



Parliamentary Standing Committee on **Public Works**

DATE
PRESENTED

2333

21 OCT 1982

W. Cunningham

Clerk of the Senate

FINAL REPORT

relating to the construction of

NEW AIR TRAFFIC SERVICES CENTRE AND CONTROL TOWER, PERTH AIRPORT

Western Australia

(Eighth Report of 1982)

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

F I N A L R E P O R T
relating to the construction of
NEW AIR TRAFFIC SERVICES
CENTRE AND CONTROL TOWER,
PERTH AIRPORT
Western Australia
(Eighth Report of 1982)

Correction

Page 14 (continuation of paragraph 46 from previous page)
line 2

add provided. after "parallel runway was"

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(Twenty-sixth Committee)

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- 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.

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EXTRACT FROM
THE VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES,
NO. 48 DATED 27 AUGUST 1981

- 13 PUBLIC WORKS COMMITTEE - REFERENCE OF WORK - CONSTRUCTION OF NEW AIR TRAFFIC SERVICES CENTRE AND CONTROL TOWER, PERTH AIRPORT, W.A.: Mr. McVeigh (Minister for Housing and Construction), pursuant to notice, moved - That, in accordance with the provisions of the Public Works Committee Act 1969, the following proposed work be referred to the Parliamentary Standing Committee on Public Works for consideration and report: Construction of new air traffic services centre and control tower at Perth Airport, W.A.

Mr. McVeigh presented plans in connection with the proposed work.

Question - put and passed.

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PARLIAMENTARY STANDING COMMITTEE OF PUBLIC WORKS

CONSTRUCTION OF NEW AIR TRAFFIC SERVICES CENTRE AND CONTROL TOWER PERTH AIRPORT, WESTERN AUSTRALIA

F I N A L R E P O R T

By resolution on 27 August 1981 the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament the proposal for the provision of buildings for operational units which provide air traffic control and in-flight information services to aviation. The new accommodation will allow improved operating and technical facilities needed at Perth Airport to maintain aviation safety standards at existing and forecast levels.

The Committee has the honour to report as follows:-

THE REFERENCE

1. This is the Committee's final report on this reference of work. The Committee's Twelfth Report of 1981 (Parliamentary Paper 266/1981 hereafter called the Committee's 1981 Report) recommended the construction of the work in this reference with the exception of the Control Tower.

2. When referred to the Committee it was proposed that five buildings with associated pavements and services, required for the development of airways facilities, be provided at Perth Airport.

3. The works comprised:

- an Air Traffic Services Operations Building;
- a services building associated with the Operations Building;
- a Technical Maintenance Centre;
- a Control Tower;
- a radio equipment and plant and equipment building linked to the control tower.

4. The estimated cost of the work when referred to the Committee was \$3.6 million at July 1981 prices. The works recommended by the Committee in its 1981 Report totalled \$2.7 million (July 1981 prices) and were approved by the House of Representatives on 17 November 1981.

THE COMMITTEE'S INVESTIGATION

5. For the inquiry into the control tower component of this reference the Committee received written submissions and drawings from the Department of Aviation and the Department of Transport and Construction and took evidence from their representatives at a public hearing held in Perth on 28 and 29 July 1982.

6. The Committee also received written submissions and took evidence from Mr K.C. Beazley, MP, Member for Swan; the Hon C.J. Jamieson, MLA, Member for Welshpool; representatives of the Western Australian Government, QANTAS Airways Limited, Belmont City Council, the City of Canning, together with experts from the Western Australian Institute of Technology, School of Community Health; Kalamunda Shire Council, Airport Information Residents Study; the Australian Federation of Airline Pilots, and the Civil Air Operations Officers Association. A private submission was presented by Mr M.D. Monley.

7. Written submissions were also received from Swan Shire Council, Gosnells Town Council, the Guildford Study Group and various individuals.

8. The Committee also received copies of all submissions received by the Department of Aviation commenting on the four options for the development of Perth Airport.

9. On 29 September 1981 the Committee inspected the existing air traffic control facilities at Perth Airport and the Kalamunda Radar Unit.

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

BACKGROUND

11. In its 1981 report the Committee recognised the need to upgrade Perth Airport air traffic services facilities, including the control tower. Briefly stated, airways operations facilities are unable to cope with prevailing and anticipated aircraft traffic demands without compromising safety standards.

