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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

R E P O R T

relating to the proposed

SITE PREPARATION FOR THE NORTH-WEST BUILDING AREA

at

SYDNEY (KINGSFORD-SMITH) AIRPORT

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

SITE PREPARATION FOR THE NORTH-WEST BUILDING AREA  
AT SYDNEY (KINGSFORD-SMITH) AIRPORT

R E P O R T

By resolution on 18th May, 1965, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and separate report on each work, the following proposed works at Sydney (Kingsford-Smith) Airport:-

- (a) site preparation of the north-west building area, and
- (b) provision of buildings and services for the international terminal complex and associated aircraft pavements in the north-west building area.

The Committee have the honour to report as follows on the first of these references.

GENERAL

1. The work in the present reference, and the construction of the international terminal complex and associated works, are two of a number of major developmental works designed to increase the capacity of Sydney airport to efficiently handle a growing volume of air traffic. Other phases of the work include -

- (a) the southern extension of the north-south runway;
- (b) construction of a new operations building and control tower; and
- (c) provision of an improved instrument landing system on the north-south runway.

2. The southern extension of the north-south runway was investigated by the Committee in 1963. In a report presented to the House of Representatives on 22nd August, 1963 we recommended that the runway be extended to 8,500 feet instead of the 7,900 feet proposed. This recommendation was accepted and construction of the extension is now in progress.

2.

3. The other projects have now been referred to the Committee including the work which is the subject of this report. We will be reporting separately on the other references.

#### THE PRESENT REFERENCE

4. The reference on which the Committee is now reporting is the first stage of a proposal to provide Sydney airport with new passenger terminal buildings for both domestic and international operations, and the associated aprons, taxiways and engineering services. It deals with the site preparation of the area and includes excavation, sand filling, surcharging and major drainage works.

5. A report to be tabled shortly will deal with the second stage which is the provision of buildings, roadways and engineering services for the international terminal, adjacent aprons and taxiways. The third phase, the construction of the domestic terminal facilities, is, at this point of time, only in the broad planning stages.

6. Work on the first two phases has been divided as the construction arrangements require completion of the filling and surcharging before the building and other works are commenced. It is proposed to surcharge the area on which the buildings, aprons and taxiway pavements will be constructed, over a period of up to 18 months to achieve the required consolidation, while the design and documentation of the terminal and pavements are being finalised.

#### COMMITTEE'S INVESTIGATION

7. The Committee received submissions and drawings relating to the present reference from the Departments of Works and Civil Aviation. We inspected the work being carried out on the runway extension, the facilities at the airport and the area generally. Evidence was taken from representatives of the Departments of Works and Civil Aviation, domestic and international airline operators, New South Wales government departments, local government authorities and the Royal Australian Institute of Architects. Hearings were held in Canberra, Sydney and Melbourne.

SYDNEY AIRPORT

8. One of the main features of Sydney airport is that the site is confined by both natural and man-made features. The area is bounded on the south by Botany Bay, on the north and west by Cooks River and Alexandra Canal, on the north-east by a goods railway line and industrial and residential areas, and on the south-east by a highway, the Mill Stream and built up areas. The total area within the airport boundary, apart from reclamation in Botany Bay, is 1,420 acres.
9. Development of Sydney airport since the early post-war years has involved a number of major works including the diversion of Cooks River and the present installations represent a major public investment. The airport is located close to the city of Sydney but being in a built up area it inconveniences people living nearby, particularly through the noise generated by jet aircraft.
10. The aircraft pavements at Sydney airport comprise the 16/34 and 07/25 runways and the associated taxiways. The 07/25 runway is 8,300 feet long and is orientated roughly east and west. The 16/34 pavement which runs north and south, is at present 5,500 feet long and is being extended to 8,500 feet at the southern end by reclamation in Botany Bay.
11. Almost all of the major ground facilities at Sydney airport are located in the area north-east of the junction of the runway system. These facilities include the domestic and international terminals, engineering, maintenance and other ground installations of airlines operating out of Sydney airport and Department of Civil Aviation activities. A large portion of the area is occupied by Qantas Empire Airways Limited which operates its overseas services from Sydney and therefore uses the airport as its base for major engineering and maintenance purposes.
12. Major airport facilities not located in the north-east sector are the long range radar station in the south-east and the fire station and training school in the north-west.

