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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

REPORT

relating to the

**SANDFILLING OF INTERNATIONAL TERMINAL,
OPERATIONAL AND COMMERCIAL SITES, BRISBANE AIRPORT**

(Twenty-fifth Report of 1989)

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MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS

(Twenty-ninth Committee)

Mr Colin Hollis MP (Chairman)

Mr Percival Clarence Millar MP (Vice-Chairman)

Senate

Senator Bryant Robert Burns

Senator John Robert Devereux

Senator Dr Glenister Sheil

House of Representatives

Mr George Gear MP

Mr Robert George Halverson OBE MP

Mr John Graham Mountford MP

Mr William Leonard Taylor MP *

* Appointed on 29.9.88 following resignation of

Mr Maxwell Arthur Burr MP

Inquiry Staff:

Mr Peter Roberts (Secretary)

Mrs Denise Denahy (Assistant Secretary)

Mrs Helen Hutchins (Secretarial Support)

Mrs Judith Jurek (Secretarial Support)

EXTRACT FROM VOTES AND PROCEEDINGS OF
THE HOUSE OF REPRESENTATIVES

NO. 124 DATED MONDAY 29 MAY 1989

- 14 PUBLIC WORKS COMMITTEE - REFERENCE OF WORK - SANDFILLING OF INTERNATIONAL TERMINAL, OPERATIONAL AND COMMERCIAL SITES, BRISBANE AIRPORT: Mr West (Minister for Administrative Services), pursuant to notice, moved - That, in accordance with the provisions of the Public Works Committee Act 1969, the following proposed work be referred to the Parliamentary Standing Committee on Public Works for consideration and report: Sandfilling of international terminal, operational and commercial sites, Brisbane airport.

Mr West presented plans in connection with the proposed work.

Debate ensued.

Question - put and passed.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

SANDFILLING OF INTERNATIONAL TERMINAL, OPERATIONAL AND COMMERCIAL SITES, BRISBANE AIRPORT

By resolution on 29 May 1989 the House of Representatives referred to the Parliamentary Standing Committee on Public Works for consideration and report the proposal for the sandfilling of international terminal, operational and commercial sites, Brisbane airport.

THE REFERENCE

1. This proposal by the Federal Airports Corporation is to prepare for further developments at Brisbane airport, including a new international terminal, aviation industry requirements and commercially lettable sites. The proposed development sites are located on low-level salt marsh or on open grassed land. The underlying sub-surface soils comprise 24-30m of soft saturated soils. As was the case with preparations for the new Brisbane airport, it is necessary that, prior to any facilities being constructed, the area be filled and surcharged with sand to avoid flooding and minimise differential settlement of the saturated subsoil.

2. The estimated cost of the proposal when referred to the Committee was \$44M at January 1989 prices.

THE COMMITTEE'S INVESTIGATION

3. The Committee received a written submission from the Federal Airports Corporation (FAC) and took evidence from its representatives at public hearings in Brisbane on 25 July and

11 August 1989. The Committee also received submissions and took evidence from the following:

- . Australian Construction Services
- . Australian Federation of Air Pilots
- . Mr D M Cameron, MP
- . Civil Air Operations Officers Association
- . Civil Aviation Authority
- . Commonwealth Department of Transport and Communications
- . Mrs E E Darling, MP
- . The Honourable B C Humphries, MP
- . Mr D F Jull, MP
- . Nudgee Beach Progress Association
- . Office of Economic Development for the City of Brisbane Limited
- . People Against Aircraft Noise (Camp Hill-Coorparoo branch)
- . Qantas Airways Limited
- . Queensland Government
- . Mr P Rodukoff, private citizen
- . Mr C Sciacca, MP.

4. Written material was also provided by the following and is incorporated in the transcript of evidence:

- . Australian Heritage Commission
- . Australian Tourism Industry Association Limited
- . Ms Anne Beasley, Resident of Nudgee Beach & Mr Brian Hutchinson, Resident of Shorncliffe
- . Mr T Burns, MP
- . Nudgee Beach Field Study Centre
- . Queensland Commercial Fishermens' Organisation
- . Queensland Tourist & Travel Corporation.

5. The Committee carried out detailed inspections of Brisbane airport and environs on 25 July and 10 August 1989. These

included the proposed site, the existing international terminal, and an aerial inspection which included the airport, the site for the sand dredging at Middle Banks and a simulated instrument approach to the airport. The Committee also travelled to suburbs south of the city to observe aircraft on landing approach and to experience noise levels.

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

BACKGROUND

7. The FAC is a Government Business Enterprise established by, and incorporated, under the Federal Airports Corporation Act 1986.

8. In January 1988 the FAC assumed responsibility for Australia's federal airports. It owns, manages and develops 23 airports throughout Australia and aims to provide an ever-improving service to the travelling public and to the aviation industry.

9. Brisbane is the Corporation's key airport in Queensland and was commissioned in March 1988. It is Australia's newest airport and replaces the old Eagle Farm facility.

10. The phase 1 development (see Figure 1) of Brisbane airport included:

- . clearing of the site
- . construction of a floodway to divert flood waters around the airport
- . filling of the site with 15M cubic metres of sand dredged from Moreton Bay
- . provision of major drainage systems
- . construction of two run-ways and associated taxi ways

- . domestic terminal
- . control tower
- . operations building
- . fire stations
- . airport maintenance complex
- . other airport buildings.

11. Domestic and general aviation services now operate from the new airport site. However, the international terminal complex (ITC) has remained at its existing site but utilises the new run-way system.

12. Strong growth in international aviation passenger activity has resulted in pressure for additional aviation infrastructure at Brisbane, including, a new international terminal, operational and commercial facilities.

13. This is the sixth inquiry the Committee has conducted into the redevelopment of the Brisbane Airport since 1979. The previous inquiries were:

- . 10/1979 BRISBANE - Redevelopment of Brisbane International Airport - Initial Works of Phase 1, Queensland (PP 343/1979)
- . 6/1981 BRISBANE - Extensions to International Terminal Facilities at Brisbane Airport, Queensland (PP 154/1981)
- . 9/1981 BRISBANE - Redevelopment of Brisbane International Airport - Further Dredging and Reclamation (PP/272/1981)
- . 6/1982 BRISBANE - Redevelopment of Brisbane International Airport - Remainder of Works of Phase 1 (Initial) (PP 245/1982)

- 7/1982 BRISBANE - Redevelopment of Brisbane
International Airport - Remainder of Works
Phase 1 (Final) (PP 454/1982).

THE NEED

14. In November 1979 the Committee in its recommendations and conclusions agreed that the proposed concept for the ultimate development of Brisbane airport was satisfactory. This was again reaffirmed in October 1981 when it concluded that the proposed master plan concept for the ultimate redevelopment was broadly satisfactory. From this the airport master plan was developed by the Joint Government Co-ordinating Committee on Brisbane Airport and was published in March 1983.
15. After the commissioning of the new Brisbane airport on 20 March 1988 the FAC took action to review its capacity in terms of the infrastructure required to support international traffic both in the short and long term. The airport capacity review determined that serious constraints prevailed on the capacity of the existing ITC to effectively cope, in the short term, with the continued buoyant growth being experienced in international traffic at Brisbane. It further supported the need to initiate action to undertake immediate limited expansion of the facility, pending the development of longer term planning strategies.
16. The longer term planning strategies have been based upon the provisions of the airport master plan and from this the site for future international terminal facilities was selected. The FAC Board has agreed with the proposal submitted and has approved the expenditure on this project subject to Public Works Committee recommendation and Parliamentary approval.
17. FAC advised the Committee that developments, either under consideration or proposed for Brisbane airport over the next

decade, require the availability of sites for aviation industry developments, commercial developments and new international terminal facilities.

18. The Brisbane airport site comprises low level salt marsh with soft underlying soils which require special and timely site development works. These site works involve the filling and surcharging of sites followed by a twelve month settlement period before facility construction can commence.

19. The long lead time for site preparation has a significant bearing on the FAC's ability to expedite the provision of facilities. Therefore, its Board has approved this proposal for reference to the Committee so that sites for the development of a new international terminal and operational and commercial facilities can be prepared. The international terminal is likely to be the first of these developments. The FAC advised the Committee that it was planned, subject to necessary approvals, to have the new ITC operational in 1994.

20. The existing ITC was constructed in 1975 as an interim development with a ten year design life, and was designed in a form that could readily be converted for other uses by the aviation industry such as a freight facility.

21. The existing complex was developed as an expedient solution to Brisbane's international terminal needs. The site chosen was the best available within the surrounding flood plain at that time.

22. The ITC was expanded in 1982 and 1987 and is again being upgraded. The current upgrading involves mainly improvements to passenger and car parking facilities and are designed to keep the terminal functioning until the earliest date that a new facility can be provided. Current works are necessarily limited by constraints of the existing site but represent the most

economical improvements before a new terminal can be provided on the master planned site.

23. Aviation and tourism authorities forecast a range of possible international passenger growth outcomes for Brisbane. The FAC's strategic planning forecasts prepared by British Airport Services, estimated international arriving and departing passenger numbers as follows:

- . 1990 - 1.25M
- . 1991 - 1.35M
- . 1992 - 1.43M.

24. The 1988 throughput figure of 1.2M represented a growth over the previous year of 46%.

25. For previous years the growth rates for arriving and departing passengers were:

- . 1982 - 12%
- . 1983 - 0.7%
- . 1984 - 6.8%
- . 1985 - 11.1%
- . 1986 - 14.5%
- . 1987 - 19.2%.

