Alternatives Considered**

Stage 2 Phase C, Helicopter Support Facility (HSF)

25. The following alternatives to the construction of the facility on the southern side of the island were considered:

- . use of existing civil facilities in the Perth area
- . use of existing RAAF facilities
- . erection of portable building or interim facilities, utilising the present interim helipad at HMAS *Stirling*.

26. Assessment factors influencing the preferred option were the restricted access to RAAF facilities, the requirement to support 10 helicopters, the cost penalties and the dismantling costs of interim facilities and operational effectiveness of purpose-built accommodation.

Stage 2 Phase D, Small Arms Range

27. Defence advised the Committee that, following experience in the Gulf War, Somalia and Cambodia, it became apparent that naval personnel are in need of extra training in the use of small arms.

28. It is proposed to construct a small arms range on the western side of the island. Alternatives examined for the range activities included the Army facilities at Swanbourne, Bindoon and Bushmead. Bushmead has been the primary venue for small arms training, as it is the closest facility and the most readily available. However, Defence advised that this is scheduled to be closed in the near future. Swanbourne and Bindoon are considered unsuitable because of the significant travel distance, and the ensuing cost and loss of manhours. Closure of the Bushmead range will increase demand for the Swanbourne and Bindoon facilities, with consequent reduction in access time available to Navy. This will influence the effectiveness and quality of the training.

29. Navy regulations require rifle training at up to 300 metres for present service weapons. This matter is discussed further at paragraphs 48 - 61.

#### Stage 2 Phase D, Power House Upgrade

30. It is proposed to construct a small extension of the existing facility to accommodate a transformer and a frequency converter, together with an additional 22 kV cable from the mainland.

31. The conclusions from a study, "Electricity Supply and Upgrade to the Year 2005 at HMAS *Stirling*, Garden Island, WA" (Energy Study) by Australian Construction Services (ACS) in September 1993, were that by the year 1995 the load would exceed the capacity of the existing 22 kV feeder for about 15 per cent of the year and by the year 2000, for about 30 per cent of the year.

32. Therefore, in providing the necessary power requirements for HMAS *Stirling*, no alternative exists, other than to undertake an upgrade. It is possible to stage the upgrade by installing an additional generator. This was discounted on the basis of the high cost of power generated and the need nonetheless, to duplicate the feeder line in the future.

#### Stage 2 Phase-D; F44 AVCAT Fuel Storage Expansion

33. It is proposed to upgrade the existing facility. The decision to construct the HSF at HMAS *Stirling* to support naval aviation activity, leaves no realistic alternative to the increase in F-44 AVCAT storage capacity. Without this capacity, aviation activity cannot be supported by HMAS *Stirling* beyond 1994. Additionally, bulk storage of fuel delivered by

ship tanker offers the potential for cost avoidance over the current practice of supply by road/rail. Although investigated as an alternative, the manufacture of F-44 AVCAT at Kwinana to Defence specifications is not possible.

#### Stage 2 Phase D, Training Facilities

34. The preferred option is the construction of a dedicated training area. Other options included:

- reconfiguration of existing office accommodation at HMAS *Stirling*. However, this does not provide sufficient additional floor area to meet the future training requirements
- use of external TAFE facilities. This was discounted because of non-standard Defence course requirements and training areas, difficulty in sourcing courses for Naval personnel and significant time and travel costs.

#### Stage 2 Phase D, Trials and Research Support Facility

35. Research and development in support of the COLLINS Class submarines is essential. The existing shortage of space at HMAS *Stirling* precludes accommodation of trials and research staff within existing facilities.

36. The possibility of using other Commonwealth buildings or rental accommodation on the mainland was explored. Locating the facilities outside of HMAS *Stirling* on the mainland, would reduce the effectiveness of the support offered by trials and research staff and not provide any substantial cost saving. Security could also be compromised and be expensive to maintain.

#### Stage 2 Phase D, Torpedo Maintenance Facilities

37. The facilities will be required to be operational by the end of 1998 when HMAS *Platypus*, Sydney is scheduled to close. The options are to build new facilities in the eastern states, or expand the facilities at HMAS *Stirling*. Of these options, new facilities at HMAS *Stirling* best satisfy the strategic and time frame requirements. Additionally, there is potential cost avoidance in operation and maintenance costs by having the facilities on the west coast, rather than the east.

38. The current accommodation at HMAS *Stirling* for Regional Superintendent Naval Engineering Support (RSNES)-Perth is inadequate, and no practicable alternative is available.

#### Extension to Submarine Training and Systems Centre

39. It is proposed to extend the existing facility to accommodate training activities. The alternative is to stay at HMAS *Watson*, Sydney thereby splitting functions and increasing costs.

### Outline of Facilities

#### Stage 2 Phase C, Helicopter Support Facility

40. It is expected as a result of the Two Ocean Navy concept, that up to 10 helicopters will be based or home-ported at HMAS *Stirling*. The proposed facility will provide operational and intermediate level maintenance capabilities for the aircraft. The HSF will also provide an area capable of non-controlled, day and night helicopter operations for training and operational flights.

41. A site has been master planned at the southern end of Garden Island which meets the safety and environmental issues as raised by the Department of Defence Environment and Heritage Section.

42. Construction consists of a maintenance hangar, administration building, sundry outbuildings, 450 metre long runway, taxiway and multi-purpose apron.

43. Defence advised the Committee that there will be provision for the storage of six helicopters in the proposed facility - four with rotors folded and two with rotors unfolded. The likelihood of all 10 helicopters requiring storage ashore is fairly remote. However, if necessary, this could probably be achieved by housing the helicopters with their rotors folded. Defence confirmed that light aircraft will not land on the runway.

44. The City of Rockingham Chamber of Commerce expressed concern that increased helicopter flights may interfere with local residents and local business enterprises and restrict the use by small boats of the waters of Cockburn Sound. Defence advised the Committee that it is conscious of the impact that such a facility may have on the local community. It has



therefore initiated an in-depth noise survey and assessment based on similar operations in NSW. A probable noise profile is being compiled recognising that flight paths should not impact on residential areas and will largely be confined to the waters surrounding Garden Island. Anticipated flight patterns, speeds and heights are such that they should not impact on local water craft nor restrict their movements, as flight paths will basically be from the ship to the Base and occasionally to RAAF Base Pearce.

45. Defence advised the Committee that following concerns expressed at the public hearing, it has relocated the northern fence line to protect native trees in the area. Defence confirmed that *Callitris preisi* (Rottneest pines), *Melaleuca lanceolata* (Rottneest teatrees) and *Pittosporum phylliraeoides* (Cheesewood trees) in the area will not be affected by the development.

46. The Committee was advised that Defence is currently propagating Cheesewood trees and other native trees and shrubs in its nursery at HMAS *Stirling* from seeds collected on the island.

#### **Committee's Conclusion**

47. The Committee commends the Department of Defence on its policy of propagating trees and shrubs native to Garden Island in its nursery at HMAS *Stirling*.

#### **Stage 2 Phase D, Small Arms Range**

48. It is envisaged that the range will be used to conduct specialised training and standard range course training as required by the Permanent Naval Force (shore and ship-based), Reserves and Naval Reserve Cadets. The frequency of use will vary with training requirements. Defence informed the Committee that following advice from Army, the range is in accordance with military guidance and the safety template provided to it.

49. Defence advised the Committee that 84 per cent of the island is available for public access. Access to the beach areas is by boat. Construction of the small arms firing range will mean that 2.5 kilometres of this beach area will be unavailable to the public. Defence advised that this would only occur up to about three days per week when the range is operational. Access will not be restricted on weekends or public holidays.

50. The original Master Plan identified a Zone (Zone N), located on the

western side of Garden Island. Zone N on the updated Master Plan has been rotated through approximately 90° to allow for the safety template to be enclosed within Naval waters. The amendment was approved and ratified by the Stage 2 Project Control Group and the Garden Island Environmental Advisory Committee (GIEAC). The proposed site was selected after assessment of:

- . preferred N-S orientation
- . topographical features with a need to minimise clearing and earthworks
- . the 'safety' template being contained within Naval waters
- . environmental management
- . safety management.

51. The arrangements between the Commonwealth of Australia and the State of Western Australia established GIEAC, which is charged with advising the Commonwealth on the environmental management of Garden Island.

52. The Committee was advised that GIEAC consists of the Officer Commanding HMAS *Stirling* or his/her representative, a State representative, a Commonwealth representative and such other persons as the Commanding Officer, the State representative or the Commonwealth representative may wish to co-opt on a temporary basis for the purposes of the efficient functioning of the Committee. GIEAC is responsible for the provision of advice to the Commonwealth on all aspects of the environmental management of Garden Island.

53. Defence advised the Committee that changing the direction of the small arms range from east-west to north-south was submitted to the AHC on a Section 30-referral-and permission received.

54. Range facilities will include a 300 metre long range with firing positions at each 100 metres, an access road and car park, control hut, ablutions and two targeting systems, an automatic system with computer technology and a manual system. Construction would require sealing of the existing access road and clearance of an area of natural vegetation for the

range and portion of the road. The vegetation and excavated soil will be used to re-establish adjacent beaches/dune areas affected by wind and other erosion.

55. The Committee was advised that due to the safety area being relocated, it now encompasses more of the shore line. However, a considerably lesser portion of the adjacent fishing waters are now affected.

56. Operational safety procedures will be initiated and managed. These will include sentries, warning flags and personnel allocated to restricting public access within the safety template. Defence assured the Committee that in line with Government and Departmental policy, standard notices will be placed in local papers, the safety zone will be patrolled prior to the commencement of use and visual markers used to indicate that the range is in operation. Defence stressed that the safety of the public will be paramount at all times.

57. Defence advised the Committee that it is not envisaged that the range would be made available to local shooting clubs.

58. Several submissions expressed concern that placement of the small arms range will impact on the natural vegetation cover on the western side of the island. This area is relatively free of disturbance when compared to similar vegetation communities on neighbouring Rottne Island and the mainland. Defence, however, assured the Committee that it had rotated the axis of the small arms range, so as to contain the safety template within Naval waters and this had also reduced the impact on the flora of the island.

59. The Committee, however, has yet to be convinced that the construction of a small arms range is fully justified. The Committee has brought to the attention of Defence the possibility of using a simulated firearms firing system. Although acknowledging that simulation can never fully replace actual practice on a firing range, the Committee believes that simulation could form part of training. This simulation could then be complemented by training at one of the Army facilities on the mainland.

#### **Committee's Conclusion and Recommendation**

60. The Committee has yet to be convinced that a need exists for a small arms range at *HMAS Stirling*.

61. The Committee recommends that the Department of Defence investigates the possible use of a simulated firing range which could be used in conjunction with Army firing ranges on the mainland.

#### Stage 2 Phase D, Power House Upgrade

62. The Power House transforms power received from the SECWA main grid to voltages and frequencies required for use on board HMAS *Stirling* and ships when berthed. The extra demand from the additional naval vessels home-ported between the present and the year 2005, will be beyond the existing facility's capacity. The Energy Study undertaken separately to study future power requirements, outlined recommendations to meet the demand. The study examined expected load increases due to future Stage 2D and Stage 3 facilities, and loads arising from the increasing number of ships. This matter is discussed further at paragraphs 98 - 100.

63. The critical elements for the upgrade include:

- . an additional 60 Hz frequency converter
- . an additional 22 kV feeder line from Rockingham
- . an additional transformer
- . two additional air compressors.

