

1972

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed construction of a

ROAD TO EAST ALLIGATOR RIVER AREA

Northern Territory

(FOURTH REPORT OF 1972)

COMMONWEALTH GOVERNMENT PRINTING OFFICE
CANBERRA: 1972

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

ROAD TO EAST ALLIGATOR RIVER AREA
NORTHERN TERRITORY

R E P O R T

By resolution on 11 November 1971, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament, the proposal for construction of a road to the East Alligator River area of the Northern Territory.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal involves
 - construction of 86 miles of 20 ft wide sealed road from Mt. Bunday to Yourmill Waterhole including a major bridge over the South Alligator River and widening the existing bridge over the Mary River;
 - widening the existing 12 ft wide sealed road between Middlepoint turnoff and Mt. Bunday to 20 ft including the widening of three single lane bridges.
2. The work is estimated to cost \$4.4 million.

THE COMMITTEE'S INVESTIGATION

3. The Committee received written submissions and drawings from the Northern Territory Administration and the Department of Works and took evidence from their representatives at a public hearing in Darwin. The Committee also conducted public hearings at Mudginbarry Station and at the Oenpelli Mission in Arnhem Land.

4. In addition to departmental presentations, we took evidence from representatives of the Atomic Energy Commission, as well as mining, tourist and pastoral interests. Witnesses representing the Oenpelli Mission and two members of the Legislative Council of the Northern Territory also appeared before the Committee. We inspected the general area of the proposed road from the air.

THE EAST ALLIGATOR RIVER REGION

5. The East Alligator River, flowing generally north to north-east enters Van Diemen's Gulf some 150 miles east of Darwin. This river and other major rivers in the area, including the Adelaide River, Mary River and South Alligator River flow through a wide tract of sub-coastal plain country. At various times attempts have been made to develop the area but lack of reliable access has been a major deterrent to significant activity. Further to the east lies the Arnhem Land Aboriginal Reserve.

6. Access Except for 42 miles of sealed road between the Stuart Highway and Mt. Bunday, the area is traversed by a low standard road running easterly from Mt. Bunday to the East Alligator River and beyond into Arnhem Land. The road is only partly formed with many bed level stream crossings and provides rough, dusty dry weather access

to a number of pastoral leases, some forestry ventures, uranium prospecting activities and to Arnhem Land itself. The road is incapable of sustaining continuous heavy traffic and is virtually impassable for up to five months during each wet season.

7. Pastoral Industry There are currently ten pastoral leases within the area of influence of the proposed road and up to nine more are expected to be made available over the next five years or so. Both cattle and buffalo are run. The cattle population is about 10,000 head with a turnoff of 600 annually, mostly being killed at the Darwin meatworks.

8. Four permanent abattoirs in the vicinity of the road serve the buffalo industry. Two have restricted export licences and the others supply Australian markets only. The present buffalo population is estimated at 70,000 head (mostly feral) and there is a turnoff of about 20,000 per annum.

9. Uranium Discoveries Extensive deposits of uranium mineralisation have been discovered in the East Alligator River area in the past few years. Indicated and inferred reserves of 100,000 short tons of uranium oxide mark the area as a major potential source of fuel for nuclear reactors. Although of relatively recent discovery, the reserves are very highly ranked among world deposits.

10. The deposits have been found to be of a very high grade. A uranium oxide content varying up to 8 lb. per ton of ore has been announced which compares more than favourably with an average content of overseas sources of supply.

11. Tourism To date, there are very limited facilities for tourists, being mostly associated with safari-type operations. There is only one motel serving the entire region. The area has an extensive range of environmental conditions which provides a wide variety of wildlife and vegetation. Many plants and animals are unique to the area and there are many scenic attractions including rock formations, waterfalls, streams, billabongs and native cave paintings. We were told that organized tours of the region were very popular particularly with overseas tourists, but many were deterred by the poor access, inadequate facilities and inability to tour the area during the wet season.

12. Forestry The Administration's Forestry Branch is developing forest resources at Murgarella, to the north of Oenpelli. There are also a number of other forestry reserves proposed in the sub-coastal plains area which could be served by an all weather road.

