Parliamentary Standing Committee on Public Works

REPORT

relating to the

MAINTENANCE DREDGING OF KEDRON BROOK FLOODWAY, BRISBANE

(Fifteenth Report of 1995)

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA
1995

The Parliament of the Commonwealth of Australia

Parliamentary Standing Committee on Public Works

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MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

(Thirty-First Committee)

Mr Colin Hollis MP (Chairman)
Senator Paul Henry Calvert (Vice-Chairman)

Senate	House of Representatives
Senator Bryant Robert Burns	Mr John Neil Andrew MP
Senator Shayne Michael Murphy*	Mr Raymond Allen Braithwaite MP
	Mr Russell Neville Gorman MP
	Mr Robert George Halverson OBE MP
	Hon. Benjamin Charles Humphreys MP

* replaced Senator John Devereux on 10 February 1995

SECTIONAL COMMITTEE MAINTENANCE DREDGING OF KEDRON BROOK FLOODWAY, BRISBANE

Mr Colin Hollis MP (Chair)
Mr John Neil Andrew MP (Vice-Chair)
Mr Raymond Allen Braithwaite MP
Mr Russell Neville Gorman MP
Hon Benjamin Charles Humphreys MP

Committee Secretary:	Peter Roberts
Inquiry Secretary:	Michael Fetter
Secretarial Support:	Belynda Zolotto

EXTRACT FROM THE VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES

No. 133 dated Thursday, 30 March 1995

PUBLIC WORKS–PARLIAMENTARY STANDING COMMITTEE–REFERENCE OF WORK–MAINTENANCE DREDGING OF KEDRON BROOK FLOODWAY, BRISBANE

Mr Walker (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: Maintenance dredging of Kedron Brook floodway, Brisbane.

Papers: Mr Walker presented plans in connection with the proposed work.

Question - put and passed.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

MAINTENANCE DREDGING OF KEDRON BROOK FLOODWAY, BRISBANE

By resolution on 30 March 1995, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for consideration and report to Parliament the maintenance dredging of Kedron Brook floodway, Brisbane.

THE REFERENCE

1. The proposal involves maintenance dredging of the Kedron Brook floodway to restore its original design capacity and the disposal of approximately 600 000 cubic metres of dredged spoil on part of the nearby old Brisbane Airport site.

2. The Kedron Brook floodway consists of an 8.5 kilometre long, deep water channel passing through approximately 500 hectares of flood plain linking the Kedron Brook with Moreton Bay. The floodway was designed to convey flood flows around the new Brisbane Airport site.

3. The estimated cost of the proposal is $9.1m at March 1995 prices.

THE COMMITTEE'S INVESTIGATION

4. On 11 May 1995 the Committee appointed a Sectional Committee comprising Mr C Hollis MP (Chair), Mr N Andrew MP (Vice-Chair), Mr R Braithwaite MP, Mr R Gorman MP and the Hon B Humphreys MP to undertake this inquiry. The Committee received a written submission from Australian Estate Management (AEM) and the Sectional Committee took evidence from its representatives at a public hearing in Brisbane on 18 May 1995. Prior to the public hearing the Sectional Committee inspected the Kedron Brook floodway and the site for the disposal of the dredged spoil at the old Brisbane Airport site.

5. At the public hearing evidence was also taken from the following:

- Mr W Swan MP

. Brisbane City Council

. Nudgee Beach Progress Association

6. Written submissions regarding the proposal were also received from the following organisations and are incorporation in the Committee's proceedings:

. Environment Protection Agency

. Australian Heritage Commission

. Queensland Department of Primary Industries

. Queensland Commercial Fishermen's Organisation

. Federal Airports Corporation

. Queensland Department of Environment and Heritage

7. A list of witnesses who gave evidence at the public hearing is at Appendix A. The Committee's proceedings will be printed as Minutes of Evidence.

BACKGROUND

8. The Kedron Brook floodway was constructed by the Commonwealth in 1980 as part of the new Brisbane Airport development to replace existing flood plain drainage systems which were filled during airport works. In designing the capacity of the floodway, the criterion adopted was that flood water levels outside Commonwealth land upstream of the floodway should not be increased as a result of airport construction.

9. The floodway provides only limited drainage for the Airport site. Its main purpose is to carry flood flows originating from the Kedron Brook catchment area around the Airport site and into Moreton Bay. The Kedron Brook catchment area covers about 70 square kilometres of Brisbane's northern suburbs.

