1972

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed extension of

17/35 RUNWAY, TAXIWAYS AND APRONS

at

Canberra (Fairbairn) Airport

(NINTH REPORT OF 1972)

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

EXTENSION OF 17/35 RUNWAY, TAXIWAYS AND APRONS AT CANBERRA (FAIRBAIRN) AIRPORT

R E P O R T

By resolution on 20 April 1972, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament, the proposal to extend the 17/35 runway, taxiways and aprons at Canberra (Fairbairn) Airport.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal referred to the Committee comprises:

   - a 2,000 ft southern extension of the 17/35 runway;
   - extension of the parallel taxiway system for both the 17/35 and 12/30 runways;
   - extensions of the terminal apron; and
   - a new general aviation apron.

2. The proposal has arisen from a study which indicated the need to generally improve the operational capacity of Canberra Airport over the next ten to twelve years. The work now before the Committee, to improve the aircraft movement area and utilisation of the airport by D.C.9 aircraft comprises the first stage of these improvements.

3. The present work is estimated to cost $2.25 million.

THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions and drawings from the Departments of Civil Aviation and Works and took evidence from their representatives at public hearings in Canberra. We also took evidence from representatives of the Queanbeyan Municipal Council and the Airport Service Station. A written submission was received from the Canberra South Branch of the Australian Labor Party.

5. The Committee inspected the airport, including the facilities planned for extension.

CANBERRA (FAIRBAIRN) AIRPORT

6. Construction History Runways 17/35 and 12/30 and basic taxiways were constructed in 1946/47 for aircraft with 37,000 lb single wheel loads. The runways were 150 ft wide and taxiways 50 ft wide. These pavements performed satisfactorily until about 1960 when due to an increase in the moisture content of the pavement materials significant distress occurred on the 17/35 runway under Viscount aircraft operations and extensive pavement patching was required.

7. In 1963/64, to enable Viscounts to continue operations, runway 17/35 was strengthened. It was then assessed as being satisfactory for regular daily operations of Electra and Boeing 727 aircraft and occasional Boeing 707 operations. In 1970, the runway was resurfaced with bituminous concrete to maintain a waterproof surface.

8. Since 1966/67, the original taxiways have been either strengthened or reconstructed and an additional taxiway has been constructed. The original terminal apron 14,000 sq. yds in area was strengthened for Electra aircraft in 1963/64 and apron extensions of 13,000 sq. yds were constructed to the same standard. These pavements are now performing satisfactorily under D.C.9 traffic but some distress and loss of shape could occur if used regularly by larger aircraft unless they were strengthened. More recently apron extensions of 16,000 sq. yds have also been constructed.

9. The section of runway 12/30 west of runway 17/35 was strengthened for Viscount traffic in 1966/67 and the section to the east was resurfaced in 1971 and is of similar strength.

10. Aircraft Traffic All aviation activities in the National Capital are concentrated at Canberra (Fairbairn) Airport. It is a joint user airport required to accommodate a wide cross section of civil and military aviation activities. For example, in the calendar year 1971, there were 624,986 passenger movements and 94,853 aircraft movements. Of the latter 27,422 were of airline aircraft, mainly regular public transport, 31,422 were general aviation including training, and 35,789 military, including helicopters.

11. Passenger movements are expected to increase to 877,000 in 1975, 1,428,000 in 1980 and 2,255,000 in 1985. Civil aircraft movements including general aviation aircraft are predicted to rise to 103,000 in 1975, 143,000 in 1980 and 189,000 in 1985 and military aircraft movements over the same periods to 46,000, 65,000 and 89,000 respectively.

12. Diversion of Pialligo Avenue Pialligo Avenue which forms the southern boundary of the airport will need to be diverted before runway 17/35 can be extended to the south. Whilst the roadwork is to be carried out for the National Capital Development Commission and as such is not part of this reference, we were told that construction will be co-ordinated with the work on the runway extension.