13. Aboriginals The nearest Aboriginal community is the Oenpelli Mission to the east of the East Alligator River and some 50 miles from Yourmill Waterhole. Oenpelli has a population of about 500 persons. The Mission's abattoir is a major income earner but access to markets is restricted by the low standard of the existing road. Apart from access by sea and the East Alligator River, the Mission is virtually isolated during the wet season.

14. The largest community in Arnhem Land is Maningrida which has a population over 1,000 people and is situated about 150 miles east of Oenpelli by the existing track.

POTENTIAL OF THE EAST
ALLIGATOR RIVER AREA

15. Because of the poor access to the area, commercial activities virtually cease for the five months or so of the wet season. During this period, access to most ventures is only possible by air or by limited barging operations in some cases. Consequently, considerable capital is tied up in store supplies and there is little real income over the wet season.

16. Pastoral The poor standard of the existing road even in the dry season reflects in heavy maintenance and operating costs and loss of animals in transit through bruising, horning and dust asphyxiation. One witness suggested to the Committee that an all weather sealed road would reduce freight costs by up to 50 per cent.

17. Buffalo, particularly, are well adapted to the tropical conditions of the region and whilst the emphasis at present is on exploitation of feral buffalo, it is expected that increasing importance will be placed on domestication and selective breeding, along with cattle production based on improved tropical breeds.

18. With better facilities and access the present cattle turnoff of 600 annually is expected to increase by 1990 to about 9,000 from a herd of some 55,000. The buffalo turnoff is not expected to increase substantially but the present herd of 70,000 is expected to rise to about 100,000 by 1990.

19. There is now a well established demand for buffalo meat for export. During 1969-70, buffalo meat to the value of \$1,616 was exported compared with \$161,382 in 1970-71.

20. Construction of an all weather sealed road would give considerable impetus to the pastoral industry. In particular, it will allow more economic development of new leases, virtually continuous access to markets with a higher standard of output and opportunities to upgrade existing abattoirs and properties generally.

21. Mining Proposals Nuclear power generation is now some 15 years old and its use is increasing. World capacity of installed power stations is calculated at 25,000 megawatts and a further 150,000 megawatts is under construction or committed. The Committee were told that it has been estimated that this will rise to over 800,000 megawatts by 1985 and to around 4,000,000 megawatts by the end of the century. It has therefore been assessed that there will be a rapid increase in demand for uranium oxide fuel after the mid-1970s up until about 1985 when the new generation "breeder" reactors with more efficient fuel usage will cause a levelling of demand.

22. The proven high grade reserves in the East Alligator River region have been calculated as having a gross value of \$1,600 million at current world prices. The Committee noted that there is no export embargo on uranium oxide. The Government believes that this potentially valuable export earner should be exploited.

23. The Committee were told that the economic viability of mining, processing and marketing the ore depends largely on provision of adequate road access. Also access is required sufficiently early to allow establishment and commencement of operations in time to take advantage of the expected rapid increase in demand for uranium oxide after the mid-1970s.

We noted that site construction works are programmed to commence early in 1973. After 1976, it is expected that the area will be producing some 4,500 tons of uranium oxide per annum. One witness estimated that establishment costs would be of the order of 10 to 20 per cent higher if the road was not constructed as proposed. Operating costs will also be much higher without improved access and the extra costs and risks involved will have a significant influence on ability of the companies concerned to compete on the world market.

24. Regional Centre Construction and operation of mining ventures will require substantial support facilities and community services. It has been estimated that total regional population will have risen to about 2,300 persons by 1975 and to 4,300 by 1990. The majority of the population would be serving the mining industry.

25. We were told that a proposal to establish a town in the general area of the uranium fields was being investigated jointly by the Government and the mining companies. A regional town would allow centralisation of support industries and services and facilitate provision of health, education and other community services which otherwise might not be available to the area. An all weather sealed road link to Darwin is an essential requirement for establishment and maintenance of the community.