12. The proposed siting of the Area Control Centre, the Flight Service Centre and the Technical Maintenance Centre will not preclude future development options for Perth Airport. Whilst the Committee accepted that a new control tower, to be operational by 1984, is necessary at Perth Airport, it was felt that design and siting of the control tower should be compatible with the preferred future development option for the airport.

13. Accordingly, the Committee concluded that the control tower should be delayed until the master plan for Perth Airport is available. The Committee's objective was to prevent any

development from taking place which would close off airport development options. The siting of the control tower was seen as a key ingredient in determining the direction of future airport development.

PERTH AIRPORT PROVISIONAL MASTER PLAN

14. Since the Committee's 1981 report the Department of Aviation (DOA) has published a Provisional Master Plan and Draft Environmental Impact Statement. This single document was released for public comment in May 1982. It is the intention of Commonwealth departments involved in ensuring compliance with the Environmental Protection (Impact of Proposals) Act 1974 that a final Environmental Impact Statement be released in mid-November 1982. The Committee understands the Minister for Aviation will make a decision on the future direction of airport planning following the tabling of this report.

15. DOA made available to the Committee copies of submissions and letters received from organisations and individuals in response to the Provisional Master Plan.

16. DOA has pointed out in the preamble to the Provisional Master Plan that it is not a rigid blueprint constituting a commitment to the direction of future airport development, but rather possible ways in which increasing demands for airport services could be met at the time of preparation.

17. Forecasts of a number of determinants such as passenger movements and aircraft movements were derived from regression models. Against these determinants the requirements for airport facilities embracing the following components were calculated:

- runway and taxiway system
- passenger and flight terminals

- General aviation facilities
- DOA airport operation facilities
- airline operation facilities

18. Aircraft Movements Table 1 below, shows forecast aircraft movements at Perth Airport from 1985-2010 calculated by DOA.

Table 1 - Forecast Aircraft Movements - Perth 1985-2010

	1985	1990	1995	2000	2005	2010
International	4270	5000	5730	6100	6660	7310
Interstate	5840	5900	6230	6390	6580	6880
Intrastate	7880	8420	8990	9520	10330	11020
Commuter	8780	9100	9500	9500	9670	9780
Other Aviation	51100	54000	56200	58100	59700	61100
Total	77870	82420	86650	89610	92940	96090

19. These forecasts differ considerably from those in the report of the Commonwealth-State Advisory Committee which studied Western Australia's Airport requirements (December 1979). That report forecast 199,500 total aircraft movements compared to 92,940 forecast in the latest estimates. DOA advised the Committee that the Commonwealth-State Advisory Committee forecasts were prepared in June 1975. The forecasts included in the provisional master plan (Table 1 above) were prepared in June 1981, have the benefit of six years of additional data and are influenced by changes in the economy and the aviation industry since 1975.

20. The Committee believes that such variations in forecasts demonstrate that there is great uncertainty in the

accuracy of forecasts and that it is prudent to plan for the shorter term and at the same time retain maximum flexibility in the longer term.

21. Airport Capacity At the 1981 hearing DOA advised the Committee that the capacity of the present Perth Airport is limited by the absence of a parallel taxiway to the southern end of the main runway (02/20). Without a parallel taxiway capacity would be between 150,000 and 160,000 movements per annum, and with a taxiway capacity would be between 170-200,000 movements per annum DOA advised the Committee that their latest estimate of the capacity of the existing runway system with parallel taxiway developments is 180,000 movements per annum. This most recent annual capacity figure given by DOA is also at variance with that given in the Commonwealth/State Committee report. That report, without qualification, states the annual capacity to be 210,000 movements per annum.

22. The present lack of a parallel taxiway, especially along the main 02/20 runway reduces the capacity of the runway system and requires aircraft to back track or taxi along runways after landing or before taking off. This can lead to delays during daily peak periods.

23. In terms of forecast aircraft movements, now estimated at 96,090 in the year 2010, and the capacity of the existing runway system (with or without parallel taxiways), the runway system should be able to handle the forecast traffic. This would not preclude the need for present airport facilities such as aprons and terminals to be upgraded or redeveloped.

24. The location of these facilities especially the terminals, collectively or individually will largely determine the direction and extent of future airport development. The

amount of space required by each component was calculated and four alternative development strategies, which combine alternative sites for international and domestic passenger terminals with a number of possible runway configurations, were included in the master plan for public comment. The strategies divide possible developments into two phases; up to the year 2000 and from 2000 to 2010.