64. The installation of the frequency converter necessitates a 6 metre wide extension to one side of the existing power house building, whilst the new transformer requires a small compound.

#### Stage 2 Phase D, F-44 AVCAT Fuel Storage Expansion

65. The existing F-44 AVCAT fuel storage facility at HMAS *Stirling* cannot provide the required support nor capacity to accommodate the planned increase in aviation activity. This activity results from the home-ported of helicopter capable ships and the operation of shore-based aircraft. It is proposed that storage capacity for AVCAT fuel be increased from the current 120 cubic metres to 2120 cubic metres, together with a 1000 cubic metre quality inspection tank. This increase in storage capacity will meet the projected usage and reserve requirements up to the year 2006.

66. Currently the fuel is delivered in 30 cubic metre loads by road/rail transport from Melbourne, where it is manufactured under contract. To meet the increased storage requirements, the fuel is expected to be shipped in bulk by tanker in 1000 cubic metre lots. The increased storage provides the opportunity for cost avoidance, through economy of scale.

67. Construction will consist of a 2000 cubic metre holding tank, a 1000 cubic metre quality inspection tank, new 200mm diameter import line and associated pipework, pumps, filters and valves. It will be located directly adjacent to the existing facility and will be designed to meet environmental safety requirements. This includes a bunded area, protected by a High Density Polyethylene (HDPE) liner, which would incorporate a leak detection system. In the event of a major spill, the fuel would be contained within the bunded area to allow for emergency pumping and disposal procedures to be enacted.

#### Stage 2 Phase D, Training Facilities

68. The various training activities at HMAS *Stirling* have been rationalised and have been re-titled Training Centre - West. Responsibilities include the delivery of several levels of leadership and management training, together with the co-ordination of technical training.

69. Present training facilities are dispersed around a number of different buildings at HMAS *Stirling*, together with the Damage Control and Fire Fighting Facility. These facilities are inadequate to meet the expected expansion of training requirements.

70. The expansion of Naval training activity results from the increase in normal population and the decision to localise leadership and management training. Therefore, the requirement is to provide a dedicated training centre close to existing facilities and ships.

71. Also as an extension of the training needs, there is a requirement to increase the capacity of Ship Survivability and Sea Safety (S4) training. The existing facilities are considered to be inadequate for the advanced levels of training proposed.

72. Facilities proposed include:

- training centre - west complex. A purpose designed single level

building with an approximate gross floor area of 2750m<sup>2</sup>, located opposite the existing STSC would centralise all educational and training activities

- extensions to the damage control and fire fighting facility. An extension to the existing small administration and classroom facilities would enable the increased training activities to be accommodated. A separate workshop would provide flexibility in operation

- S4 training facilities - two small buildings for a simulated ship cleansing training unit and a protective face mask testing facility.

73. Defence advised the Committee that training will be carried out not only for submariners but also for personnel on ships based at HMAS *Stirling*. It is anticipated that there will be three guided missile frigates and four Anzac ships based at HMAS *Stirling* around the year 2000. Personnel on these ships have to be requalified in a continuing way on damage control, seamanship, safety courses and a wide range of management courses.

#### Stage 2 Phase D, Trials and Research Support Facility

74. With the home-porting of Naval vessels, particularly the COLLINS Class submarines at HMAS *Stirling*, there is a support need for ongoing operational research and development. The trials and research staff would undertake operational analysis to solve problems, improve systems or develop additional skills and capabilities. These activities involve constant interaction with the users (in particular, their secure computer network) throughout the life of the COLLINS Class. Because of the sensitivity of the data and equipment, a secure location is needed. Existing facilities at HMAS *Stirling*, do not have the capacity to incorporate the needs, or the specialist laboratories and research areas.

75. A single level building with an approximate gross floor area of 2000m<sup>2</sup> is to be constructed, opposite the STSC. It has been designed around the specific functional relationship required for such scientific activities and integrates office accommodation, workshop facilities and laboratories.

#### Stage 2 Phase D, Torpedo Maintenance Facilities

76. The required facility will provide storage, preparation for firing, testing

after firing, depot and intermediate level maintenance for Mk46 and Mk48 torpedoes and Encapsulated Harpoon Certification Training Vehicles (EHCTVs). The latter provide a reusable training vehicle that simulates the Encapsulated Harpoon (submarine launched harpoon anti-ship cruise missile).

77. The existing Torpedo Support Facility (TSF) has provision for the washing out of OTTO fuel (special fuel for driving a torpedo engine) and the preparation of the torpedoes for transport back to the east coast for maintenance. This particular facility, constructed within Stage 2, was an integral part of an overall longer term plan for relocating torpedo maintenance functions to HMAS *Stirling*.

78. Further works to complete the relocation were originally proposed as part of Stage 3, but recent studies have determined that earlier completion of the relocation provides significant cost savings.

79. Given the specialist functions, two separate buildings will be constructed, thus providing an optimum solution by utilising where possible the existing TSF.

80. These functions, which have been recognised in the Zone Plan are either categorised as non-explosive or explosive. Specifically designed buildings will be located within the respective zones, as incorporated into the Master Plan. These are:

- non-explosive maintenance facility: A building with an approximate gross floor area of 4400m<sup>2</sup> integrating loading/unloading areas, workshops, testing areas, administration, stores, documentation control, Mk46 non-explosive testing, together with OTTO fuel handling. Subsequent to the preparation of the Master Plan, the site of this facility has been amended to minimise the effects on the natural vegetation.

- explosive test cell extension to TSF: A 450m<sup>2</sup> extension of the existing building which is located in the Explosive Zone (Zone B). This will accommodate testing for the Mk48 torpedo. There will be a common use of delivery areas, gantry cranes and amenities. The location of this function, classified as "explosive", was confirmed by the Defence Site Selection Board.

81. The project will also purchase specialist torpedo testing equipment manufactured in the *United States*. This has a lead time of approximately 27 months, which must be incorporated into forward planning.

82. Although independent of the maintenance functions, this facility requirement incorporates an extension to the existing RAN Armament Weapon and Explosives Depot (RANAWED), for RSNES-Perth. At present there is no dedicated office accommodation at HMAS *Stirling* in support of the RSNES functions.

83. Defence advised the Committee that the cost of transporting two torpedos from coast to coast by road is approximately \$70 000 per trip. If the submarines are to be based on the west coast, then it seems logical to base the weapons on the west rather than the east coast. At present Defence envisages 75 firings a year, all of which will be conducted on the west coast.

84. The Committee was advised that there is provision on the Master Plan for a larger demolition range in the north-west corner. Although this is desirable for the future, Defence does not at this stage propose to proceed with that development.

#### Extension to Submarine Training and Systems Centre

85. The STSC is a single, integrated facility providing for all aspects of submarine training, operational information system upkeep and tactics, and operating procedure development. Extensions to the STSC will house the Submarine Warfare Systems Centre (SWSC) and equipment to be transferred from HMAS *Watson*, Sydney. The transfer is a consequence of the Government's decision to home-port all COLLINS Class submarines at HMAS *Stirling*. To meet the new requirements, extensions of approximately 2810m<sup>2</sup> are necessary, comprising:

- single storey extension of approximately 1250m<sup>2</sup> to the north wing of the existing building
- single storey extension of approximately 1560m<sup>2</sup> to the west wing of the existing building.



## **DESIGN CONSIDERATIONS**

86. Planning has been developed in compliance with Defence Functional Design Briefs as issued and the Department of Defence Services Scales and Standards of Accommodation. Zone and Master Plans for HMAS *Stirling*, Garden Island have previously been developed and approved by Defence.

### **Design Philosophy**

87. Particular aspects relating to the overall design of the development include:

- an architectural design philosophy for the current Stage 2 development has been prepared and approved by Defence. New buildings will reflect and be in sympathy with the existing buildings, but will not necessarily be identical in form and treatment. Flexibility to allow for future expansion has been provided
- most buildings in the accommodation zone are characterised by red brick, tile roofs or aluminium sheet roofs. This philosophy continues in the other zones, to the extent that Stage 2 buildings immediately adjacent to Stage 1 buildings are of similar form and material. The design of industrial-type buildings has been developed to meet the functional requirements, but remains complimentary to the architectural form generally adopted.

### **Marine Environment**

88. The selection of materials will recognise the high corrosion factor of the moist salt-laden environment. Durable materials will be used with due regard to cost restraint.

### **Provision for the Disabled**

89. Consideration has been given to disabled access. Wheelchair access will be provided generally, except to upper levels. If necessary, lifts will be provided. Toilet facilities for disabled persons will be provided where appropriate.

90. Defence assured ACROD that it has given an undertaking to provide adequate provision in the proposed facilities for access to people with disabilities, in line with relevant Commonwealth guidelines. Measures such as directional aids and colour contrast for delineation of doors and steps are also considered in the design of facilities where practical to assist people with vision impairment. Defence advised that incorporation of an "audio loop", to aid people who rely on the assistance of hearing aids, while considered helpful in a lecture theatre type environment designed for public use, is not considered to be appropriate for the type of facilities proposed.

#### **Ablutions**

91. Ablution facilities have been increased due to an increase in the number of female personnel in the Navy permanent work force.

#### **BUILDING WORKS AND SERVICES**

92. The range of materials and finishes to be used will generally reflect those that currently exist. The selection of materials is based on an assessment of performance in a coastal environment, which recognises factors such as function, economy, durability and ease of maintenance.

#### **Material and Finishes**

93. Generally building materials to be used include:

- External:
- . red metric modular clay bricks or grey concrete blocks
  - . anodised aluminium window frames
  - . painted steel structural frames
  - . painted steel door frames
  - . galvanised steel roller shutters
  - . lightweight cladding
  - . terracotta tiles, aluminium sheeting or colourbond steel.

- Internal:
- . masonry
  - . plasterboard on steel stud walls or clay bricks
  - . carpet to offices and administration areas
  - . special protection to industrial areas
  - . ceramic tiles to floors and walls in toilets
  - . concrete grano floors
  - . ceilings of plasterboard and plaster skim to underside of concrete floor slabs.

### Construction

94. Generally construction can be described for categories of facilities as follows:

- . Workshops and Industrial Type Buildings:
  - . steel portal frame on concrete footings with concrete floor slab
  - . masonry and lightweight cladding to walls and aluminium roofing
  - . the explosive test cell will be of light frangible (i.e. blast vent) construction.
- . Office Type and Training Facilities:
  - . steel-braced frames with brick cladding and tile roofs - concrete footings and ground slabs.

### Engineering Design

95. Structural, mechanical, electrical, civil and hydraulic design will be carried out in accordance with the Building Code of Australia (BCA), the relevant Australian Codes and Standards and Departmental Technical Directives.

96. Successful construction tenderers will be required to produce Quality

Assurance Plans to clearly show how BCA, Australian Standards and any additional Defence requirements will be met and the required standards for construction/installation are maintained.

### **Mechanical Engineering Services**

97. Consideration of the mechanical services includes :

- . airconditioning will be provided to training facilities, offices, key maintenance areas and other areas, where required. The design will take into account life-cycle costing and operational zoning areas to ensure the units are non-active out of hours, or when not being utilised
- . the large open areas of the engineering workshop type buildings will be naturally ventilated. Space heating will be provided to workshops where required
- . toilets, cleaners' rooms and some storage areas will be mechanically exhausted. Localised exhaust systems will be provided where required
- . generally domestic hot water will be provided by liquefied petroleum gas fired plant or small electric units - a further review will be carried out during project documentation and solar energy will be used if proved economic
- . compressed air will be provided where required.