For Senator Prowse -

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

Site Preparation for the North-West Building Area  
at Sydney (Kingsford-Smith) Airport.

23rd September, 1965.

NEED FOR NEW TERMINAL BUILDINGS

13. The rapid growth of air traffic at Sydney has, from time to time, required the expansion of the facilities in the north-east area but the time is approaching when major reconstruction of the passenger terminal facilities is needed.

14. The following table shows the growth in passenger traffic in and out of Sydney airport between 1952 and 1964 and the forecasts for 1970 and 1980

<u>Year</u>	<u>International</u>	<u>Domestic</u>	<u>Total</u>
1952	45,000	805,702	850,702
1953	49,900	833,661	883,561
1954	68,900	933,608	1,002,508
1955	96,200	1,007,926	1,104,126
1956	123,700	1,094,450	1,218,150
1957	126,200	1,185,746	1,311,946
1958	105,600	1,123,816	1,229,416
1959	113,400	1,304,465	1,417,865
1960	162,528	1,462,335	1,624,863
1961	196,997	1,475,918	1,672,915
1962	228,000	1,498,865	1,726,865
1963	271,124	1,665,631	1,936,755
1964	333,090	1,954,366	2,287,456
1970	600,000	2,500,000	3,100,000
1980	1,400,000	3,600,000	5,000,000

15. Between 1952 and 1962, international traffic increased at an average rate of 17.7 per cent per annum. The 1963 and 1964 figures rose 17.5 per cent and 23 per cent respectively over the figures for the previous years. The calculations for 1970 and 1980 make allowance for the opening in 1969 of the international airport at Melbourne (Tullamarine) Airport.

16. The International Terminal The existing international terminal building is a temporary structure which developed, as traffic demanded, from an original assembly of wartime timber huts. It works reasonably efficiently except during peak periods when it is too small to cope with the traffic it has to handle and the system of passenger flow through the building breaks down. Owing to the recent rapid increases in international traffic, and with the expectation of further growth, it has been necessary to plan for an extension of the present

facilities and £200,000 has been provided for this purpose in the 1965/1966 Civil Works Programme. With the provision of the additional facilities, the terminal should be able to meet demands until the proposed permanent terminal is completed about 1969.

17. Existing Domestic Terminals The terminal facilities of the domestic airlines are separated from each other and from the international terminal. They are adequate for current requirements and in the case of Ansett-A.N.A. we were told that the existing facilities will continue to meet needs to about 1970 without major alteration or extension. Trans-Australia Airlines, on the other hand, is not as well off and as there has not yet been a decision on the building of the new domestic terminals, the company will be compelled to spend over £700,000 in the next five years on major improvements to the terminal and ancillary facilities and nearby aprons.

18. Redevelopment of Terminal Facilities The build up of pressures which has followed the rapid growth of passenger traffic, is more apparent in passenger terminal facilities than in other ground facilities. Furthermore, as all passenger terminals are, to one degree or another, incapable of satisfactory expansion to meet the ultimate capacity of the airport, the Committee agreed that there is an urgent need to completely redevelop the passenger terminal facilities at Sydney Airport.

19. New Domestic Terminals We were told that the Government has not yet taken a decision on the point in time when the domestic terminals will be redeveloped in the north-west or whether the cost of this work will be borne by the operator or by the Commonwealth as in the case of the new Melbourne (Tullamarine) and most other airports. This indecision is the cause of concern to Trans-Australia Airlines which would make substantial savings in the £700,000 expansion programme if it is decided to build new domestic terminals concurrently with, or shortly after, the international terminal.



20. Due to the present state of the existing facilities, and as they will become inadequate unless major costly and uneconomic extensions are made over the next five years, the Committee concluded that there is a need to commence construction of the new domestic terminals concurrently with the international terminal. There is also the fact that until the new domestic terminals are built in the north-west, airline passengers transferring in Sydney from an international to a domestic airline, or vice versa, will be faced with the problem of the separation of the respective terminals and the great inconvenience in moving from one terminal to the other.

SITE FOR REDEVELOPMENT OF PASSENGER TERMINAL FACILITIES

21. As the site at Sydney airport is strictly confined, it is essential to make the best possible use of the available land. The extremely high cost of resuming land or of reclaiming it from Botany Bay makes this necessary.

