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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

DEPARTMENT OF THE SENATE

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29 MAY 1978

Clerk of the Senate

REPORT

relating to the proposed

REDEVELOPMENT OF AIRWAYS FACILITIES

at

Adelaide Airport
South Australia

(FIRST REPORT OF 1978)

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

REDEVELOPMENT OF AIRWAYS FACILITIES
ADELAIDE AIRPORT, SOUTH AUSTRALIA

R E P O R T

By resolution on 8 March 1978, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament the proposal for the redevelopment of airways' facilities at Adelaide Airport. The proposal was referred to the Twenty-fourth Public Works Committee on 6 October 1977 but the reference lapsed with the dissolution of the House of Representatives on 8 November 1978.

The Committee has the honour to report as follows:

THE REFERENCE

1. The proposal referred to the Committee is for the construction of buildings to house improved operating facilities at Adelaide Airport to overcome present deficiencies in aviation safety services and to enable safety to be maintained with traffic growth. The proposal comprises:

- an operations building to accommodate area approach control, flight service centre and necessary control equipment and training facilities;
- a services building containing a transformer for the provision of primary power, essential power generation and air conditioning plant;
- an air traffic control tower accommodating an elevated control cabin, support control equipment and essential power and air conditioning plant;
- associated site works, car parks, roads and engineering services, sewerage and drainage and security fencing to the operations building and services building area.

2. The estimated cost of the proposal when referred to the Committee was \$2.35 million at March 1978 prices.

THE COMMITTEE'S INVESTIGATION

3. The Committee received written submissions and drawings from the Department of Transport and the Department of Construction and took evidence from representatives of these departments at a public hearing in Adelaide on 21 April 1978. The Committee also received written submissions and took evidence from the Anti-Airport Noise Association Inc., the Corporation of the City of West Torrens, the Metropolitan Regional Organisation (No. 2) Western, Mr. H. Becker, M.H.A. (the State Member for Hanson), who whilst supporting the need for the works in the reference, expressed concern at the long term use of the present airport to meet Adelaide's future airport needs. Submissions and evidence in support of the proposal was given by the Civil Air Operations Officers' Association of Australia and the Professional Radio and Electronics Institute of Australasia. Evidence was also given by Da Tel Inc.

4. Prior to the public hearing, the Committee inspected the airways facilities at Tullamarine Airport, Melbourne, the existing airways facilities at Adelaide Airport and the sites for the proposed new works.

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

THE NEED

5. The present control tower and the other centres involved in providing services to air traffic at Adelaide Airport for anti-collision or flight planning purposes were first established in the Adelaide passenger terminal building in 1957. Air traffic at Adelaide Airport has increased five-fold since then. Since 1957 there has been a substantial lowering of the standard of operating facilities and a reduction in space for operators below that necessary to adequately support current requirements for service and to maintain satisfactory staff working conditions. Expected annual traffic growth of at least 5% will exacerbate the present serious position.

6. The project will meet the primary needs of providing, as soon as practicable, new operational centres for three units engaged in anti-collision services:

- flight service centre (FSC) in 1980/81;
- control tower (TWR) in 1980/81, with the introduction of tower radar displays in 1981/82;

- area approach control centre (AACC) in 1981/82 but some interim adjustments will be necessary in the present centre in 1979/80.

7. These facilities will enable:

- additional operating staff to be progressively introduced and the existing staff to be progressively employed to correct present overloads and to meet future loadings;
- restoration of working conditions for technical maintenance staff from their substandard state;
- provision of increased training facilities and supervision capacity for new and existing staff involved in these centres;
- provision of other important operational and management needs by utilising space vacated in present accommodation;
- installation of modern and efficient equipment.

8. Airline and general aviation interests have been consulted and they accept the need for redevelopment to the time scale proposed.