25. The development strategies are illustrated at pages A-D and are summarised below:

26. Strategy 1 In the first phase (to the year 2000):
- an international terminal complex would be constructed 1 kilometre north of the existing terminal with taxiway connections to the existing apron and via the 11/29 runway to the main and secondary runways
 - the existing terminal building complex (presently used by domestic and international traffic) to be redeveloped and extended for use by domestic services;
 - the access road to the international terminal complex to be within the airport boundary, linked to existing airport access roads, Brearley and Fauntleroy Avenues;
 - the 02/20 runway to be extended and a full length parallel taxiway constructed;
 - a control tower located in the south east sector;
 - airline cabin service facilities located between the domestic and international terminal complex.
27. In the second phase (from 2000 to 2010) it is envisaged that
- there is incremental expansion of the international and domestic terminal buildings and aprons;
 - general aviation facilities continue to expand along the current line;
 - additional cargo terminal capacity is provided by a south-west extension of the existing area;
 - an airfreight apron is constructed for the freight

terminals;

- the main 02/20 runway is extended to 3600 metres;
- the 06/24 runway is extended to 3000 metres and a full length parallel taxiway constructed.

28. Strategy 2 In the first phase (to 2000):

- the international terminal centre would be constructed to the east of the main runway;
- access to the terminal would be by a new road connecting Harvey Road and the Beechboro-Gosnells Freeway;
- a parallel taxiway constructed on the eastern side of the 02/20 runway;
- the domestic terminal and the 02/20 runway would be developed and extended similarly to Strategy 1;
- cabin services would be located in the domestic terminal area as in strategy 1.

29. The second phase envisages the following developments:

- incremental expansion of the international terminal building and apron;
- domestic terminal expansion would be accommodated in a new complex east of the main runway but 50 per cent of all intra and interstate operations would continue from the existing terminal;
- the construction of new facilities for cargo terminal expansion east of the main runway;
- freight aprons and taxiway links for new and existing terminals;
- runway extensions and parallel taxiway works would be the same as in Strategy 1;
- general aviation facilities would be expanded in the existing area.

30. Strategy 3 In the first phase of development it is envisaged that:

- a wide-spaced parallel and a full length taxiway be constructed on the 02/20 alignment, 2 kilometres east of the present runway with taxiway connections to the existing movement area via the 11/29 runway;
- a control tower designed to view the parallel runway system located between the two parallel runways;
- other pre-2000 developments as for Strategy 1.

31. In the second, post 2000 phase, development would be similar to Strategy 1.

32. Strategy 4 The first phase of development involves the construction of:

- a parallel runway and taxiway system similar to Strategy 3 but with taxiway connections to an international terminal area to the east of the present 02/20 runway;
- other developments similar to Strategy 2 with the exception of the control tower which, in order to view the parallel runway system over three building lines, would need to be about 90 metres high. The second phase of development would follow that proposed for Strategy 2.

33. Strategy Preferred by DOA undertook a cost-benefit analysis of the four strategies. The analysis amounted to an estimation of:

- the capital cost of the facilities which would need to be constructed for each strategy and the cost of the equipment to operate the facilities;
- operating costs borne by airport management, airlines and airport users;
- environmental and social costs.

34. Costings, for each Strategy at discounted and undiscounted rates are at Appendix 1.

35. Based on the cost-benefit analysis DOA prefers Strategy 1 for the following reasons:

- the reduction in the number of houses exposed to certain levels of aircraft noise and the consequent reduction in "social cost" which would result from the operation of a parallel runway system although significant is not considered to warrant the attendant cost penalties;
- the operation of a parallel runway would increase operating costs;
- the population affected by aircraft noise would decrease during the planning period regardless of runway systems;
- there are significant cost advantages in the continued development of the existing terminal area and location of the international terminal to the north;
- a terminal and oil company installations at the northern site would attract less capital costs and would provide "cost savings" associated with airport user access;
- whilst an eastern terminal site would reduce the level of airport-generated traffic through adjacent residential areas this is insufficient justification for it.

REACTIONS TO THE STRATEGIES

36. The Provisional Master Plan was available for public comment from May 1982 to August 1982. During this period the Committee understands DOA and the Department of Home Affairs and Environment received about 300 letters and submissions from organisations and individuals. As it was felt that the

location of the control tower would directly affect the direction of future airport development, a number of local government bodies presented their objections to the preferred strategy and strongly urged in favour of Strategy 4.