26. The FAC believes that whatever the growth outcome the existing ITC will inevitably become strained again in its current location. Existing schedule control rules, designed to limit aircraft and passenger loads on the facility, would have to become more restrictive. This outcome would create difficulties for airlines wishing to schedule stop-overs in Brisbane, but more importantly, this would decrease service levels to passengers. These same airlines are already having to cope with schedule restrictions at connecting destinations such as Sydney and Melbourne.

27. The FAC's development strategy has been to initiate site preparation and to progress the design development processes for the new terminal complex. It has sought submissions from prospective development consortia to determine in what form the new ITC could proceed.

28. By taking this approach the FAC is able to preserve the option to fast track a new terminal and achieve the earliest possible commissioning date should high growth be sustained.

29. In regard to commercial development the FAC is currently negotiating property leases with major aviation tenants for the development of aircraft orientated industries adjacent to the proposed ITC area. Negotiations for similar developments are also in progress with other aviation industry organisations.

Committee's Conclusion

30. The present international terminal at Brisbane Airport is inadequate to cope with the expected increase in international passenger numbers and should be replaced. The Committee agrees that a need exists for the Federal Airports Corporation to provide sites for aviation industry infrastructure and commercial activities.

Location of Facilities at Brisbane Airport

31. Future development at Brisbane airport is to a large extent governed by developments which have already taken place. In relation to the most appropriate location for the works proposed in this reference the Committee examined a number of issues relating to the Brisbane Airport master plan and its basic philosophy and it should be noted that they include issues examined by previous Committee's during inquiries into various

aspects of the development of the Brisbane airport. These are discussed below.

ISSUES EXAMINED DURING PREVIOUS INQUIRIES

Brisbane Airport Master Plan

Runways

32. In the master plan (see Figure 2) the following runway orientations and lengths were selected:

- . 01R/19L parallel (eastern runway) - 4 260m
- . 01L/19R parallel (western runway) - 3 600m
- . 14/32 cross runway - 2 600m.

33. The following criteria were used for the selection of runway lengths:

- . at least one of the parallel runways to have a length suitable for any existing or future aircraft, engaged in very long range operations
- . a second parallel runway to have a length suitable for long range international and domestic airline aircraft operations
- . a cross runway to have a length suitable for domestic operations and all landing operations by domestic and international aircraft
- . the runway lengths to be suitable for maximum permissible take-off and landing weights as appropriate.

Runway Development

34. At the time of the preparation of the master plan forecasts indicated that an additional runway would be required at Brisbane by about 1996. The runway development envisaged at that stage was the 01L/19R (western parallel) runway of a length suitable for aircraft up to F27/F28 size. Subsequent runway developments envisaged included at the appropriate times:

- . lengthening and strengthening of the 01L/19R runway
- . lengthening and strengthening of the 14/32 runway
- . lengthening of the 01R/19L runway.

Mode of Runway Operation

35. The probable pattern of the use of the initial 01R/19L and 14/32 runways was:

- . operation of aircraft up to F27 size on the 14/32 runway as far as possible
- . operation of heavy aircraft on the 01R/19L runway
- . at night and weather permitting, take-offs in the 01 direction and landings in the 19 direction
- . take-offs and landings by heavy aircraft in the 01 direction as far as possible.

36. The probable pattern of use of the ultimate airport configuration was seen as:

- . diversion of light to medium aircraft operations from the 14/32 runway to the 01/19 runways when required for runway capacity reasons
- . take-offs and landings by heavy aircraft on both parallel runways with restrictions or prohibitions on the operation of noisy aircraft on the western runway during night hours
- . operation of the 01/19 runways in a similar fashion to that described for the 01R/19L in the initial configuration
- . improved noise abatement would be possible at night by using the full length and strength 14/32 runway in preference to the 01/19 runways when weather and traffic permit.

Runway Directions

37. A great deal of evidence was taken by the Committee in 1979 as to the best direction for the main runway. There was considerable objection at the time to the 02/20 direction selected by the then Department of Transport (DOT). It was stated that operating assumptions taken by DOT in relation to tail wind and cross wind components could not be applied in practice (the runway designation was later changed to 01/19 to prevent possible operational confusion arising between the 02 and 20 directions).

38. In a submission to the Committee in 1979 the Australian Federation of Air Pilots (AFAP) stated that there was a definite requirement for an east-west runway based on many operational

factors. Stage 1 of the project contained only one runway i.e. 02/20 which was a runway with a north-south aspect. It pointed out that as the strongest winds in Brisbane are either easterly or westerly, and the 'wettest' or poorest weather conditions are accompanied by easterly winds the AFAP considered that no new construction for Brisbane airport should be contemplated which did not provide for a runway with an east/west aspect, long enough to satisfy the operational needs, particularly in the landing phase of wide-bodied jets.

39. In its 1979 submission to the Committee the Civil Air Operations Officers Association of Australia (CAOOA) stated that it was fundamentally opposed to the runway alignment of 02/20 (north-east, south-west) because it would not reduce noise pollution, but merely move the noise sensitive area to a new group of suburbs and proposed instead a runway alignment of 16/34 (south-east/north-west).

40. The CAOOA stated that as a matter of policy it believed that no new runway should be constructed in Australia in situations which will lead to the imposition of operational constraints because of noise nuisance. It stated that the proposed new runway would be the subject of noise abatement restrictions from the very first day of operations.

41. However having considered all the evidence put to it the then Committee accepted the DOT evidence that having regard to all factors which influenced the new airport layout the 02/20 direction was the best available. In relation to cross wind operations the Committee was of the view that the selected runway direction was little different from the then main runway and no evidence was produced to indicate past accidents, incidents or diversions due to excessive cross wind.

Cross Wind Runway Orientation

42. At the time of the Committee's 1979 hearings the direction of the cross wind runway was still being investigated. A runway on a bearing of 110 degrees magnetic (11/29 alignment), was favoured by DOT. However, this alignment conflicted with further port developments planned for the Brisbane River and had noise impacts which were not acceptable to the Brisbane City Council because of planned residential development. Consequently, the 14/32 runway alignment was selected and agreed to by the Commonwealth and Queensland Governments and Brisbane City Council in late 1980. In the 1981 reference the Committee considered a number of different runway lengths for the 14/32 runway.

43. A number of witnesses argued that a 14/32 cross wind runway of sufficient length and strength to take heavy jet aircraft was needed and views put forward by the AFAP were representative of these arguments. It argued that on safety grounds and because of the possibility of increasing runway usability there was a need to provide a cross wind runway of sufficient strength and length for heavy jet aircraft. Two options to extend the 14/32 runway beyond that required for general aviation operations were outlined by the AFAP:

- . to about 2 600m to enable heavy jet aircraft to use Brisbane airport in wet season weather conditions that would otherwise prove hazardous
- . to 3 000m to enable the runway to be used as a general major runway.

44. Estimated costs for the 14/32 runway at various lengths at that time were:

- . 1640m - \$ 15.5M
- . 2600m - \$ 31M
- . 3000m - \$ 37.5M.

45. The AFAP based its proposal on the following points:

- . the preponderance of higher winds and bad weather conditions from the south-east quadrant
- . wind gust factors
- . AFAP interpretation of meteorological data
- . an AFAP estimate of airport unusability hours.

46. The Department of Transport (DOT) refuted the AFAP contention that safety was an issue. It advised the Committee that in providing a 1 640m cross wind runway and not one of sufficient length and strength to take domestic jet aircraft the safety of aircraft operations would not be compromised. DOT stated that all relevant safety standards were adhered to. It believed that only the regularity of aircraft operations would be affected. It was estimated that there would be little economic penalty to the airlines in holding or diverting aircraft on the few occasions a year that strong cross winds could necessitate this. The economic penalty was not considered by DOT to be large enough to justify the expenditure involved in providing a 14/32 runway to take heavy domestic jets.

47. DOT advised the Committee that the resultant increase in usability of the airport would only be about 24 hours per year (about 0.3% of total yearly hours). The Committee accepted the evidence presented by DOT and concluded that there was no need on either safety or economic grounds to provide either a 2 600m or 3 000m cross wind runway at that time.

48. The 1981 report canvassed the implications of various 14/32 cross wind runway lengths on the master plan. The possibility of constructing a 14/32 runway to heavy domestic jet

standards to a length of 3 000m raised questions about the validity of the master plan. The Committee believed that such a runway could end up as the main runway for usability and noise reasons. This was seen as having a severe impact on proposed terminal location, taxiway layouts, apron design, location of general aviation facilities, the length of the proposed parallel 02/20 (west) runway and the progression of the positioning of the sand fill.

49. The Committee noted that a 14/32 runway up to 2 600m capable of handling heavy jet aircraft would not become the main runway and consequently the master plan appeared adequate to allow for this extension.

50. The Committee also canvassed in 1981 the practicability of constructing parallel 14/32 runways sufficient to take all jet traffic rather than parallel 02/20 runways. However, this option was not considered viable because of noise problems, physical site constraints, planning restrictions and cost penalties.

51. The Committee therefore concluded that the proposed master plan concept for the ultimate redevelopment of Brisbane airport was broadly satisfactory.