22. In determining the site of the new terminal buildings, three possibilities were considered. These were to locate the buildings -

- in the existing building area in the north-east;
- near the original mouth of Cooks River in the south-east; or
- in a low lying area near the junction of Cooks River and the Alexandra Canal in the north-west.

The possibilities of the various sites were considered in relation to the following factors -

- the areas available for terminal building activities, airline maintenance activities and other purposes;
- the areas available for the construction of parallel runways and the best location for them;
- the location of the terminals in relation to the runway system and the movement of aircraft;
- aircraft traffic between the maintenance area and the terminals;

- public access to the terminals and the aircraft maintenance area;
- the effect of the location of the terminals and the aircraft maintenance area on facilities adjacent to the airport;
- noise;
- cost.

23. North-East Area The area available for development of terminal and airline maintenance facilities in the north-east, is 250 acres. This includes not only the land already in use, but the whole area, in this sector, within the present airport boundary. Some 110 acres is already occupied or is allocated for use by Qantas Empire Airways Limited. Thus, should the terminals be located here, only 140 acres would be available for the international and domestic terminal facilities and domestic airline maintenance. About 90 acres would be required for aprons, leaving only 50 acres for activities behind the building lines. We considered that this would be inadequate.

24. A further deficiency of the north-east site would be the practical difficulty of building the new terminals whilst the existing terminals and engineering and other facilities continue to function in the same area. The alternative sites for the new terminals in this area would each necessitate the demolition of some existing buildings and the problem of continuing to operate the airport during major rebuilding, would be most complex.

25. South-East Area The second alternative was to locate the terminal buildings in the south-east, leaving the whole of the north-east available for aircraft maintenance and other ground activities. The area in the south-east, suitable for terminal development, is 80 acres which is also insufficient for a terminal complex. Additional land would thus be required involving reclamation of Botany Bay. The complicated nature of the site, caused partly by General Holmes Drive, would make it necessary to have about 275 acres in order to provide facilities comparable to those which could be established on the recommended north-west site. Furthermore, the development of

terminals in the south-east would involve heavy costs to strengthen the main outfall sewer, on road works and to relocate the long range radar station.

26. North-West Area The third alternative considered was to locate the terminal buildings in the north-west where some 210 acres would be available. The whole of the north-east area would, under this siting arrangement, remain available for aircraft maintenance and other ground activities. The land available in this scheme is not an optimum size but it would provide sufficient aircraft parking positions to match the expected capacity of the ultimate runway system with an area of about 80 acres behind the building line for car parking and other requirements. Some 5,000 cars could be parked at ground level.

27. Parallel Runways The two existing runways at the airport are expected to cope with traffic until about 1975. It is planned to then construct parallel runways about 1,000 feet from each of the existing runways. If the terminal is built in the north-west, the parallel runways can be constructed east of the present north-south runway and south of the existing east-west runway. They can be constructed in these locations without interfering with existing facilities except the present T.A.A. passenger terminal. It is expected, however, that the domestic terminals will be rebuilt in the north-west before the parallel runways are required.

28. On the other hand, should the terminal be built in the south-east, the parallel runways would need to be constructed on the western side of the existing north-south runway and on the northern side of the existing east-west runway. The first would require a considerably longer reclamation into Botany Bay than if built on the eastern side. It would also bring the edge of the reclamation within 800 feet of the mouth of Cooks River and it was suggested to the Committee that this may not be favoured by the New South Wales government. The parallel east-west runway in this case would also result in problems. It would involve demolition of a large portion of the existing building area and the

remaining area would be so reduced in size that it may not accommodate satisfactorily the maintenance areas of the overseas and domestic operators. Some of these activities would then need to be moved to the north-west involving a costly division of maintenance activities.

29. Aircraft Movements When the north-south runway is extended into Botany Bay it is expected that two-thirds of aircraft operations at the airport will take place on this runway with most of these from north to south. The remaining movements will be equally divided in direction on the east-west runway. In relation to the main runway, it is thought that the terminal would be better located in the north-west. A study of aircraft taxiing showed that times and distances are shorter with a terminal complex in the north-west. This is particularly so in the case of the domestic operators whose aircraft taxiing costs at the airport could be as much as £500,000 per annum less if the domestic terminals are located in the north-west area than if they were sited in the south-east.

