1968

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

REPORT

relating to the proposed construction of

AIRLINE MAINTENANCE BASES

for

DOMESTIC AIRLINES

at

Melbourne (Tullamarine) Airport

BY AUTHORITY
A. J. ARTHUR, COMMONWEALTH GOVERNMENT PRINTER:
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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

AIRCRAFT MAINTENANCE BASES FOR DOMESTIC AIRLINES
AT MELBOURNE (TULLAMARINE) AIRPORT

REPORT

By resolution on 14 August 1968, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report a proposal for the construction of aircraft maintenance bases for the domestic airlines at Melbourne (Tullamarine) Airport.

The Committee have the honour to report as follows:

THE COMMITTEE'S INVESTIGATION

- 1. We received submissions and drawings from the Department of Civil
 Aviation, the Department of Works, the Australian National Airlines Commission
 (Trans-Australia Airlines) and Ansett-A.N.A. Evidence was taken at public hearings
 in Melbourne from witnesses representing these organizations, the Council of the
 City of Keilor and the Australian Licensed Aircraft Engineers! Association.
- We inspected the maintenance bases of both airlines at Essendon Airport and the development works completed or under construction at Tullamarine.

THE REFERENCE

3. The proposal referred to the Committee is for the construction of the first stage of each of the aircraft maintenance bases required by Trans-Australia Airlines and Ansett-A.N.A. at Melbourne (Tullamarine) Airport. The work proposed includes hangars, workshops, stores, engineering services, internal roads, car parks and other supporting facilities required for the line maintenance of the fleet of each airline.

- 4. Water, sewerage, drainage and electricity services and roads are adjacent to the sites and connections can be made to each base. Aircraft access will be by taxiway connections from an existing airport taxiway which runs south from the terminal area.
- 5. The estimated cost of the work when referred to the Committee was \$11 million. It is proposed that funds for the work will be provided by the Commonwealth which will own the facilities and rent them to the airlines. In addition a ground rent is to be charged for the land occupied by the airlines.

MELBOURNE (TULIAMARINE) AIRPORT

- 6. <u>History</u> The unsuitability of Essendon Airport for further development as the principal airport for Melbourne led to a decision to create a major airport at Tullamarine. Since then the Public Works Committee has investigated three major works proposals for Tullamarine, viz
 - airfield pavements including the two main runways and texiways (1963);
 - additional arrons, vehicular pavements, engineering services, roads and instrument landing systems (1965);
 - international and domestic terminals, services building, control tower, fire station, D.C.A. maintenance area and other minor buildings (1965).

- 7. The pavement work is now virtually completed and, in fact, the east-west runway has been used for training purposes mainly by the domestic airlines for about 12 months. The other works are in various stages of completion. It is expected that the first regular international traffic will use the airport towards the end of 1969 and domestic traffic a year later.
- 8. Loyout The airport covers an area of 5,300 acres and is located 12 miles north-west of Melbourne. The runways comprise a main runway 8,500 ft long running generally north and south and an east-west runway 7,500 ft long. There is room for both to be extended and the master plan allows for the construction, eventually, of a parallel runway system in the south-east part of the airport.
- 9. The terminal complex is located south-east of the intersection of the completed runways and the area set aside for aircraft maintenance bases is south of the terminals. Vehicular access to the terminals is from the Tullamarine Freeway which approaches the airport from the south-east and to the airline maintenance bases is from Sharps Road which skirts the airport's southern boundary.
- 10. The maintenance areas are connected to the terminal area by a 7,000 ft long taxiway. The airport master plan envisages that each of the domestic operators will eventually require 100 acres for maintenance purposes and that international and other operators who might require these facilities would occupy about 55 acres.
- 11. The control tower and operations centre, and facilities connected with the maintenance of the airport and its services by the Department of Civil Aviation are located near the western boundary.