37. They based their arguments on the grounds of noise and ground access to the airport. Under Strategy 1 the effects of aircraft noise on suburban areas in the flight paths and congested airport access routes, which are not major arterial roads, would become intolerable. No submissions supported Strategies 1 and 3.

38. Other local government authorities did not favour development of a wide-spaced parallel runway because of the possibility of the introduction of aircraft noise nuisance to areas within their boundaries relatively free of such noise nuisance at the moment.

39. Aircraft Noise In objecting to the adoption of Strategy 1, a number of organisations pointed out that Perth Airport is not restricted by a curfew, questioned the accuracy of DOA calculations of the number of dwellings and people "seriously annoyed" by aircraft noise and asserted that the Commonwealth Government had entered into a commitment to provide a parallel runway in 1970/71.

40. In previous reports, most recently its Second Report of 1982 (Final Report relating to the upgrading of Airport Facilities for the Introduction of Domestic Wide Body Aircraft, Parliamentary Paper 50/1982) the Committee has mentioned the Noise Exposure Forecast (NEF) System. During previous hearings the Department of Transport (now DOA) advised the Committee that the criteria for assessing the number of people annoyed by aircraft noise in a noise affected area as defined by the NEF system is as follows:

- (a) At 25 NEF level
 - 20% of the exposed population are seriously annoyed;
 - a further 20% of the exposed population are annoyed.
- (b) At the 30 NEF level
 - 35% of the exposed population are seriously annoyed;
 - a further 25% of the exposed population are annoyed.
- (c) At 40 NEF level
 - 60% of the exposed population are seriously annoyed;
 - a further 30% of the exposed population are annoyed.

41. Acceptability ratings relating to NEFs, developed by the United States Federal Aviation Agency particularly for land use planning purposes, indicate that zones within the 35-45 NEF as "unacceptable" for urban development and zones between 30-35 NEF as "barely acceptable" for such development.

42. The number of houses within various NEF contours were estimated by DOA from aerial photographs and are shown in Table 2 below.

Table 2 DOA - Estimated Number of Houses
in Noise Affected Areas

<u>NEF ZONE</u>	<u>25-30</u>	<u>>30</u>	<u>TOTAL</u>
1979	3250	2350	5600
1985 Existing R/W System	2600	925	3525
1985 Parallel R/W System	1800	500	2300
2000 Existing R/W System	2325	950	3275
2000 Parallel R/W System	1750	475	2225

43. The Belmont City Council has been carrying out its own aircraft noise monitoring program, and its results differ markedly from those set out above.

44. The National Acoustics Laboratory (NAL) has published its report "Aircraft noise in Australia: A Survey of Community Reaction" (NAL Report No. 88, February 1982). This report concludes that the NEF system is the most appropriate index to reflect community responses to aircraft noise, the standard NEF calculations apply a night penalty that is too high and revised NEF computations should incorporate a reduced night weighting and add an evening weighting for aircraft operations between 7 p.m and 10 p.m. The revised formula if adopted would significantly affect the location of the 20 and 25 NEF contours in relation to Perth Airport.

45. The Committee is not convinced that the reduced night weighting recommended by NAL does not bias results against Perth. Obviously, such matters will be fully examined by the House of Representatives Standing Committee on Environment and Conservation enquiry into aircraft noise.

46. Other factors relating to aircraft noise at Perth Airport include:

- the number of witnesses who claimed that NEF contours are not accurate because aircraft deviate from preferred flight paths and do not abide by noise abatement procedures;
- the DOA view that the progressive replacement of current aircraft by quieter new generation aircraft will reduce the number of houses adversely affected by aircraft noise;

- clarification of the areas likely to be affected by aircraft noise if a wide-spaced parallel runway was DOA pronouncements on this point have not been consistent.

47. The Committee's concern with aircraft noise led it in earlier reports to recommend to the Government that the question should be referred to the House of Representatives Standing Committee on Environment and Conservation for full examination. The Government has now acted on this advice and that Committee has commenced its investigation.

48. The Committee acknowledges that there is a noise nuisance problem in residential areas because of aircraft operations at Perth Airport. The extent of this nuisance will be fully examined, it is understood, by the House of Representatives Standing Committee on Environment and Conservation. The Committee places the noise problem at Perth Airport as not as severe as that at Sydney and Adelaide Airports (where Government action has not been taken) but less than that existing at Brisbane Airport, where the Government has accepted the problem as a major justification for the construction of a new airport. Government inconsistencies in its approaches to aircraft noise have been noted in previous Reports by the Committee.