THE NEED

10. The floodway was designed to function as a small tidal estuary. It consists of an 8.5 kilometre long, deep channel with an overbank flow area on each side where no development may take place. The overbank flow area is bounded by agreed flood regulation lines.

11. The design of the channel provided a bed width varying from 6 metres at its upstream end near Nudgee Road to 200 metres at its mouth at the Moreton Bay shoreline. The bed level varied from approximately low tide level at Nudgee Road to two metres below low tide level at a point 1.1 kilometres downstream of Nudgee Road through to the mouth. The design also included an entrance bar at the mouth with a bed level of half a metre below low tide level.

12. At the time of construction a 10 metre wide bench along each bank of the floodway was formed and planted with mangrove seedlings extending over a length of about six kilometres upstream from the mouth. In some sections these mangroves have thrived and been supplemented by self-seeded mangroves. In others, they have merely survived, died out or been lost due to bank erosion. Nevertheless the floodway channel is now generally mangrove fringed. Some colonisation of parts of the banks by salt marsh plants has also occurred.

13. Since completion of construction, the deep channel of the floodway has been subject to gradual deposition of sediments over most of its length. The channel's flood carrying capacity is now reduced below its design capacity.

14. As owner of the land, the Commonwealth is responsible for maintenance of the floodway's performance and now needs to restore the channel to its original design capacity.

15. The requirement for this dredging maintenance to be carried out at about this time was foreshadowed by the then Department of Housing and Construction in its evidence to the Committee during the inquiry into the Proposed Redevelopment of the Brisbane Airport in 1979. (Tenth Report of 1979).

16. Since construction, the floodway has steadily decreased in depth over most of its length, as originally predicted, because of the natural processes of fluvial siltation, bank erosion and ingress of sediment from Moreton Bay.

17. Heavy siltation occurring in the first few years during the new Airport's construction. Periodic surveys and analysis of data indicate that sedimentation is continuing at a fairly uniform rate averaging about 25 000 cubic metres per year. The thickness of the sediment layer on the bed now ranges from 0.4 metres to 1.5 metres. The cumulative volume of silt is in the order of 600 000 cubic metres.

18. Overbank flow capacity outside the flood regulation line initially assisted in the conveyance of flood waters but, in the 15 years since floodway construction, various activities in this area including filling, road construction (both on the Airport and external to the Airport) and dense plantings have significantly reduced the overbank capacity available.

19. The floodway is mainly abutted by open land or roads except for the suburb of Nudgee Beach close to the western side of the floodway mouth. Upstream, Nudgee Golf Course and the Gateway Arterial Road border the flood regulation line on the western side. Almost the whole of the eastern side of the floodway adjoins a largely undeveloped area of the Brisbane Airport.

20. AEM believes that because of the continuing sedimentation and changes in the overbank flow area, a significant risk of increased flooding in upstream areas now exists and the Commonwealth, as the owner of the floodway, could be open to complaints and claims by affected property owners.

Committees's Conclusion

21. There is a need for the maintenance dredging of the Kedron Brook floodway to restore the floodway to its original design capacity.

THE PROPOSAL

22. The object of the proposal is to

- remove the built-up sediment from the floodway to restore its design performance capacity and ensure that the criterion for no worsening of flooding upstream of the floodway is satisfied

- place the dredged spoil on low lying areas of the old Brisbane Airport site.

23. When originally designed and built, it was recognised that the floodway channel would not be self-scouring, other than at times of very high flows, and that periodic maintenance dredging would be necessary to maintain its flood carrying capacity. The necessary frequency of such maintenance was estimated in 1980 to be of the order of 15 years.

24. Given the nature of the sediment material in the floodway channel, the dimensions of the channel and the location of the spoil disposal area, AEM believes it is not economically viable to remove the material by means other than dredging.

25. AEM advised the Committee that it examined the options of disposing dredged spoil onshore or offshore. Offshore disposal would require removal of the sediment material by means of a dredge loading directly into hopper barges, which would then transport the material to an offshore spoil dumping area. This method is significantly more costly than onshore disposal because of the long distance to any offshore dumping ground, small capacity of hopper barges required because of the shallow depth of water in the floodway, and dumping fees incurred.

26. The combined effect of the above factors would be to increase the cost of the work by at least 50% compared with onshore disposal. The environmental effects of offshore dumping are also potentially greater than with disposal on the old Brisbane Airport site as proposed. The offshore dumping option is therefore not considered viable.

