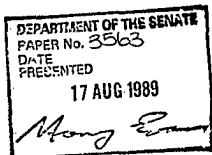




THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA
PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS



REPORT

relating to the

CONSTRUCTION OF FACILITIES FOR 2ND CAVALRY REGIMENT,
DARWIN

(Twelfth Report of 1989)

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

(Twenty-ninth Committee)

Mr Colin Hollis MP (Chairman)
Mr Percival Clarence Millar MP (Vice-Chairman)

Senate

House of Representatives

Senator Bryant Robert Burns	Mr George Gear MP
Senator John Robert Devereux	Mr Robert George Halverson OBE MP
Senator Dr Glenister Sheil	Mr John Graham Mountford MP
	Mr William Leonard Taylor MP *

* Appointed on 29.9.88 following resignation of
Mr Maxwell Arthur Burr MP

Committee Secretary: Mr Peter Roberts

**SECTIONAL COMMITTEE ON CONSTRUCTION OF FACILITIES FOR 2ND CAVALRY
REGIMENT, DARWIN**

Mr Colin Hollis MP (Chairman)

Mr Robert George Halverson OBE MP (Vice-Chairman)

Mr William Leonard Taylor MP

Inquiry Staff:

Mr Peter Roberts

Mrs Judy Jurek

**EXTRACT FROM THE
VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES
NO. 113 DATED THURSDAY 13 APRIL 1989**

**PUBLIC WORKS COMMITTEE - REFERENCE OF WORK - CONSTRUCTION OF
FACILITIES FOR 2ND CAVALRY REGIMENT, DARWIN:**

Mr West (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: Construction of Facilities for 2nd Cavalry Regiment, Darwin.

Mr West presented plans in connection with the proposed work.

Debate ensued.

Question - put and passed.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

CONSTRUCTION OF FACILITIES FOR 2ND CAVALRY REGIMENT, DARWIN

By resolution on 13 April 1989 the House of Representatives referred to the Parliamentary Standing Committee on Public Works for consideration and report the proposal for the Construction of Facilities for 2nd Cavalry Regiment, Darwin.

THE REFERENCE

1. This proposal is for the construction of new facilities to allow for the relocation of the Army's 2nd Cavalry Regiment (2 Cav Regt) from Holsworthy, New South Wales to Darwin.
2. The proposal comprises the construction of new barracks and training facilities for the 2 Cav Regt on a new site at Palmerston, approximately 20 km east of Darwin, upgrading of existing administrative support facilities at Larrakeyah Barracks in Darwin and construction of new ammunition storage facilities at RAAF Base Darwin.
3. The estimated cost of the proposal is \$62.7m at December 1988 prices.

THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions from the Department of Defence (Defence) and Australia Construction Services (ACS) and took evidence from departmental representatives at a public hearing in Darwin on 17 May 1989.

5. The Committee also received written submissions and took evidence from the following organisations:

- . Defence Housing Authority
- . Northern Territory Government
- . Palmerston Town Council
- . National Consultative Group of Service Spouses
- . Master Builders Association of the Northern Territory.

6. Written submissions were also received from the following and are incorporated in the transcript of evidence:

- . Australian National Parks and Wildlife Service
- . Darwin City Council
- . Lt Col T. Barker (RL).

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

7. On 16 May the Committee inspected the proposed site at Palmerston, the existing facilities to be upgraded at Larrakeyah Barracks and a sample of Defence housing in Darwin.

BACKGROUND

8. Government defence policy as stated in the policy information paper, The Defence of Australia 1987, includes the relocation of 2 Cav Regt from Holsworthy near Sydney to Darwin. The Minister for Defence announced on 22 March 1988 that planning was proceeding on the basis that the relocation would be completed by the end of 1992.

9. The role of 2 Cav Regt is to conduct reconnaissance, provide security and engage in limited offensive and defensive operations. It has a considerable capability for mobile

reconnaissance over a wide area of Northern Australia, and a modest capacity to deal with incursions. It is capable of independent operations in low-level contingencies and, with its mobility and communications, can react to sightings by Regional Force Surveillance Units. Defence is currently considering replacement of the unit's tracked armoured fighting vehicles (AFV) with wheeled AFV. It is also planned to increase unit manning by 70 positions in order to reorganise the unit for northern operations. The planning of facilities has been based on these requirements. The planned strength of the unit is 407 including 32 officers and 375 other ranks. The following table gives a breakup of personnel and lists significant equipment:

2 CAV REGT STRENGTH

Personnel

Trooper/Private	248
Corporal	74
Sergeant	36
Staff Sergeant	3
Warrant Officer class 2	11
Warrant Officer Class 1	<u>3</u>
TOTAL OTHER RANKS	375
Lieutenant	15
Captain	11
Major	5
Lieutenant Colonel	<u>1</u>
TOTAL OFFICERS	<u>32</u>
TOTAL ALL RANKS	<u>407</u>
Civilian	1

Significant Equipments

Armoured Fighting Vehicles	79
General Transport Vehicles	49
Patrol Motor Cycles	16
Machine Guns (Non-vehicle)	31
84 mm Anti-armour Weapons	20

10. Defence advised the Committee that Darwin was chosen for the location of 2 Cav Regt because it was felt that a greater defence presence was required in Darwin and in the Northern Territory-Kimberley area. There is already a relatively large defence presence in the North Queensland area.

11. The possible relocation of a brigade to the north in the longer term has also been foreshadowed by the Government. A study is presently being conducted within Defence into an increased Army presence in the region. Where applicable, this project takes account of the need to plan for such an increase. Defence advised the Committee that in view of the cost of transferring an entire brigade to the north that any such transfer is a long-term proposition.

THE NEED

12. While Government policy requires 2 Cav Regt to be relocated to Darwin by the end of 1992 there are no defence facilities available in Darwin in which the unit could be accommodated. All such facilities are fully committed to meet current requirements. In relation to existing Army facilities at Larrakeyah Barracks, Defence advised the Committee that it was also not considered appropriate for a unit with armoured vehicles to be located in a city location as it would require frequent movement of armoured vehicles through built-up areas. Navy and Air Force facilities in particular are designed and sited to meet specific operational

functions which are incompatible with the needs of 2 Cav Regt. Consequently, new working, training, recreational, messing and living-in facilities are required.

13. Administrative support to 2 Cav Regt in Darwin will be provided by enhancement of the present local system. This involves both joint service supply support arrangements and the provision of services by Army elements commanded by Headquarters 7th Military District (HQ7MD). The additional dependency provided by 2 Cav Regt necessitates adding to and enhancing present administrative support facilities and increasing support manpower by 30 positions.

Committee's Conclusion

14. There is a need for the construction of purpose-built facilities to enable the relocation of the 2nd Cavalry Regiment from Holsworthy, New South Wales to Palmerston, near Darwin.

THE PROPOSAL

Background

15. 2 Cav Regt currently occupies permanent working, messing and living-in facilities at Holsworthy and has access to rifle, indoor battlefield simulation and limited field firing ranges, a close training area, physical training and recreational facilities. Advanced field firing is conducted at Singleton, New South Wales and the Regiment undertakes annual deployments to the Katherine-Kununurra area of the Northern Territory for manoeuvre training. Facilities at Holsworthy vacated by the unit will be reallocated for use by other Army elements.