ANSETT-A.N.A. BUILDING PROPOSALS

- 12. Outline The proposed transfer of airline operations from Essendon to Tullamarine requires the domostic airlines to establish aircraft maintenance facilities at Tullamarine. Ansett-A.N.A. proposes to stage the transfer beginning with facilities for line maintenance and for aircraft undergoing progressive maintenance. Although workshops and other facilities for major overhauls will remain at Essendon temporarily, there will be some duplication of these facilities in the first stage to permit progressive "in-service" maintenance of some components.
- 13. The facilities in the first stage will be designed for current types of aircraft and any larger versions of the same aircraft but the building layouts and types of construction will be adaptable to the changing requirements of the industry. The plan for the development of the company's site allows for the construction of subsequent stages including additional workshop and hangar accommodation.
- 14. Stage 1 comprises hangars, an annexe building to accommodate stores, amenities and offices, a workshop building, taxiway, apron, roadworks and engineering services.
- 15. Site The site for stage 1 comprises 50 acres and is about half the total area reserved for the company's maintenance base at Tullamarine. It is served by roads on the eastern and southern boundaries, adjoins the T.A.A. area to the west and the access taxiway from the terminal to the north.
- 16. Proposed Facilities An apron, 300 ft by 600 ft, will be located
 60 ft from the eastern boundary and will be joined to the main taxiway by a
 60 ft wide connecting taxiway. The hangar is to be 600 ft long with a clear

depth of 170 ft and an opening height of 50 ft. It will be possible subsequently to extend the hangar north or south as required.

- 17. A two-storey annexe building 600 ft by 50 ft with provision for the addition of a third floor, will abut the hanger. It will accommodate stores, equipment areas, inspection and maintenance offices, first aid and looker rooms, amenities, a canteen and office space.
- 18. A workshop 140 ft by 250 ft is to be built adjoining the annexe at the rear to allow progressive in-service maintenance of some components. It will be separated from the annexe by a service road. A basement area in this building will accommodate mechanical plant and electrical equipment required to service the complex.
- 19. <u>Construction and Materials</u> As the site has a slight fall from north-east to south-west and because the soil is not suitable for compaction into filling, the Committee noted that it will be more economical to cut to achieve a level surface. Excavated soil will be carted off the site.
- 20. The hanger will be of steel framed construction supported by columns at the rear wall. A spine lattice girder 60 ft from the front eave and carrying secondary trusses will be supported at 240 ft centres by reinforced concrete braced columns. The rear wall will have brick infill panels and the end walls will be clad in coloured galvanised steel. The roof is to be galvanised steel decking incorporating fibreglass strip skylights. Six steel framed doors will be provided for each structural bay and will be arranged to provide bay width openings. It will be heated by hot water radiant panels.

- 21. The emexe will be framed in steel as a continuation of the rear wall supporting the columns of the hangar. Framework cladding and floor slabs will be reinforced concrete and the slab over the first floor will be waterproofed by a temporary gulvanised steel decking. Mechanical heating and ventilation will be provided.
- 22. Materials and finishes will be appropriate to the functions and occupancy of particular areas and will be chosen so as to minimise maintenance. The Committee were told that externally the buildings will harmonise with others in the area and comply with the requirements of the Department of Civil Aviation.
- 23. <u>Engineering Services</u> An emergency domestic water supply will be provided from rainwater storage tanks of 20,000 gallon capacity located on the roof of the annexe. It will be boosted from the reticulated supply as required. An emergency storage in a ground level reservoir will be located near the western boundary of the site. This facility will be shared with T.A.A.
- 24. Sealed roadways 25 ft wide and kerbs and channels will be provided within the complex. Car parking for employees and visitors will have sealed surfaces and artificial lighting. Access to the area will be controlled at a security building near the vohicular entrance. The site will be security fenced.
- 25. Fire protection measures will conform with departmental requirements and include detection systems in the hangar and annexe, fire resistant protection of main structural components, manually operated appliances and alarm points and fire hydrant and sprinkler systems.

