1972

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed construction of a new

14L/32R RUNWAY

and

ASSOCIATED AIRPORT WORKS

at

Port Moresby
Papua New Guinea

(TWENTY-NINTH REPORT OF 1972)

CONTENTS

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

14L/32R RUNWAY AND ASSOCIATED AIRPORT WORKS
PORT MORESBY, PAPUA NEW GUINEA

REPORT

By resolution on 31 August 1972, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament, the proposal to construct a new 14L/32R runway, associated aircraft pavements, works and engineering services at Port Moresby, Papua New Guinea.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal referred to the Committee comprises:

   - a new 14L/32R runway of 9,000 feet;
   - associated taxiways;
   - extending the terminal apron;
   - strengthening parts of the existing parallel taxiway and the concrete terminal apron; and
   - associated engineering services.

2. The work is estimated to cost $7.5 million.

THE COMMITTEE'S INVESTIGATION

3. The Committee received written submissions and drawings from the Departments of Civil Aviation and Works, and took evidence from their representatives at a public hearing in Canberra. Supporting written submissions were also received from the Administrator of Papua New Guinea and from the Melanesian Tourist Federation. We inspected the airport including the facilities planned for extension.

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

AIRCRAFT PAVEMENTS AT PORT MORESBY AIRPORT

5. There are two runways at Port Moresby Airport (also known as Jackson's) both of which were constructed during World War II.

6. Between 1955 and 1957 runway 14R/32L, the major runway, was reconstructed and lengthened for DC4 and Constellation aircraft. It is now 6,800 feet long and 150 feet wide, with 8 feet unsealed shoulders. It is bitumen surfaced and generally 19 inches thick, 8 inches of which is fine crushed rock on either a clayey or silty sand sub-base, or the original pavement material.

7. Parallel runway 14L/32R is 6,200 feet long and 150 feet wide, and is surfaced with pre-fabricated steel matting as originally built.

8. Taxiway connections to runway 14R/32L were also constructed during 1955/57 in similar materials to the runway. The concrete section of the terminal apron and the connecting taxiway were constructed between 1960 and 1963 for Boeing 707 aircraft and consist of concrete 12 inches thick. The remaining aircraft pavements including extensions of the terminal apron constructed to the north and east of the concrete apron are of Fokker Friendship standard.

THE NEED

9. Aircraft and Passenger Traffic The Committee were told that in 1971 there were 355,100 revenue passenger movements through Port Moresby, and 52,900 aircraft movements. Some 210,000 passenger movements were within Papua New Guinea, 131,500 were to and from Australia, and 13,600 were international passengers. Of the aircraft movements, 49,900 were movements within Papua New Guinea, 2,400 were to and from Australia and 630 were international movements.

10. Passenger movements are expected to increase to 635,000 in 1975, 1,015,000 in 1980 and 1,531,000 in 1985. Aircraft movements including general aviation aircraft and military aircraft are predicted to rise to 64,000 in 1975, 100,000 in 1980 and 145,000 in 1985.

11. Performance of Runway 14R/32L Fine crushed rock had not been produced in quantity in Port Moresby before the reconstruction of runway 14R/32L in 1955, and although the material used was of reasonable quality it did contain larger quantities of clay and fine material than desirable for heavy aircraft pavements. Small areas have since been located in the runway where excess clay has contaminated the crushed rock. The result is that in wet conditions the material becomes springy and deforms under repeated aircraft movements, causing pavement failures.

12. Since the introduction of heavier aircraft on the Port Moresby run in 1967, every effort has been made to extract maximum usage from the runway in terms of aircraft weight and frequency. This has been qualified by the need to not unduly overload and damage the pavement so that it could be kept in service with a reasonable level of maintenance and patching. Operations of Boeing 727 and 707 aircraft have therefore been restricted in weight and frequency.

Nevertheless, over the period they have been operating, some 6,000 square yards, or about 10 per cent of the total runway area used regularly, has required patching.