Palmerston

16. At the 2 Cav Regt site at Palmerston the following facilities are to be provided:

- . administrative offices for Regimental Headquarters and sub-units
- . regimental and sub-unit quartermaster's stores
- . a vehicle repair, general engineering, electronic, instrument and radio workshop
- . a secure compound providing covered garaging for 107 armoured and general transport vehicles, open parking for 22 vehicles and miscellaneous equipment, servicing facilities, fuel point and storage, and a vehicle wash
- . regimental aid post
- . guardroom and unit cells
- . small arms ammunition magazine
- . an officers mess
- . a senior non-commissioned officers mess
- . a rank and file mess and canteen
- . single living-in accommodation for 15 officers, 12 warrant officers/sergeants and 240 rank and file
- . covered parking for 267 cars (living-in personnel) and open parking for 122 cars (living-out and visitors)
- . physical fitness training and recreational facilities comprising a gymnasium, squash courts, 25 m swimming pool, two football fields and three tennis courts
- . a regimental parade ground
- . a building to house an indoor moving target battlefield simulation (cine target) range
- . a fixed radio communications antenna.

17. The Committee queried whether a 25 m swimming pool would be adequate and was advised by Defence that a 50 m pool would be difficult to justify for a unit the size of the 2 Cav Regt which

is not a training unit. The additional capital cost of a 50 m pool is approximately \$0.5m with additional operating costs between \$0.02 and \$0.017m per annum. The Committee agrees that the provision of a 50 m pool is not warranted.

Engineering services to be provided include:

- . roads
- . car-parks
- . fencing to the mechanical target range danger template area
- . an agricultural-type boundary fence
- . security fencing will be provided in areas such as the vehicle compound
- . water
- . drainage
- . sewerage
- . mechanical
- . fire
- . communications
- . electrical.

18. The Committee was advised that the additional cost of providing security fencing around the total site, including the antenna farm and residential area, is approximately \$200,000. Based on the information provided by Defence regarding security measures and noting that security fencing will be provided around areas such as the vehicle compound, the Committee agrees that security fencing of the total site if not warranted.

19. Water and power are to be brought to the site by the local supply authorities and sewage waste is to be pumped into the local public sewerage system. Some off-site roads and drains are to be upgraded. (See paragraphs 32 and 33 regarding the provision of a water supply main.)

20. Designs of relevant facilities will provide for expansion in the longer term from any further manpower, vehicle and equipment increases.

Larrakeyah Barracks

21. The increased administrative support requirement arising from the relocation of 2 Cav Regt necessitates enhancement of the present local administrative system. Administrative functions provided by HQ7MD at Larrakeyah Barracks include personnel support, barracks services, transport, supply and maintenance.

22. Refurbishment and extension of some buildings and provision of some additional facilities are required to satisfy the additional dependency imposed by 2 Cav Regt. These include:

- . temporary office accommodation for the command and control of logistic and personnel support functions
- . four temporary warehouses
- . minor extensions to the transport control and workshop trade repair offices
- . refurbishment of the existing dental laboratory.

23. Defence plans to relocate logistic elements into permanent facilities at the Palmerston site some time after the completion of the 2 Cav Regt relocation. This will be undertaken as a separate project. In the interim, the additional logistic facilities required at Larrakeyah Barracks will be similar to existing temporary structures.

Ammunition Storage

24. Under joint service supply support arrangements, the RAAF is responsible for the secure storage of explosive ordnance for the Australian Defence Force (ADF) elements in Darwin. A new

ammunition storage and preparation complex is to be built at RAAF Base Darwin commencing in 1990.

25. The complex will replace the existing off-base facility which is to be handed over to the Northern Territory Government as a redevelopment site. Whilst master planning of the new complex provides for expansion, the facilities to be provided in the initial stage are sufficient only for the present ADF dependency. Additional storage space comprising two earth-covered explosives store houses is required as part of this project for the increased ammunition holding generated by 2 Cav Regt requirements.

Small Arms Range Facilities

26. The 25 m rifle ranges are located at Larrakeyah Barracks and RAAF Base Darwin. An improvised classification range has been constructed at the Kangaroo Flats training area some 100 km southwest of Darwin. These ranges do not have the capacity to accept the additional throughput imposed by 2 Cav Regt and are inadequate for effective small arms shooting training and also are of limited use during the wet season. A modern, all-weather small arms range facility is therefore required in Darwin which meets the training requirements of 2 Cav Regt and other ADF elements.

27. Small arms range facilities to be constructed at the Palmerston site include:

- . covered day/night firing points
- . control room, monitor room and target store/workshop
- . wet weather instructional/weapon cleaning bays
- . a 10-lane electronic target range incorporating five lanes with target arrays to 300 m and five lanes with target arrays to 600 m
- . access, building services, fencing and warning signs.

2 Cav Regt Barracks Master Plan

28. The new facilities have been located in accordance with the master plan which makes allowance for future expansion of the unit and for possible additional future units.

29. Prior to developing the master plan a zone plan was produced for the overall site which was designed to allow for future orderly incremental expansion whilst permitting the initial establishment of the 2 Cav Regt as a cohesive unit able to operate on a stand-alone basis.

30. The master plan provides for both expansion and future common use of appropriate facilities such as messes, gymnasium, playing fields and vehicle wash.

Services Scales and Standards of Accommodation

31. The facilities proposed for the 2 Cav Regt barracks accord, where applicable, with Services Scales and Standards of Accommodation. However, in recognition of climatic and other local factors it is proposed to provide the following facilities over scale:

- . physical fitness centre
- . air cooling to living-in accommodation
- . covered parking for the private vehicles of living-in personnel
- . the sizes of kitchens will also provide for planned long-term capacity.

Off-site Works

32. The project provides for water, sewerage and electricity connections from the barracks site to trunk services maintained

by local authorities and for upgrading the existing gravel access road. The project includes provision for a dedicated water supply main to the Palmerston site from the trunk main adjacent to the Stuart Highway to the south. Defence advised the Committee that for water to be available at the site early in 1990 and eliminate cartage costs of between \$80,000 and \$100,000, the installation of the water supply main must be completed by November 1989 before the onset of the wet season.

Committee's Recommendation

33. The Committee recommends that the dedicated water supply main for the 2nd Cavalry Regiment barracks site be installed by November 1989 to eliminate water cartage cost penalties.

Field Training Area

34. Defence has acquired a pastoral lease at Mount Bunday, some 120 km southeast of Darwin as a surveillance training area for North West Mobile Force. Mount Bunday is also suitable for development as a field firing/low-level manoeuvre training area for 2 Cav Regt and other Army units on training deployments to the region. This will involve a change in land use for which an environmental impact statement (EIS) is being prepared. On present programming the EIS will be available for public comment by mid-1990.

35. Defence indicated to the Committee that close consultation with the Australian National Parks and Wildlife Service is planned on issues relating to land management. The land management plan to be developed from the EIS will provide guidance for the long-term development and use of the area and identify safeguards for the protection of the boundaries and approaches to Kakadu National Park and the Wildman River heritage area. Acquisition of Mount Bunday should provide for the

disposal of Kangaroo Flats training area which is too small to meet Army training and safety requirements.