### **Electrical Engineering Services**

98. The Committee queried whether wind power had been considered as an alternative to other sources of power for the island. Defence advised that the Energy Study considered alternative energy sources. ACS commissioned the State Energy Commission of WA (SECWA) to conduct a study on the feasibility of using renewable energy sources in reducing the cost of energy.

99. Two renewable energy technologies considered were wind energy and solar power. SECWA concluded that solar energy was not viable due to the high capital cost per kW. With regard to wind energy, SECWA concluded

that a wind farm would provide a low rate of return. For a capital expenditure of \$2.3m Navy could expect to avoid electricity purchases worth \$136 000 per annum. This would represent an internal rate of return of 4.3 per cent. Defence concluded that, although alternative energy sources had been considered, the inability to guarantee availability at the time of each daily peak demand, cannot justify the capital expenditure and running costs. The only feasible alternative source to the SECWA grid is diesel, but this becomes non cost-effective after approximately 90 hours of operation. The cheapest option for increasing the energy available was assessed as being another cable from the mainland.

100. The Committee notes that this study was undertaken in September 1993 and believes that there have been recent major breakthroughs in solar energy technology which could lead to significant cost reductions. The Committee believes Defence should continue to monitor this situation.

101. *Consideration of electrical services includes:*

- the existing high voltage distribution system will be extended to cater for the new facilities. The design will take account of energy efficient systems and whole of life costs
- new substations will be required to major load centres
- switching patterns will be arranged to utilise available daylight. Natural light will be introduced from suitably positioned windows
- all external power cabling will be underground
- external electrical services will include conduits and cables for telephone, security, fire alarm, public address systems and fault monitoring systems. Public address systems will be provided only where specifically required for the functions
- lighting will be provided to roadworks, car parks, pathways and recreation areas
- the telecommunications systems on the island are being upgraded separately, within Stage 2 engineering services.

102. Defence assured the Committee that its aim is to reduce energy consumption. The design of the buildings will use natural light to the maximum extent possible. Where artificial lighting is required, control will be by switching pattern.

### **Civil Engineering Services**

103. Civil engineering requirements include:

- . roadworks and car parks will generally be provided as extensions to the established road network to service the individual facilities
- . buildings will be constructed on natural sand with cut and fill as necessary
- . generally pavements will be graded to drains, which either connect to the existing stormwater system or into soakwells as appropriate. Building gutters and downpipes will discharge direct to local soakwells or the existing drainage system
- . paved access will be provided to all facilities
- . in general facilities will connect into the established (or extension of the established) water main, fire main and sewer systems adjacent to the individual sites
- . the existing water mains across the causeway and storage tanks are adequate for the projected increased demand. The existing reticulation system will be extended to the new facilities
- . landscaping will be in accordance with a Landscape Master Plan.

### **Fire Protection**

104. All construction and fire protection requirements will, as a minimum, be in accordance with the provisions of BCA which is the Defence construction standard, and all other applicable Codes and Standards. Additionally;

- a suitably experienced and qualified certifier will be employed to certify that the design and construction meet the requirements of the BCA, relevant Codes and Standards and any additional Defence requirements
- fire protection to a higher standard than the "required" minimum may be utilised to adequately protect Defence facilities and equipment
- the WA Fire Brigade will be invited to visit the site and offer comment throughout the construction phase
- facilities not adequately addressed by the BCA (e.g. helicopter hangar) will have fire protection installed in accordance with the requirements of the Defence Manual of Fire Protection Engineering (FACMAN 2)
- generally all buildings will be monitored by thermal-type fire detectors connected through local indicator panels to the Base security building
- fire points with fire hose reels supplemented by hand-held extinguishers will be provided to each building and facility in accordance with Australian Standards AS 1221, AS 2441 and AS 2444
- fire sprinkler or deluge systems will be installed where required by the BCA and in locations requiring additional protection as determined by a Defence risk assessment.

105. The Committee queried whether burnback should be carried out on the island. Defence advised that its philosophy is that it is better to allow the material to break down - its policy being that there should not be any burning on the island. A network of fire trails has been established and appropriate equipment is deployed around the facilities areas. The Wildflower Society of WA commended Defence on its fire policy and agreed on the reasoning behind the policy.

106. The Commonwealth Fire Board expressed concern over the limited fire brigade service on the island and the limited services available from the mainland. Defence advised the Committee that this issue will be addressed

during the design phase of the project and will take into account the adequacy of inbuilt fire protection and suppression at major facilities.

107. The Committee was advised that the water supply for fire fighting purposes is supplied from two independent systems. The first system is a salt water supply main reticulated to all wharves and pressured by salt water supply pumps. This system provides a salt water fire main to ships alongside. The second system is a fresh water system which includes a supply main from the mainland, two large reservoir tanks located on the island, booster pumps and reticulation throughout the built-up area of Garden Island. Defence agreed that there are limited fire brigade services on the island and limited services available from the mainland. This places a greater emphasis on the need for inbuilt fire protection and suppression at major facilities housing high value assets, or assets with long lead times for replacement, such as the proposed HSF.

108. Defence confirmed that the HMAS *Stirling* Fire Station has four fire fighting appliances and one hazardous materials (HAZMAT) unit capable of responding to domestic, ship and aircraft type fires and to HAZMAT type incidents e.g. chemical spills. The Commonwealth Fire Board also expressed concern over the causeway and bridge to the mainland being subject to high wind, which could delay brigade attendance from the mainland if this was required. Defence indicated that advice from HMAS *Stirling* is that vehicle access across the causeway and bridge is not disrupted by high wind conditions. However, during occasions of "king tides" together with high wind, water may overshoot the causeway area causing some disruption to traffic.

109. The Committee believes that the large number of Navy assets on the island, together with the dense vegetation place a great emphasis on fire protection. With civil fire brigades being located across the causeway on the mainland, the Committee has some concerns over Navy's ability to control a major fire should one occur on the island.

#### **Committee's Recommendation**

110. The Committee recommends that the Department of Defence continues discussions with both the West Australian Fire Brigade and the Commonwealth Fire Board regarding the adequacy of fire protection during all stages of the proposed works.



## Hydraulics

111. Hydraulic and plumbing services include:

- provision of toilets with facilities for the disabled in accordance with the BCA
- hot and cold water will be reticulated throughout the facilities to showers, basins and sinks. Cold water will be provided to all cisterns, refrigerated drinking fountains, fire hose reels and hose taps. Energy efficient shower roses will be installed in all shower cubicles
- industrial buildings will incorporate appropriately designed waste water or toxic waste management systems for collection, storage and disposal.

112. Defence advised the Committee that the toilets would have a dual flush system.

## ENVIRONMENTAL IMPACT

113. Extensive investigations were carried out to guide the planning, design and implementation for Stage 1. Protection measures proposed in the 1970 and 1972 Public Works Committee hearings were endorsed by the previous Committee. (Refer PWC Reports 22/1970 - Cockburn Sound - Construction of the Point Peron - Garden Island Causeway and 7/1972 - HMAS *Stirling* Cockburn Sound - Construction of a Naval Support Facility (HMAS *Stirling*) at Cockburn Sound, WA). In 1974 Defence and the WA State Government investigated physical and biological matters related to Garden Island. This investigation resulted in a Land Management Plan (1980). As part of the planning for Stage 2 and Stage 3, a Public Environment Report was issued in 1989. This was endorsed by the then Minister for Arts, Sport, the Environment, Tourism and Territories, Senator the Hon. G Richardson, along with actions which have now been undertaken.

114. The future construction and ongoing operation of the proposed facilities will be in accordance with the Environmental Management Plan (EMP) for HMAS *Stirling* at Garden Island, as prepared in March 1993. This document contains a series of management action plans which comprehensively address the key issues associated with HMAS *Stirling* at

Garden Island. Environmental certificates of clearance from the Department of Defence Environment and Heritage section have been issued. Particular issues relating to sites requiring clearing in sensitive areas have been studied and assessed. The conditions attached to the clearances will also be adhered to, either during construction or ongoing operation. These conditions mainly relate to environmental protective measures as over-viewed by GIEAC.

115. The Committee was advised that the island has a surface area to the low water mark of 1214 hectares. Defence advised the Committee that it currently has 191.5 hectares, or 16 per cent of the island reserved for Naval use. Should the proposal be approved then a further 14.6 hectares would be reserved, bringing the total area available to the Navy to 206.1 hectares or 17 per cent of the island. Defence stressed that this does not include the safety template for the small arms range, which will be used intermittently on about three days per week. Defence advised that to the best of its current knowledge, the total development of HMAS *Stirling*, including Stage 3, would remain at 17 per cent or 206.1 hectares.

116. The Wildflower Society of WA expressed concern over the potential loss of habitat integrity and increased disturbance of the environment from further development of Garden Island. There are four species of fauna which are either rare or vulnerable. These are the tamar wallaby, the carpet python, the lined skink and the brush bronzewing. Defence advised that its 1993 EMP provides strong policy commitments to the maintenance of habitat integrity and outlines management actions which will minimise habitat loss. Defence stressed that it recognises that the native animal life on the island plays an essential role in the natural ecosystem of the island. Accordingly, environmental management is aimed at maintaining the behaviour, diversity and ecological integrity of indigenous animal species.

117. At the public hearing, reference was made to the Rottnest Island pine forests, the Rottnest teatree forests and the Cheesewood forests on the island, which is still 86 per cent vegetated. The Committee was advised that it is Defence policy that no exotic plants or animal species will be introduced or kept on the island for any reason. Exotic species found on the island will be controlled and, if possible, eradicated. Defence advised that it has a very extensive and expensive weed control program in progress on the island, with arum lilies and bridal creeper being the two main targets. It is not intended to have any extensive grassed areas as these tend to attract weeds.

118. Defence stressed that it recognises the importance of Garden Island as a biological entity and has undertaken to take due consideration of the native flora and fauna in its environmental management policies.

119. At the public hearing the National Trust expressed its belief that Defence has concentrated on ecological and scientific values, rather than cultural heritage values on Garden Island. The Committee was advised that the National Trust believes that a full conservation plan should be carried out which will not only identify the cultural values of Garden Island but also assess the degree of significance of the various sites and the various conservation measures that need to be implemented. A similar plan has been carried out by the Rottneest Island Authority, at the request of the National Trust. A draft plan for Rottneest Island has been completed and is presently being reviewed by the National Trust. The Committee notes that a submission received from the AHC advised that the historic reserve in Zone C is entered in the Register of the National Estate as the Cliff Head Historic Site.

120. The Committee believes that Defence should have discussions with the National Trust of WA regarding its concerns over cultural heritage issues.

121. During the public hearing the Committee received the impression that non-government environment/conservation groups believed that they were not adequately consulted or represented when decisions are made concerning environmental issues on Garden Island. The Committee believes that this problem could be alleviated by having a representative of these groups on GIEAC. As indicated in paragraph 52 the GIEAC consists of the following members:

- the Commanding Officer of *HMAS Stirling* or his/her representative (Chairman)
- a Commonwealth representative
- a State representative, and
- such other persons who may be co-opted, on a temporary basis, to assist the functioning of the committee.

122. The Committee believes that membership of GIEAC should be increased to include a representative of non-government

environment/conservation groups.

#### **Committee's Conclusion and Recommendations**

123. The Committee commends the Department of Defence on action taken to preserve the unique environment of Garden Island.