9. If the project does not proceed, the present overloading of facilities in peak traffic will continue, leading to increased overloading to cope with estimated traffic increases. Therefore safety of traffic handled by the area approach centre and the control tower could only be assured by imposing increased restrictions on traffic desiring to use Adelaide Airport and on traffic desiring to pass through the associated airspace. Restrictions would need to contain traffic to something less than present peak levels and limited action has already been initiated. Traffic restrictions would mean that some general aviation traffic would be suppressed and some would avoid the Adelaide controlled airspace on flights to and from Parafield by flying less safely at low levels over the Mount Lofty Ranges or over Gulf St. Vincent. Restrictions to contain flight service centre workload would have similar effects of lowered safety and suppression of traffic.

10. Committee's Conclusion There is a need for improved airways facilities at Adelaide Airport to overcome present deficiencies in aviation safety services and to enable safety standards to be maintained with projected traffic growth.

THE PROPOSAL

11. Operations Building The operations building will be a single storey structure of approximately 1870 sq. metres and in addition to air traffic control, flight service, training and equipment accommodation, will provide staff amenities and air handling plant rooms. The plant rooms will house the air conditioning equipment necessary to provide the temperatures needed for the proper control of radar and radio equipment heat loads, occurring in both the operational and training functional areas and to provide satisfactory working conditions for personnel.
12. The scope of the operations building has been kept to a minimum by retaining some activities in the present operations centre located in the terminal building. These activities are the rescue co-ordination centre, briefing centre, hi-jack committee area and aeronautical message switching centre.
13. Air Traffic Control The area approach control centre (AACC) to be located in the proposed operations building controls civil and military aircraft in controlled airspace and military restricted areas around Adelaide and on the controlled domestic and international air routes traversing South Australia. It will accommodate radar control positions with flight progress board and co-ordination support facilities.
14. Flight Service Centre The flight service centre (FSC) provides a flight information service, en route communications and search and rescue alerting service to all aircraft operating outside controlled airspace within 150-200 nautical miles of Adelaide. It will accommodate operational positions supported by flight data positions and an operations monitoring and control position.
15. Services Building The services building will be a single storey structure of approximately 300 sq. metres adjacent to the operations building housing an electrical transformer, switch gear, standby generator sets and chilled water plant for air conditioning purposes.
16. Control Tower The control tower will be a steel framed structure supporting a control cabin, radar equipment room and staff amenities. The control cabin will be an air conditioned glare-free facility planned to provide the least impeded view possible, taking into account the specific line-of-sight requirements for its location, and to isolate the control cabin from external aircraft noise.

17. The roof of the control tower will accommodate aereals, a rotating beacon and air conditioning equipment. Access to the roof will be provided by an electrically operated retractable ladder within the control cabin. A galley will be located at a half-level position, below the control cabin, and allow for the preparation of light meals. It is at this level to ensure that a controller standing in the galley will not obscure the view of other controllers in the control cabin and will allow him to be within hearing of incoming calls.

18. The services level, one floor below the control cabin, will provide supporting facilities including locker room, toilet, office, radar equipment room, air conditioning plant and stairway. Combined with and located at the base of the control tower will be a single storey structure housing the radio equipment, air conditioning plant and an emergency electricity generator set.

19. The control tower will control all aircraft and vehicles on the manoeuvring area of the airport and all aircraft operating in the vicinity of the airport. A radar display will be provided in the cabin to enable radar hand-off of aircraft from the area approach control centre to the aerodrome controller.

20. Airways Engineering Facilities Airways engineering facilities are required for the safe, efficient and economic functioning of air traffic control and flight information services. Facilities include navigation aids, surveillance radar communications and operator console facilities used by pilots, air traffic controllers and flight service operators. The airways engineering facilities associated with the current project involves no changes to the existing navigation aids, some additions to the existing communication facilities and replacement of the existing surveillance radar display system and operator console facilities. The estimated installed cost is \$3.5 million.