26. Taxiway and Apron Pavements The pavements will be constructed to a standard similar to that adopted for the aprons in the terminal area where 14 in. of concrete on a base course of 18 in. was used. Taxiways will be 60 ft wide with bitumen sealed shoulders.

T.A.A. BUILDING PROPOSALS

- 27. Outline As with Ansett-A.N.A., T.A.A. is required for operational reasons to set up aircraft maintenance facilities at Tullamarine. When completed to the master plan, the base will provide hangars, workshops and stores, accommodation for offices, technical services and engineering training and permit aircraft maintenance and overhaul activities now based at Essendon to be relocated at Tullamarine.
- 28. As a first stage of development, it is proposed to construct hangers, an amnexe building containing tool stores, offices, first aid facilities and staff amenities, a bulk store, an access taxiway and apron, an aircraft wash bay, readworks and other engineering services.
- 29. Site The site for the initial development covers about 50 acres. To the west and north, it is bounded by aircraft taxiways, and to the east it adjoins the Ansett-A.N.A. maintenance base. The southern boundary is a road which divides the 100 acres to be occupied ultimately by T.A.A.'s maintenance base.
- 30. Aircraft gain access to the area from a taxiway which leads to the torminal complex and runway system. Read access is from Sharps Read.

 T.A.A. has an engine test cell under construction in the north-west corner of the site to be used to test engines overhauled at both Tullamarine and Essendon. It is not part of the proposal in this reference.

- 31. Proposed Facilities The taxiway within the site, running south from the airfield taxiway, will be 60 ft wide and 800 ft long. It will join the aircraft apron which will be 600 ft long by 350 ft wide. The latter includes an area of flexible payment 600 ft by 50 ft.
- 32. Adjoining the apron will be the hangar 600 ft long, 170 ft deep and with a clear height of 50 ft. The hangar is to be designed to accommodate donestic aircraft now in service and any type now used by international airlines which may fly into Tullamarine. It will be primarily for overnight servicing and is to be fitted with tail docks, power and compressed air outlets. The hangar doors will be power operated and the building will be heated.
- 33. The adjoining annexe building 600 ft by 45 ft will be two-storeyed over 30 ft of its width. Ground level accommodation will include tool stores, office accommodation, amenities and a first aid suite. At the upper level will be located further offices, a staff canteen and the PABX.
- 34. Adjacent to the annexe will be the first section of the bulk store covering 25,000 sq ft. This will be used for the storage of items required for maintenance purposes.
- 35. Adjoining the eastern boundary, it is proposed to erect an aircraft wash bay. This will be a steel framed building 170 ft by 150 ft.
- 36. A powerhouse building is to be built to accommodate mechanical equipment, an electrical substation and the standby generator. The building will be designed so that it can be extended when necessary.
- 37. The T.A.A. site will be enclosed by a security fence and entry will be controlled at a security building erected on the southern boundary. Some personnel and employment services will be located in this building.

- 38. Construction and Materials The site slopes gently from north-west to south-east. The levels of the apron area are to be adjusted so that little filling will be required at the lower end.
- 39. The hanger will be a semicantilever steel framed structure, the roof being carried on a main lattice girder 600 ft long. The latter will be supported on columns at either end and by an intermediate column. The structural design allows for a future northwards extension of the hangar. Secondary trusses spanning the hangar will be supported on the rear walls and on the main girder. Lateral stability under wind stress will be provided by portal bracing in the structure of the annexe at the rear.
- 40. The store, annexe and powerhouse buildings will have conventional steel frames. The aircraft wash bay will also be steel framed and its roof will be carried by 3-nin arches.
- 41. The buildings comprising the T.A.A. complex should be of pleasing design, in harmony with those in the Ansett-A.M.A. base and comply with the design requirements of the Department of Civil Aviation. Materials will generally be selected with durability and economic maintenance in mind.
- 42. <u>Engineering Services</u> Plant, providing heating and hot water and when required in future, air conditioning, is to be located in the powerhouse building. The hangar is to be provided with a floor heating system with supplementary air heating and mechanical ventilation as needed.
- 43. Within the base, electricity will be reticulated from high tension and low tension switchboards in the powerhouse. Lighting will include floodlighting of the apron area and street lighting of roads and car parks. Power outlets will be provided as required.