13. The route selected for the diversion will take account of the Molonglo River flood levels, natural topography and future expansion of the civil terminal facilities. A major portion of the north/south leg of the new road would be retained if further extension of the runway is later required. The east/west leg will be sited to provide the necessary clearances for aircraft using the extended runway, and for the requirements of the I.L.S. glide path system. Road connections will also be made to the passenger terminal and to R.A.A.F. Base Fairbairn.

14. Future Development The Committee noted that some expansion of the terminal facilities and further extension of the aircraft aprons and taxiways will be necessary to meet the forecast growth of passenger and aircraft traffic at Canberra Airport over the next 10 to 12 years. Master planning is based on additional terminal facilities being sited in the area made available by the diversion of Pialligo Avenue.

15. We were also informed that to further increase the airport's capacity, some consideration is being given to the establishment of a satellite airfield for light aircraft training or possibly for relocation of all Canberra's general aviation activities.

16. The Committee noted that the Department of Civil Aviation has no plans to extend runway 17/35 beyond its now proposed length of 8,800 ft, and whilst the Department of Air has master planned for an eventual length of 11,500 ft, we were told it is " ... a reservation against the unforeseen rather than ... a specific project".

THE NEED

17. Terminal Apron Development Based on the predicted airline aircraft traffic, the number of apron positions required in peak hours during the period 1970 to 1975 should be seven, between 1975 and 1980 it should be eight and for 1980/85, nine. As the existing terminal apron provides only for the parking of five jet aircraft and one Fokker Friendship, it is therefore proposed to expand the apron to accommodate six jet aircraft and two Fokker Friendships to meet requirements up to 1980.

18. General Aviation Apron The Committee were told that general aviation activities are such that aircraft can be parked for relatively long periods. In 1971, 32 aircraft were based at the airport compared to 25 in 1969. During the past six months an average of 30 aircraft have been parked and at times up to 42 have required positions.

19. It is expected that parking requirements will increase in line with the growth in general aviation traffic, and in terms of parking positions, about 43 will be required by 1975, 63 by 1980 and 92 by 1985. However, the Committee noted that whilst parking is expected to increase proportionately to general traffic growth, the uncertainties of such development at Fairbairn make it prudent to limit expansion at the moment to the forecast for the late 1970s.

20. At present 20 aircraft can be accommodated on the general aviation apron which consists of three paved areas west of the passenger terminal and a small area of temporary pavement. Adjacent grassed areas can also be used but only when weather permits. We noted that due to the proposed expansion of the terminal apron, six existing positions will be lost to general aviation leaving only 14. It is therefore proposed to provide a new general aviation apron with a parking capacity of 40 aircraft which will make available 54 positions.

21. Runway 17/35 Extension Runway 17/35 is predominantly used by airlines and under the maximum permissible cross wind component of 25 knots, runway 17 has a usability of 53.68%, runway 35, 80.06% and runway 17 combined with runway 35, a usability of 99.77%.

22. The airport is nearly 2,000 ft above sea level and experiences relatively high summer temperatures. High elevation and temperature conditions adversely affect the performance of turbine powered aircraft such as the D.C.9 and combined with the high terrain surrounding Canberra can seriously limit permissible take-off weights. However, special departure procedures at Canberra involving a curved take-off over terrain which is lower than that over which the pilot would fly if he took a straight course have enabled D.C.9s to operate at higher take-off weights than would otherwise have been possible. These procedures must be capable of being followed precisely in both instrument and visual conditions and at a critical phase of the flight when the crew workload is already high.

23. From available data, the pilot determines the maximum take-off weight which will enable him to either stop the aircraft before the end of the runway where an engine failure occurs prior to the pre-determined

critical speed being exceeded, or where an engine failure occurs after that speed has been passed, to continue take-off with one engine inoperative and adopt a climb gradient to clear all obstructions in the take-off area.