Aircraft Noise

52. Community response to aircraft noise is generally expressed in terms of the percentage of the population seriously annoyed, where serious annoyance is taken to represent interference with activities such as sleep, conversation, enjoyment of radio and television, to a degree where those affected considered aircraft noise to detract substantially from the amenity of the area. Evidence produced in 1979 indicated that the number of dwellings affected in 1977 to 25 Noise Exposure Forecast (NEF) and higher for the 04/22 runway of the Eagle Farm airport was 2 565. The Committee was also informed that Sydney (26 725), Perth (6 380)

and Adelaide (5 400) had considerably more dwellings within the 25 NEF and higher contour than Brisbane. The number of dwellings within the 25 NEF and higher for the proposed 02/20 runway was estimated as 48. The Committee noted at that time that no evidence was presented to it that complaints of annoyance due to aircraft noise were restricted to those areas within the 25 NEF contour and no guarantee could be given that complaints would decrease with any new alignment. On the contrary, it was stated that people newly affected by noise could be very annoyed whether inside the NEF contour or not.

53. In evidence to the Committee in 1981 DOT estimated that aircraft using the proposed 1 640m 14/32 cross wind runway would not generate any significant noise impact. The 14/32 runway was not designed to take larger jet aircraft, although it was felt that there may be occasional operation of aircraft up to F28 size.

54. The Committee in 1981 also received information on the noise impact of the master plan runway combinations. It was estimated that in the year 2000 when the second parallel 02/20 west runway was proposed to be operational that there would be no significant noise impact on surrounding residential areas. From 40-80 dwellings were estimated to be within the 25 NEF footprint of the total airport development.

ISSUES RAISED DURING PRESENT INQUIRY

Runway Directions

55. The People Against Aircraft Noise (PAAN) (Camp Hill/Coorparoo branch) said that it regarded the sandfilling proposal as a significant key stone in determining the future development and layout of the airport and its runway system. It believed that the project raised several vital issues which must be addressed at this time before what it sees as the flaws in the

master plan for the airport are allowed to develop beyond a point of no return. In summary its major points were:

- . the existing 01/19 runway on which the international terminal will be sited is incompatible with 'prevailing' and 'adverse' wind directions and places aircraft and passengers, crew and Brisbane residents in unnecessary danger
- . it drew attention to the fact that in 1981 the Committee concluded 'there is a need on safety grounds to provide a cross wind runway. The 14/32 wind alignment appears best to meet the need'
- . the master plan ignores severe criticism by professionals in the aviation industry for example, Civil Air Operations Officers Association of Australia and the Australian Federation of Air Pilots
- . the failure of the airport to achieve anything near the FAC's promised 80% of aircraft movements over Moreton Bay. This has resulted in a severe noise problem over densely populated residential areas. PAAN believes that the extent of this problem has been acknowledged by the Minister for Transport and Communications and gives as a source aircraft movements by the Civil Aviation Authority.
- . it drew attention to the fact that Federal MPs including Mr Cameron, Mr Humphries, Mr Jull and Mr Sciacca in addition to state

and local government representatives have been most critical of the airport and its adverse affects on the people of Brisbane.

56. The PAAN position was supported by a private citizen, Mr P Rodukoff, who said to the Committee that the planned runway parallel to the existing 01/19 runway should be abandoned and the existing cross runway 14/32 be immediately rebuilt to full international jet standard. His proposal would also provide that the new international terminal would need to be located in the area now use for general aviation activities.

57. Mr Rodukoff believes that an informed use of the wind data for Brisbane airport will clearly support earlier suggestions that the main runways at the new Brisbane airport should generally align with the direction of the present cross wind runway that is 14/32. In his view had runway 14/32 been originally built with international jet operating capability the advantages of its direction in relation to the prevailing wind would have soon been recognised and the use of runway 19 for take-offs towards and runway 01 for landings over the heavily populated southern suburbs would have been very much reduced. Mr Rodukoff believes that this would have led to a much safer airport and aircraft flying methods and greater public acceptance of the new airport.

58. In its presentation to the Committee in August 1989 the AFAP stated that its position as presented in 1979 remained basically the same. The AFAP position was that the preferred major runway direction should have been north-west, south-east and that the shorter or minor runway should have been built in a north-south direction. The AFAP pointed out that what has happened is exactly the opposite.

59. The AFAP told the Committee that in its view in conditions of strong south-easterlies with heavy rain and strong cross winds the existing 01/19 runway is marginal from a safety point of view. It believes that the possibility of having an incident or accident associated with an aircraft running off the runway, or having some problem, is going to be much less if there was a 14/32 runway that is usable by heavy aircraft. The AFAP pointed out that at present the only heavy jet aircraft that can use the 14/32 runway is the B737 and only then under fairly restrictive landing and take-off weight conditions. The AFAP does not believe that modern jet aircraft are more capable of operating in adverse cross wind conditions. It pointed out that there had been a movement away from tail-mounted engine aircraft such as the B727 and DC9s back to wing-mounted engines, mostly for reasons of weight reduction, among other technical reasons. It pointed out that these aircraft are more critical in cross winds than aircraft with tail-mounted engines.

60. In evidence to the Committee in August 1989 the CAOOA repeated its belief that the incorrect orientation had been chosen for the main runway. It said that with the existing 19 runway in operation procedures were in place which require the pilot to manoeuvre the aircraft on departure to take up a track which would have been the extended centre line of runway 16 if that runway direction had been chosen as it had suggested.

61. Now that the 14/32 runway has been built, the CAOOA considers that any parallel runway concept would have to consider an extension into Moreton Bay. For these reasons the CAOOA does not think that 14/32 runway can be seriously considered capable of being extended and used for larger aircraft because it is simply too close to populated areas to the north and south. The take-off to the south would also be over oil refineries and port facilities. The CAOOA had reluctantly concluded that there was no alternative because of air traffic control constraints but to

accept the FAC proposal and build the international terminal in the suggested location.

Aircraft Noise

62. In evidence to the Committee the Hon. B Humphries, MP, Mr C Sciacca, MP and Mr D Cameron, MP expressed concern at the noise problems being experienced in the southern suburbs of Brisbane since the opening of the new airport. While it was conceded that the noise situation had improved considerably over that experienced with the old Brisbane airport there was general surprise that the current noise problem still appeared to be considerable and far greater than was expected.

63. All were concerned about any decision which would lock future airport development around the existing 01/19 runway and a possible parallel extension to the west. The extension of the cross wind 14/32 runway was favoured as a solution to the noise problems of the southern suburbs.

64. However, in a submission to the Committee Mrs E Darling, MP who represents an electorate immediately to the north of the airport expressed total opposition to any extension of the 14/32 runway. Mrs Darling believed that any use of the 14/32 runway for heavy aircraft would put Nudgee Beach and other bayside suburbs into an unacceptable high aircraft noise zone.

FAC COMMENTS ON AIRPORT PLANNING ISSUES

Background

65. The FAC advised the Committee that the development of an agreed master plan for a new airport such as Brisbane is of great importance to the efficiency of investment in airport development and supporting infrastructure, and in ensuring that

the ultimate development of the plan is environmentally acceptable.

66. The development of a master plan depends upon a considerable amount of detailed analysis and consultation. As finally agreed upon it represents a compromise between a number of desirable but often mutually competitive characteristics. The process leading to the more important attributes of the Brisbane airport master plan are outlined below.

Airport Target Capacity

67. A major airport taken together with the noise affected areas associated with its runway system is a major land use and therefore difficult to site. Efficient use of resources means that every airport should be developed to make maximum use of its land area and the immediate environs. Failure to do so may accelerate the requirement for the development of another site with all the associated penalties involved. The FAC believes that planning for major airports should seek to site a high capacity runway configuration within the physical and environmental constraints of each particular site. The most efficient runway system comprises widely-spaced parallel runways. Most major airports except those which face severe siting constraints are based on this system.

68. The FAC advised that the wide-spaced parallel runway system can be simply thought of as two single runway airports located side by side which are capable of being operated with a minimum of interaction between one another. Any other system with intersecting runways or approach/departure paths suffers from greater levels of interaction between component runways. Where siting permits the performance of widely-spaced parallels can be enhanced where necessary by the addition of a cross wind runway to particularly cater for those aircraft that are susceptible to cross wind.

Runway Siting

69. The ideal site would be one which allows the main runway system and the associated cross wind runway to be located on flat land of low value alternative use, main runways directed into prevailing winds, no natural or man-made obstructions to flight, no environmental consequences, and within easy and economical connections to land-based transport systems. Few if any sites exhibit all these characteristics. In practice, efficient siting of the runway system will involve a sensible compromise between some or all of these attributes. The FAC believes that Brisbane airport is one example of a siting in which few compromises have been necessary as outlined in the following paragraphs.

Runway Direction

70. The first objective is to consider a main runway direction which achieves acceptable runway usability. This is a measure of the proportion of time, expressed as a percentage, during which the limiting cross wind component of particular aircraft types is not exceeded.

71. The Brisbane airport master plan aims to satisfy the International Civil Aviation Organisation (ICAO) recommendation that the number and orientation of runways should be such that usability of not less than 95% was achieved, "for the aeroplanes that the aerodrome is intended to serve". Table 1 compares usability for 01/19 and 14/32 runway directions, and for the combination of both directions (corresponding to combined main and cross wind runways). This table shows that for all limiting cross wind components, there is little difference in usability between the 01/19 and 14/32 directions (and in all cases, the combination exceeds 95% recommended minimum usability).

