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THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

R E P O R T

relating to the proposed lengthening and strengthening of the

RUNWAY

and the development of

TAXIWAYS AND HARDSTANDING AREA

at

LAUNCESTON AIRPORT, TASMANIA.

For Senator Anderson.

I present the Report of the Parliamentary
Standing Committee on Public Works, relating to the
following proposed work:-

Launceston Airport - Lengthening
and strengthening of runway and
development of taxiways and
hardstanding area.

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THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

RUNWAY, TAXIWAY AND APRON WORK, LAUNCESTON AIRPORT, TASMANIA.

R E P O R T.

By resolution on 27th November, 1962, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report, the proposal to lengthen and strengthen the runway and develop taxiways and the hardstanding area at the Launceston Airport, Tasmania. The Committee have the honour to report as follows:-

GENERAL.

1. The Committee visited Launceston where an inspection of the aerodrome was made and evidence obtained from citizens and representatives of organisations interested in air services at Launceston. Other witnesses who appeared before the Committee included representatives of the major airline companies and the Departments of Works and Civil Aviation.

HISTORICAL.

2. Air services from Launceston across Bass Strait to Melbourne date back to the early 1930's. During the last war the aerodrome was enlarged for use by the R.A.A.F. as an Elementary Flying Training School. At the end of the war, apart from hangars and wartime hutments, it was little more than a good grassed field and remained so until the completion, in 1949, of the 136 degree runway.

EXISTING PAVEMENTS.

3. Pavements in existence at the Launceston airport comprise runway, taxiway and hardstanding area.

4. Runway. The present runway laid in a north-west south-east direction over a sub-grade of clay is 5,200 feet long and 200 feet wide. It consists of a bitumen sealed pavement of 8 inches of gravel over a loam base course at least 13 inches thick. The runway ends are concrete 10 inches thick over a base course of gravel 6 inches thick.

5. The runway was designed for regular use by DC 4 aircraft of 73,000 lbs all up weight and 100 lbs per square inch tyre pressure. As much of the runway was constructed in fill and as the thickness of the loam base course is significantly greater than the minimum value, the runway is capable of carrying loads in excess of those for which it was originally designed.

6. It has stood up to DC 3, DC.4, Friendship, Viscount and occasional DC 6 aircraft traffic satisfactorily and apart from a normal rescal in 1958 the pavement has had only minor maintenance.

7. There is an upward slope of the runway at the north-western end of the order of one per cent.

8. Taxiway. A single taxiway connects the runway to the existing hardstanding area.

9. A cement concrete taxiway parallel to the runway is being constructed at present. The section under construction is 2,300 feet long and 50 feet wide. It has been so designed that the width can be readily increased to 75 feet and it will be suitable for aircraft of weight and tyre pressure similar to the Boeing 727.

10. Hardstanding area. The existing hardstanding area or apron is inadequate for the traffic at Launceston. It has been developed from the original low strength wartime pavement. It is therefore neither large enough nor strong enough for the aircraft now using it.

THE NEED FOR AERODROME DEVELOPMENT.

11. The airport at Launceston serves a population of approximately 192,000 in the city and surrounding areas, and in the 12 months ended 30th June, 1962 handled 126,296 passengers, 8,773 tons of freight and 11,528 aircraft movements. As such it was the seventh highest

airport in Australia for passenger traffic , fourth highest for freight and fifth highest for aircraft movements.

12. There are peaks in traffic at Christmas and Easter to handle the tourist industry the importance of which was emphasised by witnesses representing local commercial interests. A contributing factor to the relatively high position that Launceston occupies in aircraft traffic is the absence of any other means than sea travel to get to the mainland states.

13. Aircraft types. In planning aerodrome development work at Launceston, as elsewhere, it is necessary to consider the requirements of aircraft likely to use the airport in the next 10 years or so.

14. The proposed purchase of two Boeing 727 aircraft by each of the main internal airline operators has been announced. These are expected to be in use in Australia in 1965 and are regarded as a replacement for the Electra.

15. We were told by representatives of the airline companies that the next purchase will be a smaller jet aircraft of the British Aircraft Corporation 111 or the Douglas 2086 type to replace the Viscount. This is expected to occur in 1967.

16. Evidence was given of the likely purchase later of more Boeing 727 aircraft which are expected to have an operating life of 15 to 20 years. Within this period they are likely to be used on services to Launceston.

17. The possible pattern of development over the next few years is for the Boeing 727 to replace the Electra on mainland services in 1965 when the latter aircraft will be available for use to Launceston. The introduction of British Aircraft Corporation 111 or Douglas 2086 aircraft in 1967 would commence the phasing of Electra and Viscount aircraft out of the major air routes. The phasing out of Electras could lead to their use as freighters.