13. Weight and Frequency Restrictions Port Moresby is the only airport in Papua New Guinea currently accepting regular scheduled services by international jet aircraft up to and including Boeing 707 size. However, the length of the main runway, 14R/32L, and its pavement strength, restrict frequency of operations, as well as take-off weights and stage lengths of both international and Australian services. Weekly movements are limited to a maximum of eight Boeing 707 services each with an operating limit of 260,000 lbs, and 28 Boeing 727 services each with an operating limit of 160,000 lbs.

14. Taxiway Systems The Committee were told that ideally, a full length parallel taxiway should serve the proposed runway. However, as it is intended to retain runway 14R/32L and its parallel taxiway for use by aircraft up to F28 size, which make up most of the traffic, it is considered that a parallel taxiway for the new runway could not be justified at this stage.

15. Nevertheless, to facilitate aircraft movement between the terminal apron and the new runway, it is proposed to provide two bituminous concrete taxiways between the proposed runway and the existing parallel taxiway and to strengthen the interconnecting portions.

16. To provide full utilisation of the existing parallel taxiway by all aircraft continuing to use the 14R/32L runway, the parallel taxiway is to be strengthened and sealed to F28 standard.

17. The taxiway and runway fillets at pavement intersections will be sized for aircraft up to Boeing 747 size so that future widening of the fillets will be avoided.

18. Terminal Apron Extension For heavier aircraft, the present apron provides parking for two Boeing 727 aircraft or one Boeing 707. Forecast aircraft movements indicate that two additional Boeing 727 aircraft will require apron positions during peak periods.

19. Instrument Landing System (ILS) ILS facilities are proposed for both ends of the new runway to provide track and glide slope guidance for landing aircraft. The twin installation is required to satisfy the seasonal variation in wind direction. Smoothly graded areas for the glide path and localiser components of the ILS are required as an essential component of this facility.

20. Other Work Other work includes approach lighting and power house buildings, relocation of the remote receiver station, diversion of the old Rouna Road, construction of access roads and engineering services.

21. Committee's Conclusion The Committee were told that due to the projected increases in aircraft traffic, and the unsuitability of the existing facilities at Port Moresby to regularly handle aircraft of the Boeing 727 size and above, the proposed work is the most satisfactory method of catering for the present and likely future air service needs.

22. The Committee concluded that there is a need for the work in this reference.

THE AIRPORT SITE

23. Additional Land The development of the new runway and the relocation of the remote receiver station will necessitate the addition of three parcels of land totalling 1,177 acres to the existing airport area of 1,195 acres.

Most of the land is Government owned and whilst the Committee were informed that no great difficulty or undue delay is expected to occur with the purchase or acquisition of the remainder, we were disturbed that negotiations for the land have not commenced. The Committee's endorsement of this proposal must therefore be conditional on satisfactory arrangements being made with the land owners concerned.

24. The Environment The Committee noted that the proposed development is consistent with the town plan adopted by the Port Moresby City Council. We would, however, direct the attention of the authorities concerned to the desirability of ensuring that land usage patterns in the vicinity of the airport are controlled so that environmental problems associated with the airport development and use do not arise.

CONSTRUCTION OF THE PROPOSED WORKS

25. Design Standard The standards adopted for the new runway have been based on the requirements of a Boeing 707 flying the Port Moresby/Hong Kong stage. This requires a runway length of 9,000 feet for a pay load of 40,000 lbs and an all up aircraft weight of 302,000 lbs.

26. The runway width of 150 feet and taxiway width of 75 feet are required for Boeing 707s in wet and cross wind conditions and also take account of surface operating speeds, wheel base and track, surface steering system and manoeuvrability. The proposed width of runway shoulders 25 feet and taxiway shoulders 10 feet will avoid ground erosion and jet ingestion.