- 44. The hangar and annexes will be fitted with fire detectors and
 the bulk stores with automatic sprinklers. Manually operated fire alarms,
 hydrant points and hand extinguishers will be located at appropriate points.
- 45. Domestic water supply will come from the main airport reticulation.

 There will be internal storage of a 24-hour reserve supply.
- 46. Taxiway and Apron Pavements Materials and standards of construction will be identical with those for these facilities in the Ansett-A.N.A. base.

FINANCIAL ARRANGEMENTS

- 47. The financial arrangements for the works in this reference are that the Commonwealth is to provide the funds and rent the facilities to the airlines. The rental has been calculated to recoup the Commonwealth's investment plus interest at 7½% over a 40-year period. Excluding ground rent, the rental for the facilities will be \$498,000 per annum in the case of T.A.A. and \$415,000 per annum for Ansett-A.N.A.
- 48. The decision by the Covernment to provide finance for the construction of these works is contrary to established policy and was not envisaged when the concept of a new airport for Melbourne was being developed. The Committee noted statements made to the previous Committee in 1965 that, at that time, both the Government and the airlines expected the airlines to provide finance for their own facilities at Tullamarine.
- 49. The Committee was concerned at this change in policy. In seeking clarification we received confidential information and had detailed discussions with officers of the Department of Civil Aviation about the reasons for the Commonwealth's decision to vary the usual practice in this

- instance. Although we do not necessarily agree with the principles underlying the decision, we realise that the Government had little alternative.
- 50. We were also informed that although the prosent proposals are stage 1 only of the maintenance bases at Tullamarine, it is not thought that the Government will finance by this or a similar method, further stages of dovelopment of the maintenance bases or other works properly attributable to the airline operators at Tullamarine or, indeed, at any other airport in Australia.
- 51. In the circumstances, the Committee recommend the construction of the work in this reference.

DESIGN AND CONSTRUCTION ARRANGEMENTS

- 52. The functional requirements for the proposals in this reference were determined individually by the airlines and each was authorised to engage consultants for proliminary design and estimates except for the taxiway and apron pavements.
- 53. The designs submitted comply with the requirements of the Department of Civil Aviation and we were told that the types of construction and finishes proposed are similar to the technical standards which would be adopted if the proposals were being constructed for the Department of Works.
- 54. Subject to approval being given by Parliament for the work to proceed, each airline is to be authorised to extend the engagement of consultants for the completion of plans and specifications and supervision of construction. The Department of Works is to be responsible for the design of and tender documents for the payements and is to supervise construction of this work.

55. Tenders will be called by the respective consultants and subject to endorsement by the Department of Works of their recommendations, tenders will be accepted and contracts lot by the airlines. The contracts are to be administered and the work supervised by the airlines and their consultants, subject to general oversight by the Department of Works.

PROGRAMME

56. In the case of each maintenance base, tenders for the various parts of the work are to be called progressively. The Committee were told that subject to an early approval to proceed being given by Parliament, it is planned that all of the work will be completed by the end of 1970.

ESTIMATE OF COST

57. The estimated cost of the work when referred to the Committee was
 \$11 million as follows:

Ansett-A.N.A.	8	S
Taxiway and Apron	640,000	
Buildings and services	4,360,000	5,000,000
T.A.A.		
Taxiway and apron	660,000	
Bunldings and services	5,340,000	6,000,000
		11,000,000

NOISE

58. <u>Buffer Zones</u> The Committee received a submission from witnesses representing the Council of the City of Keilor about the likely disturbance of residents in the City's area by noise emanating from engines being tested

in the maintenance areas. The Council's witnesses suggested that desirably the maintenance areas should be located further north than proposed, it being alleged that there are houses about 2,000 ft from the maintenance areas.

