

Parliamentary Standing Committee on Public Works

REPORT

relating to the

DEVELOPMENT OF RAAF BASE DERBY, WESTERN AUSTRALIA STAGE 1

(Ninth Report of 1982)

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

R E P O R T

relating to the

DEVELOPMENT OF
RAAF BASE DERBY
WESTERN AUSTRALIA
STAGE 1

(Ninth Report of 1982)

MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS
(Twenty-sixth Committee)

Melville Harold Bungey, Esq., M.P. (Chairman)
James Leslie McMahon, Esq., M.P. (Vice-Chairman) ⁵

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- ¹ Retired 30 June 1981.
- ² Ceased to be member on election as President of the Senate on 18 August 1981.
- ³ Appointed 25 August 1981.
- ⁴ Appointed 25 August 1981.
- ⁵ Appointed Vice-Chairman 27 August 1981.

PUBLIC WORKS COMMITTEE ACT 1969
ORDER UNDER SUB-SECTION 18(4)

I, SIR ZELMAN COWEN, the Governor-General of the Commonwealth of Australia, acting with the advice of the Federal Executive Council, in pursuance of Sub-Section 18(4) of the Public Works Committee Act 1969, hereby, by this Order, declare that the public work described in the schedule be referred to the Parliamentary Standing Committee on Public Works for consideration and report.

SCHEDULE

DEVELOPMENT OF RAAF BASE DERBY, W.A., STAGE 1

L.S.

Given under my Hand and the
Great Seal of Australia
on 25 June 1982.

ZELMAN COWEN

By His Excellency's Command,
(Signed) Ralph Hunt
Minister of State for
Transport and Construction.

Governor-General

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

DEVELOPMENT OF RAAF BASE DERBY, W.A., STAGE 1

R E P O R T

On 25 June 1982, His Excellency the Governor-General in Council referred to the Parliamentary Standing Committee on Public Works for consideration and report to Parliament the proposed development of RAAF Base Derby, W.A., Stage 1.

The Committee has the honour to report as follows:

THE REFERENCE

1. The proposal is for the establishment of a forward defence air base at Derby to allow operation by all types of RAAF aircraft deployed there from time to time. The proposal comprises:
 - a runway
 - a taxiway system
 - four aircraft parking aprons
 - ordnance loading facilities
 - flight line facilities
 - a living area for RAAF personnel
 - associated engineering services.
2. The estimated cost of the proposed work when referred to the Committee was \$50.7 million at April 1982 prices.

THE COMMITTEE'S INVESTIGATION

3. The Committee received written submissions and drawings from the Department of Defence and the Department of Transport and Construction and took evidence from their representatives at a public hearing held in Derby on 26 and 27 July 1982.

4. The Committee received a written submission from West Kimberley Shire Council and took evidence from their representatives.

5. A written submission from Broome Shire Council and a letter from the Premier of Western Australia were also received.

6. Prior to the public hearing the Committee inspected the site of the proposed work. By courtesy of Airlines of Western Australia members of the Committee also viewed the site from the air.

7. The Committee's proceedings will be printed as Minutes of Evidence.

THE NEED

8. The White Paper on Australian Defence, November 1976, (Parliamentary Paper 312/1976) referred to a need to develop airfield and patrol craft bases in the more remote areas of Australia, particularly in the north. The statement was made in the context of intentions to develop and acquire defence facilities.

9. The ability of RAAF fighter aircraft to operate in the north west of Australia is limited by the lack of suitable airfields. Military aircraft require relatively long and strong runways and whilst there are a number of civil aerodromes in the area they are unsuitable for fighter and F111 aircraft. The practicalities of developing civil aerodromes at Broome and Derby to a standard required by the RAAF are discussed below.

10. At present fighter aircraft can operate from Darwin/Tindal in the Northern Territory and Learmonth in Western Australia. These centres are approximately 2,000 kilometres apart and adequate air defence of the entire north west cannot be provided from them. There is consequently a need for an airfield about half way between Darwin and Learmonth to fill the present gap in air defence.

11. An airfield in this region would also permit P3 Orion long range maritime patrol aircraft to extend their area of operations over the Indian Ocean, increase their reaction times and enable these aircraft to remain on station for longer periods.