18. The all up weights and tyre pressures of the larger aircraft likely to use Launceston in the foreseeable future are:-

<u>Aircraft</u>	<u>All up weight</u> lbs.	<u>Tyre Pressure</u> lbs. per square inch
Viscount 800	72,500	120
B.A.C. 111	81,100	116
Electra	113,000	130
Boeing 727	152,000	150

19. The aircraft which will demand the greatest strength of runway, taxiway and apron pavements is the Boeing 727. For use by it and the Electra the runway must be strengthened. For the Viscount and BAC 111 this would not be necessary.

20. Runway. The existing runway is capable of handling aircraft of weight and tyre pressures up to and including those of the Viscount and BAC 111 type. Operation of the Viscount is limited to the relatively short journey to Melbourne and the runway length is critical even for this distance.

21. To maintain safety standards, Viscounts operate in and out of Launceston at all up weights less than the maximum and therefore at less than their maximum pay load.

22. So that existing aircraft can operate to their maximum capacity and in order to provide facilities which will permit the aircraft likely to be introduced on services to Launceston to operate at that airport there is a need to extend the runway.

23. Taxiway. As aircraft traffic develops the point is reached where it is necessary to provide the means for aircraft to vacate runways quickly. With a single runway system such as at Launceston this may be done by the installation of a taxiway parallel to the runway. This has not been available with the consequence that an aircraft after landing has to taxi back along the runway to reach the apron area. Similar circumstances apply where an aircraft is taxing out for takeoff. The consequence is that other aircraft about to land or take off can be delayed. During

periods when aircraft are landing by instruments or during an emergency, the need to clear a runway quickly assumes greater importance.

24. It is well known that airline schedules are so arranged that most flights of both major operators between the major ports are scheduled to depart and arrive at the same time. This is a contributing factor to the congestion at Launceston.

25. We therefore enquired about the possibility of the problem being overcome by rationalising air services so that departure and arrival times of flights of the companies would be staggered.

26. The companies state that the problem of connecting flights and the inclination of the travelling public to favour certain times of travel require them to have aircraft departing for the same destination at the same time.

27. We are satisfied that this topic has had the close attention of all those concerned with civil aviation in Australia. Recognition of this feature of airline operation must therefore be accepted and in these circumstances the only way to overcome the congestion is by the installation of a parallel taxiway at Launceston airport. Completion of the parallel taxiway, portion of which is now under construction is therefore necessary.

28. Hardstanding area. As already mentioned the hardstanding area or apron is too small to provide the desirable amount of clearance between aircraft, particularly during busy periods. In addition the pavement is of low strength.

29. Associated with the aerodrome work is the proposal to erect a new terminal building. There is insufficient space in the vicinity of the existing apron to develop a suitable terminal area.

30. To provide adequate parking at the new terminal building for aircraft of the sizes and weights expected to operate to Launceston a new hardstanding area should be constructed.

THE EXTENT OF DEVELOPMENT.

31. Having satisfied ourselves about the need to extend the runway, complete the taxiway development and construct a new hardstanding area, we turned our attention to the extent to which development should be undertaken. The critical factors are the types of aircraft expected to operate to Launceston and the lengths of the journeys involved.

32. Extension of the runway to only 6,000 feet without strengthening the existing pavement would exclude it from regular use by the Electra and the Boeing 727 and would limit the aircraft able to use the airport to the Viscount and the BAC 111. A similar runway length with the extension of greater strength and with the existing pavement strengthened would permit aircraft up to the Boeing 707 to operate but would limit journeys by the larger modern aircraft to the relatively short stage between Launceston and Melbourne.

33. Advice has been given to us that the time will come when the Boeing 707 is likely to be used on Launceston services and when there will be direct air services between Launceston and Sydney. If the runway is not constructed to meet these likely developments the possibility remains of the need for further work, with its attendant disruption to air services, to be undertaken within the next 10 years.

34. In order to permit all aircraft up to the Boeing 727 specification to operate direct between Launceston and Sydney without restriction it is necessary for the runway to be 6,500 feet long with the existing section strengthened and the extension equally strong.

35. The Committee believe that the extent of the work proposed at the Launceston airport should be related to the likely development in aircraft operations, and therefore recommend standards capable of permitting its use by aircraft of weight and tyre pressure specifications up to the Boeing 727 on direct flights between Launceston and Sydney.

PROPOSED WORK.

