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<i>W. Morrison</i>	
Acting	

*Parliamentary Standing Committee on Public Works*

## REPORT

relating to the proposed construction of an

# AIRCRAFT MAINTENANCE COMPLEX AND ACCESS PAVEMENTS

at

RAAF Base, Darwin,  
Northern Territory

(SEVENTH REPORT OF 1980)

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

1980

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

R E P O R T

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(Seventh Report of 1980)

Australian Government Publishing Service  
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(Twenty-fifth Committee)

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

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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

CONSTRUCTION OF AN AIRCRAFT MAINTENANCE COMPLEX AND ACCESS  
PAVEMENTS AT RAAF BASE DARWIN.

L.S.

Given under my Hand and the  
Great Seal of Australia  
on 6 June 1980

ZELMAN COWEN

Governor-General.

By His Excellency's Command,  
(Signed) R.J. GROOM  
Minister of State for  
Housing and Construction

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

AIRCRAFT MAINTENANCE COMPLEX  
AND ACCESS PAVEMENTS  
AT RAAF BASE, DARWIN, N.T.

R E P O R T

On 6 June 1980, His Excellency the Governor-General in Council referred to the Parliamentary Standing Committee on Public Works for investigation and report to Parliament the proposal to construct an aircraft maintenance complex and access pavements at the Royal Australian Air Force Base, Darwin, Northern Territory.

The Committee has the honour to report as follows:

THE REFERENCE

1. The proposal is for the construction of a maintenance complex to allow full undercover servicing of aircraft up to Caribou size and 'nose in' servicing of larger aircraft. Aprons and taxiways are to be provided to suit servicing requirements and access to runways.

2. The works will consist of:

- a new hangar;
- a servicing support workshop;
- a flammable stores building;

- apron and taxiway pavement works; and
- relocation of demountable buildings from RAAF Base, Edinburgh, South Australia.

3. The estimated cost of the proposal when referred to the Committee was \$4.5 million at May 1980 prices.

#### THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions and drawings from the Department of Defence and the Department of Housing and Construction and took evidence from their representatives at a public hearing in Perth on 15 July 1980. A written submission was also received from the Northern Territory Government and evidence was taken from Mr A.G. Morris, Acting Deputy Director-General, Chief Minister's Department.

5. The Committee inspected the existing facilities and the site for the proposed works on 4 June 1980.

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

#### BACKGROUND

7. The RAAF Base Darwin was formed on 1 June 1940, developed during World War II and now occupies an area of about 1600 hectares. In the period between the mid-1950s and the mid-1970s the base and its attached properties underwent major development changes which included:

- construction of all the present main airfield pavements;
- development of an air defence radar site at Lee Point;

- improvements to explosives storage and handling facilities at Frances Bay;
- construction of major aviation fuel storage and dispensing facilities; and
- development of operational, technical and domestic support facilities.

8. Servicing of aircraft deployed to Darwin was originally undertaken in an old igloo hangar which was subsequently demolished. During World War II support workshops and technical administration facilities were housed in two annexes located inside a steel-framed hangar and a number of buildings of light construction located on the base. Since the early 1960s numerous Air Defence exercises involving the deployment of RAAF aircraft from their southern bases have been conducted in the Darwin area.

9. At the end of 1974 Cyclone Tracy completely destroyed both the steel-framed hangar and most of the maintenance support facilities. The cyclone also caused the destruction of facilities at Lee Point, and Air Defence exercises, which depend on radar control and technical support facilities, have been curtailed as a result. Since Cyclone Tracy the roles and functions of the base have been restricted due to the limited aircraft staging and support capabilities of the remaining facilities. Restoration of the Lee Point facility is progressing with re-activation expected in 1981 to allow resumption of major operational exercises.

#### THE NEED

10. Existing Facilities Aircraft maintenance facilities currently consist of an air-transportable hangar and transportable cabins housing support workshops and technical administration. The air-transportable hangar is an aluminium

frame canvas-clad structure having a floor area of 625m<sup>2</sup> without lighting or other services and capable of accepting only one aircraft of Tracker or F111C size. This hangar has proved unsatisfactory in other respects and the canvas cover has deteriorated due to the prevailing climatic conditions, particularly wind action.