TABLE 1 - RUNWAY USABILITY PERCENTAGES - 01/19 AND 14/32 RUNWAYS

PERIOD	CONDITIONS % OF TIME	RUNWAYS	ALLOWABLE CROSSWIND COMPONENT (knots)				
			10	13	15	20	25
DAY HOURS	DRY	01/19	88.35	94.43	96.95	99.64	99.94
		14/32	90.89	96.39	98.23	99.74	99.96
	94.42%	BOTH	96.10	98.86	99.49	99.95	99.98
(0600 TO 2300)	WET	01/19	87.35	92.97	95.40	98.90	99.62
		14/32	91.54	96.20	98.03	99.45	99.67
	5.58	BOTH	96.31	98.55	99.25	99.76	99.81
	ALL	01/19	88.30	94.35	96.87	99.59	99.93
		14/32	90.93	96.38	98.22	99.72	99.94
	100%	BOTH	96.11	98.81	99.48	99.94	99.97
NIGHT HOURS	DRY	01/19	98.92	99.56	99.79	99.97	99.99
		14/32	98.59	99.48	99.76	99.96	99.99
	94.11%	BOTH	99.47	99.82	99.92	99.99	99.99
(2300 TO 0600)	WET	01/19	93.95	96.24	97.26	98.95	99.47
		14/32	94.28	97.63	98.76	99.60	99.85
	5.89%	BOTH	97.31	99.00	99.45	99.78	99.87
	ALL	01/19	98.62	99.36	99.64	99.91	99.96
		14/32	98.33	99.37	99.70	99.94	99.98
	100%	BOTH	99.34	99.77	99.90	99.98	99.99
ALL HOURS	DRY	01/19	92.30	96.35	98.01	99.76	99.96
		14/32	93.77	97.55	98.80	99.82	99.97
	94.31%	BOTH	97.36	99.20	99.65	99.96	99.98
(0000 TO 2400)	WET	01/19	89.86	94.20	96.11	98.92	99.56
		14/32	92.61	96.76	98.31	99.51	99.74
	5.69%	BOTH	96.70	98.73	99.32	99.77	99.83
	ALL	01/19	92.14	96.23	97.91	99.71	99.94
		14/32	93.70	97.50	98.77	99.80	99.95
	100%	BOTH	97.32	99.17	99.63	99.95	99.97

Dry Conditions - Rain less than 1.5mm in 3 hours.
 Wet Conditions - Rain equal to or more than 1.5mm in 3 hours.
 Wind Data - 10 years, 1967 to 1976 inclusive supplied by
 Meteorological Bureau.

72. The small differences in usability between the main competing runway directions, particularly for higher limiting cross wind components, provide an ideal flexibility to seek a runway alignment which minimised aircraft noise nuisance in the surrounding community whilst maintaining high wind usability.

73. The FAC insisted that this decision is justified as a reality in practical airport master planning. It is effectively an economic decision not a safety one as has in some cases been implied. The FAC stressed that in its view safety is not an issue. It believes that if limiting cross winds are exceeded, pilots will choose not to land or take off, in exactly the same way as pilots make other operating decisions to remain within the prescribed safe operating practice. What may be lost in usability due to wind considerations may be more than gained by avoiding limiting noise exposure problems or obstructions to flight.

NOISE EFFECTS

74. The National Acoustics Laboratory was able to develop a reliable system to predict the proportion of the population who would experience a particular response to a particular level of aircraft noise. This system known as the Australian Noise Exposure Forecast System (ANEF) is based on the Noise Exposure Forecast (NEF) System of the United States Federal Aviation Administration and was developed in Australia in 1982 to reflect Australian conditions. Using the ANEF system, recommended land use in areas affected by aircraft noise was developed as set out in Table 2 below:

TABLE 2 - LAND USE COMPATIBILITY ADVICE FOR
AREAS IN THE VICINITY OF AUSTRALIAN AIRPORTS

LAND USE	ANEF RANGE			
	LESS THAN 20 ANEF	20-25 ANEF	25-30 ANEF	ABOVE 30 ANEF
Residential	Yes	Yes See Note 1	No	No
Hotel, Motel Offices, Public Buildings	Yes	Yes	See Note 2	No
Schools, Hospitals Churches, Theatres	Yes	No	No	No
Commercial, Industrial	Yes	Yes	Yes	See Note 2
Outdoor Recreational (Non-Spectator)	Yes	Yes	Yes	Yes

Note 1: Within 20 to 25 ANEF, some people may find that the land is not compatible with residential use. Land use authorities may consider that the incorporation of noise control features in the construction of residences is appropriate.

Note 2: An analysis of building noise reduction requirements by an acoustic consultant should be made and any necessary noise control features included in the design of the building.

Note 3: The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variations in aircraft flight paths.

75. The noise effects of runway development options are generally expressed by comparing the numbers of people living inside particular ANEF zones, and in particular the numbers residing in areas likely to be subject to noise exposure exceeding twenty-five ANEF, which is generally regarded as areas in which ideally residential development should not be permitted.

76. The Brisbane airport master plan is so well sited according to the FAC, that there are only thirteen residences located within the 25 ANEF contours.

77. The FAC assured the Committee that assuming no additional residential construction is permitted within these areas, the total number of dwellings subject to noise exposure in excess of twenty-five ANEF would be minimal. The FAC believes that this compares most favourably with other major airports in Australia as indicated in Table 3 below:

**TABLE 3 - ESTIMATED NUMBER OF DWELLINGS INSIDE 25 ANEF
AT SELECTED AUSTRALIAN AIRPORTS**

AIRPORT	NO. OF DWELLINGS SUBJECT TO NOISE EXPOSURE IN EXCESS OF 25 ANEF
SYDNEY	33,378
ADELAIDE	6,921
PERTH	2,073
MELBOURNE	513

Source: NAL Report No. 88, February 1982, Appendix E.

Response to Noise Complaints

78. The Committee was informed that preliminary forecasts based on advice from the Bureau of Meteorology indicated that more than 80% of departures from the main runway would be over Moreton Bay. However, in the months following the opening of the airport in March 1988 with southerly wind conditions prevailing only 44 to 57% of aircraft using the main runway were taking off over the Bay. This contrasted with the latter part of 1988 with northerly wind conditions prevailing approximately 80% of aircraft using the main runway took off over the Bay.

79. From the time operations at the new airport began in March 1988 until November 1988 the CAA received over 1 400 telephone complaints while more than 1 000 written complaints were received. However there has been a reduction in the number of complaints. From February 1989 to July 1989 the CAA received 273 noise complaints from areas to the south of the airport. The FAC pointed out that 100 of the complaints came from six people.

80. Over 95% of the complaints came from areas to the south and south-west of the airport and were related to movements on the 01/19 runway. In particular, take-offs from runway 19 and landings on runway 01 were involved. The Committee notes that hilly terrain to the south of the airport may exacerbate the noise problem.

81. The CAA pointed out that most of the complaints involved perceived increases in noise levels or noise in suburbs not previously affected. It believed that the noise exposure had been contrary to residents' expectations that most, if not all, aircraft would operate over the Bay to the north, thus leaving residential areas largely unaffected by noise.

82. The Committee notes with interest information provided by the FAC regarding noise complaints at the old Brisbane airport. From 1982 to 1988 there were 364 complaints from an airport which had residential development up to the airport boundary and high density residential development in the immediate vicinity.

Noise Measurement Program

83. The CAA advised the Committee that the original noise assessment for the airport was based on the ANEF system. The land use planning advice associated with this system recommends that there be no residential development within the 25 ANEF contour. At the end of 1988 there were 13 dwellings within the 25 ANEF contour of the new airport compared with 2580 at the old airport.

84. Noise measurements conducted after the opening of the new airport indicated that the noise exposure to the south is consistent with that forecast while the noise levels of individual aircraft were at expected levels. The greatest noise was generated by DC9 and B727 aircraft. Both aircraft types are being phased out of domestic fleets.

Operational Arrangements to Minimise Noise Nuisance

85. On 21 June 1989, the Hon. Ralph Willis, Minister for Transport and Communications, announced a comprehensive series of measures aimed at reducing aircraft noise related to aircraft operations at Brisbane airport.

86. The measures were aimed at maintaining the airports operational capacity, curfew free status and ability for future growth while at the same time minimising noise intrusion.

87. The measures include:

- . take-offs and landings will be over Moreton Bay except where safety requires otherwise. During busy periods where 'nose to nose' operations are not possible take-offs will be over the Bay with arrivals over the city whenever wind conditions allow
- . improved wind measuring systems have been installed on the main runway to give pilots more accurate information. Pilots will be asked to accept a down wind component of up to 10 knots to enable increased operations over the Bay. This will significantly reduce the number of flights attracting complaints in the midnight to 5.00am period
- . when take-offs and landings over the Bay on the main runway are not possible due to weather conditions, pilots of aircraft approved to use 14/32 will be requested to do so where take off weight permits. This will apply mainly to smaller aircraft, medium jets operating on short routes and most freight aircraft
- . late at night and early in the morning the airlines will, to the greatest extent possible use new generation less noisy types of aircraft which are progressively replacing old noisy jets
- . the airlines have agreed not to schedule older type noisier jet aircraft to operate regular services between midnight and 5.00am
- . however, during periods of peak passenger activity, some movements may be scheduled beyond

midnight. These movements will be over Moreton Bay except where safety directs otherwise

- . the airlines will promptly notify any late night operations by older noisier jets
- . to ease noise in the Wynnum-Manly area, incoming aircraft will be re-routed out over Moreton Bay to increase the distance of the air traffic lane from residential areas and provide a major reduction in overflights (this procedure is at a cost to the airlines which they have accepted in the community interest).

88. In addition to the above the following noise abatement procedures would continue when operationally possible:

- . aircraft departing to the south are required to use the full length of the runway to achieve the greatest possible height in the shortest possible time over their departure route
- . pilots must also use standard instrument departure procedures which divert aircraft away from highly populated areas.

89. The Minister also announced the establishment of a Task Force which would review the planning and operation of Brisbane Airport with the view to making recommendations which would minimise the impact of airport noise on surrounding communities, while still providing an airport which would meet Brisbane's needs into the future.