36. The aerodrome work proposed at the Launceston airport is confined to the construction of new, or the strengthening of existing, pavements.

37. Runway strengthening. To assess what strengthening work is necessary, field and laboratory investigations have been carried out on the flexible pavement section of the existing runway and it has been test rolled to impose stresses on the pavement approximating those which the Boeing 727 would generate.

38. The conclusion reached from these investigations is that apart from approximately 10,000 square yards of pavement which will need to be reconstructed, the flexible section of the runway should be satisfactory for the Boeing 727 after stabilization in situ of the top course of approximately 3 inches of the pavement with a small quantity of cement and surfaced with bituminous concrete. It is proposed to do this only to the central 150 feet width of the runway but extending to the western edge at the junctions with the taxiway. Elsewhere the remaining width of the existing runway will be used as a shoulder.

39. Very high concrete strengths were obtained during construction of the existing concrete ends of the runway. Although by normal design standards these pavements are marginal in strength for the critical design loads, they are expected to give satisfactory service, and strengthening by over-laying with further concrete or reconstruction is not proposed. To correct surface irregularities however the concrete at the northern end of the existing runway is to be surfaced with about 2 inches of bituminous concrete.

40. Runway lengthening. Based on an examination of the strength of the clay sub-grade under the existing runway and of the soils in the area of the runway extension the flexible pavement for the additional length will consist of a gravel loam base course approximately 20 inches thick, a top course of cement stabilized gravel or fine crushed rock 10 inches thick and a bituminous concrete surface course 2 inches thick.

41. The shoulders on either side of the centre section will consist of a gravel pavement 12 inches thick with a bituminous surface. As such, they will be satisfactory for regular use by heavy road vehicles and emergency use by aircraft, although in the latter case there would be some damage to the pavement.
42. The end 300 feet of the runway extension will be constructed of cement concrete approximately 12 inches thick over a gravel base course 6 inches thick.
43. Blast areas at each end of the runway, the primary purpose of which is to prevent erosion caused by jet exhausts, will be of similar construction to the shoulders of the runway.
44. There is a hill at the north-western end of the Launceston airport and the existing grade at this end of the runway is of the order of 1 per cent up towards the hill. It was proposed to increase the grade to a little more than 1 per cent over the extension but within the 1.25 per cent recommended runway slope as laid down by the International Civil Aviation Organisation. Even this would involve considerable earthwork.
45. While our enquiries were going on, a meeting of the Aerodromes, Air Routes and Ground Aids Division of the International Civil Aviation Organisation was taking place in Montreal at which one of the matters listed for consideration was a review of the maximum slope of runway ends.
46. The outcome of the meeting has been to recommend that longitudinal slopes over the end quarters of runways be not greater than 0.8 per cent.
47. At Launceston this involves considerable modification as the slope planned for the north-western end is, as already mentioned, in excess of the recommended limit. The slope at the south-eastern end of the runway is within the tolerance recommended.
48. The International Civil Aviation Organisation is the major forum for airport design and we believe that the Department of Civil Aviation is correct in observing its recommendations although the member

countries have an obligation only to do so at international airports. It would be unwise to fail to conform to recommended standards at other airports where aircraft types which will operate might elsewhere have international classification.

49. Modification of the design as proposed by the Department of Civil Aviation to permit the runway to conform to the International Civil Aviation Organisation standards is recommended. This will involve more extensive excavation of the rock strata of the hill. Although it is believed that this will be rippable, a large increase, estimated to be £125,000, in the estimated cost of the work proposed will be involved.

50. In view of the extensive nature of the aerodrome development proposed we enquired whether the direction in which the runway lies is the most suitable. We were informed that the north-west south-east direction is the best for prevailing winds at Launcoston and that cross wind conditions have never caused cancellation of services.

51. There is no residential development in the area of the runway approaches. At the north-western end there are farm lands and at the south-western end there are farm lands and railways yards.

52. In order to carry out the runway work proposed, it will be necessary to close it. The only alternative to this is to build a new strip alongside the existing one.

53. Apart from the fact that the existing runway is in the best location, the cost of a new one would be greatly in excess of the cost of the work proposed and it would be wasteful to discard a runway which can be adapted for modern aircraft with relative ease.

54. It will be necessary, nevertheless, to provide alternative landing facilities while work is being carried out on the runway. This is to be achieved by providing a temporary strip approximately 5200 feet long, beside the existing runway. It is to be an unsealed strip comprising approximately 5 inches of gravel laid over the grass.