21. Committee's Conclusion The Committee agrees that the proposed new airways facilities should be provided as expeditiously as possible to replace the unsatisfactory and overcrowded facilities.

SITE

22. The proposed buildings are to be located on Commonwealth property at Adelaide Airport, approximately 6 km west of the City of Adelaide. The

location of the operations and services buildings has been determined by the Department of Transport and will be sited on the western side of the airport approximately midway along the Tapleys Hill Road boundary. The facilities are to be set back from the western boundary to clear an existing open and unlined stormwater drain and a South Australian Engineering and Water Supply Department easement.

23. The services building has been separated from the associated operations building to reduce interference occasioned by the high noise levels inherent in the operation of the diesel generator and chilled water condenser equipment.

24. At the public hearing the Committee canvassed the possibility of siting the control tower to the west of taxiway F instead of east of the taxiway as proposed by the Department of Transport in their submission. The suggested relocation had the apparent advantages of tower staff and visitors not having to cross taxiway F when moving between the new entrance on Tapleys Hill Road and the new control tower and also a saving of \$70 000 in the provision of electrical and engineering services under the taxiway.

25. Written evidence since received by the Committee from the Department of Transport has set out in detail the criteria governing the siting of the proposed control tower. The Committee accepts the Department of Transport's assurance that the proposed site is the only available site which meets the control tower siting criteria and which will not unduly constrain any future development of the airport.

26. The existing ground surface at both sites is practically flat and subject to area flooding. Soil investigations have been carried out to determine the most appropriate foundation design. At the operations building site, filling is proposed to raise the building floor level above the recorded 1 in 50-year flood level. The control tower ground floor will be on filling raised in similar fashion.

27. Committee's Conclusion The sites selected are suitable. The Committee accepts the Department of Transport's assurance that the proposed control tower site is the only available site which meets the control tower siting criteria and which will not unduly constrain any future development of the airport.

CONSTRUCTION

28. Design Basis The design of the operations building rationalises the grouping of the various technical facilities as the physical and operational inter-relationships are of primary importance. Allowance has been made for possible future expansion of the major operations facilities. The east-west orientation of the major axis of the operations building was chosen for solar heat load control. The main entrances are located on the northern facade to avoid the prevailing south-westerly inclement weather.

29. The design basis of the air traffic control tower building adopts the same set of criteria, for efficiency of function and economy of construction, met by the recently completed air traffic control tower at Moorabbin in Victoria and represents a further development of this already successful design.

30. Structure The operations and services buildings will be of steel framed construction on reinforced concrete raft foundation. The control tower building will be a steel-framed structure supported on concrete piles. The equipment, plant and generator rooms at the ground floor level of the control tower building will be of steel frame construction on a reinforced concrete raft footing.

31. External Finishes It was proposed that the operations building, services building and control tower be clad externally with deep corrugated asbestos cement sheeting. A core of insulation material will be incorporated for thermal and acoustic purposes. Window and external door frames are to be anodised aluminium and glazing is designed to meet special light and sound transmission requirements in specific areas.

32. The Committee is concerned that the cladding proposed for use on the operations, services and control tower buildings will be visually unacceptable. We were also concerned about the durability of this material. Evidence was received that the external surfaces of the buildings will be painted in the appropriate colour to impact a bold appearance to the passing public.

33. We were also advised that the cladding is now put through an autoclaving process which both extends its life and prevents it becoming fragile, a major problem with early examples of the same material.

34. The Committee recommends that the Department of Construction re-examine the use of this material with regard to alternative lightweight claddings (i.e. corrosion resistant aluminium) with the purpose of utilising the most satisfactory material bearing in mind visual, durability and economic factors. The Committee wishes to be kept informed on the progress of this matter.

35. As the operations and services buildings will be close to Tapleys Hill Road, it is suggested that consideration be given to landscaping in the form of low maintenance shrubbery being used to screen the buildings from Tapleys Hill Road and to help reduce traffic noise intruding into the proposed buildings.