124. The Committee, however, recommends that the Department of Defence carry out discussions with the National Trust of Australia, WA concerning cultural heritage issues.

125. The Committee further recommends the appointment of a representative of the non-government environment/conservation groups to the Garden Island Environmental Advisory Committee.

#### **Heritage Considerations**

126. The Department of Aboriginal Sites raised the possibility of the existence of Aboriginal sites on the island. It believes that at least one burial site is likely to exist on the island. It is known that an Aboriginal man was murdered on the island by some other Aboriginals when he was put ashore from the colonial brig *Champion* in 1837. Consequently, should any skeletal material be uncovered, then work should cease immediately and the appropriate authorities be informed. A search of its register system indicated that no Aboriginal sites as such have been recorded on Garden Island although three artefacts (flakes) have been located. Two of these flakes are made of fossiliferous chert, which is a stone believed to have come from a source that lies somewhere between the mainland and Rottnest Island. When the sea level rose, this source of stone ceased to be available.

127. Defence advised the Committee that there is no evidence of Aboriginals inhabiting Garden Island, although it is likely that the island was visited by Aboriginal people. No cultural materials have been left in the form of middens or campsites. It is believed that the absence of surface water may have been the main reason why there were no permanent Aboriginal settlements on the island. Defence assured the Committee that as works progress, it will immediately inform the relevant authorities and take all necessary precautions should any evidence of Aboriginal settlement be found.

128. The AHC expressed concern that the Cliff Head historic site may be

adversely affected by the proposed modifications. Defence advised that this area is protected by access control and environmental management procedures already in place. These procedures will ensure that these areas are not adversely disturbed by proposed developments, service personnel or members of the public. Defence assured AHC that it will take into account recommendations from the Department of Aboriginal Sites (WA) when planning for the proposed developments.

129. The Committee was advised that at the direction of the Commanding Officer HMAS *Stirling*, an annual inspection on the physical condition of heritage areas and materials is undertaken. This includes the condition of the foot tracks to the historic fortifications as well as the remains of the gun positions and other structures on the island.

130. Defence advised the Committee that the AHC is currently considering the nomination of Garden Island for inclusion in the Register of the National Estate. When this process has been finalised, Defence will review the relevant action plans of the HMAS *Stirling* Environmental Management Plan to take into account the requirements to protect the natural heritage and cultural heritage values of the island.

131. The Royal Australian Artillery Historical Society expressed concern over Defence's plans concerning coast and artillery defence sites on the island. Defence advised that it is committed to maintaining the heritage values of Garden Island and to assist with the conservation of maritime relics which rest in controlled naval waters.

#### **Committee's Conclusion and Recommendation**

132. **The Committee believes that the Department of Defence is committed to preserving the heritage values of Garden Island.**

133. **The Committee recommends that the Department of Defence continue to survey for Aboriginal relics in areas intended for development on Garden Island and continue discussions where appropriate with the Department of Aboriginal Sites (WA).**

#### **CONSULTATIONS**

134. This further phase of the development of HMAS *Stirling* has been discussed with a wide range of external authorities. Many of these have

only a minor interest in the proposed facilities as they are an extension of existing capabilities. Following the environmental clearance having been issued, formal letters of notice were sent by Defence.

135. Authorities consulted by Defence include:

- . City of Rockingham
- . Water Authority of WA
- . Garden Island Environmental Advisory Committee (GIEAC)
- . Telecom
- . State Energy Commission of WA
- . Environmental Protection Authority
- . Marine and Harbours Department
- . Civil Aviation Authority
- . Fremantle Port Authority
- . Homeswest
- . Commonwealth Environmental Protection Agency
- . Defence Housing Authority.

136. The State Department of Conservation and Land Management is represented on GIEAC.

### **CONSTRUCTION PROGRAM**

137. The program for the development has been based on the timing for Parliamentary clearance and inclusion in the 1994/95 Budget. Proposed works would be completed as necessary to meet the home-porting program for naval vessels including the COLLINS Class submarines.

138. Construction completion dates, based on currently available

information are as follows:

- . Stage 2 Phase C Helicopter Support Facility - March 1995
- . Stage 2 Phase D Facility
  - Small Arms Range - May 1995
  - Power House Upgrade - October 1995
  - F-44 Fuel AVCAT Storage Expansion - May 1995
  - Training Facilities - October 1995
  - Trials and Research Support Facility - October 1995
  - Torpedo Maintenance Facilities - December 1996
- . Extension to Submarine Training and Systems Centre - June 1995

139. Particular points of note in respect to the construction program include:

- . certain items of equipment may require advanced procurement given the long lead times for manufacture. These include the Torpedo Test Kit (27 months) and the Frequency Converter (11 months)
- . general fit-out of the buildings will be additional to the times indicated
- . following the completion of construction on the STSC there is a period of 6 months for general fit-out and a further period of 11 months for the transfer of equipment from HMAS *Watson*, Sydney.

#### **Proposed Stage 3 Facilities**

140. Within Stage-3-development the facilities as listed below are planned:

- . additional office space - engineering
- . fuel installation additional capacity
- . extension to medical centre, asset A13

- . extension to guard house, asset B1
- . additional explosives store
- . vehicle holding pad at RANAWED
- . armament processing building
- . Mk 48 and Mk46 torpedo drop point
- . additional sporting facilities
- . additional accommodation
- . upgrade of declivity slip/provision of shiplift
- . bus terminal/development of Point Peron
- . target services maintenance and storage facility
- . additional utilities, civil works and roadworks
- . baggage and utility store for shipborne personnel
- . extension to fleet base general amenities building
- . flight deck training unit
- . extension to armoury, asset B47
- . armament wharf upgrade
- . additional engineering workshop.

**Strategy for Delivery of the Works**

141. The development and construction of the proposed HMAS *Stirling* facilities will be undertaken using the standard forms of Defence contracts.



## DEVELOPMENT COST ESTIMATES

142. When referred to the Committee in February 1994 the limit of cost estimate for the public works component of the project was \$39.3m at December 1993 prices. However, Defence has advised that this cost has increased to \$40.54m at December 1993 prices. This is due to an increase in the size of the Trials and Research Support facility from about 1270m<sup>2</sup> to about 2000m<sup>2</sup>. The proposed increase arises from considerations of the support required to ensure the maximum operation of the COLLINS Class submarines.

143. The Committee discussed with Defence estimates for escalation, professional fees, contingency and construction management fees as it was concerned that these amounts were too high. While Defence considers the amounts to be reasonable, it agreed to provide the Committee with details of amounts expended on these items during the life of the project.

### Committee's Recommendation

144. While the Committee recommends the further development of HMAS *Stirling*, Garden Island, WA at an estimated cost of \$40.54m at December 1993 prices, it has been recommended at paragraph 61 that the need for construction of a small arms range be further investigated.

## CONCLUSIONS AND RECOMMENDATIONS

145. The conclusions and recommendations of the Committee and the paragraph in the report to which each refers are set out below:

	Paragraph
1. A need exists to continue the development of HMAS <i>Stirling</i> to provide a secure base on the western seaboard to support major and minor fleet units home-ported there due to the Government's Two Ocean Navy concept.	19
2. A need also exists to provide operational support for the COLLINS Class submarines which will be based at HMAS <i>Stirling</i> .	20
3. The Committee commends the Department of Defence on its policy of propagating trees and shrubs native to Garden Island in its nursery at HMAS <i>Stirling</i> .	47
4. The Committee has yet to be convinced that a need exists for a small arms range at HMAS <i>Stirling</i> .	60
5. The Committee recommends that the Department of Defence investigate the possible use of a simulated firing range which could be used in conjunction with Army firing ranges on the mainland.	61
6. The Committee recommends that the Department of Defence continues discussions with both the West Australian Fire Brigade and the Commonwealth Fire Board regarding the adequacy of fire protection during all stages of the proposed works.	110
7. The Committee commends the Department of Defence on action taken to preserve the unique environment of Garden Island.	123

8. The Committee, however, recommends that the Department of Defence carry out discussions with the National Trust of Australia, WA concerning cultural heritage issues. 124
9. The Committee further recommends the appointment of a representative of the non-government environment/conservation groups to the Garden Island Environmental Advisory Committee. 125
10. The Committee believes that the Department of Defence is committed to preserving the heritage values of Garden Island. 132
11. The Committee recommends that the Department of Defence continue to survey for Aboriginal relics in areas intended for development on Garden Island and continue discussions where appropriate with the Department of Aboriginal Sites (WA). 133
12. While the Committee recommends the further development of HMAS *Stirling*, Garden Island, WA at an estimated cost of \$40.54m at December 1993 prices, it has been recommended at paragraph 61 that the need for construction of a small arms range be further investigated. 144



Colin Hollis  
Chairman

2 June 1994

## APPENDIX A

### WITNESSES

**GRAY**, Ms Mary, Conservation Committee Consultant, Wildflower Society of Western Australia, 24 Hillview Terrace, Mt Lawley, Western Australia

**JOHNSON**, Mr Gregory, President, Garden Island Preservation Society, 159 Scarborough Beach Road, Mount Hawthorn, Western Australia

**NYE**, Captain Bryan Geoffrey John, Director, Capability Development and Analysis (Sea), Department of Defence, Russell Offices (B-4-07), Canberra, Australian Capital Territory 2600

**PALMER**, Mr Richard John, President, City of Rockingham Chamber of Commerce, 6/41-43 Parkin Street, Rockingham, Western Australia 6168

**PEPPERDAY**, Mr Michael Edward, Conservation Council of Western Australia, 115 Kent Street, Rockingham, Western Australia 6168

**PERRIGO**, Mr Thomas, Chief Executive Officer, National Trust of Australia (WA), Old Observatory, 4 Havelock Street, West Perth, Western Australia 6005

**REYNOLDS**, Mr Robert, Acting Southern Regional Manager, Department of Aboriginal Sites, Western Australian Museum, 21 Stafford Court, Stafford Street, Midland, Western Australia 6056

**SHEPHERD**, Mr Ian Douglas, Principal, Gutteridge, Haskins and Davey, and Consultant, Department of Defence, 619 Murray Street, West Perth, Western Australia 6005

**SNUSHALL**, Commander Barry Brian, West Australia  
Development Project Director, Facilities-Navy, CP3-2-8,  
Campbell Park Offices, Campbell, Australian Capital Territory  
2601

**WARRINGTON**, Captain Michael, Director General,  
Facilities-Navy, CP3-2-14, Campbell Park Offices, Campbell,  
Australian Capital Territory 2601

**WATERMAN**, Mr Peter, Consultant, Department of Defence, 40  
Dixon Drive, Holder, Australian Capital Territory 2611

**WOOD**, Captain John, Chief of Staff, HMAS *Stirling*, and Chairman,  
Garden Island Environmental Advisory Committee, HMAS *Stirling*,  
Garden Island, Nr Rockingham, Western Australia 6169