55. With the temporary strip constructed in this way the aerodrome will be limited to use by DC.3, DC.4 and Friendship aircraft for a period of from 6 to 9 months while the runway is being developed to the stage where it will be available for use by the larger aircraft.

56. The temporary strip will be a fair weather one and it is possible that there could be serious disruption to air services during the period mentioned. We do not believe that the cost involved in an all weather temporary strip would be justified. We are conscious of the problems involved however, and further reference is made to this aspect under the heading "Disruptions to Air Services".

57. The Committee are satisfied that aerodrome development at Launceston should be achieved by lengthening and strengthening the existing runways.

58. The work described will result in a runway 6500 feet long of sufficient strength for use by Boeing 727 aircraft and will permit direct flights by the larger modern aircraft between Sydney and Launceston. Construction of the work proposed is recommended.

59. Taxiway. A 2300 feet section of the parallel taxiway is under construction at present. It and the extension of the taxiway to the full length of the runway will consist of 12 inches of concrete over a gravel base course 6 inches thick and will be of sufficient strength for the Boeing 727.

60. The section now under construction is 50 feet wide, but it is designed so that it can be widened to 75 feet readily. The proposed section has been similarly designed.

61. When this proposal was referred to the Committee it was hoped that a width of 50 feet would be satisfactory at the Launceston airport. It is sufficient for Viscounts and for Electras on a straight section.

62. However the Aerodromes, Air Routes and Ground Aids Division of the International Civil Aviation Organisation at the Montreal

meeting also reviewed recommended taxiway widths. As a result a minimum taxiway width of 75 feet has been recommended for airports of similar size to Launceston and for aircraft such as those expected to operate there.

63. The estimates of cost for the taxiway work proposed allowed for the possibility of the additional width being recommended and therefore no change in the estimates will result. It was hoped, however, to save approximately £90,000 by having a taxiway only 50 feet wide.

64. The Committee agree with the intention of the Department of Civil Aviation to increase the taxiway width and recommend the construction of the new section of the taxiway to a width of 75 feet and to the widening of the 2300 feet section now being built.

65. If the runway is to be of sufficient strength to permit the Boeing 727 to operate it follows that other pavements will need to be of similar strength also. Construction of the taxiway to the strength and dimensions proposed is therefore recommended.

66. Hardstanding area. A new hardstanding area or apron 1200 feet by approximately 215 feet is to be constructed in front of the site of the new terminal building. Like the taxiway it is to be of concrete approximately 12 inches thick over a gravel base course 6 inches thick and it will be strong enough for Boeing 727 aircraft.

67. The value of the existing apron will not be lost as it will be available for use by the extensive light aircraft activity at Launceston.

68. Sufficient area is to be provided for six turbo-prop aircraft to park independently or a similar number of jet aircraft if towing procedures are used. This provision is against the request of the major airline operators for room for ten aircraft.

69. Officers of the Department of Civil Aviation believe the six positions will be sufficient initially, and as the apron can be enlarged if congestion occurs, the major airline operators are content with this provision.

70. In the knowledge that additional hardstanding area can be provided if required the Committee recommend development of the new apron with six aircraft parking positions to the design and size proposed.

ESTIMATES OF COST.

71. The estimated cost of the work proposed is £1,025,000. This represents an increase of £125,000 over the estimated cost of £900,000 when the proposal was referred to the Committee and is accounted for by the need to reduce the slope of the runway.

72. The estimates for each portion of the work are:-

Runway strengthening including £35,000 for the temporary strip	£250,000
Runway lengthening including an additional £125,000 for less slope than originally proposed	445,000
Taxiway work including widening of the section under construction to 75 feet	150,000
Hardstanding area	<u>180,000</u>
	<u>£1,025,000</u>

CONSTRUCTION TIMETABLE.

73. It is hoped to include the work in the 1963-64 civil works programme and to commence construction as soon as possible after the 1963 winter with the aim of having the runway, taxiway and hardstanding area pavements available for limited but substantial use by the middle of 1965. Some of the taxiway and apron pavements may be delayed until the summer of 1965-66 if wet weather causes excessive delay.

74. Provided weather conditions are such that the temporary strip can be completed by the end of 1963 the strengthening of the existing runway should be completed by the winter of 1964.

DISRUPTION TO AIR SERVICES.

75. Brief reference has been made to disruption to air services which may occur. Closure of the runway while strengthening and some of the lengthening is being carried out will limit use of the aerodrome to DC.3, DC.4 and Friendship aircraft which will be able to operate from the temporary strip. With wet weather the aerodrome may be closed at times, to all commercial airliner traffic.