36. Internal Finishes The operations building will have steel-framed internal walls clad both sides with plasterboard and treated for sound where required. Walls to the air conditioning plant rooms, the switch room, the cleaners' room and the walls separating the central building unit from the east and west wings will be fire rated.

37. Due to the noise generated by the equipment and controllers' background speech, walls within the area approach control centre, the flight service centre and the radar simulator will be acoustically treated and floors will be carpeted. Wall and ceiling surfaces will be painted and floors generally will be covered with sheet vinyl (except where carpet is required), with ceramic tiles to wet areas. Ceilings in operational areas will be suspended plaster acoustic tiles, with the remainder being plaster-board.

38. The services building will be unlined, with the exception of the control room which will be lined with plasterboard and sound attenuated to isolate occupants from the noise sources in the plant room. The walls forming the transformer/switch room will be fire rated.

39. The control cabin floor will be carpeted, the toilet areas ceramic tiled and all other floors covered with vinyl tiles.

40. Mechanical Services Air conditioning will be provided in staffed and equipment areas of the operations building and control tower to achieve staff comfort and to meet operational requirements for equipment. Separate air conditioning plants will serve different zones of both buildings.

Heating will be by duct-mounted electric heaters. The refrigeration plants will consist of two chiller sets, each capable of maintaining tolerable conditions in the event of a breakdown of one set.

41. A 300 kW diesel generating set in the services building will provide "essential" emergency power supply for the operations building. An underground fuel oil storage tank will serve this generating set and two 50 kW "no-break" generating sets.

42. Mechanical exhaust ventilation will be provided in all toilets, locker rooms, amenities rooms, normally unoccupied stores, cleaners' rooms, switch room and battery room.

43. Electrical Power supply will normally be from nearby overhead high voltage mains. Substations and switchboards will be installed as appropriate.

44. All lighting and power facilities will be classified according to the following priorities:

- (i) non-essential;
- (ii) essential - where a short interruption to power supply prior to emergency plant starting is tolerable;
- (iii) no-break - for critical operational facilities which cannot tolerate even a short duration power supply failure.

45. Emergency generating plant and automatic switching facilities will be provided to meet the "essential" and "no-break" requirements.

46. All power distribution will be in accordance with the relevant codes and all mains within the site will be underground. Interior and exterior lighting will comply with appropriate codes. The interior lighting will generally be fluorescent, but will include special provisions for specific operational equipment. A lightning protection system will be provided for the control tower building as required by the Australian code.

47. Hydraulic Water supply to the operations and services buildings will be reticulated from an existing water main in Tapleys Hill Road. Supply for control tower, domestic and fire fighting water requirements will be met by extending an existing asbestos cement water main serving the adjacent fire station.

48. Sewage disposal from the operations building will be connected to the sewer main in Charles Veale Drive. Control tower sewage will be reticulated to a new septic system comprising an eight person all purpose septic tank and associated absorption trench.

49. Stormwater will be discharged through an underground system into the existing adjacent open drain.

50. Civil Vehicle access to the operations building will be from Tapleys Hill Road which is presently a two-lane road. The South Australian Highways Department proposes to restructure this road into a four lane highway in the near future. The Committee was assured that provision will be made for 'slow down' and 'merging' lanes to facilitate access to and exit from the site and to prevent any impediment to the free flow of traffic on Tapleys Hill Road.

51. A concrete box culvert will bridge the existing open stormwater drain along the airport boundary to enable vehicle access. Access to the control tower will be via the airport internal road system.

52. Parking will be provided for 100 vehicles in the operations building car park and 18 vehicles in the control tower car park.

53. The site of the operations building will be protected by a standard security fence. Double gates will provide access from Tapleys Hill Road.

54. Environmental Aspects The Department of Environment, Housing and Community Development has studied the proposal and has advised that no environmental impact statement was required.