90. The compositions of the Task Force is broadly based and includes community and industry representatives.

Summary

91. The Committee acknowledges that aircraft noise is an extremely sensitive issue and believes that all possible practical steps should be taken to minimise its impact. However it must also be recognised that aircraft operations are an integral feature of present day society which must be accommodated.

92. The Committee believes that the crux of the noise problem at Brisbane is the perception that aircraft noise would disappear with the opening of the new airport. While it is recognised that noise problems have improved, probably of greater importance is the fact that suburbs previously unaffected by aircraft noise are now under flight paths. While the Committee has recognised that the noise problem at Brisbane is small compared to other cities such as Sydney, and indeed the number of noise-related complaints has reduced considerably, the fact remains that aircraft noise is perceived as a significant problem, particularly for the southern suburbs.

93. The Committee regards it as unfortunate that neither the FAC nor the CAA appeared to have perceived this problem prior to the opening of the airport and attempted to inform the public as to the real nature of aircraft operations at the new airport. The Committee welcomes the establishment of the Task Force to review the planning and operations of the airport.

Committee's Conclusion

94. The Committee notes the measures being taken to minimise the noise impact of aircraft operations at Brisbane airport.

EVALUATION OF THE BRISBANE MASTER PLAN BY THE FAC

95. The FAC advised the Committee that the main features of the master plan were identified in consultation with other planning authorities and by comparing competing runway and siting alternatives. The FAC believes that the master plan comes close to meeting the criteria indicated previously in paragraph 69.

96. With the acceptance and publication of the master plan, numerous investment decisions were confirmed including:

- . initial runway and terminal development
- . airline support infrastructure development
- . access road development
- . reservation of future rail link corridors
- . major site drainage works.

97. In addition, land use authorities have the means to determine areas likely to be noise affected by the development and take the necessary action to ensure and maintain a high degree of compatibility between the airport and its neighbours.

Terminal Development Planning

98. The FAC believes that in addition to being the most efficient runway system in use, a wide-spaced parallel runway system allows convenient and orderly support and infrastructure development between the two runways; another reason for the frequency with which this runway system is chosen as the basis for long term airport development by airport authorities around the world.

99. The wide-spaced parallel runway system can be thought of as two airports on the same site. This allows unit terminal developments, with each closely specialised to the task each is to perform. This has led to conscious planning for separate

domestic and international terminals with the capability of replicating each should that be necessary. The general aviation terminal will be conveniently located between the main runways and adjacent to the cross wind runway. The FAC believes that the result is a well planned airport with long term potential. It is the basis on which all developments have been approved to date.

Alternatives to Master Plan

100. The FAC noted that one alternative for long term planning proposed the abandonment of 01/19 as the main operating direction and its replacement with the 14/32 direction. The main arguments for this are that 14/32 is the preferred direction in terms of prevailing winds and also for reducing noise exposure particularly in areas to the south of the airport along the approaches to the 01/19 parallel runways. The FAC said that this alternative had not been given serious discussion in the original planning because surrounding obstructions and shipping in the Brisbane River precluded its practical development. This was particularly so when the far more practical 01/19 option was available. The 14/32 runway cannot be extended to the southeast without interacting with the existing infrastructure associated with shipping and port facilities at the mouth of the Brisbane River. Extensions to the northwest in excess of 3 000m whilst possible, may require redesign and redevelopment of the floodway constructed as part of phase 1. It would also possibly entail relocation of the existing control tower as the threshold of runway 14 is at the limit of acceptability.

101. These practicalities aside, the FAC believes that operational realities of developing on the basis of an extended 14/32 runway as the preferred direction militate against it. Airlines operating from the existing domestic terminal, being remote from 14/32 will resist its preferred use on the basis of the potentially excessive taxiing involved. If successful, this airline resistance would by default force most operations onto

01/19 to be in phase with domestic operations, particularly during peak periods. The FAC believes that this situation would intensify over time, since no ready alternatives to domestic terminal expansion exist other than that associated with the parallel runway arrangement.

102. In the longer term, the capacity constraints of the two existing runways (even with major extensions to the 14/32 runway) will require development of the 01/19 parallel runway. Should this take place, an international terminal facility located near the general aviation apron may well prove poorly located to exploit the expansion opportunities afforded by the additional capacity.

FAC's Position Regarding Changes to the Master Plan

103. The FAC believes that the Brisbane airport master plan is the result of lengthy and detailed evaluations and decision-making and incorporates many contemporary objectives in airport planning with relatively few environmental effects. It also believes that there are no practical alternatives to it. The FAC strongly supports the master plan and rejects as impractical proposals to abandon the master planned 01L/19R runway in favour of long term development around the 14/32 runway. The FAC believes that the real risk involved in entertaining and promoting alternative master planning philosophy is that it weakens the resolve to maintain the agreed planning strategies, with the potential result that pressures to subvert planning restrictions to protect those strategies may prevail to the detriment of the long term potential of the airport. The FAC strongly submits that the proposed site for the international terminal development is the appropriate site within the context of the existing master plan.

**Implication of Relocation of International Terminal and
Development of 14/32 as Preferred Runway Direction**

104. The FAC believes that very little would be achieved from relocating the international terminal into the general aviation area and developing the 14/32 runway as a preferred direction. It pointed out that the 14/32 direction would only allow one or two hours per year additional operations for most large aircraft types. The FAC believes, that whilst the change to the 14/32 runway preferred direction would free some people of aircraft noise nuisance, that a new group to the northwest would be likely to have emerged protesting about the fact that they were now subject to noise arising from the new preferred operating direction and others objecting to new flight patterns associated with manoeuvring to use the new preferred direction. The FAC believes that there would be possible adverse environmental effects arising from the runway jutting out further into the Bay than had originally been planned. It will also need to relocate the main drainage channel.

105. The FAC believes that a wide-spaced parallel 14/32 runway development is not practical and that the only high capacity option would be a new 14/32 runway two kilometres offshore which would prove to be financially impractical and also likely to be environmentally unacceptable and operationally difficult with existing infrastructure development hopelessly misplaced from the centre of operational activity. The FAC would then have to consider some lesser capacity runway development, abandon any thought of expanding the airports capacity or revert to the original plan of developing 01/19 left. However should the 01/19 direction once again become the preferred runway direction, airport facilities would now be very poorly planned and located for efficient infrastructure development to support this long term capacity. The FAC believes that it would again be confronted by residents of the southern suburbs complaining about aircraft noise. In relation to the future development of the

airport, the FAC believes that additional runway capacity will not be required in the next twenty years. Development of the parallel runway at that time would not, it believes, involve major noise impacts because of technological advances.

Summary

106. The Committee accepts that the provisions of the master plan has locked the FAC into a continuation of previous development at Brisbane airport. However the Committee rejects the proposition that extension of the 14/32 runway to accept heavier aircraft is not feasible.

107. On balance the Committee accepts that the sandfilling should proceed which therefore determines the siting of the future international terminal in the area proposed by the FAC. However the Committee believes that before any further runway developments proceed at Brisbane the FAC should undertake a thorough re-examination of the master plan to determine its continued validity.

Committee's Recommendation

108. The Committee recommends that the Federal Airports Corporation should undertake a thorough re-examination of the Brisbane Airport master plan before further runway developments are undertaken.

PROPOSED INTEGRATED TERMINAL CONCEPT

109. The FAC informed the Committee that a private enterprise group made a proposal to it for the development of an

international terminal integrated with the existing domestic terminal at an estimated cost of \$89M. This would involve the expansion of the existing centre satellite area of the domestic terminal.

110. The FAC indicated that it generally was not in favour of integrated terminals and its general principle would be to keep where ever possible domestic and international terminals separate. Experience has shown that it is extremely difficult to maintain growth prospects in two different sectors in the same area. The FAC pointed to Melbourne and Cairns where difficulties had arisen because the total terminal development is constrained by domestic terminals on either side of the international terminal.

111. The FAC pointed out that the proposal was based on a ten-year life and depending on traffic growth may become redundant before then and planning for a new terminal would be necessary.

112. The FAC also indicated a number of major defects in the proposal:

- . it would not be able to cope with the expected aircraft parking requirements
- . it could require the FAC to spend an estimated additional \$50M to provide facilities for possible new airline entrants which it had planned to locate in the centre satellite area
- . the proposal has a number of technical flaws relating to baggage handling facilities, insufficient check-in facilities, and restrictions on the amount of concession space

- . support infrastructure for international aircraft would be located some four kilometres away.

Committee's Conclusion

113. The Committee believes that the development of an international terminal in the centre satellite area of the domestic terminal is a viable interim measure but is not a long term alternative to the construction of a separate international terminal on the proposed master planned site.

THE PROPOSAL

Background

114. Preparation of the site requires filling with a material that is capable of being supplied and placed at a fast rate, is free of silt and clay, is of low cost and has adequate strength to support the foundations of aircraft pavement and building areas.

115. The subject of this reference is that provision and placement of some 5.5M cubic metres of sand in order to fill and surcharge international terminal, operational and commercial sites at Brisbane airport. Sixty-three percent of the sand fill area will be for the terminal and taxiways while the remaining thirty-seven percent will be for commercial sites.

116. The proposed location conforms with the master plan concept for the ultimate redevelopment of Brisbane airport as submitted to the Committee in 1979 and the approved Brisbane airport master plan of March 1983. Further the site proposed has been confirmed in 1988 by consultants commissioned by the FAC to examine terminal site and development alternatives.