27. A small suction or cutter suction dredge will be used to dredge sediment from the channel bed. The sediment will then be pumped through a pipeline to bunded containment areas on the disposal area on the old Brisbane Airport site.

28. Bunds surrounding the containment areas will be constructed using imported fill material supplemented by some material won on site (from within the areas to be filled). Where practicable, topsoil will be stripped, before filling, and stockpiled on site for future use. The Sectional Committee was advised by AEM that bed samples along the length of the floodway have been tested for the presence of contaminants. Testing was undertaken for the presence of heavy metals, pesticides and pcb's, oil and grease and petroleum hydrocarbons. Results showed the presence in some samples of zinc and chromium - at slightly elevated levels but not above acceptable levels for use as fill for industrial land. Dilution of the recorded concentrations will occur by mixing with sediment from other sections of the floodway during dredging and pumping into the bunded containment areas.

29. Pumping of dredged spoil requires large quantities of water to transport the solids in suspension. Return water discharging from the containment areas will be directed into Battery Drain and flow back into the floodway and thence to Moreton Bay.

30. After completion of dredging, free water will be drained from the bunded areas which will then be maintained in a free draining condition to facilitate drying of the spoil.

31. The banks of the floodway channel are now fringed with mangroves and other salt marsh plants which have helped stabilise bank surfaces and reduce erosion potential. It is not intended to dredge the banks, only sediment on the bed will be removed. Mangroves will not be disturbed by the dredging works.

32. All areas to be dredged, all land to be traversed by the delivery pipeline and all land on which spoil will be disposed are owned by Commonwealth agencies.

Old Brisbane Airport Site

33. Spoil dredged from the floodway will be pumped on to the old Brisbane Airport site as indicated at Appendix B. The site consists of low lying grassland and former runway and taxiway pavement areas with broken-up asphalt surfacing. The site is generally in a degraded condition.

34. There are no residences in the immediate vicinity of the disposal area. Two areas of historic value which are included in the Register of the National Estate are the former Eagle Farm Women's Prison site and the Hangar No. 7 Building. The locations are indicated at Appendix B. AEM believes that neither will be affected by the proposed works. However the Australian Heritage Commission has advised that AEM will be engaging a consultant to examine the heritage values of the site including whether there are any places of significance to Aboriginal people.

35. It is intended that this land in the future will be developed for industrial use. There are no other sites in the vicinity of the floodway available for disposal of the spoil.

Ownership of Floodway

36. AEM is currently negotiating a Memorandum of Understanding with the Brisbane City Council (BCC) for ownership of the floodway and

surrounding land to be transferred to the BCC following completion of the dredging proposal. AEM advised the Committee that the Commonwealth will have no further responsibility for maintenance of the floodway following the transfer. The transfer will be at no cost to the BCC which will then be responsible for future dredging of the floodway. The land will be held in perpetuity as open space. The Committee understands that the floodway and adjacent land will be incorporated into an expanded Boondall Wetlands Reserve.

37. Both the dredging proposal and the incorporation of the floodway and adjacent land into the Boondall Wetlands Reserve were strongly supported by Mr W Swan MP and the Nudgee Beach Progress Association. Mr Swan advised the Committee that the transfer of some 500 hectares will increase the size of the Boondall Wetlands Reserve to between 1200 and 1300 hectares. Mrs A Beasley, President of the Nudgee Beach Progress Association (which is a member of the Boondall Wetlands Management Committee) indicated that the Boondall Wetlands Reserve is an important waterbird habitat which has both national and international significance. During its inspection of the Kedron Brook floodway in the vicinity of the Boondall Wetlands Reserve, the Sectional Committee gained an appreciation of the important role played by the Nudgee Beach community not only in preserving the wetlands but also in the establishment of the Nudgee Beach Environmental Education Centre which introduces students to the wetlands through education programs.

Committee's Conclusions

38. The maintenance dredging of the Kedron Brook floodway as proposed in this reference will alleviate the risk of increased flooding in upstream suburban areas.

39. On completion of the maintenance dredging proposal the Kedron Brook floodway will be transferred from Commonwealth ownership to that of the Brisbane City Council. Maintenance of the floodway will then become the responsibility of the Brisbane City Council.

40. The transfer of ownership of the Kedron Brook floodway and adjacent lands to the Brisbane City Council will enable the expansion of the Boondall Wetlands Reserve.