49. In recommending the strategy to be adopted for the future development of Perth Airport, the Committee has given considerable weight to the need to reduce the existing aircraft noise nuisance but has attempted to ensure that the report and recommendations of the House of Representatives Standing Committee on Environment and Conservation are not pre-empted. That Committee may well find there are grounds for early construction of a parallel runway based on current noise exposures.

50. Newburn Land The acquisition by the Commonwealth in 1970 of the Newburn land, comprising 680 hectares along the then eastern boundary of the airport, and the release in 1971 of a master plan for Perth Airport which showed a parallel runway on the land, was seen by adjacent local government organisations as a commitment to airport development eventually proceeding in that direction.

51. In 1971 the then Minister for Civil Aviation advised a Belmont Council that "... the acquisition by the Commonwealth of the land in question to the east of the airport and the further development of the airport thus made possible, will contribute markedly to noise abatement in the Belmont area..." Strategy 1 which does not envisage the use of the Newburn land for a wide-spaced parallel runway, is therefore at variance with what local government understood as a physical commitment. Strategy 1 is therefore at variance with what local governments understand as a commitment.

52. Surface Access to Airport Many organisations commented that Strategies 1 and 3 would pose traffic problems since surface access would continue from Great Eastern Highway via Brearley and Fauntleroy Avenues and Stanton Street.

53. The State Government strongly supports Strategies 2 or 4 from the point of view of reducing traffic congestion. Central development would result in additional work on the Beechboro-Gosnells Highway. The State Government indicated that these works are allowed for in current designs and could include widening from four to six lanes and the construction of the Kewdale Road interchange. The development of Orrong Road to the planned six lane facility would be advanced.

54. The views against Strategies 1 and 3 were also shared by a number of local government bodies. They stated the adoption of Strategies 1 and 3 would lead to unacceptable

congestion and would increase traffic and noise in suburban streets and adversely affect a number of schools. Strategies 1 and 3 would probably require the resumption of land for improved road access to terminals located at the northern site.

55. Cost-Benefit Analysis Methodology A number of organisations argued that the cost-benefit analysis understated the environmental and social costs attributable to Strategy 1.

56. The Committee believes that the cost-benefit analysis can only be used to establish relative rather than absolute costs for each strategy. The Committee also believes "social" costings are justifiably somewhat speculative and, as claimed by Belmont Council, contingent on the accuracy of a number of basic assumptions. Many of the other costings, whilst derived from the best available advice or are based on methodologies used in other studies, should not, however, exclusively pre-determine the direction of airport development.

COMMITTEE CONSIDERATION

57. Parallel Runway Clearly in the period between now and the year 2000 the option of providing a parallel runway should not be irrevocably ruled out by the extent or location of any major works undertaken.

58. The present runway system is adequate to cope with DOA forecast annual movements beyond the planning horizon and the premature provision of a parallel runway, in advance of a demonstrated need, cannot be justified on capacity grounds at this stage. This is, however dependent on demands during daily peak periods not exceeding capacity and on the accuracy of forecasts. The Committee has already drawn attention to considerable differences in forecasts made by DOA over recent

years and can see no reason why further fluctuations will not occur. In a climate of uncertainty it is conceivable that a requirement for a parallel runway, based on changes in forecasts, may manifest itself before the year 2000. Therefore the timing of the provision of the parallel runway should depend on forecast traffic.

59. The timing of the parallel runway is also dependent on the outcome of the House of Representatives Standing Committee Environment and Conservation inquiry into all aspects of aircraft noise within and adjacent to major urban areas. The Committee may well find there are grounds based on noise exposure at Perth Airport for the early construction of a parallel runway.

60. Committee's Conclusion The further development of Perth Airport to the year 2000 should not rule out the early construction of a wide-spaced parallel runway on the 02/20 alignment.

61. Strategy 1 This strategy has as its basis the development of terminals at the northern site and no provision for a parallel runway and is therefore inconsistent with the above conclusion.

62. Strategy 3 This strategy, whilst providing for a parallel runway in the first phase of the projected development, poses a number of access and operational problems.

63. From an operational point of view all aircraft using the parallel runway would be required to taxi considerable distances, particularly to the international terminal which, under this strategy, is envisaged at the northern site, alongside the redeveloped domestic terminal area.