11. The servicing support workshops and technical administration facilities are housed in 13 transportable cabins fitted with wall-mounted air conditioning units and provide a total floor space of 335m<sup>2</sup>. The continued use at Darwin of these cabins on a permanent basis has denied them for use in the short term operational deployment role elsewhere and has contributed to their accelerated deterioration.

12. Most aircraft movements at Darwin generate servicing outside normal working hours and, as most servicing has to be done in the open, night work involves the use of portable flood lights which has proved to be most unsatisfactory. Additionally, this type of servicing exposes personnel to prevailing weather conditions and as a result it has, on occasions, not been possible to service aircraft.

13. Since Cyclone Tracy many support facilities have been reconstructed in the weapons preparation and bomber and fighter aircraft replenishment areas which will also increase the need for permanent maintenance facilities to be available for aircraft on deployment to Darwin. Facilities adequate for the maintenance of four RAN Trackers and an RAAF Caribou presently based at Darwin, as well as transient aircraft of the RAAF and allied services are required.

14. The need for the present project can be summarised as follows:

- the existing hangar is inefficient for the role it is required to fulfil;
- the new facility will enable more work or a wider scope of work to be performed on aircraft using the base; and
- the new facility will be able to cope with maintenance on the various types of aircraft which will use the base in the future.

15. Committee's Conclusion The existing aircraft maintenance facilities at RAAF Darwin are inadequate. There is a need for a new hangar and associated facilities to improve the maintenance capacity of the base.

#### FUTURE PLANNING

16. Department of Defence The operations of RAAF Darwin are an integral part of Australia's northern defence system. The Department of Defence, in evidence to the Committee, stated that all works at RAAF Darwin, including the present proposal, conform to the requirements of a Master Plan. The Department of Defence believes that as the principal Department their requirements must have priority but in the plan for the development of Darwin Airport, consultations will be undertaken with the tenant (the Department of Transport) and the Northern Territory Government to minimise any conflict of interests. The Department of Defence is opposed to any delay in the proposed works as they do not affect any area of the Airport currently used for civilian aviation.

17. Department of Transport The RAAF Base Darwin has been a joint user (civil/military) airfield since 1945 when certain buildings were allocated to the Department of Transport on a temporary basis and one of these is still in use as the



civil international and domestic passenger terminal, In 1945, an area of approximately 48.5 hectares in the centre of the base with access to the Stuart Highway was allocated to the Department of Transport and now incorporates aircraft pavements, light aircraft hangars and other support facilities for civil operations.

18. The long term plan of the Department of Transport (in consultation with the Department of Defence) has been to redevelop its facilities on the northern side of the main runway, with present planning being to transfer civil aviation activities to the new facilities by 1985 and the RAAF to concentrate its facilities on the southern side. The Committee was informed that this planning has been agreed to at interdepartmental level within the Commonwealth Government but has not yet been approved by Cabinet.

19. Northern Territory Government The Northern Territory Government is concerned to ensure that in the construction of the maintenance hangar no irrevocable step is taken to prejudice the widest possible consideration of alternative sites for the future relocation of civil aviation operations and that their point of view is given adequate consideration when decisions are taken. They are committed to pursuing future civilian operational development on the southern side of the present runways and regard with dissatisfaction any inference that a final decision has been or is about to be made for relocation to the northern side. The Northern Territory Government wished to record that to date they have not been consulted during the inter-departmental negotiation on the north-south allocation of facilities between the Departments of Defence and Transport and they feel that either piecemeal development or concentration on Department of Defence requirements would not be proper.

20. Committee's Conclusion The Committee recommends that the Departments of Defence and Transport consult with the Northern Territory Government as soon as possible on the long-term proposals for relocation of civilian aviation operations at Darwin Airport.

#### THE PROPOSED WORK

21. Planning and Design The hangar, with a floor area of 2,379m<sup>2</sup>, will provide covered maintenance facilities for a wide range of military aircraft. It will be flexible in use providing complete hangarage for either four tactical fighter aircraft or two F111C or one RAN Tracker and the Darwin based Caribou aircraft as well as 'nose-in' servicing for transient maritime and transport aircraft. It will be designed to resist 100 year return period winds, calculated in accordance with the appropriate Standards Association of Australia Loading Code, and will provide an appropriate level of protection against debris penetration.