36. The Mount Bunday area will be progressively developed by Army engineers as training exercises and does not form part of this project.

Married Quarters

37. The Defence Housing Authority (DHA) is responsible for the provision in Darwin of approximately 175 married quarters to meet 2 Cav Regt requirements. The number of houses required according to rank are:

House Type	Number Required
P1 - Private to Corporal	103
P2 - Sergeant to Staff Sergeant	34
P3 - Warrant Officer to Captain	32
P4 - Major to Lieutenant Colonel	<u>6</u>
TOTAL HOUSES	175

It is estimated that about 10% of each category will be 4-bedroom houses.

38. 2 Cav Regt will commence operations at Palmerston in 1992. The housing delivery schedule requested by Defence is:

1990-91	30
1991-92	70
1992-93	50
1993-94	25

39. Defence will be unable to confirm actual numbers until much closer to the time of the transfer, but it is possible that the housing requirement could be as low as 150 houses.

40. The DHA believes that the key issues which impact on developing a housing strategy for 2 Cav Regt are as follows:

- . uncertainty about the overall Defence housing requirement in Darwin over the next 5 years

- . the possibility that DHA funding may be constrained by the need to replace 7,000 houses across Australia over the next 5 years resulting from successful renegotiation of the Commonwealth State Housing Agreement

- . the nature of the Darwin housing market which is characterised by:
 - shortage of land in the Darwin city area
 - high construction costs
 - moderate prices but limited supply of good quality established housing stock
 - high rental vacancy rates, high rents and shortage of quality rental housing
 - client preference.

41. The housing strategy was developed in two stages: first, Kinhill Engineers Pty Ltd was commissioned to explore the available options, and then the results of the consultant's investigations were made available for comment to interested parties. The DHA's preferred approach was then developed on the basis of expert advice from Kinhill and the results of consultation.

42. In summary, housing will be provided as follows:

<u>Construct on base</u>	<u>Number of houses</u>
Larrakeyah	15
Coonawarra	30
 <u>Use existing house stock</u>	
Surplus Air Force	45
Spot purchased	15
 <u>Purchase or lease</u>	
New houses:	
- house land package/ project home	
. Darwin	10 - 15
. Palmerston	15 - 20
- established houses	35 - 45
- home ownership	5 - 10
- temporary rental allowance	5 - 10 (as this is a buffer, numbers could be less)
 TOTAL	 175

43. The DHA presently estimates that these houses could be provided for \$14.44m. This estimate is not included in the proposal before the Committee and the question of whether part of

the housing program will require reference to it will depend on the final delivery strategy adopted by the DHA.

44. In submissions to the Committee both the Northern Territory Government and the Palmerston Town Council indicated that Palmerston should be the preferred option for the provision of Defence housing in view of its capacity for housing development, high standard of services, accessibility and proximity to the 2 Cav Regt site. The National Consultative Group of Service Spouses (NCGSS) stressed the desire of many service families in Darwin to live on base for security and convenience reasons. The DHA indicated to the Committee that its current strategy is an indicative one and that it is prepared to have further discussion and consultation on the details of the strategy.

Committee's Recommendation

45. The Committee recommends that the Defence Housing Authority have further consultations regarding the details of its strategy for meeting the housing requirements of the 2nd Cavalry Regiment including the amount of housing to be provided in the Palmerston area.

Community Facilities

46. In a submission to the Committee the NCGSS raised the issue of the need for a community centre for service families living in the Darwin area. The community centre would provide facilities for meetings, social functions, adult classes, children's activities, school holiday activities and child care. Currently an area on the ground floor of building 210 at Larrakeyah Barracks is used for such activities. While the level of attendance is high the room has a number of limitations including the lack of toilet facilities. It also acts as office space for the family liaison officer.

47. While Defence advised that it is not current policy to build community facilities the Committee agrees with NCGSS that such a facility would be of benefit to service families particularly because of the isolation of Darwin. In response to a request from the Committee, Defence advised that a building of approximately 325 m² at an estimated cost of \$0.5m would be required to provide the function suggested by NCGSS. It further advised that in the interim these functions could be provided in a larger facility at Larrakeyah Barracks than that presently used.

Committee's Recommendation

48. The Committee recommends that Defence give consideration to the provision of a permanent community facility for Defence families in Darwin and that in the interim it makes available a more suitable facility at Larrakeyah Barracks for community purposes.

THE SITES

2 Cav Regt Barracks

49. The 2 Cav Regt barracks and training facilities site is situated north of Palmerston approximately 20 km east of Darwin and is bounded on the north by the Shoal Bay Naval Receiving Station site and Thorngate Road to the east. The west and south boundaries adjoin undeveloped and generally unused rural land. Defence advised the Committee that a number of alternative sites in the Darwin area were also considered but were rejected because they were either too remote or expensive to develop for Defence requirements. Areas considered included:

- . Gunn Point
- . Middle Arm Peninsula
- . Cox Peninsula.

50. The 700 ha Palmerston site, purchased from the Northern Territory Government at a cost of \$1.275m in 1989, is of sufficient size to accommodate the working, recreational, messing and living-in facilities for 2 Cav Regt and provides a contiguous close training area for the unit. By using part of the buffer zone of the Naval Receiving Station at Shoal Bay, which adjoins the northern boundary of the site, a small arms range and its associated danger template can also be accommodated. The site is also large enough to accommodate other Army elements which may be relocated to Darwin in the future. Additional close training is available if necessary by permissive use of a Crown land reserve to the east. The Northern Territory Government advised the Committee that it regarded the zoning of the land surrounding the Palmerston site as being compatible with the activities of 2 Cav Regt.

51. The southern part of the site had previously been planned for rural residential development. Subdivision works previously undertaken included gravelled roads, main drains and some underground telephone cables.

52. The site is essentially flat and covered with open woodland with some areas of pandanus species and seasonally dense grasses. Areas of seasonal swampland overlap the west and south boundaries of the site. ACS assured the Committee that, based on its surface hydrology and drainage studies to predict the potential flood lines, the buildings will not be affected by flooding. ACS also indicated that its studies had been confirmed by those of the Northern Territory Government.

53. Soils consist generally of a gravelly sand surface layer of varying thickness overlying gravelly sandy clay and weathered laterite. The laterite is underlain by siltstone. The ground conditions will permit conventional building structured systems to be adopted.

Larrakeyah Barracks

54. The proposed Larrakeyah Barracks facilities are contained within the existing boundaries of the site which is located on a peninsula approximately 2 km east of Darwin. The site is essentially flat with existing buildings surrounded by landscaped and grassed areas. The site subsoil consists of a relatively thin layer of clay overlaying a strong rock strata.

RAAF Base Darwin

55. The proposed ammunition storage facilities are to be located within the separately planned RAAF explosive ordnance storage complex in the vicinity of Marrara Swamp adjacent to the Stuart Highway.

Committee's Conclusion

56. The sites selected for the relocation of the 2nd Cavalry Regiment to Darwin are suitable.

ENVIRONMENTAL ASPECTS

57. In accordance with the Environment Protection (Impact of Proposals) Act 1974, the Minister for the Arts, Sport, the Environment, Tourism and Territories on 23 November 1987 determined that neither an environmental impact statement nor a public environmental report on the 2 Cav Regt barracks and associated facilities was required to satisfy the requirements of the Act. A Certificate of Environmental Compliance has been issued.