- 59. Besides the proposed siting of the maintenance bases, it is also relevant to the noise problem that the master plan for the airport provides for the future parallel north-south runway to be located even closer to the airport's eastern boundary than the maintenance areas. The southern end of this runway will be in the extreme south-oast corner of the sirport.
- 60. We noted that in 1963, when the first proposal at Tullamarine was being investigated, the Committee were informed by the Department of Civil Aviation -
 - Sufficient land has been acquired to provide buffer areas between the high noise areas of the simport and the general community. In this regard we have worked with and received the full co-operation of the State town planning authorities and the combination of buffer areas within the airport boundaries and land zoning outside the boundaries will ensure that the airport is a good neighbour to the community. To the north and west, aircraft using the airport vill operate over areas zoned as rural. To the south, the boundary of the airport is 20,000 feet from the point of take-off roll of the sirrerft, and south of this the area is zoned largely as zural and industrial for the next two miles. The nearest existing residential area to the main runway in this southorly direction is almost five miles from the point of take-off roll..."
- 61. This view was then supported by the Chief Planner of the Melbourne and Metropolitan Board of Works who, at the same time, forecast that pressures would develop in the future for the release, for residential purposes, of land south and east of the airport, then zoned as rural. He said that in examining future zoning plans, account would be taken of the effect of airport operations and that the Board would not be disposed to rezone these areas for residential purposes.

- 62. It is history now that by a decision of the Victorian Minister for Local Government the zoning of formerly rural land adjoining the southern boundary of the airport was changed to permit residential development. It is especially significant that not only was this decision supported by the Council of the City of Keilor but it was strongly opposed by the Department of Civil Aviation.
- 63. It is an unfortunate fact that those who live in these areas will be subjected to a degree of noise nuisance regardless of the measures that might be taken to minimise the problem. It is equally clear that the Commonwealth took every reasonable step in the planning stages to prevent this situation arising and that a good deal of the responsibility for the noise nuisance that will occur in residential areas formerly zoned for rural purposes must be taken by the Victorian Government.
- 64. <u>Noise Abatement Measures</u> Notwithstanding the rezoning action taken by the Victorian Government, the Commonwealth still has a duty to minimise the noise nuisance created by civil aviation operations at Tullamarine.
- 65. When the remaining elements of the maintenance bases of the two domestic operators are transfoured from Essendon, Tullamerine will become the principal maintenance base for each. Apart from the noise created by aircraft landing or taking off, it is obvious that the noise level will rise as the maintenance activities at Tullamarine expand and the airlines, jet floets grow.
- 66. T.A.A. is now constructing an engine test cell at Tullamarine in which to run engines after maintenance and until the transfer is completed, Ansett-A.N.A. proposes to continue to run its engines in a test cell at Essendon. We believe that it should be possible to keep noise within

reasonable bounds when engines are run in test cells but experience suggests that noise levels will become critical when engines are tested in an air frame.

- 67. The Committee were informed about a recent successful claim by an aircraft engineer employed by the Commonwealth for compensation for auditory damage and that several similar cases by airlines maintenance employees are pending. As Tullanarine will become the focal point in the domestic airlines network and also the location of their principal maintenance facilities, noise abatement measures there warrant the closest attention by the Government. We repeat a recommendation made in respect of a recent Sydney Airport reference that the problem of noise generated by civil aviation operations should be tackled by the Government with positive action and without delay.
- 68. Because a major source of noise from maintenance areas is likely to result from engines being tested while in their air frames, we were impressed with the steps taken to minimise noise at Lufthensa's maintenance base at Hamburg in Germany. The airport authority there has constructed a noise insulated hall into which aircraft whose engines are being tested are taken. The facilities are owned by the authority and are leased to the airline. It is thought that a similar facility in Australia would cost between \$2 and \$3 million.
- 69. The Committee are not competent to judge the efficiency of an installation of this type but we believe that as Tullamarine is to become the major maintenance base for both domestic airlines, the Commonwealth should investigate whether a similar facility might be provided at Tullamarine, to be used by airlines perhaps on a rental basis.