12. The Yampi training area, north-west of Derby, is similarly about half way between Darwin and Learmonth. A RAAF airfield in its vicinity would serve as a logistics base for aircraft, personnel and materiel supporting training exercises in the area. Training activities could include air defence exercises for tactical fighter aircraft, major joint service exercises and deployment training for operational conversion units.

13. Committee's Conclusion The Committee endorses the need for a military airfield in the North-West of Australia.

SITE SELECTION

14. The proposal is to construct a RAAF base at a site about 35 kilometres south-east of Derby.

15. Site Selection Six sites approximately midway between Darwin and Learmonth, in the Derby-Broome area, were examined by the Department of Defence and the Department of Transport and Construction and their suitability was assessed against the following attributes:

- some natural protection against sea, air and ground attack and against the effects of cyclones;
- topography free of features which could restrict aircraft operations or increase construction costs;
- proximity to the Yampi training area and to roads and port facilities;

- scope for the expansion of facilities;
- minimum potential for adverse environmental effects.

16. A further criterion used in assessing sites within the general area was their road distances to the nearest proven source of rock for pavement construction.

17. The possible sites were considered and their suitability is discussed below:

18. Derby South This site, which is recommended by the Department of Defence, is bounded to the north by the Mowunjum Aboriginal Reserve, to the west by a new diversion road to Derby and to the south by the Great Northern Highway.

19. It is about 35 kilometres south-east of Derby and would provide good defence in depth. Ground radar could be deployed in a forward position for air defence early warning. It is virtually flat with existing grades not exceeding one per cent. Road access would be from the Derby-Broome road or the Great Northern Highway. The soil is a fine silty sand (known as pindan) providing a good subgrade on which to construct airfield pavements. There is sufficient land available to permit master planning for base expansion. The site is 200 kilometres from the Oscar Range, the nearest proven source of rock suitable for airfield pavements. A quarry site in the Oscar Range is 15 kilometres north of the bitumen sealed Great Northern Highway and only minor road development work would be necessary for rock from the quarry to be trucked to this site.

20. A site 25 kilometres east of Derby This site is comparable to Derby South but has logistic disadvantages. The road from Derby, while sealed, is subject to flooding. Furthermore, the quarry site at Oscar Range is 260 kilometres from the site.

21. Nilli Bubbaca This site is halfway between Derby and Broome. Broome Shire Council put forward a case to the Committee favouring this site. They pointed out that the Great Northern Highway could be impassable during the wet season and there are substantial rock deposits in the vicinity for pavement material.
22. In giving careful consideration to the case favouring this site the Committee noted that its location offered no advantages over Derby South as it is more remote from either centre. Furthermore adequate reserves of fuel and material would be maintained at whatever site is selected. Finally, the Department of Transport and Construction advised the Committee that some rock, in the form of small outcrops, is available locally but it is unlikely that this would be satisfactory.
23. A site 20 kilometres north east of Broome This site is not protected from cyclones and does not provide good defence in depth. It is about 370 kilometres from the Oscar Range.
24. The Department of Defence and the Department of Transport and Construction also assessed the practicalities and economics of upgrading either one of the two existing civil aerodromes in the area, at Derby and Broome.
25. Derby Aerodrome Upgraded The aerodrome is on a peninsula which verges on to a tidal mud flat. It is estimated that tidal surge would cover the western half of the main runway. For the runway to be extended would require the acquisition of land forming part of an aboriginal reserve and would necessitate the realignment of the Derby-Broome road.
26. Broome Aerodrome Upgraded Broome Aerodrome is located adjacent to the town and noise levels from military aircraft operating around the clock would be unacceptable to the local community. The site is not protected from cyclones and provides no defence in depth. The Oscar Range is about 350 kilometres from the site.

27. Committee's Conclusion The site at Derby South is satisfactory.

THE PROPOSAL

28. Scope of the Proposal The scope of stage 1 of the development of RAAF Base Derby involves the construction of airfield pavements, flight line technical facilities, an aircraft shelter, limited domestic facilities for deployed personnel and site works for navigation aids.

29. Locality, site and airfield facility layout plans are at plans A, B and C respectively. Construction details are at Appendix A.