CONSTRUCTION

Building Design and Materials

58. The building design and materials proposed recognise the particular design requirements and constraints associated with the Darwin environment. Those of major influence are:

- . structural loading for cyclonic conditions
- . wet season high rainfall and severe lightning activity
- . constant high ambient temperatures and humidity
- . aggressive termite and high insect population
- . appropriate local materials - for example, lightweight materials such as prefinished steel or locally available masonry.

59. The design objective is to provide for and satisfy the various functional activities in an efficient and economic manner. The proposed buildings incorporate construction methods suitable to local building practice and use locally available materials where possible to provide both functional and cost-effective accommodation.

60. A co-ordinated design approach has been adopted for the buildings on the Palmerston site which will be consistent in form, construction and materials, whilst recognising variations in character between buildings serving different functions.

61. Building materials to be used include:

- . External:
 - prefinished steel and brick wall cladding for administration, industrial, mess and recreation buildings
 - brick wall cladding for residential blocks

- prefinished steel roof cladding
- anodised aluminium window frames
- painted steel door frames and timber doors on steel bifold doors

. Internal:

- painted plasterboard walls for offices, domestic areas and clean areas generally with ceramic tiles or laminated plastic finishes for wet areas
- non-slip concrete for industrial areas, sheet vinyl or carpet for office and domestic areas, ceramic floor tiles for wet areas
- suspended grid on flush plasterboard as appropriate to ceilings.

62. Industrial areas such as workshops and stores generally will not have internal linings to walls or roofs. Internal walls will generally comprise plasterboard on lightweight framing.

63. To meet specific user requirements other finishes are to be provided; for example, hard lining material with acoustic properties for walls and timber over concrete for floors in the gymnasium. Insulation and vapour barriers are to be provided for air-conditioned spaces.

64. Areas required to be cyclone rated will generally be constructed as follows:

. Walls:

- either cavity brick construction with the inner leaf being reinforced concrete-filled hollow masonry, or
- lightweight construction with prefinished steel cladding and steel faced plywood lining

. Windows:

- either cyclone resistant glass, or
- glass with steel mesh screens

. Roofs:

- lined with steel faced plywood.

65. Earthed metallic screens are to be incorporated in the building fabric around areas where electric arc welding is proposed in order that the adjacent Shoal Bay Naval Receiving Station is not affected by radio frequency interference.

66. The Larrakeyah Barracks buildings are either minor extensions to existing buildings, demountable steel frame prefinished steel clad buildings or transportable-type cabins.

67. Full construction details are included at Appendix B.

Landscaping

68. The landscape proposal for the Palmerston site includes retaining as much of the existing vegetation as possible which will be strengthened by the planting of similar indigenous species and appropriate support planting.

69. A major element of the landscaping is the playing fields around which has been placed many of the recreational, messing, residential and administrative facilities. Dryland grassed areas with shade trees for community use are to be provided around the playing fields, within residential areas and along each side of main access roads to form avenues.

70. Landscaping is to be provided around buildings which will assist in reducing glare and soil erosion, provide shade and

screen less visually attractive areas. Firebreaks are to be formed as necessary on the perimeter of the developed areas.

71. Generally, automatic irrigation in the form of sprinklers or drippers is to be provided for the playing fields and planted areas with stand-pipes being provided for general grassed areas.

Consultation

72. Defence, in association with ACS, has consulted with the Northern Territory Administration through a Joint Consultative Committee (JCC) established in May 1987. The JCC has established working parties for consultation with relevant departments and statutory authorities during project documentation and construction phases. Public meetings to explain the plans for the relocation have also been held.

73. The following organisations were consulted during the development of the proposal:

- . Northern Territory Department of Transport and Works
- . Master Builders Association of the Northern Territory
- . Conservation Commission of the Northern Territory
- . Northern Territory Department of Lands and Housing
- . Northern Territory Department of Health and Community Services
- . Northern Territory Power and Water Authority
- . Northern Territory Aboriginal Sacred Sites Authority
- . Darwin Fire Service
- . Shire of Litchfield
- . Palmerston Town Council.

74. The project will conform to all relevant standards, codes and regulations.

Construction Program

75. Subject to the necessary approvals, it is proposed that construction will commence in early 1990 and is scheduled for completion in late 1992. However, as indicated in paragraphs 32 and 33, a dedicated water supply main will need to be installed by November 1989 to eliminate water cartage cost penalties.

Limit of Cost

76. The estimated cost of the proposed work is \$62.7m at December 1988 prices. The limit of cost does not include the cost of furniture, fittings and equipment estimated at \$4.25m.
Out-turn Cost

77. ACS informed the Committee that the completed out-turn cost based on current estimates is \$83m, comprising a \$15m increase for inflation and \$5m for unforeseen contingency requirements.

Committee's Recommendation

78. The Committee recommends construction of the work in this reference at an estimated cost of \$62.7m at December 1988 prices.

CONCLUSIONS AND RECOMMENDATIONS

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

	Paragraph
1. There is a need for the construction of purpose-built facilities to enable the relocation of the 2nd Cavalry Regiment from Holsworthy, New South Wales to Palmerston, near Darwin	14
2. The Committee recommends that the dedicated water supply main for the 2nd Cavalry Regiment barracks site be installed by November 1989 to eliminate water cartage cost penalties	33
3. The Committee recommends that the Defence Housing Authority have further consultations regarding the details of its strategy for meeting the housing requirements of the 2nd Cavalry Regiment including the amount of housing to be provided in the Palmerston area	45
4. The Committee recommends that Defence give consideration to the provision of a permanent community facility for Defence families in Darwin and that in the interim it makes available a more suitable facility at Larrakeyah Barracks for community purposes	48

5. The sites selected for the relocation of the 2nd Cavalry Regiment to Darwin are suitable 56
6. The Committee recommends construction of the work in this reference at an estimated cost of \$62.7m at December 1988 prices 78


Colin Hollis
Chairman
27 July 1989

APPENDIX A

LIST OF WITNESSES

BENNETT, Mr Stephen Charles, Town Clerk, Palmerston Town Council,
6 Frances Mall, Palmerston, NT 0830

BRYANT, Brigadier Ian James, Commander, Northern Command - 7th
Military District, Department of Defence, Army Headquarters
Northern Command, Larrakeyah Barracks, Darwin, NT 0800

EDWARDS, Lieutenant-Colonel Alan Leslie, Staff Officer Housing,
Army, Department of Defence, Russell Offices, Canberra,
ACT 2600

FANNING, Mr Peter Gerard, Deputy Executive Director, Master
Builders Association of the Northern Territory,
GPO Box 2604, Darwin, NT 0801

FORD, Colonel Timothy Roger, Director of Plans, Army, Department
of Defence, Russell Offices, Canberra, ACT 2600

HAZELDINE, Mr Ewan John, Deputy State Manager Projects,
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CONSTRUCTION DETAILS

2 CAV REGT BARRACKS FACILITIES

Regimental Headquarters

This 2-storey building provides Regimental and Headquarters Squadron administrative offices and medical facilities for the Regimental Aid Post.