ENVIRONMENTAL ASPECTS

41. AEM believes that this project will have a beneficial effect on the built environment in that the dredging will restore the floodway to its required design performance capacity and will therefore reduce the risk of flooding to Brisbane suburbs upstream. A secondary beneficial impact is that the dredged spoil is to be placed on the old Brisbane Airport site to raise parts of that site which are currently below design flood levels. The filling of these low areas will assist with future development of this site.

42. A Notice of Intention under the Environmental Protection (Impact of Proposals) Act 1974 has been lodged with the Commonwealth Environment Protection Agency (EPA) by AEM. This identified the environmental issues likely to arise during the project as:

- noise impact of dredging machinery on nearby residents and workplaces
- visual impact of turbid water from dredging activities and tailwater return from the disposal area
- potential deposition of sediment outside the floodway on Moreton Bay foreshores
- removal of benthic fauna with bed sediments
- destruction of existing vegetation on the spoil disposal site.

43. In a written submission to the Committee, EPA advised that the environmental assessment of the proposal in accordance with the Administrative Procedures under the Environmental Protection (Impact of Proposals) Act 1974 had not yet been completed.

44. EPA has sought advice from the Queensland Department of Environment and Heritage, the Australian Heritage Commission and Australian Nature Conservation Agency regarding the environmental impact of the project. Following receipt of these comments EPA will then be in a position to make recommendations to the Minister for the Environment, Sport and Territories as to whether or not he should direct the preparation of a public environment report (PER) or environmental impact statement (EIS) in relation to the proposal.

45. In written submissions to the Committee the Queensland Department

of Primary Industries (DPI) and the Queensland Commercial Fishermen's Organisation (QCFO) raised a number of concerns regarding the impact of the dredging of the floodway on fish stocks. DPI pointed out that the floodway is a popular recreational fishing ground and provides a marine habitat to support this fishery. AEM stressed that it is not intended to disturb the banks of the floodway or associated vegetation during the dredging works. AEM will also continue discussions with bodies such as DPI and QCFO particularly in light of any conditions which may be placed on the project by EPA. AEM intends to undertake the works in such a way that the long term impact on environmental values, bank stability and future siltation rates is minimised. The Committee understands that the likely affect of dredging of the floodway mouth on adjacent beaches will be among the issues to be examined.

46. The Committee does not believe that projects should be referred to it without first gaining all necessary environmental approvals. Although on the information available to the Committee the need for either a PER or EIS appears unlikely the fact remains that such further studies could be required. In this situation the project being reported on by the Committee could be substantially altered and perhaps require a further public hearing by the Committee. The Committee does not believe this to be a sensible or desirable practice.

Committee's Recommendation

47. The Committee recommends that projects not be referred to it until all necessary environmental approvals have been obtained.

CONSULTATIONS

48. During the development of this proposal AEM consulted the following authorities and organisations:

- Department of Finance
- Commonwealth Environment Protection Agency
- Federal Airports Corporation
- Queensland Department of Environment and Heritage
- Queensland Department of Primary Industries

. Brisbane City Council

. Nudgee Beach Progress Association

. Australian Littoral Society

49. AEM will continue consultations with the above organisations during the detailed design and documentation phase and during the performance of the works.

WORKS PROGRAM

50. AEM has appointed Australian Construction Services (ACS) as the Project Manager. ACS will also undertake design and documentation of the works.

51. AEM advised the Committee that the most effective project delivery system will be investigated using value management techniques and a decision will be made prior to finalisation of design and tender documentation.

52. For this project AEM will be employing best practices as developed within the Australian construction industry and these will include application of the codes of tendering and ethics, the general conditions for engagement of consultants, the Australian construction industry pre-qualification criteria, partnering and value management.

53. AEM is proposing to commence work by August 1995 with completion by June 1996.

COST ESTIMATE

54. The limit of cost estimate for this proposal is $9.1m at March 1995 prices.

Committee's Recommendation

55. The Committee recommends the maintenance dredging of the Kedron Brook floodway, Brisbane at an estimated cost of $9.1m at March 1995 prices.