64. In addition, this strategy would require continued and increased usage by airport traffic of existing access routes which already impinges on what are primarily residential streets. The use of existing access routes is also inconsistent with local and State government planning.

65. Strategy 2 The operational and access disadvantages in Strategy 3 are to some extent overcome by Strategy 2 which provides for access to a central (eastern) international terminal from the Beechboro/Gosnells Highway and a more balanced airport development which does not concentrate aircraft handling and passenger handling facilities in the northern area. A further advantage of Strategy 2 is that it could be more readily adapted to Strategy 4. It does not close off the development at any time of the parallel runway. In terms of planning this is a fundamental objective, and is consistent with the Committee's conclusion in its 1981 report that the siting of the control tower should not rule out the construction of the parallel runway.

66. For these reasons Strategy 4 should therefore remain the preferred strategy in the longer term.

67. The Committee accepts that the following aspects should be taken into account in determining the development strategy to be adopted:

- (a) There should be provision for a wide-spaced parallel runway to be provided -
 - (i) when aircraft traffic justifies it; or
 - (ii) earlier if recommended by the House of Representatives Standing Committee on Environment and Conservation because of noise exposures.

(b) Planning should ensure that facilities to be constructed in the short term should be consistent with the long term need to develop a parallel runway.

(c) Noise nuisance problems, both in the short and long term, should be minimised.

(d) Road access to the airport must be consistent with road development plans and reduce traffic through residential streets and past schools.

(e) Airport costs, including aircraft taxiing and operating costs, should be kept to a minimum.

68. Committee's Recommendation The Committee recommends the adoption of Strategy 4 for the development of Perth Airport with the provision of a wide-spaced parallel runway -

- (a) when aircraft movements demand it; or
- (b) earlier if recommended by the House of Representatives Standing Committee on Environment and Conservation.

CONTROL TOWER

69. Location The location of the control tower would be the same for Strategies 1, 2 and 3.

70. DOA advised the Committee that factors governing the location of control towers include a requirement for air traffic controllers to be able to detect the movement of departing aircraft as soon as possible after commencement of take-off run. Specifically, response times for runway ends should be less than 5 seconds and desirably not greater than 4 seconds.

71. Height Tower eye level height is a function of the distance from the location of the control tower to the airport surfaces to be observed. When buildings stand between the tower and areas to be observed tower height will then be a function of the location of the tower, the height of the buildings or other visual obstructions in line with the tower and the surfaces to be observed.

72. Tower Life DOA advised the Committee that the tower life, that is essentially the life of the equipment to be installed, would be 15-20 years during which the tower construction costs would be recovered from the aviation industry in accordance with the cost recovery policy.

73. Tower Options In considering the location and size of the tower the Committee has used, as a basis, its earlier conclusion that the preferred development option for Perth Airport should consistent with Strategy 4. The Committee therefore examined the following solutions for the control tower:

Strategy No.	Height (M)	Cabin Size (M)	Construction Cost \$M	Equipment Cost \$M	Total Cost \$M
1 and 2	23	7.5	1.0	.5	1.5
3	>23	10	1.5	.5*	2.0
4	60-65	10	2.4	.5*	2.9
4	85-90	10	2.7	.5*	3.2

* Additional equipment costs of some \$0.4M required at time of construction of parallel runway.

74. Strategy 1 and 2 Tower The Committee has recommended at paragraph 68 above that airport planning should be consistent with Strategy 4 and any development should not rule out the possible requirement for a parallel runway. The cabin size required for a Strategy 1/2 tower is inconsistent with this objective. To operate a Strategy 1/2 runway system a tower with a 7.5 metre diameter cabin is required. The eye level height of the tower would be 23.1 metres. DOA argued that such a tower would be economical to provide now, providing it was used for at least 7-8 years. The Committee is not convinced that construction of a "temporary" tower is the best solution.

75. The Committee is concerned that should the need for a wide-spaced parallel runway become evident the immediate additional cost (over and above the runway itself) to provide adequate control tower facilities would be at least \$3.3 - 3.6 million (at today's costs) less the salvage value of the equipment from the smaller tower (approximately \$0.1 million).

76. Strategy 3 Tower Whilst the location of a Strategy 3 tower is identical to Strategies 1 and 2, in order to operate a parallel runway system its eye level height would need to be slightly higher and a cabin diameter of 10 metres would be required to accommodate extra personnel and consoles.