Toilets are included with changing and shower facilities provided for living-out personnel.

The operations/conference room, ancillary areas and associated services will be able to operate continuously through a cyclone. The Regimental Aid Post will be able to operate immediately after a cyclone. Facilities are provided for ambulance access to the Regimental Aid Post.

The structural system generally comprises a reinforced concrete raft slab, reinforced concrete columns, suspended first floor slab and steel roof trusses. An external sub-unit assembly area is provided adjacent to the building.

Reconnaissance Squadron Headquarters

This building provides administrative offices for both Reconnaissance Squadrons. The foyer, tea room and briefing room are common facilities shared by the two sub-units.

Toilets are provided for the personnel working in the headquarters building and the adjacent vehicle compound. Changing and shower facilities are provided for the living-out personnel working in these areas.

The structural system generally comprises reinforced concrete raft slab, steel stud walls and timber roof trusses. An external assembly area is to be provided for each sub-unit.

Quartermaster's Stores Complex

The building incorporates the Regimental and sub-unit quartermaster's stores and armoury with associated receipt and issue areas. Administrative facilities are provided on a mezzanine floor overlooking the main stores area. Toilets are included and changing and shower facilities are provided for the living-out personnel.

Each of the stores has an external paved and fenced compound area. Canopies are to be provided over the loading and receipt and issue areas. The structural system generally comprises reinforced concrete raft slab, steel beam and column frame portal

and suspended reinforced concrete mezzanine floor slab. A separate flammable liquids store is to be provided in the main compound area.

Technical Squadron Workshops

This building houses the general engineering, vehicle repair and electrical repair bays, electrical instrument and radio repair workshop, spares stores with associated receipts and issues areas and the Technical Squadron administrative offices. The administrative facilities are provided on a mezzanine floor overlooking the main repair bays.

Toilets are included and changing and shower facilities are provided for living-out personnel. Each of the stores has an external paved and fenced compound area. A canopy is to be provided over the stores loading area. An air bridge is to be provided for clean transfer of equipment to and from the electrical instrument and radio repair workshop and vehicles. The structural system generally comprises a reinforced concrete raft slab, steel portal frame and suspended reinforced concrete mezzanine floor slab. An external assembly area is to be provided for the sub-unit.

POL Point

The petrol, oil and lubricants point is the bulk store and dispensing point for all vehicle fuels and lubricants. Office accommodation, stores and toilets are provided for this facility and the adjacent vehicle wash facility.

Facilities are to be provided for storage of drummed and packaged fuel and lubricants and mobile fuel storage and dispensing equipment. A canopy is to be provided over the fuel dispensing area. The facility will be able to operate immediately after a cyclone. The structural system generally comprises a reinforced concrete raft slab with braced steel roof truss and column frame.

Vehicle Wash

The vehicle wash facility provides for high and low pressure water cleaning of vehicles in a number of bays. Safety splash walls are provided between high pressure water bays. A wash ramp is provided for cleaning under vehicles. The facility can be expanded in future to accommodate a brigade. The structure generally comprises inground in situ concrete pits with steel and concrete ramps.

Covered Vehicle Servicing Bays

This facility provides six covered vehicle servicing bays each with a maintenance pit. The structural system generally comprises a reinforced concrete raft slab and braced steel beam and column frame.

Covered Vehicle Parking Bays

This facility provides 107 vehicle parking bays each with a mesh storage cage for vehicle equipment. Stores and a small office are also incorporated. The structural systems generally comprise reinforced concrete pad footings and widely spaced portal frames. Uncovered parking for 22 vehicles and other miscellaneous equipment is also to be provided.

Guard Room

The guard room comprises the working and living accommodation for the duty personnel, cells, fire fighting equipment store, covered vehicle parking for duty vehicles and a separate gate control post. The structural system generally comprises a reinforced concrete raft slab, steel stud walls and timber roof trusses. Boom gates are to be provided to control incoming and outgoing traffic to the barracks.

Ammunition Magazine

This facility incorporates two separate ammunition stores and a receipt and issue area. The structural system generally comprises a reinforced concrete raft slab, reinforced masonry load bearing walls and timber roof trusses.

Officers and Senior NCOs Messes

The officers mess and senior NCOs mess accommodate 20 and 23 men respectively and occupy the one building. With the exception of the kitchen and associated staff accommodation, the messes are separate. A movable acoustic screen which separates the officers and senior NCOs dining rooms permits one large dining room to be created for officers and senior NCOs mess nights.

Facilities for each mess include entrance foyer, games room, ante room with bar, administrative offices, stores, toilets and paved outdoor area. In order to facilitate planned future expansion, the kitchen is scaled for up to 65 men but equipped for only 43 men. The structural system generally comprises a reinforced concrete raft slab, a braced steel beam and column frame and suspended reinforced concrete floor slab for roof plant space.

Officers Accommodation

Accommodation for the Commanding Officer, two senior officers and 12 junior officers will be provided in two separate single-storey buildings. The Commanding Officer and senior officers each have a bedroom, living room and en suite bathroom whilst junior officers each have a single room and share an en suite bathroom between two.

The blocks are designed with central breezeways to promote cross-ventilation. A laundry, tea room, cleaner's room and box cupboards are provided in each block. The structural systems generally comprise reinforced concrete raft slabs, steel stud walls and timber roof trusses.

Senior NCOs Accommodation

Twelve senior NCOs will be accommodated in two separate single-storey buildings. The senior NCOs each have a single room and share an en suite bathroom between two. The blocks are designed with central breezeways to promote cross-ventilation. A laundry, tea room, cleaner's room and box cupboards are provided in each block.

The structural systems generally comprise reinforced concrete raft slabs, steel stud walls and timber roof trusses. In accordance with the master plan proposals, the accommodation is scaled for future use by junior officers. Standards are for senior NCOs.

Rank and File Mess

The rank and file mess incorporates dining, servery and kitchen facilities for 260 men, toilets and ration store. The building is to be the designated cyclone shelter for living-in personnel of all ranks and will be able to operate immediately after a cyclone. Accordingly, the mess has integral toilet facilities bringing the total for the rank and file mess and canteen above the Scales entitlement.

The structural system generally comprises a reinforced raft slab, a combination of braced steel beam and column and portal frames and suspended reinforced concrete floor slabs for roof plant space.

Rank and File Canteen

The rank and file canteen provides wet and dry canteen facilities for 260 men, TV room, barber, bank concession and toilet facilities. The structural system generally comprises a reinforced concrete raft slab, a braced steel beam and column frame and suspended reinforced concrete floor slab for roof plant space.

Rank and File Accommodation

Two hundred and forty rank and file will be accommodated in 15 two-storey buildings arranged around the rank and file mess. Each building is designed to accommodate 16 men in four groups of 4, with each group sharing an en suite bathroom and common room with tea making facilities and cleaner's cupboard. One laundry per eight persons will be provided and one bath per 16 persons.

The structural systems generally comprise reinforced concrete raft slabs, braced steel beam and column frames supporting suspended reinforced concrete first floor slabs and steel stud first floor walls supporting timber roof trusses. Box rooms are to be provided adjacent to the associated carports.