CONCLUSIONS AND RECOMMENDATIONS

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

		Paragraph
1.	There is a need for the maintenance dredging of the Kedron Brook floodway to restore the floodway to its original design capacity.	21
2.	The maintenance dredging of the Kedron Brook floodway as proposed in this reference will alleviate the risk of increased flooding in upstream suburban areas.	38
3.	On completion of the maintenance dredging proposal the Kedron Brook floodway will be transferred from Commonwealth ownership to that of the Brisbane City Council. Maintenance of the floodway will then become the responsibility of the Brisbane City Council.	39
4.	The transfer of ownership of the Kedron Brook floodway and adjacent lands to the Brisbane City Council will enable the expansion of the Boondall Wetlands Reserve.	40
5.	The Committee recommends that projects not be referred to it until all necessary environmental approvals have been obtained.	47
6.	The Committee recommends the maintenance dredging of the Kedron Brook floodway, Brisbane at an estimated cost of $9.1m at March 1995 prices.	55

Colin Hollis MP
Chair

19 June 1995

APPENDIX A

WITNESSES

BEASLEY, Mrs Anne, President of the Nudgee Beach Progress Association, Nudgee Beach, Queensland

COULTER, Mrs Patricia Anna, Floor 6, 313 Adelaide Street Brisbane Queensland

DORE, Mr Paul Joseph, Floor 6, 313 Adelaide Street, Brisbane, Queensland

HALCROW, Mr Robert, Engineer-in-charge, Hydraulics Section, Brisbane City Council, Brisbane, Queensland

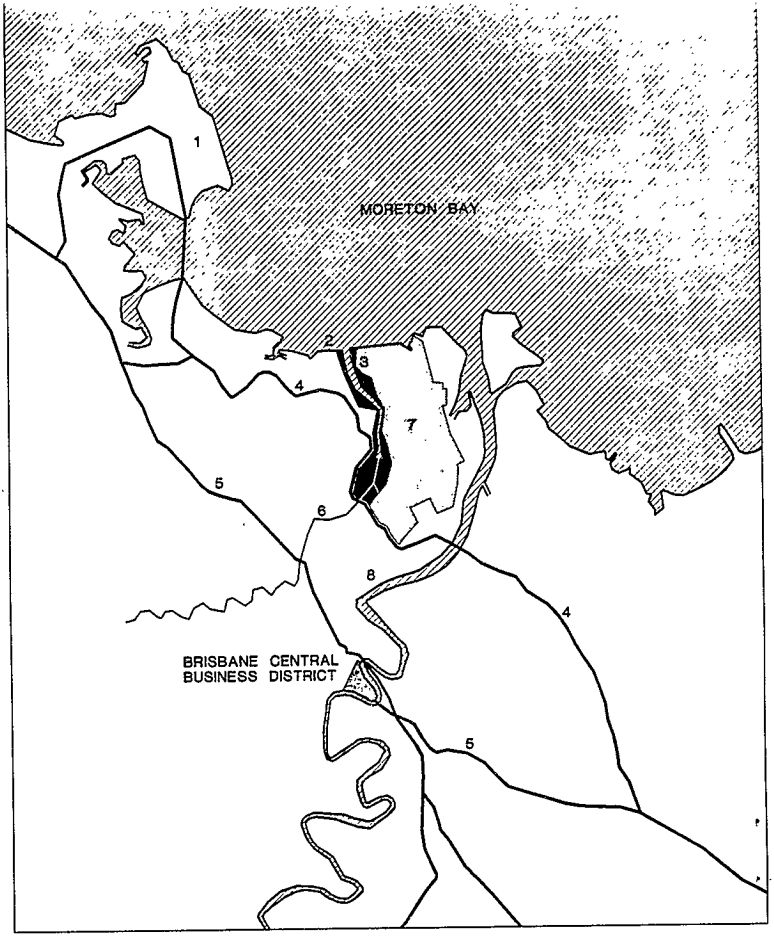
SHILTON, Dr Peter Anthony, Principal Environment Officer, Natural Areas, Brisbane City Council, Brisbane, Queensland

SWAN, Mr Wayne Maxwell, Federal member for Lilley, 1162 Sandgate Road Nundah, Queensland