30. Maintenance Area The capacity of a runway for landing and take-off purposes is reduced each time a taxiing aircraft moves across it. A terminal in the south-east area would thus be a little better placed than one in the north-west in relation to movements between the maintenance area and the terminal. The principal movement of domestic aircraft from the maintenance area is, however, either early in the morning or late at night when the runway is generally not being used to capacity. As we were told that occupation of the runway by surface traffic would not be significant in relation to the capacity of the runway system, the Committee concluded that the disadvantage of reduced runway capacity is outweighed by the merits of siting the terminal buildings in the north-west area.

31. Access to the Site In the long term it is proposed that surface access to the terminal building area will be by road transport only. The proposed means of access are dealt with in detail later in this report. The Committee believe that the system of roads being developed for Sydney will adequately meet the needs of the terminal buildings if sited in the north-west area. In the vicinity of the airport the system is designed to cater for greatest traffic densities

west of the airport and it would thus serve a terminal in the north-west somewhat better than if it were built on the eastern side.

32. We took evidence on, and considered at some length, the question of a rail link with the airport. The intention of the State government is to proceed with the extension of the Sydney suburban railway system through the eastern suburbs terminating in the area immediately east of the airport. This link could be extended to serve the north-east area but there would be difficulties in an extension to the north-west. A link to the north-east area through the eastern suburbs system could be economical, serving as it would the considerable work force employed in the north-east area and in nearby industrial areas.

33. Apart from the physical problem of extending the railway to the north-west area, we were told that it was doubtful whether such a link would be warranted economically because of the limited area served by the eastern suburbs railway and the spasmodic nature of the likely patronage. There would also be problems in providing an effective rail service through the Tempe station west of the airport to facilities in the north-west area.

34. Effect on Facilities Adjacent to Airport It has already been mentioned that the construction of terminal buildings in the south-east would require the construction of the parallel north-south runway west of the existing runway. The reclamation of Botany Bay required for the runway would be likely to create problems with the flow of Cooks River. Similarly, the reclamation required for terminal buildings in the south-east would possibly have an adverse effect on the Mill Stream which discharges into Botany Bay in this area.

35. Noise A terminal in the north-west would bring aircraft on the terminal apron to within about 3,000 feet of residential areas in the Marrickville and Rockdale municipalities. With a terminal in the south-east, the aircraft would be about the same distance from residential areas in Botany. In both cases there would be some shielding of the aircraft from the community by the building itself.

36. With the terminal in the north-west, the secondary east-west runway would have its take-off path to the east, largely over open areas. In the south-east terminal scheme, the easterly take-off would be over the residential areas of Kingsford and Mascot. There is thus some advantage from a noise viewpoint in siting the terminals in the north-west.

37. Costs The cost of development of the terminals in the south-east area would be of the order of £12.25 million. The cost of the same facilities in the north-west would be about £10.25 million. The Committee were told that this difference in cost would rise to £10 to £15 million in favour of the north-west site when the cost of developing the domestic terminals and maintenance areas and of providing the future parallel runways, is considered. The cost component for foundations in each area would be comparable.

38. For the reasons stated the Committee recommend that the redevelopment of passenger terminal facilities take place in the north-west area.

#### PUBLIC ROAD ACCESS TO THE NORTH-WEST TERMINAL AREA

39. The terminal buildings are just over six miles by road from the centre of the city through Bourke and O'Riordan Streets. This route passes through areas of heavy traffic and the travelling time is relatively slow. The State government proposes to develop a faster route from the city using Dowling Street and Wentworth Avenue connecting to the airport through General Holmes Drive and Joyce Drive. By this route the distance from the city would be  $7\frac{1}{4}$  miles, the extra mile of access being more than offset by the faster flow of traffic. The latter means of access will become the main route between the city and the north-east area and will serve the domestic terminals until they are moved to the north-west, and the airline maintenance areas.

40. Access to the north-west area from the eastern side of the airport will, in the first place, be by means of a road more or less following the existing road north of the Qantas area and skirting the northern end of the north-south runway. It is proposed that this route will connect with the city through the underpass beneath Botany

goods railway at Amelia Street, and O'Riordan and Bourke Streets. The distance to the city by this route would be  $7\frac{1}{2}$  miles. Using the faster route through Dowling Street and Wentworth Avenue, it would be  $8\frac{1}{2}$  miles.