## APPENDIX B

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# LOCATION MAP

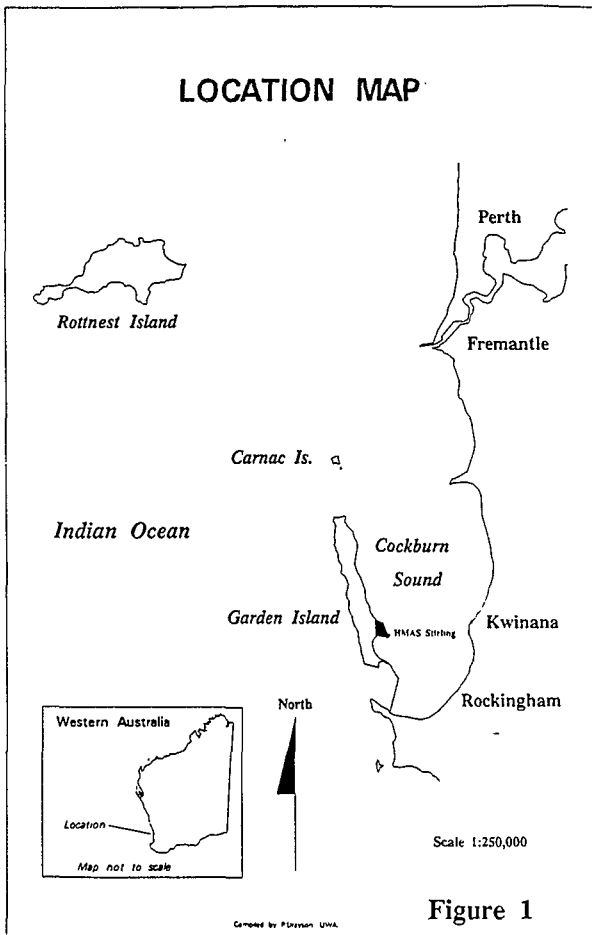
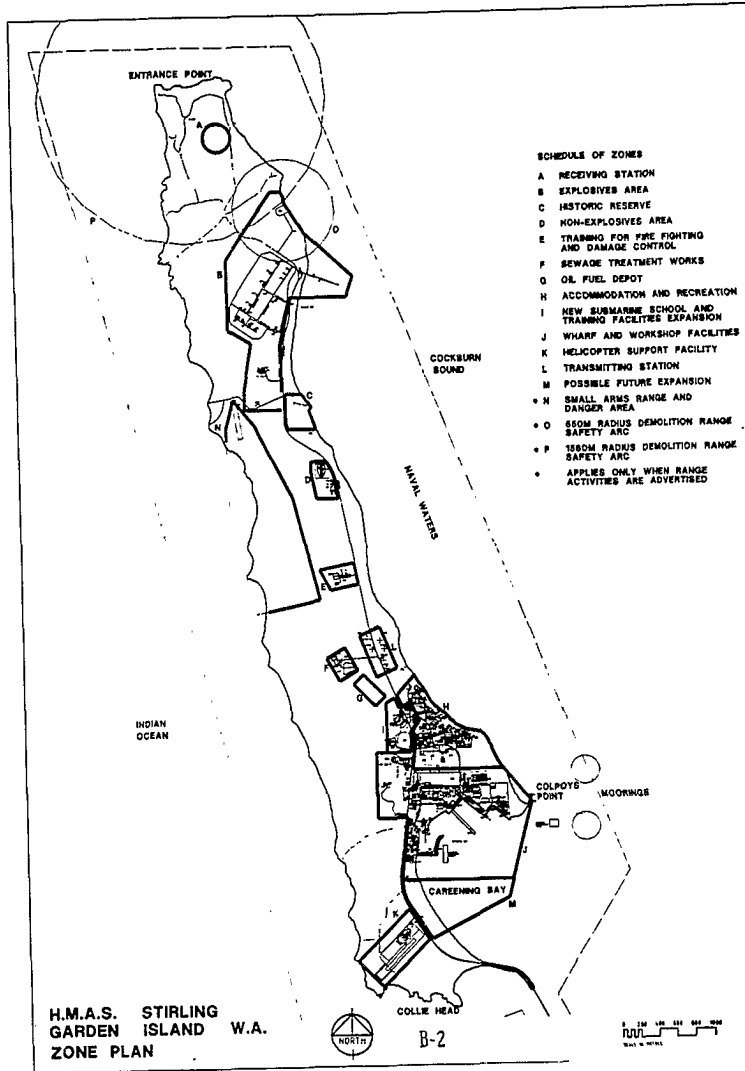
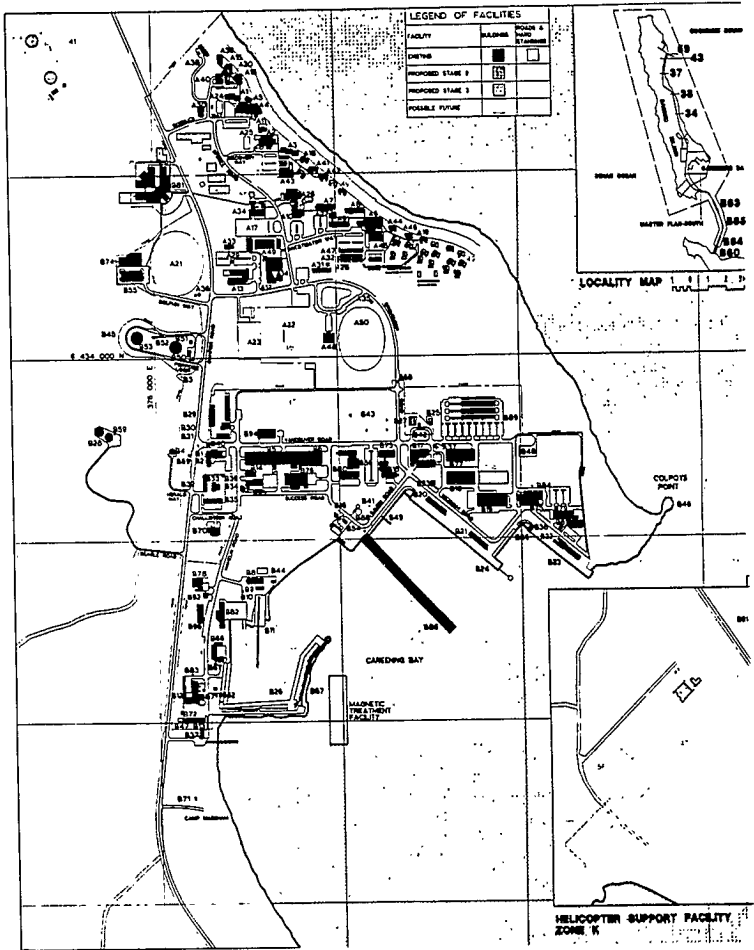


Figure 1





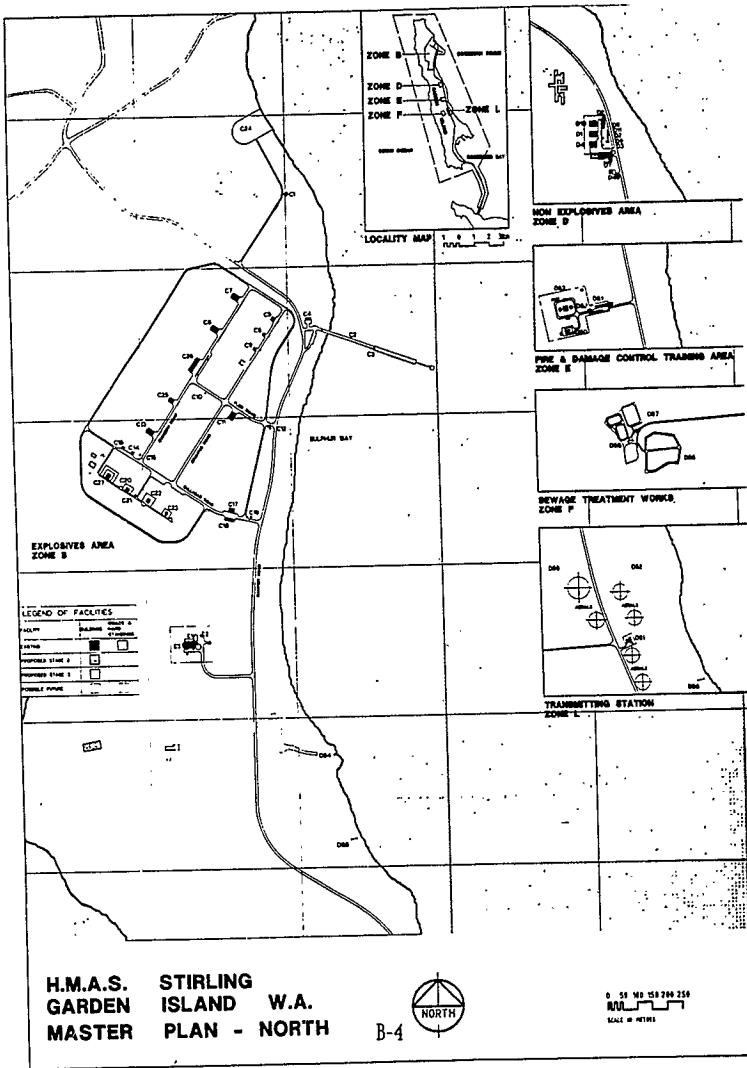


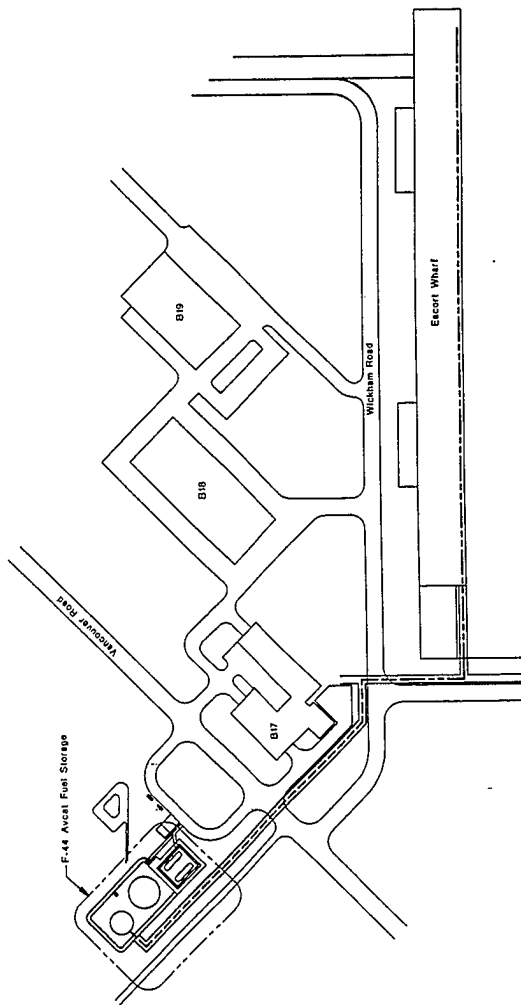
**H.M.A.S. STIRLING  
GARDEN ISLAND W.A.  
MASTER PLAN - SOUTH**

B-3



0 50 100 150 200 250  
SCALE IN METRES





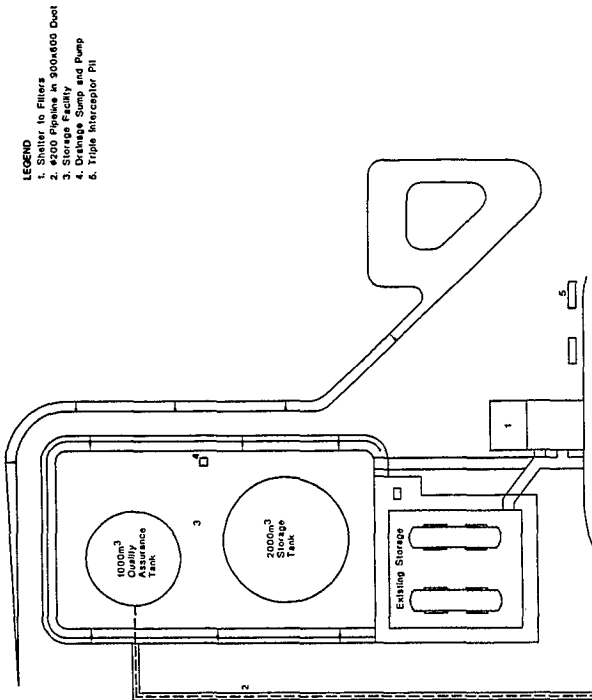
LOCATION PLAN



STAGE 2 PHASE D DEVELOPMENT

**HMAS  
STIRLING**

AVCAT F1E1 STORAGE FACILITY (NO) 1



- LEGEND**
- 1. Shelter to Filters
  - 2. 4200 Pipe in 300x600 Duct
  - 3. Storage Facility
  - 4. Drainage Sump and Pump
  - 5. Triple Interceptor Pit