77. The Committee explored the possibility of the compatibility of a Strategy 3 tower with the location of a "central" (eastern) international terminal building. DOA advised the Committee that a Strategy 3 tower is compatible with the location of a central international terminal. The building could be sited, orientated and designed so as not to interfere with requisite site lines and reaction times from a Strategy 3 tower and for a Strategy 3/4 runway configuration.

78. With regard to other significant new facilities to be provided in accordance with Strategy 3, the central location of the domestic or freight terminal, DOA advised that:

- it would be poor planning practice to permit a relatively minor facility, in terms of cost, to dictate the layout and hence operation of the far more expensive terminal development within the central area;
- given the likely timing of such development cost penalties associated with sub-optimal terminal locations would almost certainly justify replacement of the tower with one compatible with full central area development;
- a Strategy 3 tower provides a satisfactory solution - the probability of either domestic or freight terminal facilities being established in the central area within the economic lifetime of the tower being very small.

79. The Committee nevertheless believes that a Strategy 3 tower, designed to operate a parallel runway system could militate against Strategy 4 ultimately being achieved. The argument used by DOA concerning a relatively minor facility dictating terminal developments within the central area could well lead to the construction of terminal facilities in the northern area. A Strategy 3 tower is obviously compatible with such an arrangement.

80. Strategy 4 Tower DOA originally stated that the optimum eye level height of a Strategy 4 tower to be of the order of 85-90 metres with a 10 metre diameter cabin. During the public hearing, however, DOA explained that it may be possible to reduce the height to 60-65 metres at a cost of \$2.4 million (mid 1982 prices) but there would be some restrictions on building area development.

81. Consideration The broad planning for Perth Airport should be consistent with Strategy 4. It is clear that there are some advantages in proceeding with a Strategy 3 tower which could, during its expected life, serve a parallel runway and be designed so as not to conflict with a central international terminal. A "shorter" Strategy 4 tower (60-65 metres) may pose restrictions on optimum building configurations and siting in the central area. But the Committee believes these restrictions may not be as extensive as those applying to a Strategy 3 tower for a Strategy 4 development. The Committee also examined the possibility of enlarging the cabin in the present tower. Whilst this solution was less costly, it proved impracticable.

82. The Committee's Conclusion The proposed control tower at Perth Airport should be located at the site required under Strategy 4 as shown in the Provisional Master Plan and its height should be 60-65 metres.

ENVIRONMENTAL CONSIDERATIONS

83. The provisional Master Plan includes a draft Environmental Impact Statement (EIS). The Committee understands a Final EIS will be released in mid-November 1982.

84. DOA has made available copies of submissions and letters from interested groups and individuals concerning the Provisional Master Plan and Draft EIS. The Committee has carefully examined these submissions and letters.

PROGRAM

85. DOA requires the commissioning of the tower during 1984 and construction of the tower will need to be completed by December 1983 to enable the necessary equipment to be installed. The Committee is confident that the target completion date can and will be met.

CONSTRUCTION AND COSTING

86. The Committee was advised that limit of cost estimates and sketch plans had not been prepared for strategy 3 and 4 towers. The Department of Transport and Construction designs had proceeded on the basis of Strategy 1 and 2.

87. A summary of construction details for a Strategy 1 tower is at Appendix 2 to illustrate the extent of the proposal for that Strategy. Design and construction differences for a Strategy 4 tower relate primarily to cabin size and stalk height.

88. It is unusual for the Committee to recommend construction of works without limit of cost estimates. The cost differences between a Strategy 1/2 and 3/4 towers are attributable to differences in cabin sizes, stalk height and requisite engineering services. The Committee believes, however, the cost estimate provided for a "short" Strategy 4 tower to be reasonably accurate since it was derived from calculations used to derive a limit of cost estimate for a Strategy 1/2 tower.

89. In approving the construction of the work the Committee desires to be advised of the configuration, design, and the limit of cost of the tower, consistent with paragraph above, when these are completed.

90. Committee's Conclusion The Committee recommends the construction of the control tower recommended in paragraph 82.

91. The indicative cost of the recommended work is \$2.4 million.

RECOMMENDATIONS AND CONCLUSIONS

92. The recommendations and conclusions of the Committee are set out below. Alongside each is the paragraph to which it refers.