27. The Runway The proposed runway will be constructed parallel to the existing runways but 1,000 feet to the east of runway 14R/32L. It will be 9,000 feet long by 150 feet wide within a strip 9,800 feet by 1,000 feet.

28. The pavement will consist of 2 inches of bituminous concrete on 12 inches of fine crushed rock and 34 inches of sub-base material except for 500 feet at each end of the runway. The ends will be constructed of concrete pavement 15 inches thick on a 6 inch base course of fine crushed rock. The runway pavement strength has been designed for unrestricted use by fully laden aircraft up to Boeing 707 dimensions.

29. At each end of the runway, stopway areas 150 feet wide by 200 feet long will be provided. The runway and the stopways will have bituminous surfaced shoulders 25 feet wide.

30. Taxiways The new taxiways will be of the same construction strength as the runway. They will be 75 feet wide and have 10 feet wide bituminous surfaced shoulders. Where the taxiways cross runway 14R/32L, the latter will be reconstructed to Boeing 707 standard.

31. The parallel taxiway for runway 14R/32L will be strengthened to F28 standard by cement stabilising the top 6 inches of the existing pavement, overlaying that with some 5 inches of fine crushed rock and surfacing with bituminous concrete. This taxiway will be 50 feet wide with 10 feet bituminous surfaced shoulders.

32. Terminal Apron The terminal apron extension of some 12,000 square yards will be constructed in concrete 15 inches thick over 6 inches of fine crushed rock. Some 14,000 square yards of the existing concrete apron and taxiway will be strengthened by either cement or bituminous concrete overlay.

33. Other Works Associated with the runway construction, it will be necessary to divert Boroko Creek which runs through the northern end of the airport and to extend water, power and sewerage reticulation. A new access road to serve properties to the east is also proposed.

34. The provision of the ILS facility will require the grading of areas for the glide path and localiser installations, emergency power houses and access roads to the high intensity approach lighting.

35. Other engineering services will include modification and extension of the existing high voltage reticulation, airfield drainage, construction of a single lane unsealed perimeter road and the relocation of remote receiver installations.

36. Committee's Conclusion Subject to the recommendations in paragraph 23 the Committee recommend the construction of the work in this reference.

ESTIMATE OF COST

37. The estimated cost of the work when referred to the Committee was $7.5 million made up as follows:

	$
Runway works, diversion of roads, services and Boroko Creek, and fencing and drainage	5,500,000
Taxiways and aprons	1,700,000
Powerhouses, remote receiver building and high voltage reticulation	300,000
	$7,500,000

PROGRAMME

38. After an approval to proceed is given it is expected that documentation and letting of a contract will take 12 months and that the total construction period will be 2½ to 3 years subject to an absence of delay in land acquisition.

39. The construction programme has been developed to enable the works to be carried out with a minimum of interuption to aircraft services and construction activities. The programme aims at completion of the initial 6,800 feet of runway with a connection to the apron as the first stage.

RECOMMENDATIONS AND CONCLUSIONS

40. The summary of recommendations and conclusions of the Committee is set out below. Alongside each is shown the paragraph in the report to which it refers.

		Paragraph
1.	THERE IS A NEED FOR THE WORK IN THIS REFERENCE.	22
2.	THE COMMITTEE'S ENDORSEMENT OF THIS PROPOSAL IS CONDITIONAL ON SATISFACTORY ARRANGEMENTS BEING MADE FOR THE PURCHASE OR ACQUISITION OF THE LAND REQUIRED FOR THE DEVELOPMENT.	23
3.	LAND USAGE PATTERNS IN THE VICINITY OF THE AIRPORT SHOULD BE CONTROLLED SO THAT ENVIRONMENTAL PROBLEMS ASSOCIATED WITH AIRPORT DEVELOPMENT AND USE DO NOT ARISE.	24
4.	SUBJECT TO RECOMMENDATION NO. 2 THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	36
5.	THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS $7.5 MILLION.	37

(C.R. KELLY)
Chairman.

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

12 October 1972.