VALENTINE, Mr Noel Robert, 313 Adelaide Street, Brisbane, Queensland

APPENDIX B

PROJECT DRAWINGS

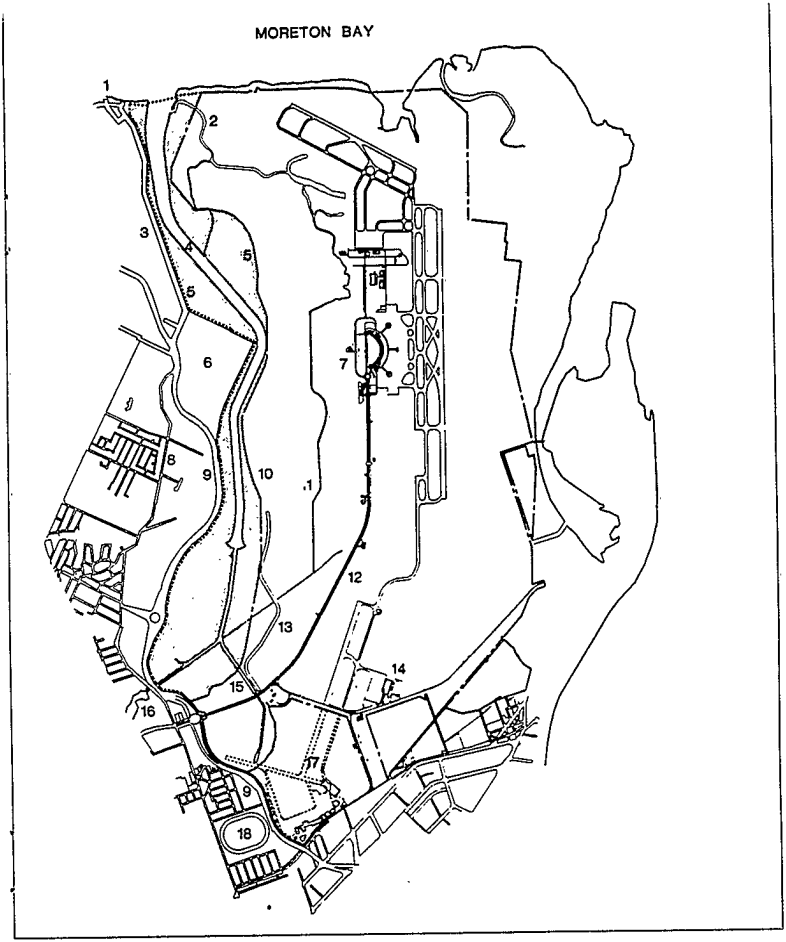


LEGEND

1 REDCLIFFE PENINSULA
2 NUDGEE BEACH
3 KEDRON BROOK FLOODWAY
4 GATEWAY ARTERIAL ROAD
5 BRUCE HIGHWAY
6 KEDRON BROOK
7 BRISBANE AIRPORT
8 BRISBANE RIVER