30. The facilities proposed for Stage 1 are designed to support concurrent deployments of 16 tactical fighters, four F111, two P3 Orion and three C130 aircraft.

31. Master Plan The master plan for the overall development of RAAF Derby is based on studies of current trends in overseas defence airfield design.

32. The master plan provides for the protection of equipment and facilities against modern conventional weapons by:

- the use of the three main taxiways as emergency runways;
- the subsequent addition of hardened aircraft shelters;
- the separation of operational areas from each other and from domestic and support facilities;
- the provision of aircraft dispersal zones adjacent to the emergency runway/taxiways; and
- the use of cable arrestor systems on the emergency runways/taxiways.

33. The master plan also sets aside a zone for civil aviation facilities which may be required in the longer term. Derby South could become an alternate airport for international civil aircraft.

34. Airfield Pavements These will consist of a main runway, parallel, link and angled taxiways, a general purpose air movements and service apron, ordnance loading aprons and two aprons for the arming and disarming of aircraft.

35. The main runway will be 3050 metres in length, 45 metres wide and these dimensions will permit unrestricted operations by all RAAF aircraft including the F18. The runway and associated taxiways could also be used by B747, B707, C141 and C5A aircraft. The runway will be unsuitable for B52 aircraft but the Department of Defence maintained that there was no need to provide an airfield for such aircraft at this stage but the Committee feels this aspect should be further examined.

36. The orientation of the runway is similar to that at Derby aerodrome, has advantages for runway operations and suits prevailing wind conditions.

37. The parallel taxiway, to be located about 400 metres south of the main runway, will obviate the need for aircraft to back track and will permit rapid access to either end of the runway. The alignment of two high speed link taxiways (C and D) which will link the parallel taxiway with the main runway will enable aircraft to quickly vacate the runway on landing.

38. Two angled taxiways (F and G), each 1525 metres in length and 15 metres wide, will permit aircraft access to aprons and facilities which will be dispersed around the site. The separation of operational areas from each other is a key element of the master plan for the development of Derby South.

39. A feature of the design, length and configuration of the three main taxiways (taxiways A, F and G) is that they could be used as emergency runways.

40. The Committee was advised that the design incorporated the latest military airfield design concepts from overseas countries including Israel and the United States.

41. A general purpose air movements and service apron will be located at the western extremity of Taxiway G. The apron area will be contiguous with the site proposed for an airtransportable hangar and the area master planned as the technical support zone. The apron will be sized to accommodate two P3 Orion and three C130 aircraft.

42. Five ordnance loading aprons will be located south-east of the eastern end of the main runway. Each loading apron will be linked by a taxiway loop which will join the main taxiway system (taxiways H and K). The ordnance loading aprons will accommodate tactical fighter and F111 aircraft.

43. Two aprons at either end of the main runway will be constructed to provide parking for aircraft for their final arming prior to takeoff and for disarming when necessary.

44. Flight Line Facilities These facilities have been designed to support up to 120 personnel engaged in round-the-clock operations in support of aircraft movements. They will be similar to those under construction at Learmonth, (Committee's Second Report of 1981 - Parliamentary Paper 43/1981) and will include:

- a technical operations area
- an ablutions area
- food services area
- storage for flyaway kits, ground servicing equipment and oxygen apparatus; and
- hardstanding for four airtransportable cabins.

45. Aircraft Shelter The aircraft shelter, for up to twelve tactical fighter or six F111 aircraft, will be constructed on an apron between taxiways H and K which service the ordnance loading aprons.

46. An aircraft tow road will link the aircraft apron with general purpose air movements and service apron.

47. Engineering Services Electrical power will be supplied from an on-base power house and the proposal includes the reticulation of power, the provision of emergency back-up power to operational facilities, water supply reticulation, sewerage facilities and roads.

48. Pricing policies of the State Energy Commission of Western Australia makes the on-site provision of electric generators the most economic method of supplying the power requirements of the base.

49. Navigational Aids The proposal includes site works and the provision of engineering services for airtransportable navigation aids.

50. Domestic Facilities Up to 400 personnel will be deployed to RAAF Derby for periods of approximately four to six weeks. Permanent shower, laundry and toilet facilities will be provided for this number in the domestic accommodation area located about 1.5 kilometres south of the general purpose air movements apron. Sleeping accommodation will initially consist of tents although permanent facilities will be sited to allow for later development of the area, the construction of permanent sleeping accommodation and other buildings.