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TULIAMARINE DEVELOPMENT

- 70. In 1963, when the Committee considered proposals for the construction of the airfield pavements at Tullamarino, it was planned to complete the work in 1967. In considering that reference, the Committee recommended that "... construction be so phased that the airport will be ready for use by Christmas 1966". The programme for the terminals building investigated by the Committee in 1965 envisaged the commencement of international operations at the airport late in 1968 and demostic operations in 1969.
- 71. The present position is that while the airfield pavements have been virtually completed since late in 1967, slow progress with the terminals development will mean that regular international traffic common commence before the end of 1969 and domestic traffic before the end of 1970.
- 72. The Committee, in 1965, was critical of the haste taken with the forward planning of some elements of the Tullamarine development, particularly the torminals. In the light of the events that have occurred since, particularly the way the opening of the airport has been progressively delayed, it is apparent that the criticism was well justified.
- 73. It is probably not significant now whether construction of the runway pavements was commenced prematurely or whether the terminal buildings were commenced too late. What is important is that the overall development programme has lacked direction and co-ordination with the result that the pavements will have been completed two years or more before they are required.
- 74. We appreciate that it is not possible to so finely co-ordinate the construction of a number of elements of a large project so that they are all completed concurrently. But we are mindful that the airfield pavements

alone represent an investment by the Commonwealth of some \$12 million and that they will not be contributing to revenue until about two years after completion. Admittedly, they now receive some marginal use by the domestic airlines for training but the timing of their construction did not have this in mind and there is no charge for this use.

75. It is broadly in keeping with the programming of most other works at Tullamarine that there is an extremely tight timetable for the construction of the proposals in this reference. We would be gravely concerned if through inadequate co-ordination or forward planning, the domestic airlines are prevented from commencing regular operations at Tullamarine due to the absence of line maintenance facilities.

REPRESENTATIONS BY AIRCRAFT ENGINEERS

- 76. The Australian Licensed Aircraft Engineers' Association drew to the Committee's notice a number of suggestions about industrial conditions, facilities and amonities for those employed in the maintenance areas.
- 77. We noted the assurances of both T.A.A. and Ansett-A.N.A. that the suggestions will be favourably considered when plans for the maintenance bases are being further developed.

RECOMMENDATIONS AND CONCLUSIONS

78. 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. FOR OPERATIONAL REASONS TRANS-AUSTRALIA AIRLINES
AND ANSETT-A.N.A. ARE REQUIRED TO SET UP AIRCRAFT
MATHUMENANCE BASES AT TULIAMARINE.

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2.	THE GOVERNMENT HAS DECIDED TO PROVIDE FINANCE	ratagraph
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	FOR THE CONSTRUCTION OF LINE MAINTENANCE FACILITIES	
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	AL/TERNATIVE.	49
4.	IN THE CIRCUMSTANCES THE COMMITTEE RECOMMEND THE	
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6.	THOSE WHO LIVE IN RESIDENTIAL AREAS IN THE	
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7	A GOOD DEAL OF THE RESPONSIBILITY FOR THE NOISE	
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	INSULATED HALL HIGHT BE PROVIDED AT TULLAMARINE	
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	ARE TAKEN.	. 69

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10.	REGULAR INTERNATIONAL TRAFFIC CANNOT COMMENCE AT	
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11.	THE OVERALL DEVELOPMENT PROGRAMME FOR TULLAMARINE	
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14.	WE WOULD BE GRAVELY CONCERNED IF THE DOMESTIC	
	AIRLINES ARE PREVENTED FROM COMMENCING REGULAR	
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	LINE MAINTENANCE FACILITIES.	75 •

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(F.C. CHANEY) Chairman

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

5 November 1968.