Carports and Covered Walkways

Two hundred and sixty-seven carports are to be provided, one for each person living at the barracks. Covered walkways link the accommodation blocks with their respective mess facilities and carports. Covered walkways also link the rank and file mess, rank and file canteen and physical fitness centre. The structural systems for the carports and walkways generally comprise concrete pad footings and steel frame.

Physical Fitness Centre

The physical fitness centre is partially two-storey and incorporates a gymnasium and squash court with viewing galleries, toilets and change facilities for players and spectators, foyer, office, stores and the central chiller plant. Adjacent to the centre is a six-lane, 25 m outdoor swimming pool with partial shade and perimeter fencing.

With the unit strength proposed, a gymnasium would not normally be an entitlement. However, this facility has been provided because of the remoteness from comparable community facilities and the need for the unit to maintain fitness during the wet season. An assembly hall, which is an entitlement, has been omitted as a partial cost offset.

The change rooms provide total flexibility of use serving users of the gymnasium, squash court and pool as well as players using the playing fields. The structural system generally comprises a reinforced concrete raft slab, braced steel frame and suspended reinforced concrete first floor slabs.

Sports Fields and Tennis Courts

A rugby field, a football oval (with a cricket pitch) and three tennis courts are to be provided.

Parade Ground and Antenna Farm

The parade ground comprises a 100 m x 120 m grass parade ground with 30 m wide apron on all sides. The facility is temporarily located for use by the 2 Cav Regt. The zone plan includes for a future permanent brigade facility north of the proposed 2 Cav Regt barracks area. The antenna farm comprises a fixed radio communications antenna installed within a cleared area.

Cine Target Range

The cine target range will be used with small arms and armoured fighting vehicles and generally comprises a concrete firing point and bullet catcher. Cine target projection equipment, controls and screens are not included.

The structural system generally comprises a reinforced concrete raft slab with steel framed, demountable steel clad hangar-type structure. The building structure and cladding is to be provided by Defence for erection and modification for the function and cyclonic conditions.

Mechanical Target Range

The mechanical target range will be used with small arms and armoured fighting vehicles and incorporates 10 lanes, five with target banks at 100, 200 and 300 m and five with target banks at 100, 200, 300, 400, 500 and 600 m. A stop butt will be located approximately 1000 m from the firing points allowing for future extension of the range.

The mechanical target range building houses the firing points, control and monitoring accommodation, store, toilets and personnel shelters. The structural system generally comprises a reinforced concrete raft slab and braced steel beam and column frame.

Site Office

The site office is to be a permanent structure which can be converted in future into an additional facility such as sports pavilion and store. Accommodation comprises office and drawing office space, toilets and lunch room. Carports are also provided. The structural system generally comprises reinforced concrete raft slab with braced steel columns and steel roof trusses.

Pump House and Power Station

The pump house accommodates fire pumps, generator plant and associated switchgear. The power station accommodates generator plant and associated switchgear. The structural systems generally comprise reinforced concrete raft slabs with reinforced brick load-bearing walls and timber roof trusses. The pump house will be able to operate immediately after a cyclone. The power station will be able to operate continuously through a cyclone.

Civil

A new road network with parking for domestic and Army service vehicles generally is to be sealed with bituminous hotmix topping, concrete or concrete block. Some of the existing gravel roads are to be upgraded and extended as necessary for access to

the mechanical target range and site office. Four sealed assembly areas are to be provided. Local off-site access roads are to be upgraded and repaired as necessary to facilitate Army use.

Stormwater disposal facilities generally comprise open drains with kerbs and gutters in closely built-up areas. Where applicable, existing open drains, including culverts, are to be cleared and upgraded both on and off site. A combined domestic, fire and irrigation water reticulation system generally is to be provided to service the new facilities. Water is to be brought to the site by the supply authority.

A combined gravity and pumped sewage waste system is to be provided to service the new facilities. Sewage waste generally will be pumped into the local public sewerage system for treatment and disposal. Waste from the vehicle wash is to be pre-treated prior to disposal off site.

Fencing is to be provided to the mechanical target range danger template area. Boundary fencing is to be provided. Security fencing is to be provided for some areas.

Mechanical

Air-conditioning generally is to be provided to the offices, messes, recreation spaces and stores and workshops where specific temperatures or humidity control is required. Living quarters are to be air-conditioned for sleeping comfort only. Centrally generated and reticulated chilled water with local air handling plant generally is to be used for the messes, recreational and residential facilities, with packaged units being provided for offices.

Living quarters are to be provided with wall louvres for natural ventilation and variable speed ceiling fans. Exhaust systems generally are to be provided to change rooms, toilets, kitchens, welding areas and the battery room and indoor target range.

Hot water systems generally are to be solar electric or gas fired. Gas fired equipment generally is to be provided for kitchens. Compressed air systems are to be included. Fuel storage and dispensing equipment is to be provided for the petrol, oil and lubricants point.

Electrical

An underground reticulation system generally is to be provided to supply the new facilities. Power is to be brought to the site by the supply authority at two points: a medium voltage supply direct to the mechanical target range and a high voltage supply to an intake station for the remainder of the site.

Emergency power is to be reticulated to the rank and file mess, the Regimental Headquarters building, the petrol, oil and lubricants storage and dispensing point and the sewage and water pumping plant. Generator plant is to be installed within the power station and pump house.

A complete telephone system including internal cabling and external underground cabling is to be installed. A central energy supervisory system is to be provided to control and monitor power usage on the site. A public address system is to be provided for the Technical Squadron workshops. Street, precinct, security lighting and floodlighting to the sports field and the tennis courts is to be provided.

Special earthing and power supply filtering measures are to be provided to building areas designated for use with electric arc welding equipment in order that the adjacent Shoal Bay Naval Receiving Station is not affected by radio frequency interference created by this activity.

Security

Security installations are to be provided in accordance with Defence requirements.

Fire Protection

Fire detection and alarm systems are to be provided in selected buildings. Fire alarms are to be monitored at the guard room. A muster system, manually initiated from a number of positions throughout the barracks including the guard room, will enable personnel to be summoned from messing, residential and recreational areas. Fire sprinkler systems are to be provided for some large stores areas. Small bore hose reels and hand extinguishers are to be supplied in buildings throughout. Ground level fire water storage tanks, a pumping station and fire hydrants are to be installed. Reticulation is to be via the combined site water reticulation system.

Larrakeyah Barracks Facilities and Engineering Services

The additional facilities at Larrakeyah Barracks are to be of a temporary or minor nature pending the possible future redevelopment of the site.

Married Quarters Furniture Bulk Store

This temporary facility will incorporate shelving and racking for storage. The structural system generally comprises a reinforced concrete raft slab with steel framed, demountable, steel clad hangar-type structure. The building structure and cladding is to be provided by Defence for erection and modification for cyclonic conditions.

Logistic Complex Headquarters

This temporary facility provides administrative accommodation for the Logistic Complex Headquarters personnel, toilet facilities for the Transport and Supply Platoon personnel and changing and shower facilities for living-out personnel working in the area. The two buildings providing this accommodation are transportable-type cabin structures designed and installed to suit cyclonic conditions. Office accommodation is to be air-conditioned.