- | | <u>Paragraph</u> |
|--|------------------|
| 1. THE FURTHER DEVELOPMENT OF PERTH AIRPORT TO THE YEAR 2000 SHOULD NOT RULE OUT THE EARLY CONSTRUCTION OF A WIDE-SPACED PARALLEL RUNWAY ON 02/20 ALIGNMENT. | 60 |
| 2. THE COMMITTEE RECOMMENDS THE ADOPTION OF STRATEGY 4 FOR DEVELOPMENT OF PERTH AIRPORT WITH THE PROVISION OF A WIDE-SPACED PARALLEL RUNWAY -

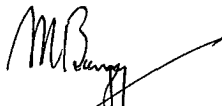
(a) WHEN AIRCRAFT MOVEMENTS DEMAND IT; OR

(b) EARLIER IF RECOMMENDED BY THE HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON ENVIRONMENT AND CONSERVATION. | 68 |
| 3. THE PROPOSED CONTROL TOWER AT PERTH AIRPORT SHOULD BE LOCATED AT THE SITE REQUIRED UNDER STRATEGY 4 AS SHOWN IN THE PROVISIONAL MASTER PLAN AND ITS HEIGHT SHOULD BE 60-65 METRES. | 82 |
| 4. THE COMMITTEE RECOMMENDS THE CONSTRUCTION OF THE CONTROL TOWER RECOMMENDED IN PARAGRAPH 82. | 90 |

Paragraph

5. THE INDICATIVE COST OF THE RECOMMENDED WORK IS
\$2.4 MILLION.

91


(M.H. BUNGEY)
Chairman

Parliamentary Standing Committee on Public Works
Parliament House
Canberra
14 October 1982

APPENDIX 1

COMPARATIVE COSTS - STRATEGIES 1, 2, 3 AND 4
1985 - 2010

	Strategy 1			Strategy 2			Strategy 3			Strategy 4		
	Undis- counted	Discounted at 10% pa	Discounted at 15% pa	Undis- counted	Discounted at 10% pa	Discounted at 15% pa	Undis- counted	Discounted at 10% pa	Discounted at 15% pa	Undis- counted	Discounted at 10% pa	Discounted at 15% pa
Construction	226.5	76.0	72.0	237.2	84.3	78.9	344.5	95.5	90.5	356.6	101.6	97.0
Operating costs	0	0	0	163.5	45.0	34.2	0	0	0	163.5	45.0	34.2
- Airport User												
- Airport	296.8	98.5	80.0	317.1	110.8	85.8	305.7	101.7	82.6	326.0	114.1	88.4
- Services	101.2	31.62	24.01	111.77	31.93	24.52	152.19	46.13	36.09	147.63	41.40	32.59
- Training costs												
- other airline	4.36	1.5	1.2	5.21	2.0	1.6	4.36	1.5	1.2	5.21	2.0	1.6
- Operating costs												
Environmental and Social Costs												
- Noise Balance	41.28	16.22	13.45	41.28	16.22	13.45	28.47	11.86	10.01	28.47	11.86	10.01
- Differential Insulation costs	21.21	16.04	15.45	21.21	16.04	15.45	0	0	0	0	0	0

CONSTRUCTION DETAILS - 7.5 METRE CABIN

1. Building Description Raising of the cabin will provide 360° surveillance of the movement area. The office, radio equipment room, battery room and emergency power room will be located in a separate building linked to the base of the tower. The tower roof will accommodate a rotating beacon and air conditioning equipment. Provision has been made in the design for a possible future surface movement radar to be supported on the cabin roof. The service level, below the cabin, will accommodate an equipment room, air conditioning plant room, locker room and toilet facilities.
2. Materials and Finishes The tower stalk will be of reinforced concrete, load bearing wall construction. Floors and the roof will be reinforced concrete.
3. Cabin glazing will consist of eight glass panels which will be installed at a slope of 20° from the vertical. The service building at the base of the tower will be conventional block work.
4. All buildings will be designed for both wind and earthquake loads to post-disaster, category "B" standard.
5. Buildings Services The cabin and equipment rooms of the tower and the radio equipment room in the services building will be airconditioned.
6. A 22kV underground power supply will be taken from the existing terminal site through ducts under the runway to the tower site. Essential and no-break power requirements will be provided from a diesel driven emergency generating plant.
7. An automatic fire detection system will be installed in the equipment rooms and thermal detectors will be installed elsewhere.

8. Hydraulics Water supply will be provided from an extension of an existing water main. Sewage disposal will be an on-site septic tank and absorption drain system.