22. A servicing support workshop annex will be provided to house engine, armament and aircraft metal workshops. Appropriate domestic facilities for use by personnel will be constructed to fulfil a secondary role as a cyclone refuge centre. A standard flammable goods store and serviced hard-stands for deployment of maintenance cabins and demountable buildings will complete the permanent facilities.

23. Three demountable buildings currently in use at RAAF Base Edinburgh, South Australia will be relocated at Darwin and modified for use by the installation of new footings, cyclone tiedowns, internal wiring and switchboards. These structures will house radio, instrument, electrical and safety equipment workshops, flight line and aircrew safety equipment facilities and offices for technical administration.

24. Appropriate security and fire equipment will be provided in line with current Department of Defence procedures.

25. Committee's Conclusion The overall design of the hangar and associated facilities is satisfactory.

#### SITE

26. The complex will be located within the existing RAAF Base at Darwin. The site is approximately 28 metres above sea level with a natural fall providing drainage from north-east to south-west. Existing vegetation on the site consists only of various grasses.

27. Two small existing buildings are marked for demolition to make way for the proposed development. The site provides an opportunity to locate the aircraft maintenance complex in a central position and at a reasonable distance from civil operations and base living quarters.

28. Committee's Conclusion The site selected is suitable.

#### CONSTRUCTION

29. Structure The maintenance hangar will be of standard construction, on bored foundation piers with overall plan dimensions of 61m x 39m, having a maximum clear height of 11.5m to the underside of the roof trusses. The manually operated main doors, each consisting of 12 leaves, will be located on each of the long sides of the hangar providing a clear opening 55m wide by 7m high. A 4m high tail gate door will be centrally located above both main doors. Two access doors fitted with security locks will be installed together with two fire doors operable from the inside only.

30. The structure will be designed to require minimal maintenance with unpainted galvanised corrugated iron and no gutters or downpipes. Roof run-off will be directed away from the building using surrounding pavements graded to open drains.

31. The support workshop will house the trades associated with servicing of engines, airframes, armament and aircraft metalwork. It will be located 7.5m from the hangar and connected by a covered way. On the western wall four roll-up doors will be installed to permit vehicle access. Separated from this area will be domestic facilities for 120 personnel comprising male and female toilets, showers and change rooms constructed in accordance with the Services Scales and Standards of Accommodation.

32. The flammable goods store will be constructed in accordance with the relevant SAA Standards and the Department of Housing and Construction Standard Details.

33. Materials The hangar will be of all steel frame construction with unpainted heavy grade galvanised corrugated iron cladding. The floor will be concrete constructed to the required gradients with a non-skid, oil resistant finish. The support workshop and flammable goods store buildings will have modular masonry walls and a galvanised iron roof, while the domestic facilities will be similar but with concrete block masonry walls.

34. The demountable buildings are metal modular and of a prefabricated, panellised and transportable type.

35. Exterior All surfaces will be left in their natural finish to reduce maintenance. A new 15m wide taxiway of sufficient strength for heavy duty aircraft movement will be constructed due east from the hangar to connect with the existing

north-south taxiway. Hangar aprons will be of similar construction and strength as the floor area and will include aircraft washdown facilities.

36. Taxiway shoulders will be 7.5m wide with bituminous concrete surfacing of sufficient strength for use by fire tenders and road vehicles. Serviced hard standings of bituminous surfaced pavement with an area of 7300m<sup>2</sup> will be constructed for the deployment of maintenance cabins and demountable buildings.

37. Interior No acoustic treatment is proposed beyond the insulation already provided in the demountable buildings as they will not be located in close proximity to flight paths, runways or taxiways.

38. Mechanical Engineering Services The hangar and workshops will be supplied with commercial standard compressed air reticulated at 700kPa from a central supply.

39. Hot water and refrigerated drinking water will be provided in the domestic facilities along with emergency water storage and power generation equipment as part of its cyclone shelter role.

40. Electrical Services To connect the new complex to the base's existing 11,000 volt ring main reticulation, a new 11kV/415/240 V substation will be provided near the hangar. Light and power, including self-contained emergency lights and exit signs will be provided in all buildings with 400 hertz outlets in the hangar and workshops.