Extension to the Transport Control Office

This facility will provide an additional air-conditioned office and briefing room. The accommodation is to be constructed under an existing covered parking bay adjacent to the existing office and amenities building.

Supply Platoon Warehouses

The three temporary Supply Platoon warehouses will generally comprise reinforced concrete raft slab with steel framed, demountable, steel clad hangar-type structures. The building structure and cladding is to be provided by Defence for erection and modification for cyclonic conditions.

Extension to the Workshop Platoon Headquarters

This facility will provide an additional air-conditioned office. The accommodation is to be of masonry construction to match the existing building.

Personnel Support Services Building

This temporary facility provides personnel support services administrative accommodation. The building is to be a transportable-type cabin structure designed and installed to suit cyclonic conditions. The office accommodation is air-conditioned.

Renovation of Dental Laboratory

The dental laboratory in the existing Military District Headquarters building is to be upgraded.

Engineering Services

Engineering services and access roads are to be extended and upgraded as necessary.

RAAF Base Darwin Facilities and Engineering Services

Two separate ammunition storage facilities are to be located in accordance with the development plan for the proposed RAAF

explosive ordnance storage complex. The buildings proposed will comprise reinforced concrete slab with earth-covered concrete structure. Security installations are to be provided in accordance with Defence requirements. Existing engineering services and access roads are to be extended as necessary.

APPENDIX C

PROJECT DRAWINGS

- Figure 1 - Location Plan
- Figure 2 - Palmerston Army Barracks, Site Plan
- Figure 3 - Zone Plan
- Figure 4 - Barracks Development Plan
- Figure 5 - Residential and Recreational Development Plan
- Figure 6 - Larrakeyah Barracks, Site Plan
- Figure 7 - RAAF Base Darwin, Site Plan

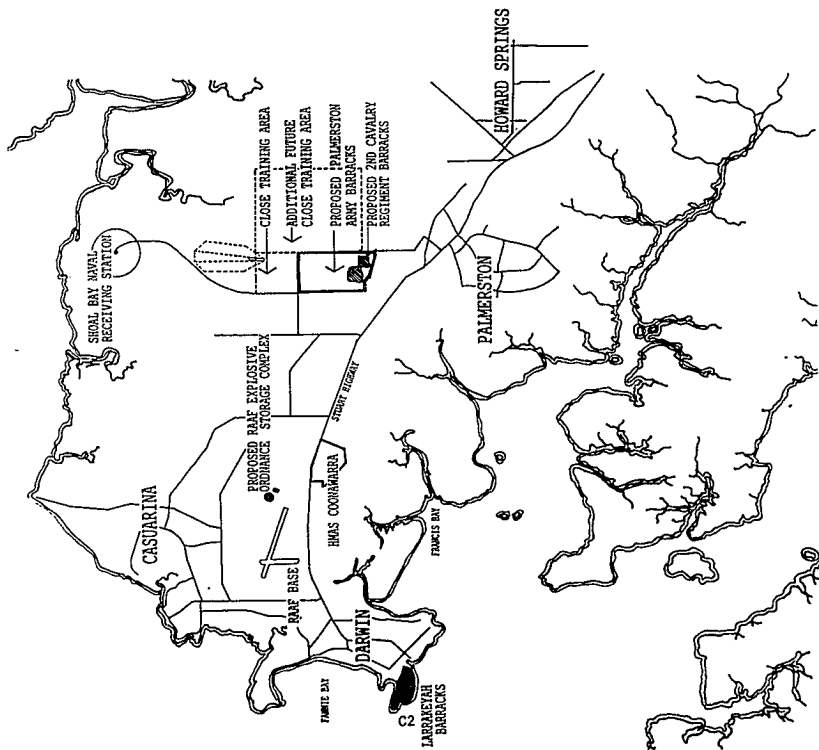
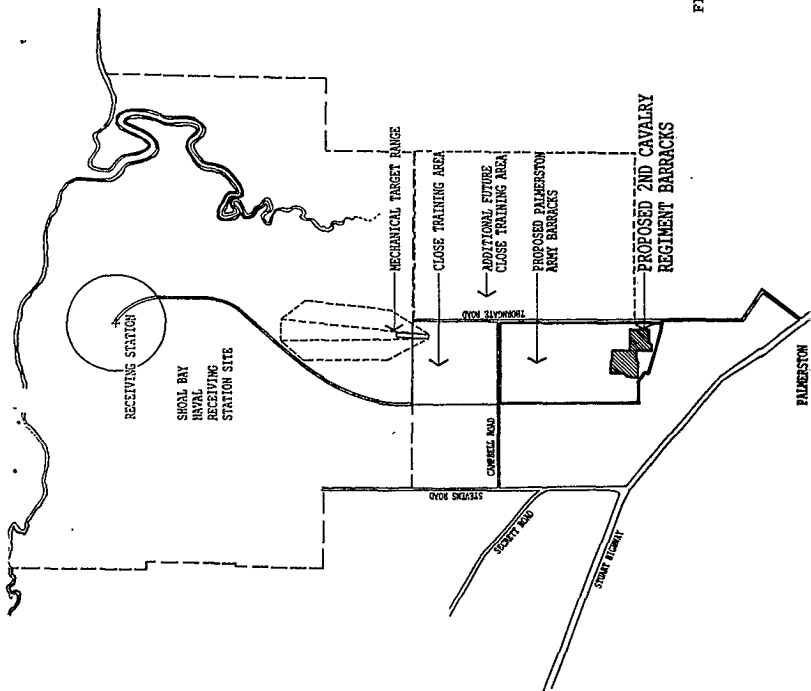


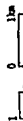
FIGURE 1 - LOCATION PLAN





PALMERSTON ARMY BARRACKS

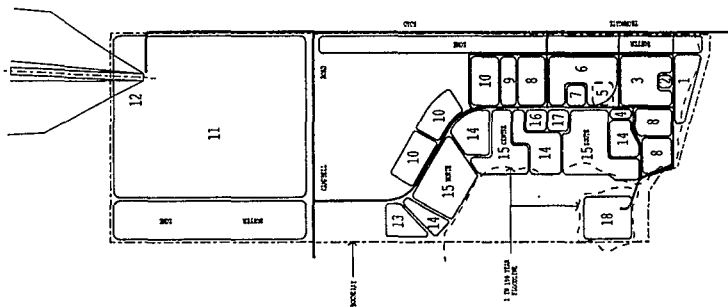
FIGURE 2 - SITE PLAN



2

LEGEND

- 1 UTILITIES
- 2 VESTIBLE WALK
- 3 2 CAV REST WALK AREA
- 4 BQ BUILDING ZONE 2 CAV REST
- 5 TEMPORARY PARADE GROUNDS
- 6 LOGISTIC SUPPORT UNITS
- 7 ANTEROMA PARK
- 8 HUNTER UNIT
- 9 MEDICAL
- 10 MAJOR UNIT
- 11 CLOSE TRAINING AREA
- 12 MECHANICAL TARGET RANGE
- 13 JIP 601 STANDED J ACCOMMODATION
- 14 RECREATION
- 15 MESSES & ACCOMMODATION
- 16 FORMATION SQ & SIG ELEMENT
- 17 PARADE GROUNDS
- 18 MINIATURE TRAINING RANGES