41. To provide access from the existing terminals to the north-west area within the airport boundary, a short connecting road is to be built from Ross-Smith Avenue in the existing terminal area to join the road mentioned in the previous paragraph on the western side of the Amelia Street underpass.

42. The State government plans, as part of the overall development of Sydney's road system, to build a main or county road from General Holmes Drive to the Princes Highway south-west of the airport, to be known as the Kyeemagh/Arncliffe access. The plan includes a connecting road from this to the proposed terminal area by way of a bridge over Cooks River. The distance from the city to the airport terminal using the fast traffic route through Dowling Street, Wentworth Avenue, General Holmes Drive and the Kyeemagh/Arncliffe access, would be  $10\frac{1}{2}$  miles. The bridging of Cooks River would open up another access between the terminal and the city by way of Princes Highway, the distance to the city being 7 miles. The present intention is that this road will be available in 1970 although discussions are taking place with a view to advancing this date to 1969 to coincide with the completion of the international terminal.

43. It is possible that the Kyeemagh/Arncliffe route will become the main access to the terminal area by the time the international building is completed, with supplementary access from the Princes Highway. In this case the road linking the existing and future terminal areas would remain a public road used primarily for access between the two areas and the airline maintenance area.

44. Ultimately the principal road access between the city and the airport will be by means of a southern expressway which the State government plans to build between the western boundary of the airport

and Princes Highway. It is proposed that this will be a limited access road leading into the heart of the city. Proposals for the expressway are only in the broad planning stage but airport traffic requirements are being recognised. On present timing the expressway will not be available until about 10 years after the international terminal is completed but we think that the need for this route as an alternative access to the airport may become apparent before this time.

#### ULTIMATE DEVELOPMENT OF THE NORTH-WEST AREA

45. It is planned in the full development of the north-west area to have international and domestic terminals and other facilities with provision for 70 aircraft parking positions. Traffic forecasts indicate that 20 of these positions will be needed for international aircraft and 50 for domestic aircraft. The terminal development plans are, however, flexible to the extent that if some future variation of this ratio is necessary, additional positions could be provided for international operations to give any combination up to 30 international and 40 domestic positions.

46. The 70 aircraft parking positions are related to the capacity of the runway system to handle aircraft movements. The positions, with those in the freight area being developed in the north-east part of the airport and other pavement available there for itinerants, are expected to match the ultimate runway capacity.

#### FUTURE AIRPORT DEVELOPMENT

47. Ground Facilities It was clear to the Committee that the confined nature of the airport will continue to hinder the redevelopment which must necessarily occur from time to time if Sydney is to retain its place as a key airport in the international and domestic networks. The very nature of the site and lack of readily available land will also cause separate problems with each major redevelopment work.

48. Completion of the terminal buildings in the north-west area and the parallel runway system, will preclude any major development at the airport in the future other than in the north-east area. After the terminal buildings are relocated, the north-east area will be occupied mainly by airline maintenance and associated facilities and probably the freight



area. Subsequent development could only take place by seriously crowding these facilities or acquiring further land adjacent. The Committee believe that this problem is of sufficient importance to warrant a continuing critical review of the future land requirements of the airport.

49. Runway Capacity The maximum capacity of Sydney Airport is expected to be reached some time after 1980, by which time the parallel runways will have been completed and operating. When this point is reached it will be necessary to develop a second major airport facility.

50. The Committee were told of the investigations which have been carried out over an extended period to find an alternative site for the present airport and of the failure to find a satisfactory area. It thus became clear that there will be problems in finding a site for a second airport. We recommend that steps should be taken to identify, as soon as possible, the site for the development of Sydney's second major airport.

#### THE PROPOSED WORK

51. Site Conditions The area in which the proposed work is to be carried out is bounded by the Cooks River diversion, the Alexandra Canal, the north-south runway and the east-west taxiway. Originally, Cooks River flowed through the site but it was diverted to the existing course for development of the present airfield. Parts of the original Cooks River adjacent to the north-south runway and the east-west taxiway and some other areas, have been filled so that about two thirds of the area is now six feet above the original tidal swamp. Part of the swamp still remains in the north-west portion of the site. A small length of the original Cooks River and a tributary stream have never been filled.

52. Adjacent to the east-west taxiway is a ponding area into which stormwater from the present terminal area is discharged. This is drained at low tide.