41. Emergency power to 50% of maximum demand will be supplied from the base central emergency power house in the event of mains failure. External security lighting will be installed on all buildings and internal security lighting will be provided in the hangar to a sufficient standard for operation of a closed

circuit television system. A security detection and alarm system will be provided to the Department of Defence specifications.

42. Facilities and ducting will be included to permit the installation of computer aided maintenance management in the avionics workshop, the administration building and the flight line building. Necessary ducting to allow installation of telephones in all areas will be included. Special power requirements for non-standard electrical frequencies will be provided as appropriate.

43. Earthing points for aircraft will be provided inside the hangar and on the aprons.

44. Civil Engineering Stormwater drainage will be directed away from buildings on surrounding pavements graded to open drains connecting to the base stormwater drainage system.

45. The existing water reticulation system will have to be extended as the site is not currently serviced. The Committee was informed that a separate investigation into this defect was well advanced. Domestic water will be supplied to all buildings and the aircraft washdown area.

46. All buildings will be connected to the existing base sewerage system. Polluted water from the hangar floor and the aircraft washdown area will be isolated from the stormwater system, collected in a treatment pond, biologically stabilised and disposed of via the sewerage system.

47. Fire Protection The proposed fire protection measures include an aqueous film forming foam (AFFF) installation having four floor mounted monitors capable of both automatic and normal operation in the hangar, with early warning alarms to a central control point, smoke venting and draft curtains. In all

buildings fire hose reels and first aid appliances will be provided in suitable locations. Thermal alarms will be used in each building except for the hangar which will have a dual fire detection system comprising ultra-violet and obscuration detectors for flame and smoke detection.

48. Provision will be made for future installation of closed circuit television linked to the fire station monitoring room.

49. A water supply for the hangar fire suppression system will be provided by two storage tanks with associated electrically and engine driven pumps and delivery pipework. Two one-way secure fire exits will be provided in the hangar.

50. Car Parking Parking for personnel working in the maintenance facility will be provided on the serviced apron adjacent to the workshop area.

51. Departmental Liaison The proposal has been developed in close consultation between the Department of Defence and the Department of Housing and Construction.

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

#### ESTIMATE OF COST

53. The estimated cost of the work when referred to the Committee was \$4.5 million at May 1980 prices made up as follows:

	\$
Building works	1 800 000
Aircraft pavements	915 000
Civil works	215 000
Hydraulic services	640 000
Electrical services	500 000
Mechanical services	430 000
	<u>4 500 000</u>

#### PROGRAM

54. Following approval for the work to proceed, it will be put to tender in a sequence of packages planned to meet the overall completion date. The work is currently being designed in detail and a tender target date of October 1980 is contemplated. The Department of Defence requires completion of the facilities for occupation by March 1982.