51. Committee's Conclusion The extent of the proposed Stage 1 development of RAAF Derby is adequate for current Defence requirements subject to a reassessment, by the Department of Defence, of its use by B52 aircraft.

LAND ACQUISITION

52. The site at Derby South, consisting of about 25,000 hectares of freehold land, was acquired by the Commonwealth in 1982. The Committee was advised that it was necessary to acquire a relatively large parcel of land to provide a buffer zone around the operational area, to provide for future expansion of activities at the base and to enable proper safety distances for the storage of explosive ordnance to be adopted.

ENVIRONMENTAL CONSIDERATIONS

53. A number of State and Commonwealth departments were involved in assessing possible environmental impacts of the proposal.

54. The Department of Aboriginal Affairs indicated that no sites of traditional importance to the Aboriginal people are in the acquisition area. The Western Australian Museum has surveyed the area for Aboriginal sites. There are no known archeological sites within the acquisition boundaries although it is possible that sites could be located during clearance and construction work. If any sites are located during construction they will be reported to the Registrar of Aboriginal Sites. The Western Australian Department of Agriculture advised that vegetation on the site is common and widespread throughout the West Kimberley region and that no unique flora and fauna exists on the site.

55. During construction the extent of clearing will be controlled and limited to that necessary for the carrying out of the work.

56. Upon completion of the work it is proposed to level and to re-establish areas cleared for construction purposes with natural vegetation. Soil loss due to wind and water will be controlled by establishing grass in unpaved areas and by the use of shallow surface gradients in other unpaved areas.

CONSULTATION

57. A number of Commonwealth and State government departments were consulted during the planning of the proposed work. There is general agreement amongst departments involved.

58. The Shire of West Kimberley was consulted at various times.

FUTURE WORK

59. Fuel storage tanks are also proposed as part of Stage 1 but as is customary these have been exempted from examination by the Committee.

60. The Department of Defence indicated that Stage 2 facilities could be developed to include permanent facilities for domestic, operational and technical support purposes, ordnance storage and preparation facilities and dispersal areas and revetments.

LIMIT OF COST

61. The limit of cost estimate for the proposed work is \$50.7 million at April 1982 prices made up as follows:

	\$m
Airfield Works	42.0
Building Works	2.7
Engineering Services	6.0
	<u>50.7</u>

PROGRAM

62. It is proposed that tenders be invited for preliminary works, including access roads and water supply, in September 1982 and for the airfield and other works in April 1983.

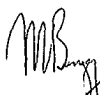
63. Completion of Stage 1 is planned for July 1987. This timetable meets the requirements of the Department of Defence.

64. Committee's Conclusion The Committee recommends the construction of the work in this reference.

RECOMMENDATIONS AND CONCLUSIONS

65. The summary of recommendations and conclusions of the Committee and the paragraph in the report to which each refers is set out below:

		<u>Paragraph</u>
1.	THE COMMITTEE ENDORSES THE NEED FOR A MILITARY AIRFIELD IN THE NORTH-WEST OF AUSTRALIA.	13
2.	THE SITE AT DERBY SOUTH IS SATISFACTORY.	27
3.	THE EXTENT OF THE PROPOSED STAGE 1 DEVELOPMENT OF RAAF DERBY IS ADEQUATE FOR CURRENT DEFENCE REQUIREMENTS SUBJECT TO A REASSESSMENT, BY THE DEPARTMENT OF DEFENCE, OF ITS USE BY B52 AIRCRAFT.	51
4.	THE LIMIT OF COST ESTIMATE FOR THE PROPOSED WORK IS \$50.7 MILLION AT APRIL 1982 PRICES.	61
5.	THE COMMITTEE RECOMMENDS THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	64


(M.H. BUNCEY)
Chairman

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

24 August 1982.

APPENDIX A.