Site Conditions

117. The proposed development sites are located on predominantly grassed areas overlaying the poor subgrade material of the pre-existing alluvial swamp at Brisbane airport. The areas to be sand-filled have previously been cleared and filled to a level above high tide. The majority of the proposed international terminal support facility site occupies the de-commissioned 04/22 runway's grassed flight strip while the area for the proposed ITC has already been partially filled to provide for adequate site drainage.

118. Generally, the subsurface consists of 24 - 30m of soft, saturated soils, these comprise a surface clay layer of 0.5 - 2m thick, over 1.5 - 6m of loose silty sand, over 6 - 27m of soft clay. Underneath lies up to 13m depth of sand of variable density on firm gravel or bedrock.

119. Because of the need to compress and stabilise the underlying soft material, the site will need to be filled and surcharged followed a settlement period prior to any construction.

120. The development sites will also require the provision of adequate surface drainage to avoid flooding of aircraft pavement and building areas by stormwater runoff and tidal movements. This will necessitate shaping of the final surface and the elevation of development sites above the natural flood plain.

Details of the Proposed Work

121. The proposed sand filling operations will involve the following five stages:

- . dredging of sand from Middle Banks

- . transport of dredged sand and deposition in a rehandling basin in the Brisbane River
- . redredging of sand from the rehandling basin and pumping through a pipeline to the development sites
- . shaping and movement of fill and surcharge material on site
- . removal and relocation of surcharge material after the settlement and consolidation period.

122. It should be noted that the works being proposed are almost identical to those undertaken as part of the initial airport development but on a much reduced scale. The extent of sand filling for the reclamation is shown in Figure 3. The existing surface grasses and salt marsh will be retained to stabilise the surface during filling.

123. The sand will be dredged from Middle Banks, located four kms off Tangalooma Point on the west side of Moreton Island as shown in Figure 4 and some 28 kms from Bulwer Island in the Brisbane River.

124. Sand will be dredged using one or two trailer-suction hopper dredges and transported in these vessels to a point in the Brisbane River adjacent to the airport site where it will be bottom dumped into the rehandling basin.

125. From the rehandling basin, sand will be redredged using a cutter-suction dredge and pumped through an overland pipe on to the development sites. The actual distances from the rehandling basin to the sand discharge points at the airport varies from five to seven kms.

126. Hydraulic pumping of sand results in large volumes of run-off water that can contain small quantities of silt. This run-off water will be retained in settling basins for sufficient time to allow settlement of any silt, before the water is discharged to Boggy Creek.

127. As pumping of the sand on to the site takes place, the earth moving plant will shape the filling and surcharged sand as required, afterwards the surface will be bound with sprayed bitumen emulsion to prevent wind erosion.

128. The weight of sandfill will cause settlement of the soft soil beneath. To achieve the design levels required, up to a metre of additional fill will be provided to compensate for initial and longer term settlement. The amount of settlement has been assessed from surface bores to establish soil profile and from laboratory testing of soil samples. These assessments are supported by the construction of two test embankments at the site in 1973 and by phase 1 development of the new airport. The performance of these works has been subsequently monitored.

129. Owing to the variable nature of the upper layers of the surface soil, localised differential settlement could occur unless appropriate construction techniques are employed.

130. To minimise differential settlement and accelerate the consolidation process, the sand filling areas underlying the aircraft pavements and the terminal building area will be surcharged by loading with additional sand for at least a year. Following completion of the surcharge period, this surplus sand will be rehandled to other areas requiring filling. Up to one metre of surcharge sand is required for building areas and two metres for aircraft movement areas to induce a necessary settlement over a twelve-month period.

131. With the considerable depth of soft soil at this site it is not practical to eliminate all the settlement which may occur after construction of the pavements or buildings. The levels of the various facilities have therefore been established to meet the requirements for pavements and drainage, and to take into account the expected settlement for the twenty year period after construction. This latter settlement is expected to average 0.3m, with settlement beyond that period averaging 0.1m.

Environmental Aspects

132. The environmental aspects of the sand filling reclamation works have been examined in detail. Environmental investigations prior to phase 1 included identification of the source for sand fill materials, hydrographic surveys, subsurface drilling of the sand, rehandling basin and assessed the likely impact of the proposed sand extraction from Middle Banks on adjacent beaches of Moreton Island. Recommended actions to minimise the likelihood of adverse impacts were also made. Studies undertaken by specialists of local and international repute, during and following completion of the phase 1 development indicated no continuing adverse environmental effects. However the Queensland Commercial Fishermen's Organisation (QCFO) is concerned at the possible impact of sand removal on the food chain in Moreton Bay and consequently on commercial fishing and suggested that dredging activity should be restricted to the smallest area possible. It also stated that during the dredging program for phase 1, conflict arose between the dredging contractor and trawler operators over right of way on the water. The Committee suggests that the FAC discuss those issues with QCFO.

133. The current proposal is similar to although smaller than the original phase 1 sand extraction operation.

134. The same environmental protection measures as for the phase 1 development will be employed during this project. These include:

- . monitoring
- . the effects of dredging on sand movement and the seabottom fauna/flora at Middlebanks
- . the stability of Moreton Island beaches
- . the effects of sand dumping in the rehandling basin on downstream waters quality
- . run-off waters from sandfill areas to ensure that water quality criteria set in consultation with relevant State authorities are met.

135. It is anticipated that there will be no adverse environmental impacts associated with this proposal. Environmental consultants confirmed this expectation in February 1989.

136. In accordance with the FAC's responsibilities under Section 2 of the Administrative Procedures to the Environment Protection (Impact of Proposals) Act 1974, a notice of intention for the proposed sand filling project was forwarded to the Department of the Arts, Sport, Environment, Tourism and Territories (DASETT). DASETT agreed that neither a public environment report nor a Environment Impact Study need be prepared. However it suggested a number of additional environmental safeguards which have been agreed to by the FAC.

Alternative Sand Sources

137. The FAC commissioned consulting engineers in November 1988 to investigate the suitability of both land and marine fill and surcharge materials. Sand from Middlebanks in Moreton Bay has been confirmed as the most suitable economic and practical source of fill for this project. Middlebanks was also the source of fill for the phase 1 development.

138. Alternative sources investigated include sand from Moreton Island, the Tweed and Logan Rivers, as well as fill materials other than sand from various land base quarries.

139. The high cost, inadequate rate of supply and likely adverse environmental impact of sand extraction from Moreton Island eliminated this source from further consideration. Likewise sand extraction from the Logan River was expensive and could not be supplied at an adequate rate. The material available from the Tweed River was designated for other purposes and its volume was inadequate.

140. The volume of fill material, other than sand, which could be obtained from quarry sources in the Brisbane region, was too small for the proposed works and was of inadequate quality to provide the foundations for the future ITC and the proposed commercial support facilities.

141. The nature and scope of marine sand extraction provides economies that determine the Corporation should fill a number of development sites, rather than include filling as a requirement of individual lease agreements. Filling of sites by the FAC provides increased commercial returns.

CONSULTATION

142. The FAC has consulted with the aviation industry to identify the scope of development sites required for airlines and other commercial organisations as well as for the proposed ITC. Such significant airport development also involves consultation with governments at local, state and federal levels.

143. Preliminary agreements, similar to those reached in the phase 1 airport development have been reached with relevant authorities including Brisbane City Council and the Queensland Government on the range of matters that may arise in this sand fill development.

CONSTRUCTION PROGRAM

144. Potential contractors have indicated that it would take approximately sixteen weeks to establish pump and servicing infrastructure and that sand dredging would take 30-40 weeks. This time period will however be influenced by the availability of suitable dredging equipment at the time of approval. A further twelve months would then be required for the settlement of the sub-soils.

145. There has been some concern expressed at the length of the construction period and method chosen by the FAC. The FAC indicated that there was scope for fast-tracking of the construction of a terminal building. However, it did not believe that the sand filling works could be speeded up.

146. The FAC agreed that the terminal could be constructed on piles rather than the chosen high-level spread footings. However, to overcome the likelihood of differential settlement occurring between the apron and the building the whole site must be compacted to keep the differential settlement between the two components to a minimum.

147. Two companies, Capitol and Compass have indicated to the FAC that each will require development sites in the airlines maintenance base area on Brisbane airport to meet operational needs, should their business endeavours to compete in the domestic airlines industry market after November 1990 proceed. As yet neither company has given any firm commitment to take up leases on Brisbane airport.

148. The Brisbane airport master plan determines that aircraft maintenance operations should be located on the eastern side of the airport. Adequate land is available for the construction of maintenance hangers in this area. However, due to the topographical features common to the entire airport, approximately 2.1M cubic metres of fill will be required to provide a flood free building platform for future maintenance facilities.

149. The FAC informed the Committee that it was not attempting to pre-empt any decisions in respect to what might occur regarding the business decisions made by Capitol or Compass. It merely foreshadows the possibility of an urgent need to prepare additional sites to accommodate possible infrastructure needs associated with deregulation of the domestic airline industry. Logically these needs can be most economically and expeditiously achieved by expanding the proposed main sandfill contract should it be approved.

COST ESTIMATE

150. The indicative cost of the project is \$44M at January 1989 prices. The FAC Board has approved expenditure of this amount subject to parliamentary approval.

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151. Funds will be provided from the FAC's internal sources and supplemented if necessary by commercial borrowing. If borrowing

is unnecessary they will be raised in accordance with Loan Council procedures and debts serviced by returns generated through the facilities on each development site provided by this investment.

Committee's Recommendation

152. The Committee recommends the sandfilling of international terminal, operational and commercial sites, Brisbane airport at an indicative cost of \$44M at June 1989 prices.