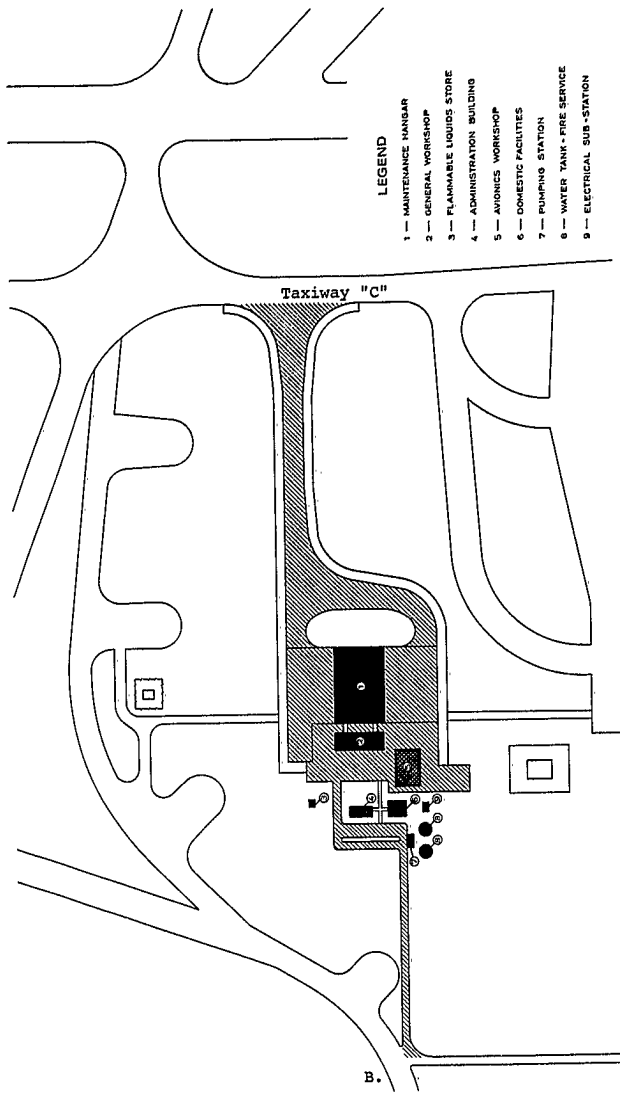
#### RECOMMENDATIONS AND CONCLUSIONS

55. The summary of recommendations and conclusions of the Committee is set out below. Alongside each is shown the paragraph in the report to which it refers.

#### Paragraph

1. THE EXISTING AIRCRAFT MAINTENANCE FACILITIES AT RAAF DARWIN ARE INADEQUATE. THERE IS A NEED FOR A NEW HANGAR AND ASSOCIATED FACILITIES TO IMPROVE THE MAINTENANCE CAPACITY OF THE BASE. 15
2. THE COMMITTEE RECOMMENDS THAT THE DEPARTMENTS OF DEFENCE AND TRANSPORT CONSULT WITH THE NORTHERN TERRITORY GOVERNMENT AS SOON AS POSSIBLE ON THE LONG-TERM PROPOSALS FOR RELOCATION OF CIVILIAN AVIATION OPERATIONS AT DARWIN AIRPORT. 20
3. THE OVERALL DESIGN OF THE HANGAR AND ASSOCIATED FACILITIES IS SATISFACTORY. 25
4. THE SITE SELECTED IS SUITABLE. 28





**LEGEND**

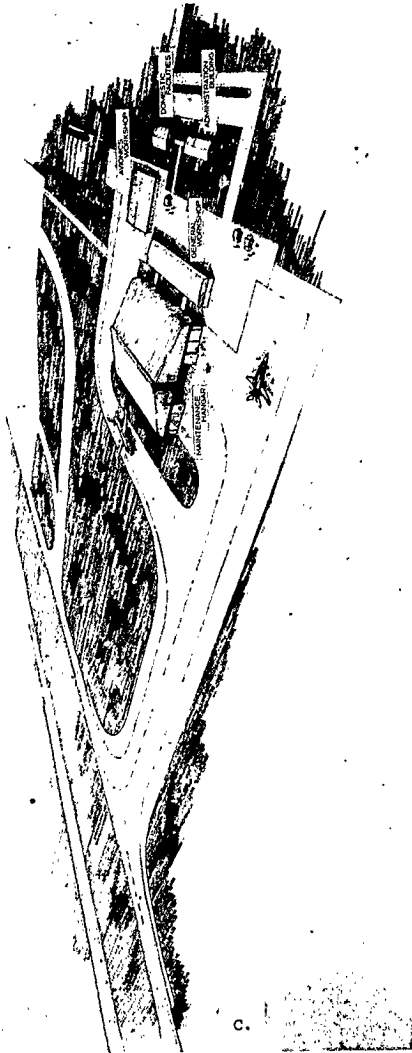
- 1 — MAINTENANCE HANGAR
- 2 — GENERAL WORKSHOP
- 3 — FLAMMABLE LIQUIDS STORE
- 4 — ADMINISTRATION BUILDING
- 5 — AVIONICS WORKSHOP
- 6 — DOMESTIC FACILITIES
- 7 — PUMPING STATION
- 8 — WATER TANK - FIRE SERVICE
- 9 — ELECTRICAL SUB-STATION

**DARWIN — RAAF BASE  
MAINTENANCE FACILITY**

**SITE LAYOUT**



B.



AERIAL VIEW FROM NORTH-WEST

DARWIN - RAAF BASE  
MAINTENANCE FACILITY