76. Concern was expressed by witnesses in Launceston about the likely effect of the withdrawal of Viscount aircraft from service during the 6 to 9 months required to carry out work on the runway, and about the consequences to the large woollen industry of Launceston of the absence of air freight services by DC.4 aircraft if the airport is closed to these aircraft due to wet weather.

77. We were told of the considerable effort that has been made and the great emphasis that has been placed on the development of the tourist potential of Tasmania. There is apprehension about the likely effect of curtailed services and restrictions of aircraft types on what has been stated to be one of the prime industries of Tasmania. The peak tourist seasons are Christmas and Easter.

78. The value of freight services available to manufacturers in Launceston was also stressed, and this is borne out by the fact that the airport is the fourth highest for freight in the Commonwealth. Woollen products primarily, and livestock are the main items and for both the DC.4 is the most suitable aircraft. The peak months for the freight of woollen products are from February to May inclusive.

79. The work on the runway has been phased in order to keep the period of curtailed services to a minimum and to avoid disruption to these highly significant industries as much as possible.

80. It is intended to commence stockpiling gravel after the beginning of the 1963-64 financial year and to complete the temporary strip by the end of the year. As soon as the Christmas period is

over work would commence on the strengthening of the runway.

81. This involves stabilizing the top 8 inches of the pavement, applying a primary coat and laying a 2 inch bituminous concrete surface. Given good weather it should be possible to complete the stabilization and apply the primary coat before winter. When this much of the work has been done it will be possible to open the runway to some traffic but restricted, say, to morning and evening flights. The bituminous surfacing could be carried out between the limited aircraft operations.

82. While the runway is closed it is intended to commence the extensions and this should be sufficiently far advanced by the time stabilization and priming is finished for equipment to be far enough away from the end of the existing runway to permit aircraft to operate from the strengthened portion.

83. The only way to avoid this disruption to air services is to build a completely new runway or an all weather temporary strip and those, for reasons already mentioned, the Committee are not prepared to recommend.

84. The Committee stress however the need for great care to be taken in the phasing of the work so that there will be as little disruption as possible to air services to Launceston particularly during the peak periods for tourist travel and air freight.

SUMMARY OF RECOMMENDATIONS AND CONCLUSIONS.

85. The recommendations and conclusions of the Committee, arrived at after studying the evidence submitted are set out below and alongside each is shown the number of the paragraph to which it refers:-

	Paragraph in Report.
(1) There is a need to extend the runway at the Launceston airport.	22
(2) To cope with increasing traffic there it is necessary to instal a parallel taxiway.	27

- (3) To provide adequate parking space for aircraft
a new hardstanding area should be constructed. 30
- (4) In order to permit all aircraft up to the Boeing 727
specification to operate direct between Launceston
and Sydney a runway 6500 feet long with the existing
section strengthened and the extension equally strong
is necessary. 34
- (5) Standards which will permit Boeing 727 aircraft to
operate on direct flights between Launceston and Sydney
are recommended. 35
- (6) The International Civil Aviation Organisation has
recommended a reduction in the maximum longitudinal
slopes over the end quarters of runways. 44, 45, 46
- (7) The Department of Civil Aviation is correct in
observing the recommendations of the International
Civil Aviation Organisation. 48
- (8) Modification of the runway design is recommended
as proposed at an estimated additional cost of
£125,000. 49
- (9) In order to carry out work on the runway it will be
necessary to close it. 52
- (10) To build a completely new strip alongside the existing
one which can be adapted for modern aircraft with
relative ease would be wasteful and much more costly. 52, 53
- (11) A temporary strip, capable of use by DC.3, DC.4 and
Friendship aircraft will need to be in use for six
to nine months. 55
- (12) There could be serious disruption to air services
due to weather while the runway is closed, but the
cost of an all weather temporary strip cannot be
justified. 56.

- (13) Aerodrome development at Launceston should be achieved by lengthening and strengthening the existing runway and construction of the work proposed is recommended. 57, 58
- (14) To conform with new International Civil Aviation Organisation recommendations, the taxiway should be 75 feet wide. 62, 64
- (15) Construction of the taxiway to the strength and dimensions proposed is recommended. 65
- (16) Development of a new hardstanding area with six aircraft parking position as proposed is recommended. 70
- (17) The estimated cost of the work proposed is £1,025,000. 71, 72
- (18) Air services play an important part in the Tasmanian tourist industry and in the air freighting of large quantities of woollen goods manufactured at Launceston. 76, 77, 78
- (19) There is need for great care in the phasing of the work proposed so that there will be as little disruption to air services to Launceston as possible. 84.

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