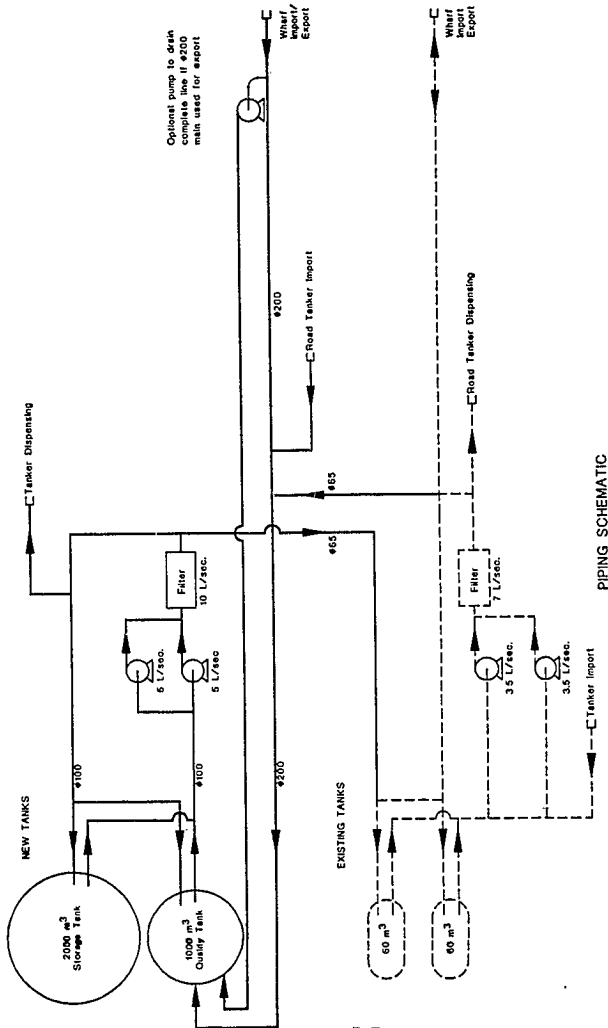
SITE PLAN  
 0 5 10 20



STAGE 2 PHASE D DEVELOPMENT

**HMAS  
STIRLING**

**AVCAT FUEL STORAGE FACILITY (30) 2**

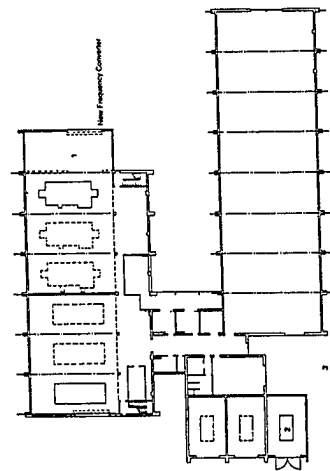


PIPING SCHEMATIC

STAGE 2 PHASE D DEVELOPMENT

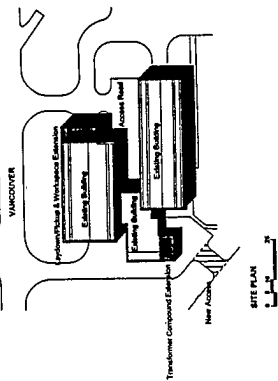
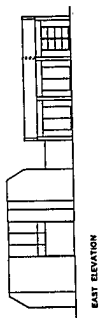
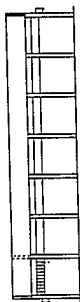
**HMAS  
STIRLING**

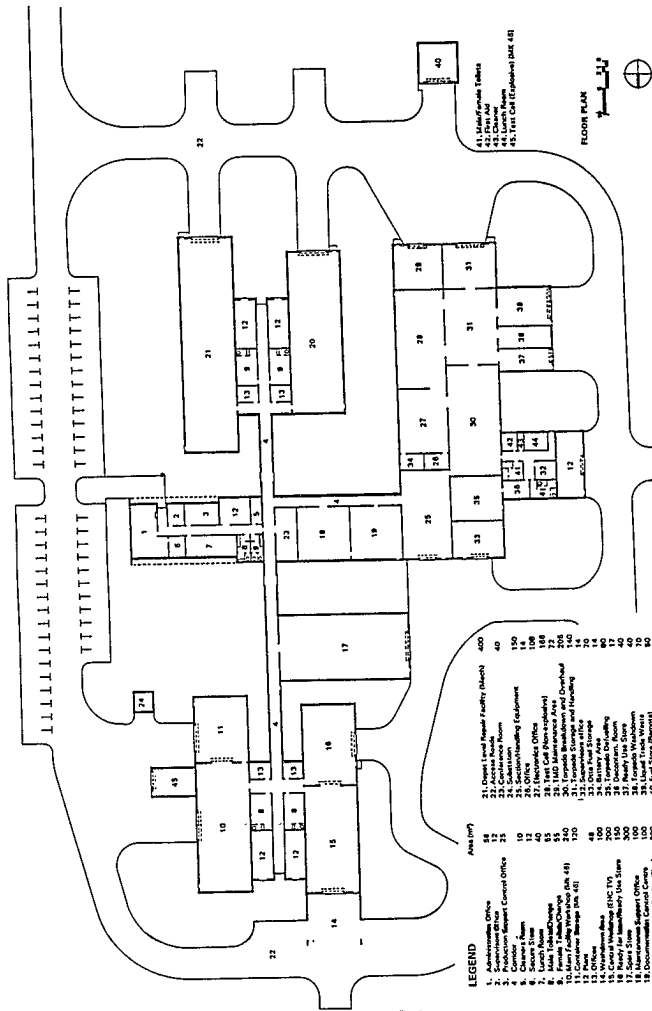
**AVCAT FUEL STORAGE FACILITY (30) 3**



LEGEND

	Area (sq ft)
1. Equipment Room and Workbench Extension	180
2. Transformer Compound Extension	55
3. Carpark Access	1





- 41. Staff Mess Tables
- 42. Staff Mess
- 43. Dining Room
- 44. Kitchen
- 45. Toilet (E/Male) (RM 48)



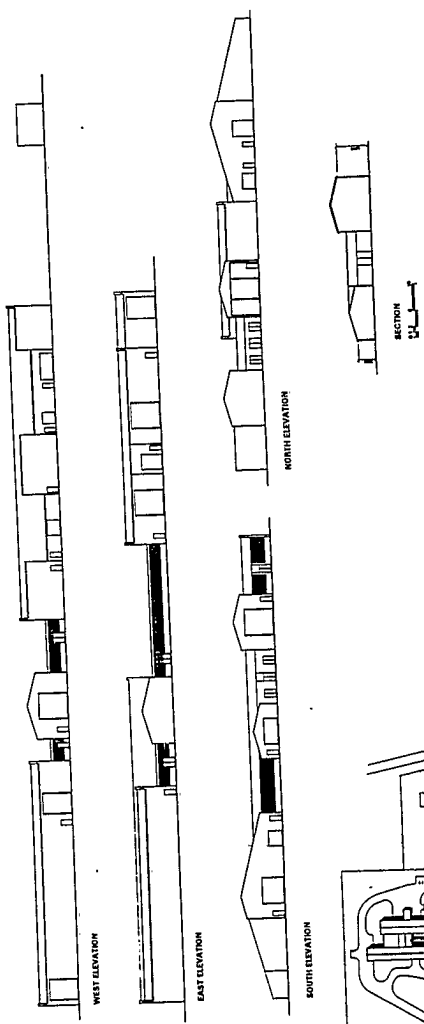
Room No.	Area (sq'f)
1	58
2	35
3	19
4	19
5	19
6	12
7	40
8	40
9	55
10	240
11	240
12	120
13	150
14	150
15	200
16	200
17	300
18	100
19	100
20	300
21	400
22	400
23	150
24	18
25	18
26	18
27	18
28	18
29	18
30	140
31	140
32	140
33	140
34	140
35	140
36	140
37	140
38	140
39	140
40	140

- LEGEND**
1. Administration Office
  2. Submarine Office
  3. Submarine Office
  4. Corridor
  5. Corridor
  6. Corridor
  7. Corridor
  8. Main Entrance
  9. Main Entrance
  10. Main Entry Workshop (RM 48)
  11. Main Entry Workshop (RM 48)
  12. Office
  13. Office
  14. Office
  15. Central Workshop (RM 17)
  16. Main Entry Workshop (RM 48)
  17. Main Entry Workshop (RM 48)
  18. Maintenance Support Office
  19. Maintenance Support Office
  20. Torpedo Repair Facility (RM 48)

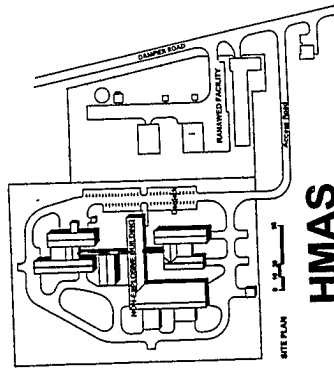
STAGE 2 PHASE D DEVELOPMENT  
 TORPEDO MAINTENANCE FACILITIES  
 NON-EXPLOSIVE BUILDING (38)

**HMAS  
 STIRLING**



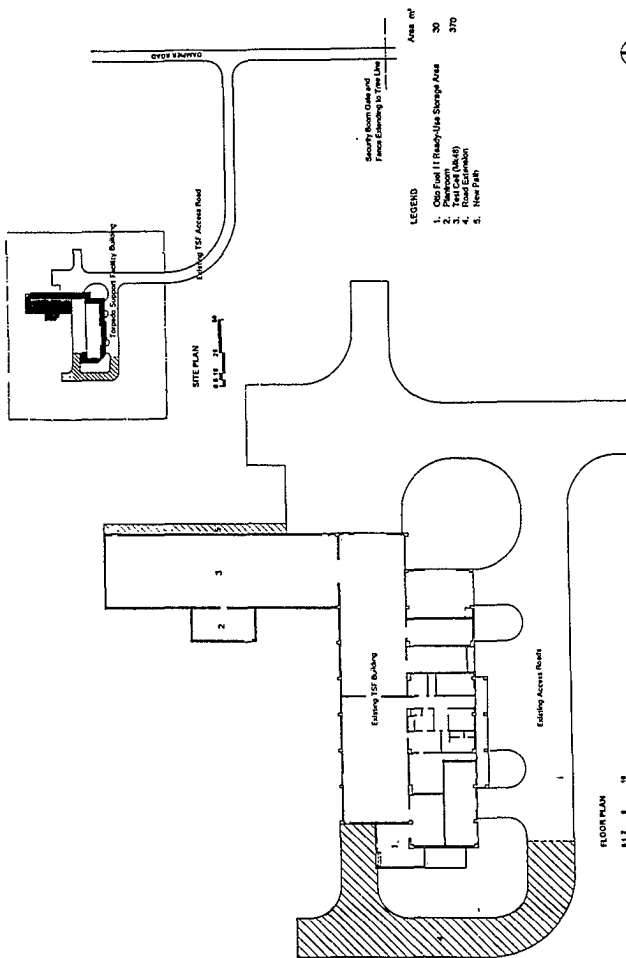


B-10



STAGE 2, PHASE D DEVELOPMENT  
 TORPEDO MAINTENANCE FACILITIES  
 NON-EXPLOSIVE BUILDING (38)