CONSTRUCTION

66. Construction Facilities The master plan provides for an area for Department of Transport and Construction Facilities.
67. An area will be provided for the contractor's camp.
68. Seven houses for Department of Transport and Construction staff will be provided in Derby. These will be occupied by staff required to maintain the airfield and the engineering services on completion of the airfield construction.
69. Movement Areas The aircraft movement area works will require 1.2 million cubic metres of earthworks, construction of 450,000 square metres of flexible pavement and 100,000 square metres of concrete pavement.
70. The main runway will be 3050 metres long by 45 metres wide and will be within a graded flight strip of 3650 metres by 300 metres.
71. The parallel taxiway and taxiways F and G will each have a minimum straight length of 1525 metres, a width of 30 metres within 150 metre wide graded flight strips.
72. The pavements have been designed to cater for the expected movements of existing and planned defence aircraft. This includes Mirage, FA18, P3 Orion, F111C and C130, Caribou and B707.
73. Full strength aircraft pavements will be provided in the central 23 metre width of the main runway, the central 15 metre width of the taxiways, across the entire 45 metre width of the 100 metre long runway ends and for the aircraft aprons.
74. The full strength flexible pavements will comprise 50mm of bituminous concrete on 275mm of fine crushed rock on not less than 200mm of highly compacted pindan sand on compacted subgrade.

75. All aircraft aprons and the 100 metre long runway ends will comprise 350mm of cement concrete on 100mm of fine crushed rock on compacted subgrade.

76. The runway over-runs will be 300 metres long by 45 metres wide. The first 60 metres closest to the main runway will be constructed in occasional use flexible aircraft pavement and the balance will be of compacted pindan sand surfaced with 100mm of lateritic gravel.

77. Concrete bases for the cable arrestor systems will be installed at each end of the main runway. Provision will be made for the installation of portable arrestor systems on the emergency runways.

78. Sources of Pavement Material As mentioned above (paragraph 19) the nearest proven source of rock suitable for aircraft pavement construction is from an existing quarry in the Oscar Range about 200 kilometres east of the site and 15 kilometres north of the bitumen sealed Great Northern Highway.

79. Approximately 500,000 tonnes of crushed rock will be required for the flexible and concrete aircraft pavements.

80. Sand for pavement construction will be obtained from the bed of the Fitzroy River, about 50 kilometres from the site.

81. The project will require 6,000 tonnes of bitumen and 20,000 tonnes of cement.

82. Buildings As cyclones occur frequently in this part of Australia all buildings will be designed to withstand prescribed wind loadings.

83. The aircraft shelter, suitable for 12 tactical fighters or six F111 aircraft, will be erected on the aircraft shelter apron. The covered area will be 204 by 32 metres.

84. The flight line facilities, adjacent to the aircraft shelter apron, are designed to cater for about 120 personnel associated with round-the-clock operations. Facilities to be provided are:

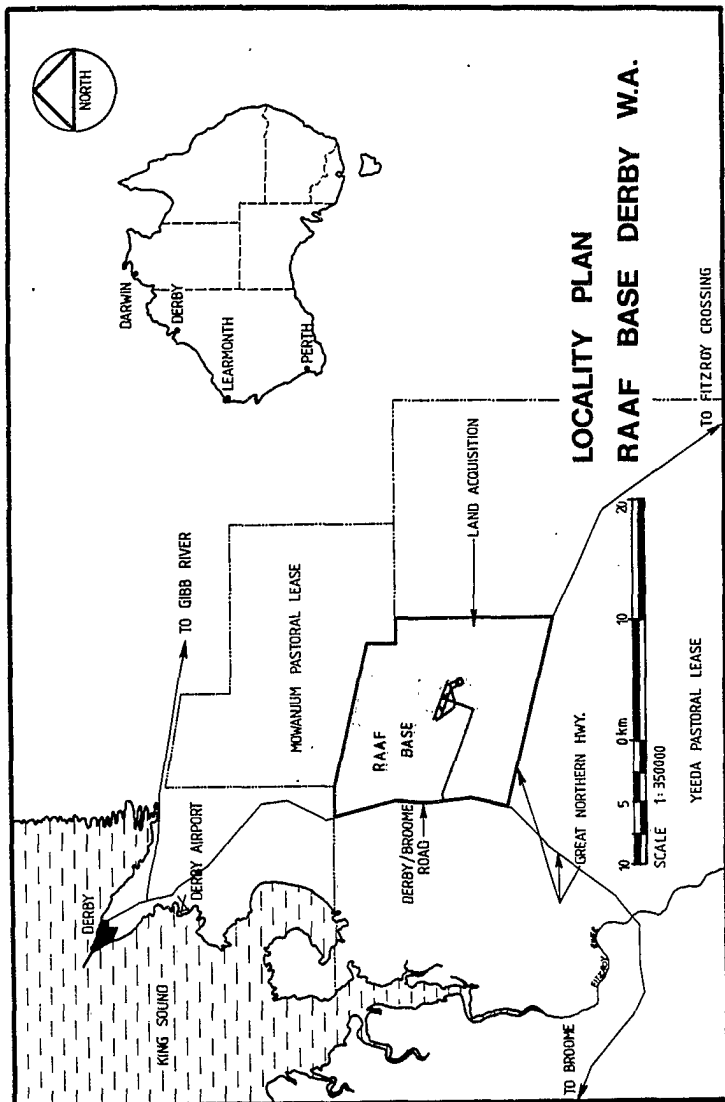
- an air conditioned Technical Operations/ Amenities building which will contain offices, crew and briefing rooms, a dining room, meal servery, ablutions and storage. The building, to be below ground level, will be constructed of reinforced concrete and will also serve as a cyclone shelter.
- a flyaway kit store to accommodate special kits which accompany operational aircraft. The store will have a steel frame, walls and roof.
- a ground servicing equipment shelter, consisting of a carport type building to accommodate specialised vehicles and platforms to service aircraft.
- a liquid dry oxygen shelter, similar to the ground servicing equipment shelter, to accommodate the trailer for the liquid dry breathing oxygen.