DISSENT BY SENATOR B BURNS AND SENATOR J DEVEREUX

153. That the sandfilling not be proceeded with until such time as the master plan is revised. The revision to focus on the location of the international terminal complex and the extension of the cross wind runway.

154. While the review is proceeding the centre satellite area of the domestic terminal could be developed as an interim international terminal.

155. This development could in the long term provide upgraded facilities for future domestic growth.

CONCLUSIONS AND RECOMMENDATIONS

156. The conclusions and recommendations of the Committee are set out below with the paragraph in the report to which each refers:

	Paragraph
1. The present international terminal at Brisbane Airport is inadequate to cope with the expected increase in international passenger numbers and should be replaced.	30
2. The Committee agrees that a need exists for the Federal Airports Corporation to provide sites for aviation industry infrastructure and commercial activities.	30
3. The Committee notes the measures being taken to minimise the noise impact of aircraft operations at Brisbane airport.	94
4. The Committee recommends that the Federal Airports Corporation should undertake a thorough re-examination of the Brisbane Airport master plan before further runway developments are undertaken.	108
5. The Committee believes that the development of an international terminal in the centre satellite area of the domestic terminal is a viable interim measure but is not a long term alternative to the construction of a separate international terminal on the proposed master planned site.	113

6. The Committee recommends the sandfilling of international terminal, operational and commercial sites, Brisbane airport at an indicative cost of \$44M at June 1989 prices. 152



Colin Hollis
Chairman

23 November 1989.

DISSENT BY SENATOR B BURNS AND SENATOR J DEVEREUX

1. That the sandfilling not be proceeded with until such time as the master plan is revised. The revision to focus on the location of the international terminal complex and the extension of the cross wind runway. 153
2. While the review is proceeding the centre satellite area of the domestic terminal could be developed as an interim international terminal. 154
3. This development could in the long term provide upgraded facilities for future domestic growth. 155



LIST OF WITNESSES

- ALLISON, Mr Anthony Leonard, Manager Operations, Civil Aviation Authority, 363 Adelaide Street, Brisbane, QLD
- BARRELL, Mr Trevor Francis, State Manager, Australian Construction Services, GPO Box 1381, Brisbane, QLD
- BAKTER, Mr Thomas, General Manager, Development and Operations, Port of Brisbane Authority, Queensland Government, GPO Box 1818, Brisbane, QLD
- BEAMES, Mr Ross Morris, Engineering Group Manager, Rankine and Hill Pty Ltd, Consultants to Federal Airports Corporation, 139 Leichhardt Street, Spring Hill, QLD
- BEASLEY, Mrs Anne, Lilley Representative, Brisbane Airport Task Force, and President Nudgee Beach Progress Association, 71 O'Quinn Street, Nudgee Beach, QLD
- BYGOTT, Mr William John, Aviation Manager, Queensland Region, Department of Transport and Communications, Brisbane, QLD
- CAMERON, Mr Donald Milner, MP, Parliament House, Canberra, ACT
- CATTS, Mr Keith Milton, Project Manager, Federal Airports Corporation, Banksia Place, Eagle Farm, QLD
- COX, Mr Michael John Arthur, Property Director, Qantas Airways Ltd, GPO Box 489, Sydney, NSW
- DARLING, Mrs Elaine Elizabeth, MP, Parliament House, Canberra, ACT
- DAVIES, Mr Robert Chester, Assistant General Manager, Air Traffic Services, Civil Aviation Authority, 363 Adelaide Street, Brisbane, QLD
- DENNY, Mr Barry Donald, Associate, C/- Rankine and Hill Pty Ltd, Consultants to Federal Airports Corporation, 139 Leichhardt Street, Spring Hill, QLD
- FELTON, Captain Colin Edward, Vice-President, Technical, Australian Federation of Air Pilots, 132 Albert Road, South Melbourne, VIC
- HAYMAN, Mr Donald Malcolm, Project Manager, Federal Airports Corporation, 77 Dunning Avenue, Rosebery, NSW

HERRON, Mr Keith Roderick, Technical Services Manager, Federal Airports Corporation, Banksia Place, Eagle Farm, QLD

HILL, Mr Stuart William, Air Traffic Controller, Civil Air Operations Officers Association, 56 Hyde Road, Yeronga, Brisbane, QLD

HUMPHREYS, Honourable Benjamin Charles, MP, Minister for Veteran's Affairs, Parliament House, Canberra, ACT

JOEL, Mr Richard Alexander, Managing Director, Office of Economic Development for the City of Brisbane Ltd, 18th Floor, Brisbane Administration Building, 69 Ann Street, Brisbane, QLD

JONES, Mr Harold McCredie, Civil Engineering Supervisor, Federal Airports Corporation, Banksia Place, Eagle Farm, QLD

JONES, Mr Peter Vincent, Senior Planning Officer, Premier's Department, Executive Building, 100 George Street, Brisbane, QLD

JULL, Mr David Francis, MP, Parliament House, Canberra, ACT

KROLKE, Mr Ernst Jurgen, Manager Fleet Planning and Scheduling, Qantas Airways Ltd, GPO Box 489, Sydney, NSW

LADE, Mr John William, Projects Manager, Federal Airports Corporation, 6 Timothy Close, Cherrybrook, NSW

LEE, Mr Brian Vincent, Airport General Manager, Brisbane Airport, Federal Airports Corporation, Banksia Place, Eagle Farm, QLD

MCGRATH, Mr Brian Leonard, Director, Engineering Services Division, Harbours and Marine Department, Queensland Government, GPO Box 2595, Brisbane, QLD

McMILLAN, Mr James Albert, Commercial Manager, Federal Airports Corporation, Banksia Place, Eagle Farm, QLD

MILLAR, Mr Greg, Director, Envirotech, C/- Griffith University, Nathan, QLD

MITCHELL, Mr Brian Lawrence, Finance and Administration Manager, Federal Airports Corporation, Banksia Place, Eagle Farm, QLD

RAINBOW, Captain Allan Roy, Member, Technical Committee, Australian Federation of Air Pilots, 115 Buckingham Street, Ashgrove, QLD

RODUKOFF, Mr Paul, 40 Quirinal Crescent, Seven Hills, QLD

SANDERSON, Mr Glen Colin, Director, Projects and Planning Branch,
State Projects Division, Premier's Department, Executive
Building, 100 George Street, Brisbane, QLD

SCIACCA, Mr Con, Federal Member for Bowman, 36 Old Cleveland
Road, Capalaba, QLD

SCOREPCCI, Mr Danny, Assistant Secretary, Infrastructure,
Domestic Aviation Division, Department of Transport and
Communications, Canberra, ACT

SHARP, Mr Derek Richard Granville, Manager Airports Development,
Qantas Airways Ltd, GPO Box 489, Sydney, NSW

STOCK, Mr Errol, Lecturer and Environmental Consultant, C/-
Griffith University, Nathan, QLD

WALKER, Mr Philip John, Research Officer, Inter-Governmental
Relations Section, Premier's Department, Executive
Guilding, 100 George Street, Brisbane, QLD

WARE, Mr John, Environmental Consultant, Institute of
Environmental Research, Griffith University, Nathan, QLD

WRIGHT, Mr Darryl William, Chairman, People Against Aircraft
Noise, Camp Hill-Coorparoo Branch, 39 Nurstead Street, Camp
Hill, QLD

APPENDIX B

PROJECT DRAWINGS

Figure 1 - Phase 1 works location	- B2
Figure 2 - Brisbane Airport Master Plan	- B3
Figure 3 - Proposed sand placement	- B4
Figure 4 - Location of Middle Banks and rehandling basin	- B5