55. Liaison The proposal has been developed in close liaison between the Departments of Transport and Construction with the objective of rationalising functional requirements and minimising cost. The proposal will comply with all relevant building regulations and codes and all relevant local and state authorities have been consulted.

56. Fire Protection Automatic fire detection and alarm systems will be installed utilising early warning and thermal detectors. Hose reels and hand extinguishers will also be provided.

57. Committee's Conclusion The Committee recommends the construction of the work in this reference. The proposed use of deep corrugated asbestos cement

external cladding should be re-examined with regard to alternative lightweight claddings with the purpose of utilising the most satisfactory material, bearing in mind visual, durability and economic factors.

58. The Committee suggests that consideration be given to landscaping in the form of low maintenance shrubbery being used to screen the buildings from Tapleys Hill Road and to help reduce traffic noise intruding into the proposed buildings.

JOINT GOVERNMENT ADVISORY COMMITTEE ON ADELAIDE'S AIRLINE/AIRPORT REQUIREMENTS

59. Evidence was received from the Anti Airport Noise Association Inc., The Corporation of the City of West Torrens, The Metropolitan Regional Organisation (No. 2) Western and Mr. H. Becker, M.H.A. who, whilst supporting the need for the works in this reference, expressed concern at the long term use of the present airport to meet Adelaide's future airport needs. The Committee is aware that the Joint Government Advisory Committee on Adelaide's Airline/Airport Requirements is presently considering its final report and we feel that that forum has given all interested parties the opportunity to express their opinions on this matter. It is expected that that Committee's report will be presented to the Commonwealth and South Australian Governments in the near future.

60. By agreement between the Commonwealth and the State of South Australia, the Joint Government Advisory Committee (comprising representatives of Commonwealth and State Departments and Local Government Councils) was formed to advise the Governments on Adelaide's future airport needs. The major considerations behind the setting up of the Committee were the aircraft noise nuisances around Adelaide Airport and the possible introduction of scheduled services at Adelaide by international airlines.

61. The Advisory Committee's work to date indicates that Adelaide Airport will remain at its present location at least up to the year 2035 and that large additional capital and access user costs are involved with any feasible alternative airport site for traffic now handled at Adelaide Airport.

62. Even if it is decided to establish a new airport, the new area approach control centre and the flight service centre to be accommodated in the proposed operations building could continue to operate from their planned locations until their economic life is reached.

63. The new control tower would also reach its economic life if Adelaide Airport is retained in its present or in a reduced form. If, however, the present airport is abandoned, any remaining economic life of the control would represent only a very small proportion of the total investment at Adelaide Airport which would need to be written off in the event of such a decision.

COST RECOVERY

64. A proportion of the costs of the project are recoverable from the aviation industry in accordance with the Government's cost recovery policy.

ESTIMATE OF COST

65. The estimated cost of the work when referred to the Committee was \$2.35 million at March 1978 prices, made up as follows:

	\$
Building works	1 108 000
Mechanical services	442 000
Electrical services	501 000
Hydraulic services	62 000
Civil works	237 000
	<u>2 350 000</u>

PROGRAM

66. The Department of Transport had established operational targets which required construction of the operations building to be completed by the end of 1979 and the control tower approximately four months later. It is not now possible to meet this earlier requirement.

67. It is estimated that documentation and tenders will require 9 months and construction 14 months. Revised timing gives a target for completion of construction of both the operations building and control tower by mid-1980.

RECOMMENDATIONS AND CONCLUSIONS

68. 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.

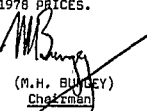
Paragraph

1. THERE IS A NEED FOR IMPROVED AIRWAYS FACILITIES AT ADELAIDE AIRPORT TO OVERCOME PRESENT DEFICIENCIES IN AVIATION SAFETY SERVICES AND TO ENABLE SAFETY STANDARDS TO BE MAINTAINED WITH PROJECTED TRAFFIC GROWTH. 10

12.