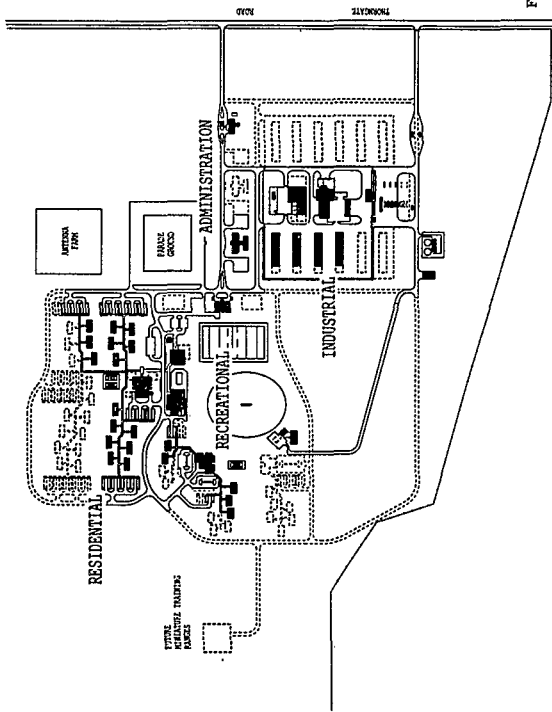
PALVESTON ARMY BARRACKS

FIGURE 3 - ZONE PLAN



500 0 500M

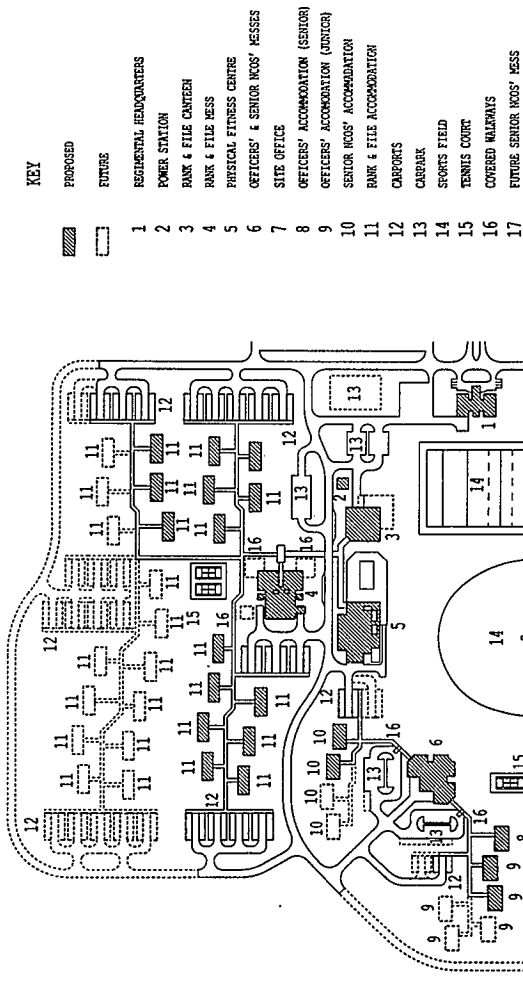
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- KEY**
- PROPOSED
 - FUTURE

2ND CAVALRY REGIMENT BARRACKS
FIGURE 4 - BARRACKS DEVELOPMENT
PLAN





2 Cavalry Regiment Barracks


FIGURE 5 - RESIDENTIAL AND RECREATIONAL DEVELOPMENT PLAN




50 0 50m

(6)

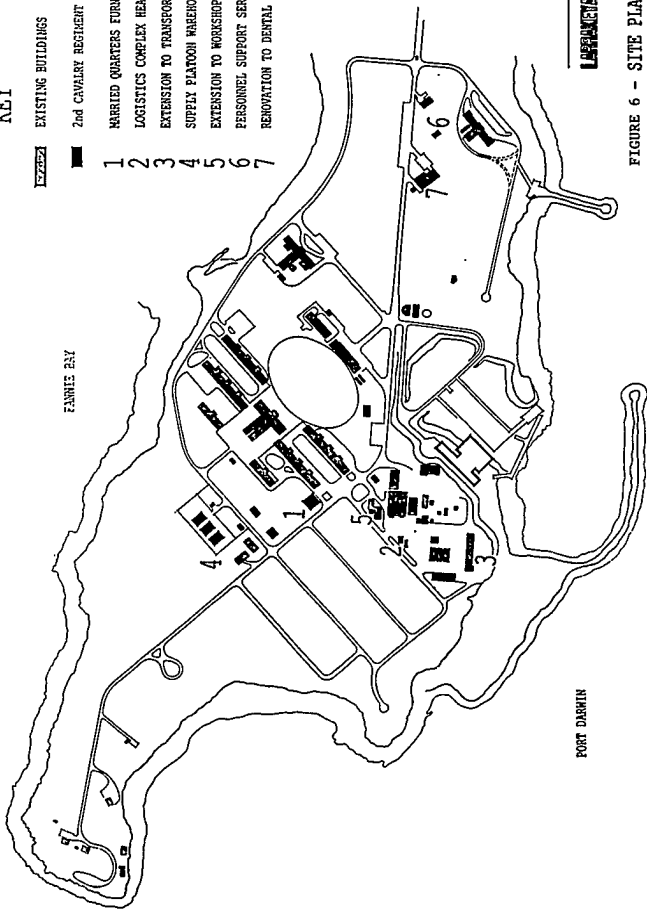
KEY

 EXISTING BUILDINGS

FANNIE BAY

 2nd CAVALRY REGIMENT WORKS

- 1 MARRIED QUARTERS FURNITURE BULK STORE
- 2 LOGISTICS COMPLEX HEADQUARTERS
- 3 EXTENSION TO TRANSPORT CONTROL OFFICE
- 4 SUPPLY PLATOON WAREHOUSES
- 5 EXTENSION TO WORKSHOP PLATOON HEADQUARTERS
- 6 PERSONNEL SUPPORT SERVICES
- 7 RENOVATION TO DENTAL LABORATORY



FORT DARWIN


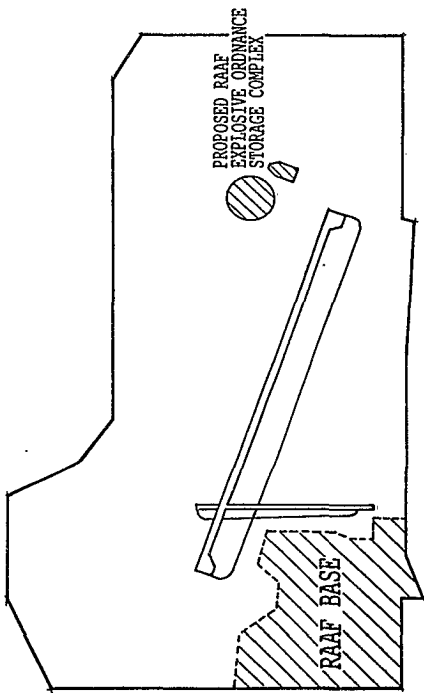
 LABORATORY PERIODS

FIGURE 6 - SITE PLAN



100 0 100M

45



RAAF BASE BATHURST

FIGURE 7 - SITE PLAN