24. An increase in runway length does not necessarily allow an increase in take-off weight as whilst a longer runway may enable the pilot to stop his aircraft within the length of the runway, the obstructions in the take-off area may prove to be the weight limiting factor. Accordingly, the limiting take-off weight is the maximum which allows the achievement of both criteria.

25. The summer months of Canberra are critical for the operation of the predominantly used D.C.9 aircraft because of high temperatures and light north/north-west winds. In typical conditions on the present runway length, the maximum take-off weight is 88,000 lbs for either runway 17 or 35. In conditions of lower temperatures and/or stronger head winds, this weight can be increased.

26. Meteorological statistics show that on 92% of occasions in summer months, the northerly component of the prevailing winds does not exceed 10 knots, which means that the opportunity would exist for the D.C.9 to use runway 17 at a take-off weight of 92,700 lbs. With such use of runway 17, there may be delays to arriving and other departing aircraft because of the high percentage of use of runway 35. However, it is believed that these will be infrequent enough to permit a planning take-off-weight of 92,700 lbs to be used.

27. The proposed extension of 2,000 ft to the south will permit the airlines to increase their planning weight in the critical summer months by 4,700 lbs which is equivalent to increasing the passenger booking

capability by 23 passengers including baggage. In addition, aircraft using runway 35 will be able to commence take-off from a point further south thus alleviating problems involving the terrain to the north of the airport.

28. Taxiway Systems The Committee noted that only limited taxiways have been provided to and from the civil terminal apron, thus restricting the airport's civil operations capacity. Due to this shortcoming, significant delays occur especially with departing aircraft as they have to taxi on the runways for take-offs into the north and north-west. An aircraft landing into the north must backtrack along the runway or use the R.A.A.F. parallel taxiway before crossing the runway to reach the civil terminal.

29. The proposed extension of runway 17/35 without taxiway improvements would seriously aggravate these delays. Whilst the ideal would be to have a full length parallel taxiway on the western side of runway 17/35, as most landings and take-offs are to the north and the landing roll is completed between 4,500 ft and 5,000 ft from the threshold of runway 35, it is proposed initially to construct only the southern portion of this parallel taxiway. We were told that this will permit some 90% of airline aircraft to vacate the runway without the need to backtrack or cross the runway at the end of a normal landing roll. Departing aircraft will be able to proceed to runway 35 on the new taxiway.

30. The relatively short and infrequent delays caused to aircraft proceeding to runway 17 across the runway and along the eastern taxiway for a southerly take-off will not be serious within the foreseen traffic patterns.

31. Ideally, the 12/30 runway should also be served by a full length parallel taxiway on the southern side, but as this runway is mostly used by general aviation aircraft, a taxiway running from the proposed general aviation apron to the threshold of runway 30 is considered to be adequate. Aircraft other than general aviation traffic using runway 12/30, will taxi on the runway.

32. Other Work The proposed runway extension will necessitate relocation of the I.L.S. glide path system and the approach lighting power house associated with the 17/35 runway as well as extension of engineering services and construction of access roads.

33. A car park with space for 60 vehicles will be provided adjacent to the new general aviation apron.

34. Committee's Conclusion The Committee concluded that there is a need for the work in this reference.

CONSTRUCTION OF PROPOSED WORKS

35. Design Standards The runway extension, the 17/35 taxiway and the terminal apron will be constructed to a standard to permit regular D.C.9 and Boeing 727 aircraft operations. Pavements for use by general aviation aircraft will be suitable for unrestricted use by planes up to 12,500 lbs all up weight.

36. Runway 17/35 Extension Runway 17/35 will be extended by 2,000 ft to the south across the present alignment of Pialligo Avenue. It will be 150 ft wide. The pavement for 1,500 ft will consist of 2 in. of bituminous concrete surfacing on 10 in. of fine crushed rock which in turn covers 24 in. of sub-base material. The end 500 ft of the extension will be constructed in cement concrete pavement 13 in. thick overlaying 6 in. of fine crushed rock.