53. Since 1955 much of the low lying north-west area at the airport has been reclaimed, at no cost to the Commonwealth, by filling with fly-ash from the New South Wales electricity authority's power houses. When this was arranged, it was known that some of the fly-ash would need to be moved later, particularly in the areas which would be subject to heavy building or aircraft loads.

54. It will now be necessary to remove the fly-ash from the areas to be used by the buildings and possibly from those to be used as aircraft pavements. The fly-ash is to be disposed of in other low lying areas which will not be subject to heavy loadings including an area in the south-east of the airport and as filling in the area of the glide path equipment installation on the north-south runway. The fly-ash will remain in the areas behind the building line to be used as car parks.

55. Sub-Surface Conditions Bores show that the sub-surface conditions are variable and apart from the fill materials of sand and fly-ash, the sub-soil is a typical estuarine deposit of layers of clean sand, sand with organic matter, soft organic clays and muds, and overlying inorganic clays. The layers are not uniform in thickness, nor are they regular in occurrence.

56. The sub-soil materials which affect the proposed development are the muds and the fly-ash filling. The muds will consolidate when the area is filled and without precautions this would lead to differential settlements over paved areas. The fly-ash has generally been placed in position by dumping or sluicing and it is in an uncompacted and saturated condition of low strength.

57. Site Filling The proposed works include filling the sites of the terminal building, aircraft pavements including aprons and taxiways, access roads, car parks and adjoining areas. The level of the filling will be such as to allow the area to be drained by a normal stormwater drainage system. It will vary in depth from 7 to 21 feet along the building line and from 4 to 6 feet at the outer edge of the apron. Filling for the access roads is to be placed to a level consistent with drainage and pavement requirements. It is proposed that the 2 million cubic yards of filling required will be obtained by pumping sand from Botany Bay.

58. Before the filling is placed the following preparatory work will be carried out:-

- (i) grass and organic matter will be removed from the area and stock piled for subsequent use.

- (ii) mud removed from the unfilled portion of the original Cooks River and the ponding area will be stock piled for top dressing of unpaved areas.
- (iii) concrete debris from the unfilled portion of the original Cooks River will be removed and used in a wall on the bank of the present Cooks River to close the existing backwater.
- (iv) the fly-ash will be excavated or treated in situ where it occurs on the site of the terminal building and aircraft pavements. Studies are still being carried out to determine the most economical method of treatment. The estimates are based on the complete removal of the fly-ash to another location on the airport.

59. Surcharging The most economical method of minimising settlement where the mud occurs, is to surcharge or load the areas to induce the anticipated settlement before construction takes place.

60. The expected settlement varies over the site being generally about six inches but ranging up to about two feet. Since the sub-soil conditions are so variable it is proposed to surcharge the pavement areas with six feet of sand and the northern part of the terminal site with ten feet of sand. The surcharge period is expected to be 18 months but other works will proceed as soon as settlement under the surcharge is completed. The southern half of the terminal building site and the car park will not require surcharging.

61. On completion of the surcharging, sand not required as filling will be removed and used in other areas which will require filling and surcharging in the future. About one million cubic yards of sand will be required for surcharging, and of this about 900,000 cubic yards will be re-used, generally in the area north of the proposed apron. The remaining 100,000 cubic yards will make up for the consolidation in the underlying layers.

62. The estimates allow for protection of the sand fill during the surcharge period to avoid the nuisance of wind blown sand. Allowance has also been made for the subsequent fertilising and grassing of the areas not to be paved.

63. Elimination of Pond Area The proposed work provides for the elimination of the ponding area into which stormwater from the existing building area is discharged. To avoid flooding in the north-east it will be necessary to extend the drainage line to a new outlet at Cooks River. The existing invert level of the drainage line under the runway is about one foot below mean sea level and it will therefore be necessary to pump the discharge.

64. The Committee recommends that the work proposed in this reference be carried out.

#### SOURCE OF FILLING MATERIAL

65. The sand being used as filling material in the reclamation for the extension of the north-south runway is being drawn from two borrow areas, respectively south-east and south-west, and close to the area in Botany Bay being reclaimed. The area to the south-west is about 2000 feet square and at the closest point is about 3000 feet from the beach front at Kyeemagh. The area from which fill for the work in the current reference is to be drawn is an area north of the area already mentioned and roughly triangular in shape. The north-west boundary of the latter area follows the line of the beach front, being generally 800 to 1000 feet from it.