Paragraph

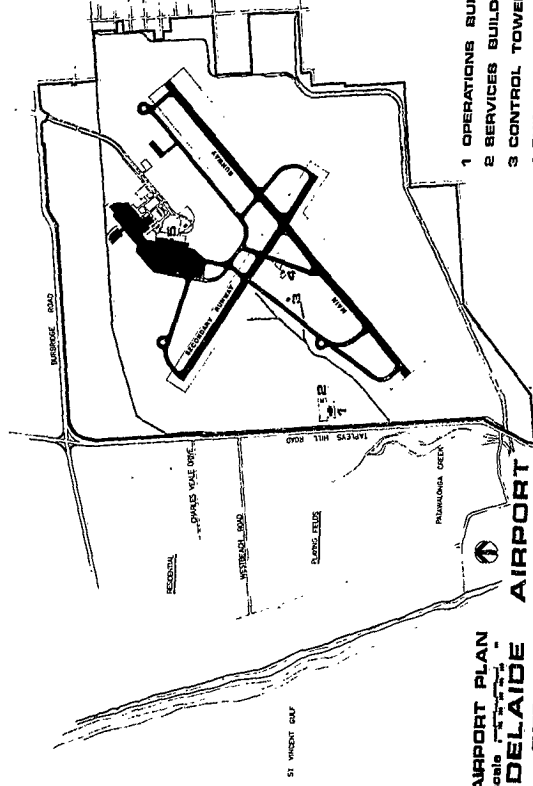
2. THE COMMITTEE AGREES THAT THE PROPOSED NEW AIRWAYS FACILITIES SHOULD BE PROVIDED AS EXPEDITIOUSLY AS POSSIBLE TO REPLACE THE EXISTING UNSATISFACTORY AND OVERCROWDED FACILITIES. 21
3. THE SITES SELECTED ARE SUITABLE. THE COMMITTEE ACCEPTS THE DEPARTMENT OF TRANSPORT'S ASSURANCE THAT THE PROPOSED CONTROL TOWER SITE IS THE ONLY AVAILABLE SITE WHICH MEETS THE CONTROL TOWER SITING CRITERIA AND WHICH WILL NOT UNDOULY CONSTRAIN ANY FUTURE DEVELOPMENT OF THE AIRPORT. 27
4. THE COMMITTEE RECOMMENDS THE CONSTRUCTION OF THE WORK IN THIS REFERENCE. 57
5. THE PROPOSED USE OF DEEP CORRUGATED ASBESTOS CEMENT EXTERNAL CLADDING SHOULD BE RE-EXAMINED WITH REGARD TO ALTERNATIVE LIGHTWEIGHT CLADDINGS WITH THE PURPOSE OF UTILISING THE MOST SATISFACTORY MATERIAL, BEARING IN MIND VISUAL, DURABILITY AND ECONOMIC FACTORS. 57
6. THE COMMITTEE SUGGESTS THAT CONSIDERATION BE GIVEN TO LANDSCAPING IN THE FORM OF LOW MAINTENANCE SHRUBBERY BEING USED TO SCREEN THE BUILDINGS FROM TAPLEYS HILL ROAD AND TO HELP REDUCE TRAFFIC NOISE INTRUDING INTO THE PROPOSED BUILDINGS. 58
7. THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$2.35 MILLION AT MARCH 1978 PRICES. 65


(M.H. BLUMLEY)
Chairman

Parliamentary Standing Committee on Public Works,
Parliament House,
CANBERRA, A.C.T.

23 May 1978.

**AIRPORT PLAN
ADELAIDE AIRPORT
REDEVELOPMENT
OF
AIRWAYS FACILITIES**



- 1 OPERATIONS BUILDING
- 2 SERVICES BUILDING
- 3 CONTROL TOWER
- 4 EXISTING FIRE STATION
- 5 EXISTING TERMINAL