37. The extension will have the same load carrying capacity as the existing runway but due to wetter subsoil conditions, the pavement will be thicker. Runway shoulders will be 10 ft wide and bituminous surfaced.

38. A bituminous surfaced blast area 200 ft long by 150 ft wide with 10 ft wide shoulders together with a 1,000 ft long overrun will be provided at the end of the proposed extension.

39. Associated works will include drainage and ducts under the existing runway and the extension, relocation and ducting of services presently located adjacent to Pialligo Avenue, grading for the glide path installation and a power house and an access road for the high intensity approach lighting.

40. Runway 17/35 Taxiway The proposed parallel and connecting taxiways will be of bituminous concrete surfaced flexible pavement of the same construction as the runway extension except for the portion adjacent to the end of the extended runway which will be in cement concrete pavement. The taxiway will be 75 ft wide with 10 ft wide bituminous surfaced shoulders. Some widening of existing taxiways and extension of existing ducts will be included in the taxiway works.

41. Terminal Apron Extensions The same flexible pavement construction will be used for the terminal apron extensions as that used for the runway and taxiway works. Associated works will include apron floodlighting and extension of existing service ducts.

42. General Aviation Apron and Taxiways The general aviation apron will be 900 ft long by 400 ft wide and will be constructed of 1 in. bituminous concrete surfacing on 5 in. thickness of fine crushed rock overlaying 10 in.

of sub-base material. The pavement will be suitable for aircraft up to 12,500 lb all-up-weight and the large D.C.A. fire tender. Other works will include apron floodlighting, water supply, a car park for 60 vehicles and an access road.

43. The general aviation taxiways will generally run parallel to runway 12/30 and will be constructed of 1 in. bituminous concrete surfacing on 5 in. of fine crushed rock and depending on subsoil conditions, overlaying 7 or 10 in of sub-base material. The pavements will be 25 ft wide and of the same strength as the apron. Shoulders will be 10 ft wide and bituminous surfaced.

44. Timing of Construction To minimise interruption to aircraft operations during daylight hours, construction activity near the existing 17/35 runway and on the northern 650 ft of runway extension will be carried out at night only. In addition, no construction activities will take place in these areas during holiday periods.

45. The Committee were told that the National Capital Development Commission has arranged for the Department of Works to design and construct the Pialligo Avenue diversion to facilitate co-ordination of this work with that of the runway extension.

46. Committee's Conclusion The Committee recommend the construction of the work in this reference.

ESTIMATE OF COST

47. The estimated cost of the work when referred to the Committee was $2.25 million made up as follows:

	$
Runway extension	1,100,000
Parallel and connecting taxiways and taxiway widening	600,000
Terminal apron extensions	150,000
General aviation apron and taxiways	400,000
	2,250,000

PROGRAMME

48. After an approval to proceed is given, the preparation of final drawings and contract documents is expected to take six months. It is planned that the work will then take some 12 to 15 months to complete.

AIRCRAFT NOISE

49. The representations made by the Queanbeyan Municipal Council principally concerned noise nuisance caused by aircraft awaiting take-off clearance at the southern end of runway 17/35 and by aircraft turning over Queanbeyan prior to a landing into the north.

50. The Committee were told that the proposed improvement of taxiways will reduce delays to aircraft taking off from the south and thus reduce this aspect of noise nuisance. In addition, a new approach path which

bypasses Queanbeyan has been devised for aircraft approaching runway 35 for landing. The path's closest point to Queanbeyan will be over one mile to the east when aircraft will be at 3,000 ft. They will then continue south of Queanbeyan descending to 1,700 ft for an approach commencing 5 to 6 miles south of the airport.

RECOMMENDATIONS AND CONCLUSIONS

51. 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 THE WORK IN THIS REFERENCE.	34
2.	THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	46
3.	THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS $2.25 MILLION.	47

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Chairman

Parliamentary Standing Committee on Public Works,
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29 June 1972.