66. During the period over which the Committee was taking evidence, severe seasonal storms occurred in Sydney, and in the Kyeemagh area severe erosion occurred on the beach front adjacent to the present and proposed borrow area. In this light we sought advice from the State Maritime Services Board and the Commonwealth Department of Works on the cause of the erosion and the likely effects of further dredging.

67. We were informed that there is a direct relationship between the depth of the water and wave height and that the excavations would cause higher waves than had been normal. However, the manner in which the waves would distribute themselves would depend to a large extent on the shape and contours of the borrow area, the direction of winds and the effect of storm action.

68. As there had been erosion in the area on occasions before the extension of the runway commenced and this had been followed by a

return to a state of equilibrium over a period, it seemed possible that the erosion which occurred recently may have taken place even if the excavation had not been carried out. There was no conclusive evidence that the excavation had caused or had directly contributed to the erosion.

69. The Committee noted that there has been close co-operation between the Commonwealth and the State in determining the extent and contours of the present and future borrow areas and that the State had no objection, even after the recent storms, to the continued excavation of sand as agreed previously.

70. The Committee enquired about alternative sources of filling material and were told that at the present time the cost factor favoured sand from Botany Bay by a substantial margin. We believe that the Department of Works should continue to investigate alternative sources of filling material of comparative cost to sand from Botany Bay. If, however, no such source becomes available during the course of the present work, we recommend that the Commonwealth and the New South Wales governments keep the extent and the shape of the borrow areas under constant review to ensure that they do not give rise to erosion on the nearby beach front.

#### CONSTRUCTION PROGRAMME

71. If an early approval is given for the work to proceed, drawings and tender documents can be finalised and tenders invited for the majority of the work before the end of 1965. The work will be finished progressively, depending in part on the rate at which surcharging is completed, between nine months and two years after the contract is signed.

#### COSTS

72. The estimated cost of the proposals referred to the Committee is £2,357,000 made up as follows:

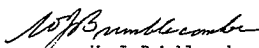
Site preparation	£460,000
Sand filling	£850,000
Sand surcharge and removal	£785,000
Protection of sand fill	£42,000
Grassing	£50,000
Drainage	£170,000
	<u>£2,357,000</u>

73. These figures were based on calculations made in 1964. The Committee were told that due to increases in cost since that time the proposed works are now expected to cost £2,600,000 or an increase of 10% over the 1964 estimates.

RECOMMENDATIONS AND CONCLUSIONS

74. 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.

	<u>Paragraph</u>
1. THERE IS AN URGENT NEED TO COMPLETELY REDEVELOP THE PASSENGER TERMINAL FACILITIES AT SYDNEY AIRPORT.	18
2. THERE IS A NEED TO COMMENCE CONSTRUCTION OF THE NEW DOMESTIC TERMINALS CONCURRENTLY WITH THE INTERNATIONAL TERMINAL.	20
3. THE COMMITTEE RECOMMEND THAT THE REDEVELOPMENT OF PASSENGER TERMINAL FACILITIES TAKE PLACE IN THE NORTH-WEST AREA.	38
4. WE RECOMMEND THAT STEPS BE TAKEN TO IDENTIFY, AS SOON AS POSSIBLE, THE SITE FOR THE DEVELOPMENT OF SYDNEY'S SECOND MAJOR AIRPORT.	50
5. THE COMMITTEE RECOMMEND THAT THE WORK PROPOSED IN THIS REFERENCE BE CARRIED OUT.	64
6. THE DEPARTMENT OF WORKS SHOULD CONTINUE TO INVESTIGATE ALTERNATIVE SOURCES OF FILLING MATERIAL OF COMPARATIVE COST TO SAND FROM BOTANY BAY.	70
7. THE COMMONWEALTH AND NEW SOUTH WALES STATE GOVERNMENTS SHOULD KEEP THE EXTENT AND SHAPE OF BORROW AREAS UNDER REVIEW TO ENSURE THAT THEY DO NOT GIVE RISE TO EROSION ON THE NEARBY BEACH FRONT.	70
8. THE ESTIMATED COST OF THE PROPOSED WORK IS £2,600,000.	73

  
 W. J. Brimblecombe  
 Chairman

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

21st September, 1965.