**HMAS  
 STIRLING**



STAGE 2 PHASE D DEVELOPMENT  
 TORPEDO MAINTENANCE FACILITIES  
 EXPLOSIVE TEST CELL  
 TORPEDO SUPPORT FACILITY EXTENSIONS (37) **3**

**HMAS**  
**STIRLING**



NORTH ELEVATION



WEST ELEVATION



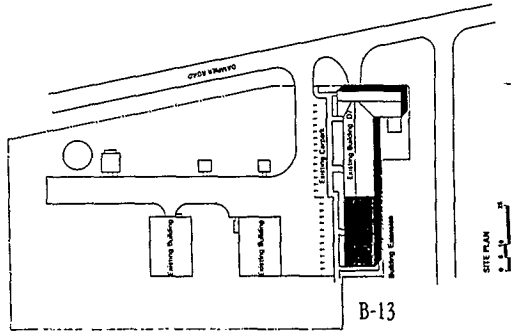
EAST ELEVATION



STAGE 2 PHASE D DEVELOPMENT  
TORPEDO MAINTENANCE FACILITIES  
EXPLOSIVE TEST CELL

**HMAS  
STIRLING**

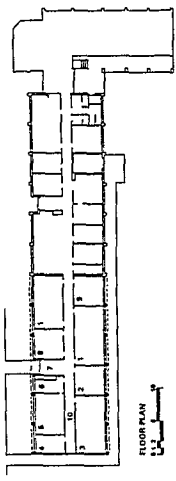
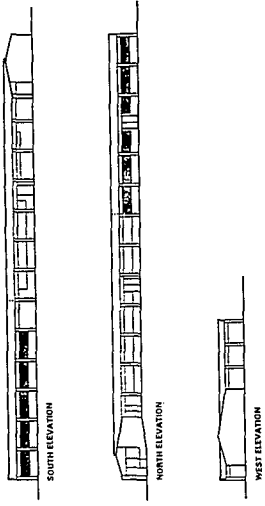
**TORPEDO SUPPORT FACILITY EXTENSIONS (37) 4**



B-13

**LEGEND**

- Area in  
 75  
 20  
 20  
 27  
 30  
 30  
 19  
 19  
 20
1. TDY Room
  2. RM&E Office
  3. Training/Conference Room
  4. Reception/Waiting Area
  5. Reception/Library
  6. Reception
  7. Reception
  8. NAR Office
  9. Computer Room
  10. Corridor

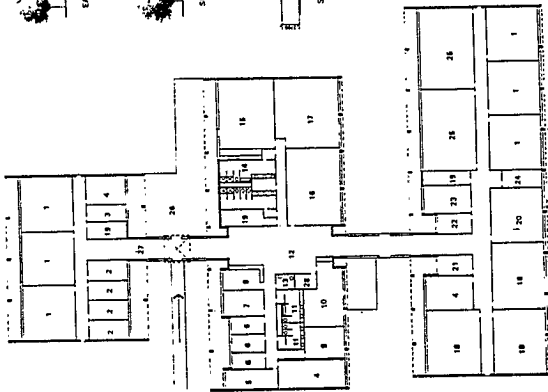


STAGE 2, PHASE D DEVELOPMENT  
 TORPEDO INTERMEDIATE MAINTENANCE FACILITIES  
**RANAWED BUILDING  
 EXTENSIONS (36)**

**HMAS  
 STIRLING**



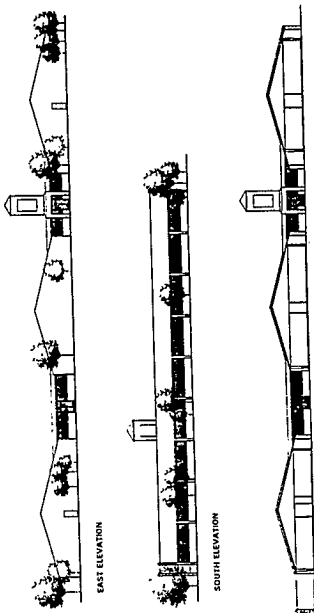




**LEGEND**

Room Number	Description	Area (sq'ft)
1	Classroom (20 students)	65
2	Simulator Room (8 students)	18
3	Leadership & Management Training Office	110
4	Office	18
5	OOO Office	18
6	Training Office	25
7	Training Office	25
8	Reception	30
9	Storage	55
10	Staff Recreation/Showers	55
11	Staff Amenities	30
12	Storage	55
13	Disabled Toilet	5

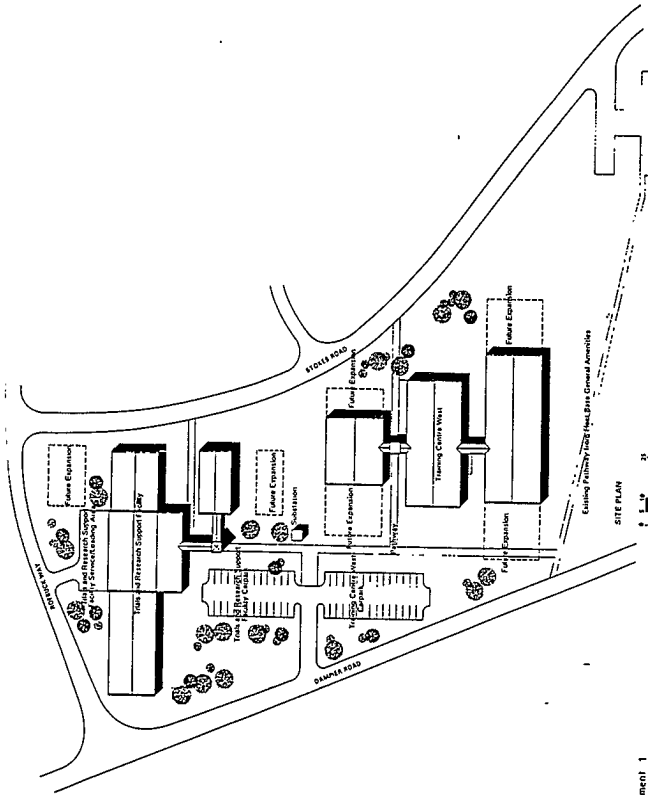
Room Number	Description	Area (sq'ft)
14	Teacher Amenities	60
15	Leisure Recreation/Showers	65
16	Leisure Recreation/Showers (50 persons)	105
17	Classroom (24 students)	60
18	Food Store/Trainers Room	45
19	Food Store/Trainers Room	15
20	Trainers Office	15
21	TTC Office	25
22	Trainers Office	25
23	Trainers Office	25
24	Interactive Voice Instruction Equipment Store	100
25	Trainers Office	25
26	External Training Area	5
27	Combiner	5
28	Combiner	5
29	Carport	5



STAGE 2, PHASE D DEVELOPMENT  
**TRAINING FACILITIES -**  
**TRAINING CENTRE WEST (34)**

**HMAS**  
**STIRLING**



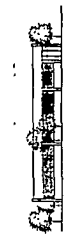


Amendment 1

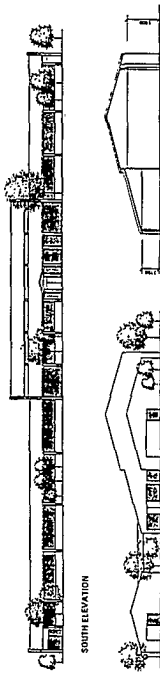
# HMAS STIRLING

## STAGE 2 PHASE D DEVELOPMENT TRIALS AND RESEARCH SUPPORT FACILITY (32)





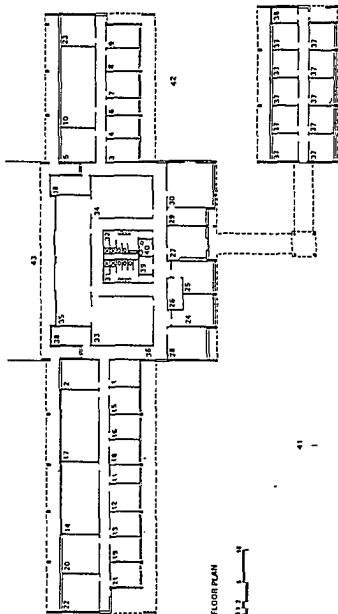
ELEVATION (OFFICES)



SOUTH ELEVATION

EAST ELEVATION

SECTION



FLOOR PLAN

Area sqft

1	Office	600
2	Office	24
3	Office	17
4	Office	17
5	Office	17
6	Office	17
7	Office	17
8	Office	17
9	Office	17
10	Office	17
11	Office	17
12	Office	17
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14	Office	17
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96	Office	17
97	Office	17
98	Office	17
99	Office	17
100	Office	17

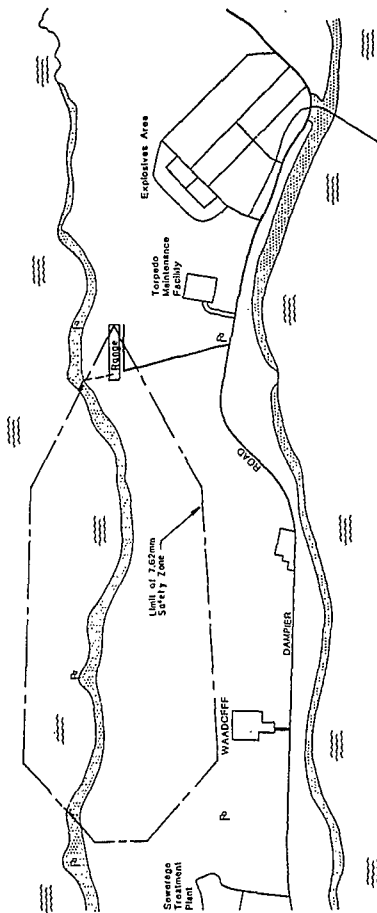


STAGE 2 PHASE D DEVELOPMENT  
TRIALS AND RESEARCH  
SUPPORT FACILITY (32)