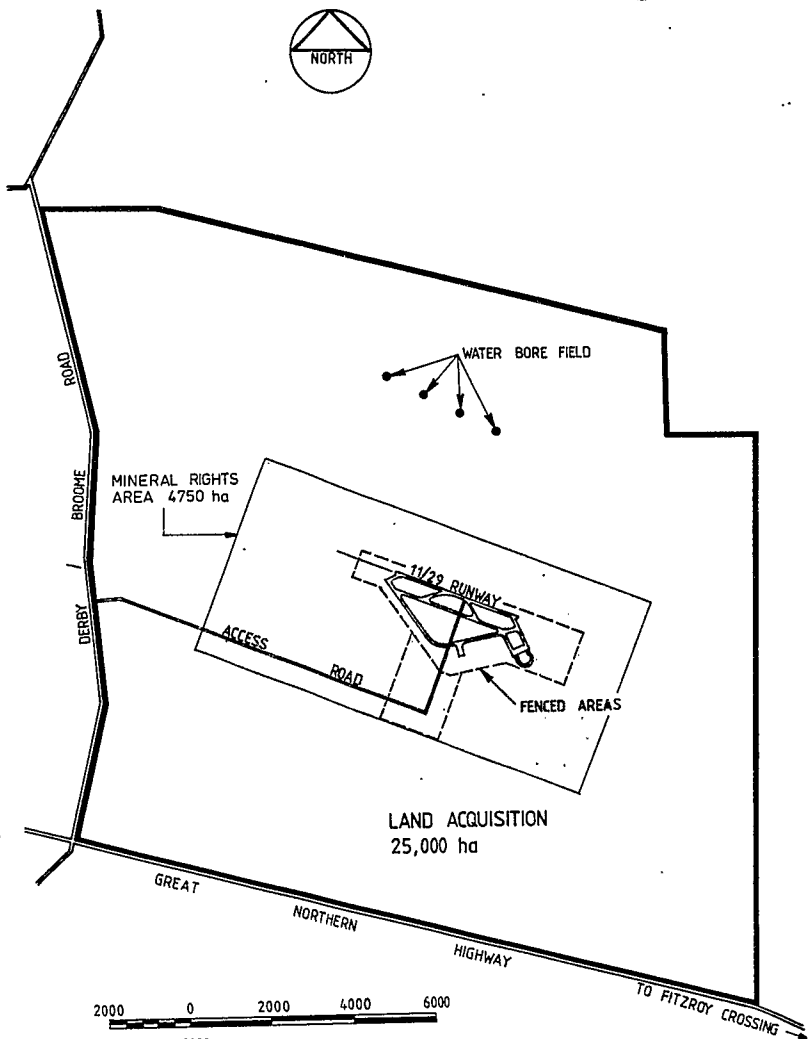
85. A primary power house, constructed below ground of reinforced concrete, will be located south of the Department of Transport and Construction compound. Underground diesel fuel storage will also be provided.