KEDRON BROOK FLOODWAY
MAINTENANCE DREDGING

LOCALITY PLAN



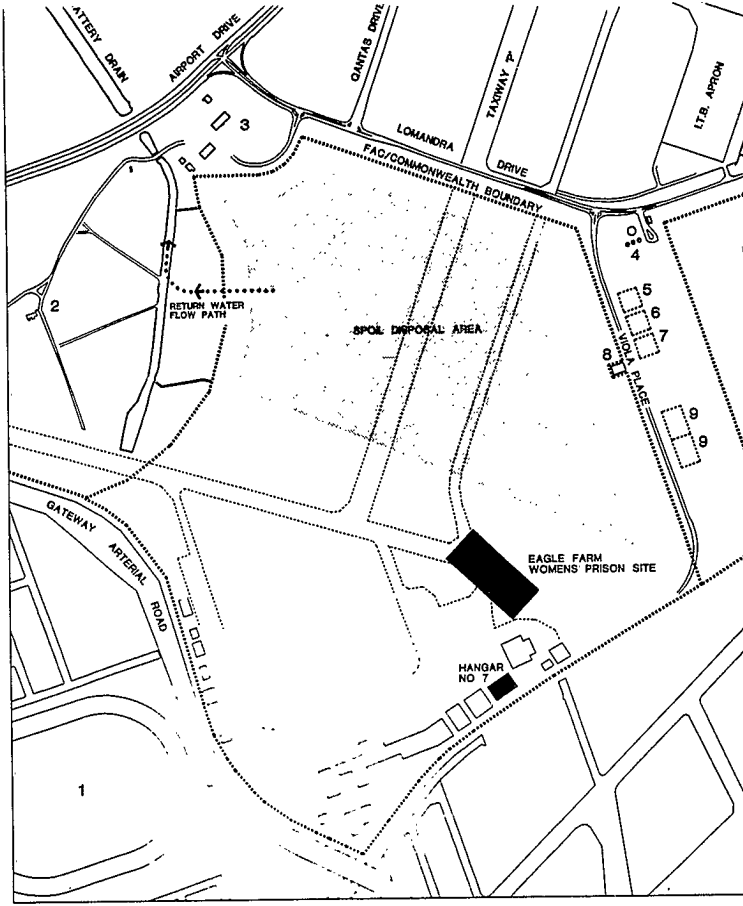
LEGEND

1 NUDGEE BEACH
2 JACKSONS CREEK
3 BEACH ROAD
4 FLOODWAY CHANNEL
5 FLOOD REGULATION LINE
6 NUDGEE GOLF COURSE
7 BRISBANE AIRPORT
8 NUDGEE ROAD
9 GATEWAY ARTERIAL ROAD
10 FAC BOUNDARY
11 LANDERS POCKET DRAIN
12 AIRPORT DRIVE
13 FLOOD LEVEE
14 INTERNATIONAL TERMINAL
15 BATTERY DRAIN
16 KEDRON BROOK
17 OLD BRISBANE AIRPORT SITE
18 DOOMBEN RACECOURSE

KEDRON BROOK FLOODWAY
MAINTENANCE DREDGING

FLOODWAY SITE PLAN

0 1 km



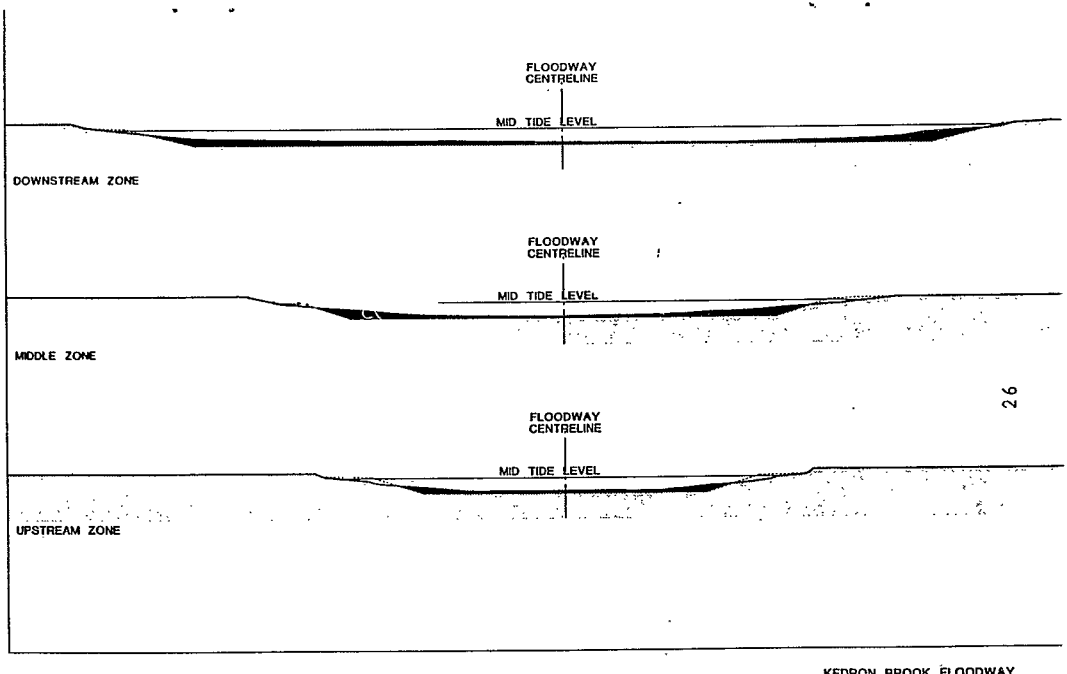
LEGEND

1 DOOMBEN RACECOURSE
2 RADAR BUILDING
3 CAA AIRPORT CONTROL BUILDINGS
4 JUHI DEPOT
5 AVIATION INSTITUTE
6 BUS PARKING
7 CAA DEPOT
8 QANTAS SERVICE BUILDING
9 RENTAL CAR DEPOT (VACANT)

KEDRON BROOK FLOODWAY
MAINTENANCE DREDGING

OLD BRISBANE AIRPORT SITE

0 250 m



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LEGEND

..... ORIGINAL DESIGN PROFILE

SEDIMENT TO BE REMOVED

KEDRON BROOK FLOODWAY
MAINTENANCE DREDGING

FLOODWAY SECTIONS

0 25 m