HMAS  
STIRLING

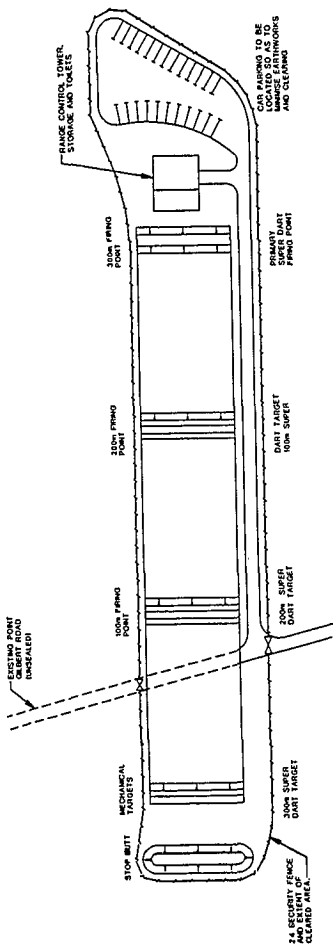
Amendment 1

LEGEND  
 P Wearing Flag  
 • Sentry



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**HMAS  
 STIRLING**



SITE PLAN

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LONGITUDINAL SECTION (IDEALISED)

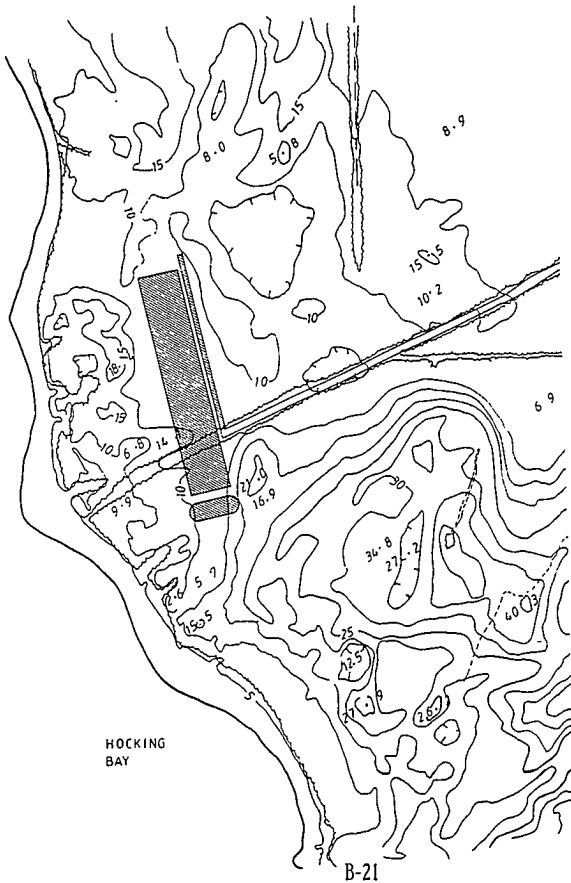


STAGE 2 PHASE D DEVELOPMENT

**HMAS  
STIRLING**

**SMA1 ARMS RANGE (53)**

**2**



CONTOUR PLAN - SITE LOCATION

STAGE 2 PHASE D DEVELOPMENT

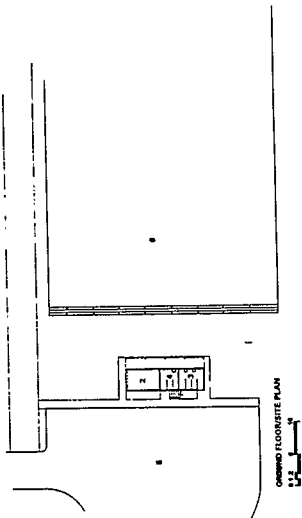
# HMAS STIRLING

SMALL ARMS RANGE (35)

Area (sq ft)  
 21  
 12  
 9

**LEGEND**

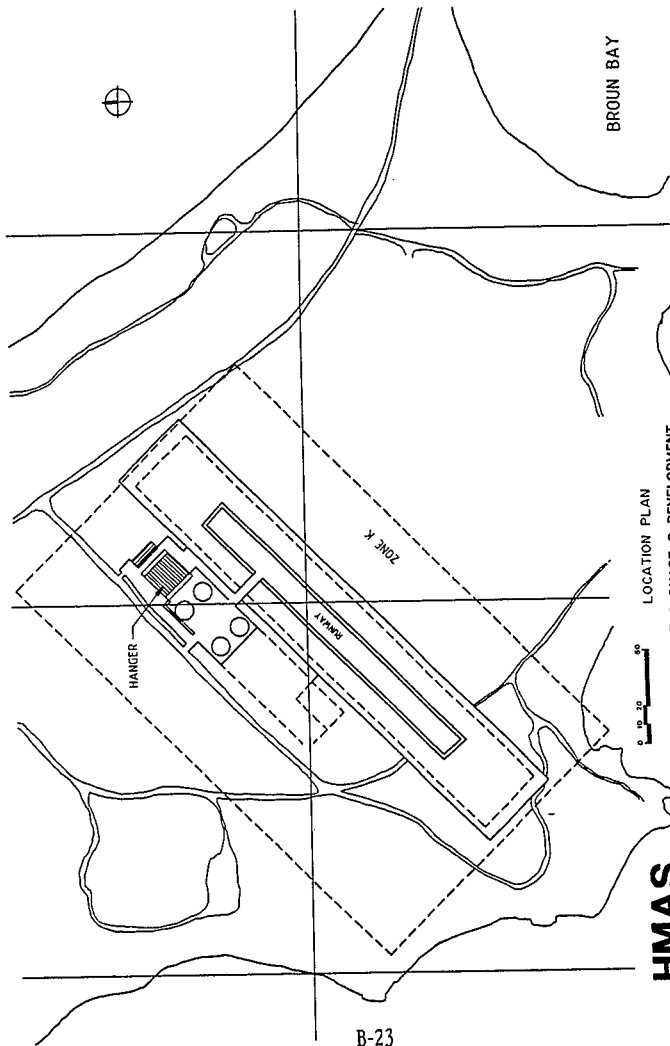
1. Control Room
2. Target Zone
3. Radar Room
4. Finance Desk
5. Chapel
6. Storage



B-22

**HMAS  
 STIRLING**

STAGE 2 PHASE D DEVELOPMENT  
 SMALL ARMS RANGE (33)

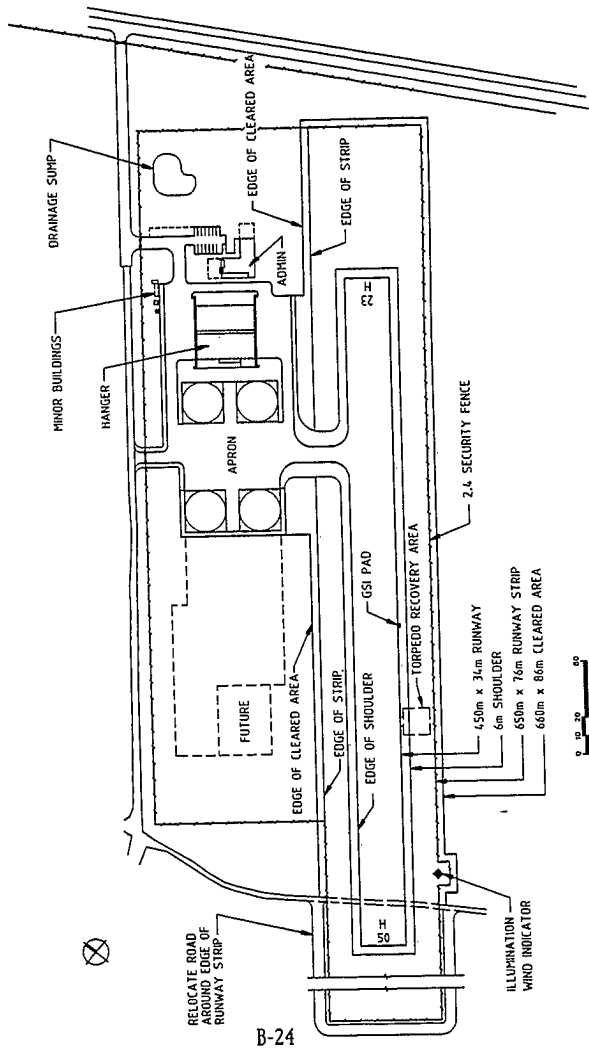


**HMAS  
STIRLING**

**HELICOPTER SUPPORT FACILITY 1**

LOCATION PLAN  
STAGE 2 PHASE C DEVELOPMENT

B-23



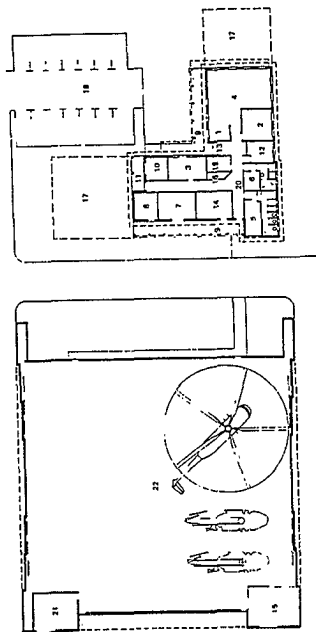
B-24

SITE PLAN

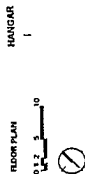
STAGE 2 PHASE C DEVELOPMENT

HELICOPTER SUPPORT FACILITY 2

**HMAS STIRLING**



ADMINISTRATION/TECHNICAL BUILDING



LEGEND

1. Control Room
2. Brew Room
3. Offices (Staff Offices & Visitors)
4. Offices (Senior Officers & Tables)
5. Mess
6. Female Lockers & Toilet
7. Mess Store
8. Electrical Workshop
9. Warehouse
10. Staff Post Room
11. Staff Post Office
12. Store
13. Store
14. General Store House
15. Store
16. Kitchen
17. Future Expansion
18. Store Room
19. Store Room
20. Corridor
21. Corridor
22. Hangar

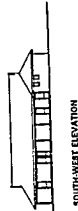
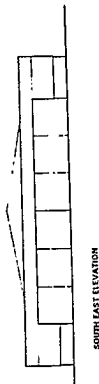
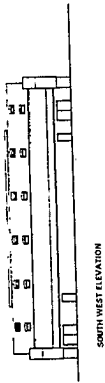
B-25

**HMAS  
STIRLING**

STAGE 2 PHASE C DEVELOPMENT

**HELICOPTER SUPPORT FACILITY**





B-26

STAGE 2 PHASE C DEVELOPMENT

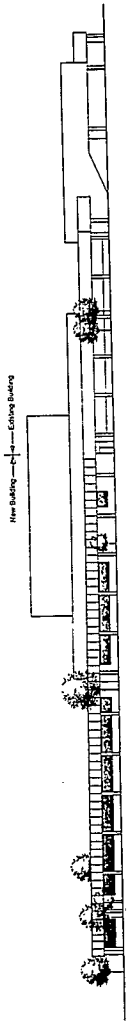
# HMAS STIRLING

HELICOPTER SUPPORT FACILITY

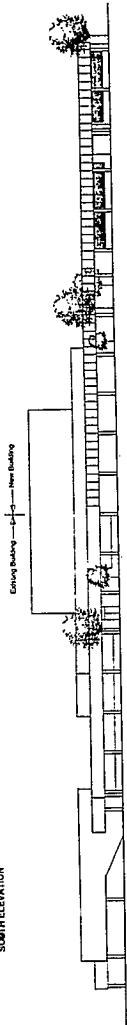




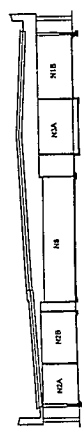




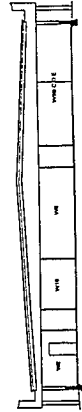
SOUTH ELEVATION



EAST ELEVATION



SECTION



SECTION

B-30

# HMAS STIRLING S.T.S.C. EXTENSION