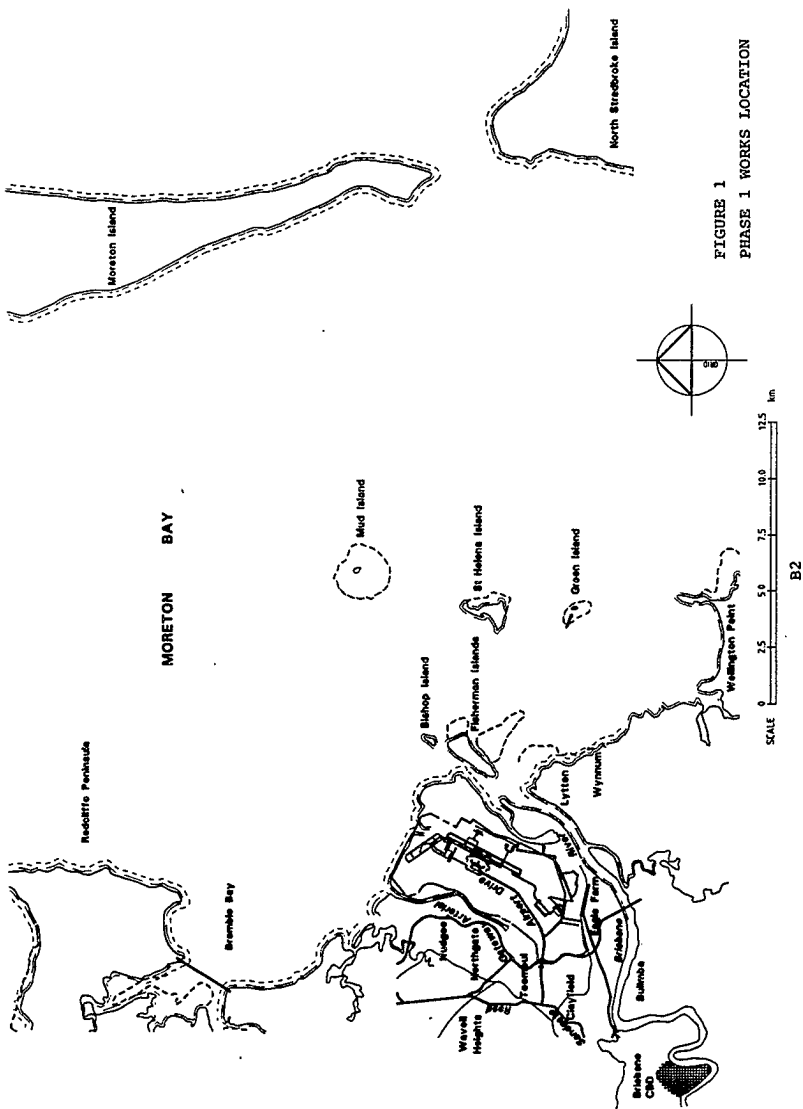
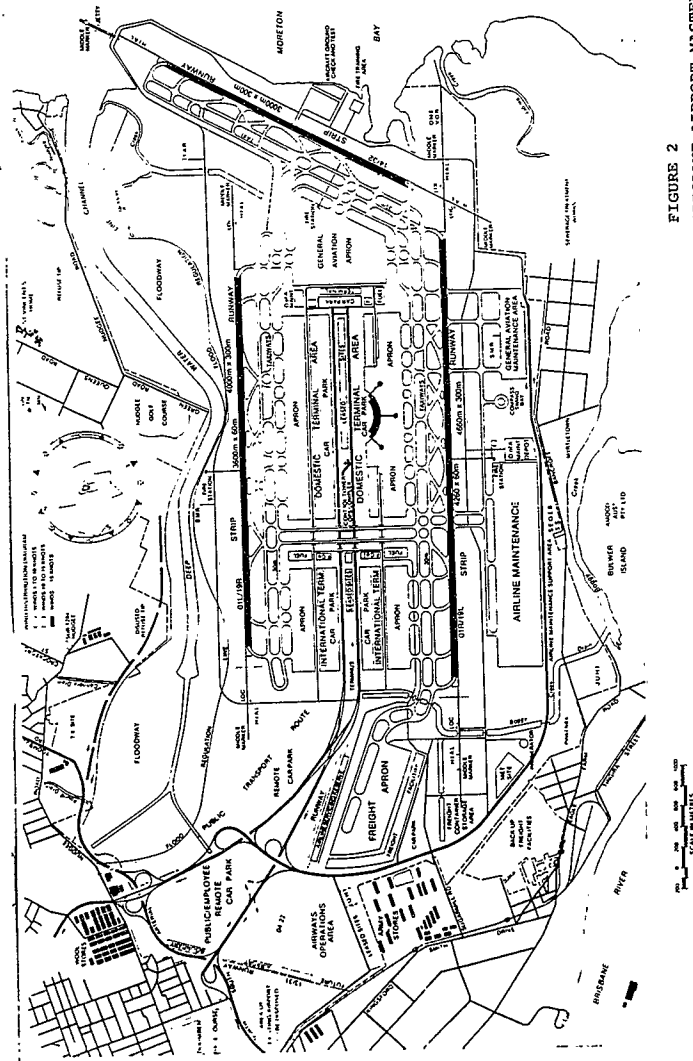


FIGURE 1
PHASE 1 WORKS LOCATION

FIGURE 2
BRISBANE AIRPORT MASTER PLAN



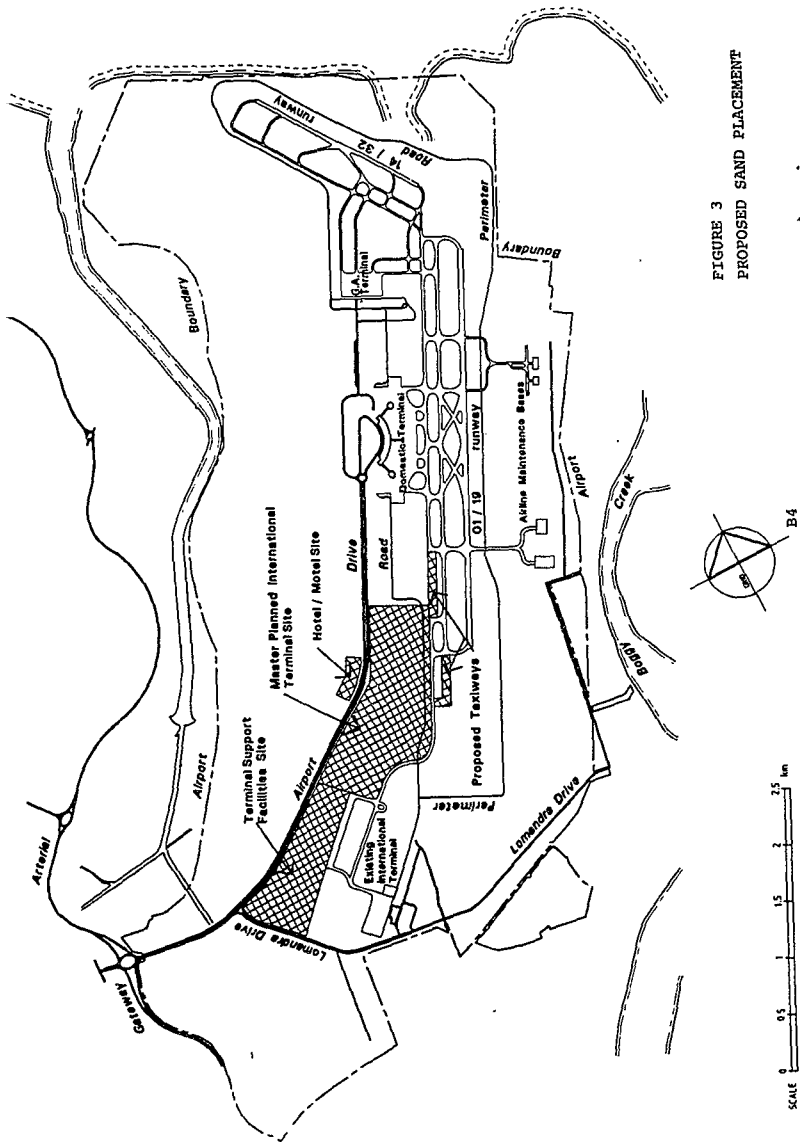


FIGURE 3
PROPOSED SAND PLACEMENT

B4

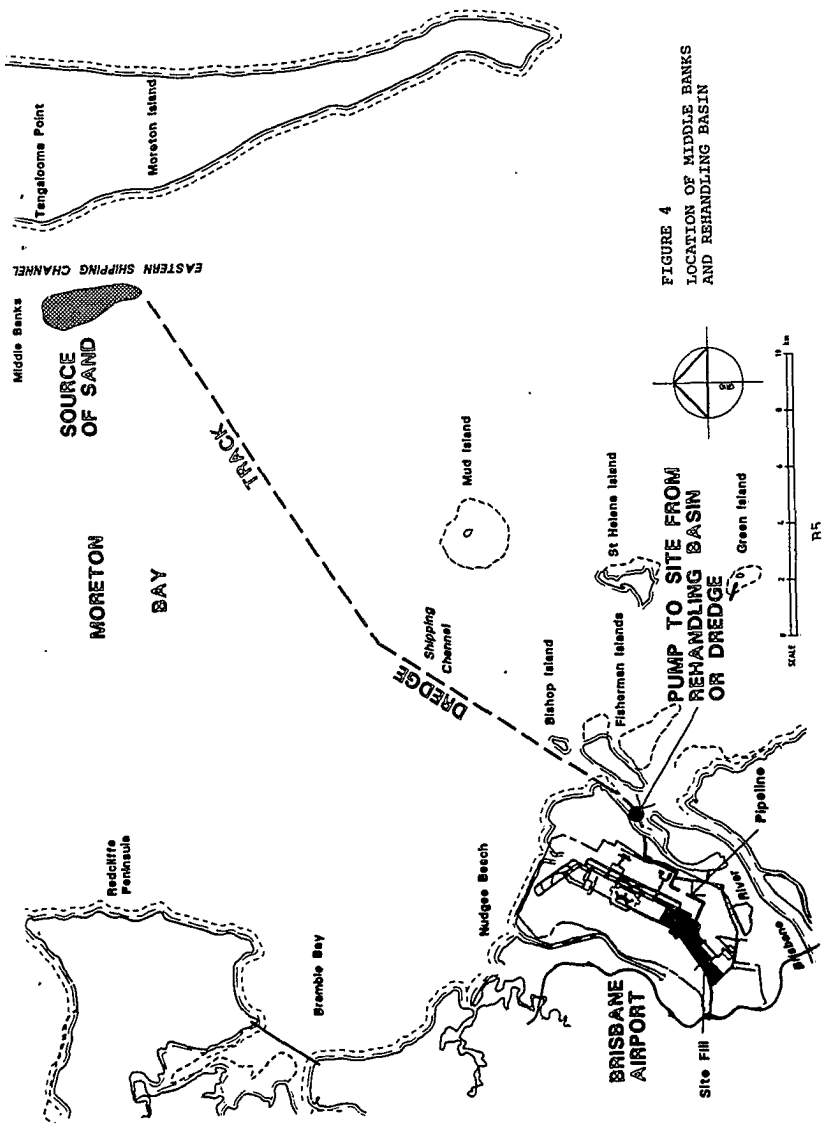


FIGURE 4
 LOCATION OF MIDDLE BANKS
 AND REHANDLING BASIN