86. A below ground emergency powerhouse and control room for airfield lighting will also be provided.

87. The living area will have compacted gravel hardstands for tent lines, mobile kitchens and vehicle parking. Panellised buildings with metal roofs will be constructed to provide shower, laundry and toilet facilities.

88. Electricity Primary electric power will be provided by two 50KW, one 200KW and one 600KW diesel driven units at the primary powerhouse. The output of units will cater for varying loads required.
89. Emergency power for airfield lighting will be provided by a 150KW diesel alternator. Mobile units will provide all other emergency power requirements.
90. Electric power will be reticulated throughout the area via 11KV underground cables with substations located at appropriate load levels.
91. Water Ground water suitable for domestic purposes is available from an aquifer to the north of the airfield. Water will be pumped to 1.3 million litre concrete water tanks with a 146,000 litre steel elevated tank providing pressure for reticulation to airfield and base facilities.
92. Water for fire fighting will be held in 500,000 litre concrete tanks and a pressurised supply serving a fire hydrant system will be provided by booster pumps.
93. Roads A sealed two lane road, about 8 kilometres long, will link the Derby-Broome Road with the airfield facilities. Internal roads within the area to various facilities will total 10 kilometres.
94. Fencing A perimeter fence, designed to exclude cattle and small marsupials, will generally follow the edges of the cleared movement areas.

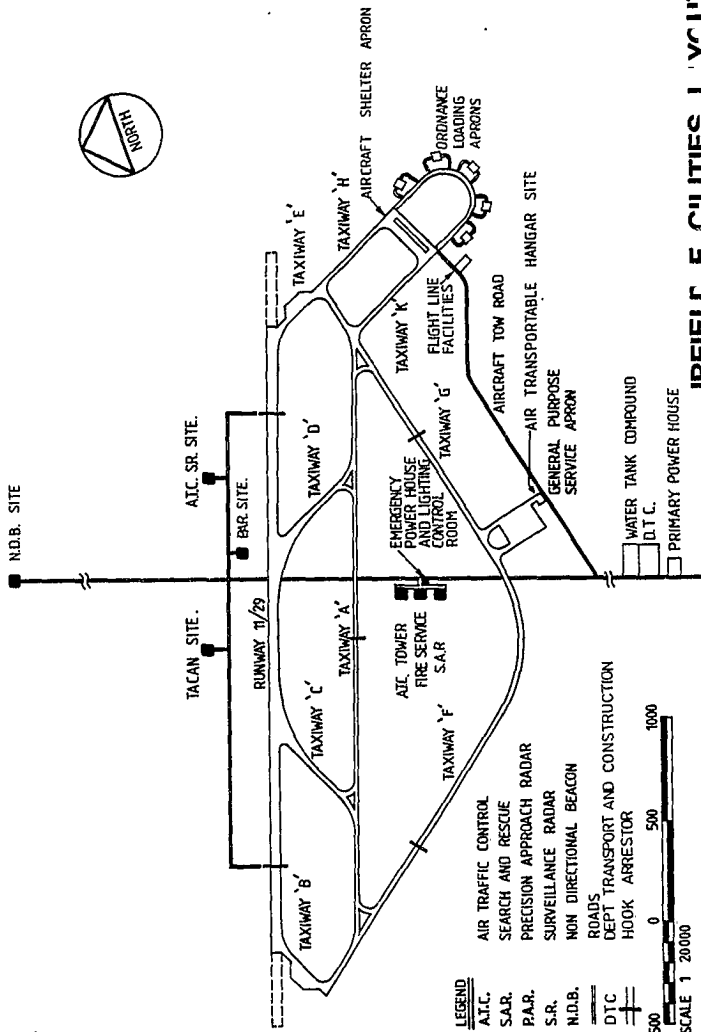




SITE PLAN

RAAF BASE DERBY W.A.

B.



IDEFIC E C I T I F E I ' V C I T