26. Tourism and National Park Tourist activities are now restricted to the dry season only and many attractions are virtually inaccessible because of the poor standard of access roads. Although the proposed road would run to the north of the area of main tourist activity, the industry generally will get significant benefits from it in reduced travelling times, lower operating costs and an extended season.

Substantial increases in tourist traffic along the proposed road are forecast and it can be reasonably expected that additional and more modern facilities for travellers will soon follow.

27. We were told that proposals to create a national park in the region had been under consideration for some time but no decision had been made. It was noted that the Government intends to review the matter at the end of 1973.

28. Forestry Completion of the proposed road will allow the forest resources at Murgarella to be further developed, with access to markets in Darwin and the mining areas. Other areas could be economically developed once a reliable road access to markets is provided.

ECONOMIC JUSTIFICATION

29. Evaluation of Road Standards The economic merit of improved access has been investigated using cost benefit analysis. Specific benefits taken into account include savings in vehicle operating costs, road maintenance costs, cattle losses in transport, the holdings of inventories by mining companies and travelling times. A number of other benefits such as tourism, advancement of Aboriginal communities, and reduced accident frequency, have not been assessed. Specific costs taken in account include the construction costs of three alternative standards of sealed width and additional maintenance costs incurred on associated roads.

30. The Committee were told that the study showed that whilst any improvement indicated a high margin of benefit over cost for the greater length of the road, construction to 20 ft seal standard is the most appropriate alternative.

31. Conclusion The Committee believes that there is ample evidence of the economic justification of the road as proposed in this reference. Major benefits can be listed as

- the opening up of a potentially economic area for pastoral, agricultural and forestry activities;
- mining of extensive deposits of high grade uranium ore;
- development of an important tourist activity in an area regarded as having great potential in view of its distinctive topographical features and unique flora and fauna;
- providing greater opportunities for Aborigines to develop more economic pastoral and other activities.

32. We therefore agree that there is a need for the construction of a sealed road between Middlepoint turnoff and Yourmill Waterhole.

33. The Committee consider that the road should be sealed to 20 ft wide as proposed because of the major benefits of reduced maintenance and vehicle operating costs, lower cattle losses and shorter travelling times.

THE PROPOSED ROAD

34. Location From Middlepoint turnoff to 9 miles east of the Mary River crossing, the existing alignment will be retained. The alignment then deviates from the existing track and does not rejoin it. The proposed route is almost a direct line between the Mary River crossing and the uranium area and is 20 miles shorter than the existing track.

Over the greater part of its length, it traverses pastoral leases and Crown land. The road will also pass through the north-western corner of the Woolwonga Aboriginal Reserve and Wildlife Sanctuary from which land will need to be excised for the road.

35. The proposed terminus at Yourmill Waterhole is some 30 miles short of the East Alligator River and 20 to 24 miles from the main uranium prospecting areas of Ranger and Noranda.

36. Interested parties told the Committee that the proposed alignment was generally well located to serve the wide variety of interests along it and to provide adequate access to Darwin. The Committee were told that in accordance with present policy, spur access would be provided to pastoral leases as they were taken up but access roads to the mining areas would be each company's responsibility. The proposed terminus at Yourmill Waterhole is considered to be an appropriate point for possible future extension of the road to the east.

37. Scope of Work The length of the proposed road is some 115 miles and will be constructed mostly on new alignment.

38. Between Middlepoint turnoff and Mt. Bunday, the existing 12 ft seal will be widened to 20 ft. The bridge over the Adelaide River and two bridges over Mt. Bunday Creek will be widened from 14 ft between kerbs to 24 ft.

39. The upgrading of the section from Mt. Bunday to 9 miles east of the Mary River which has already been constructed on a permanent alignment, will involve part gravelling, some culvert reconstruction, sealing to 20 ft width and widening of the Mary River bridge from 14 ft to 24 ft.

40. The section from 9 miles east of the Mary River to Yourmill Waterhole will be on new alignment, the first five miles being constructed in undulating country and the remaining 56 miles in flat to gently undulating gravelly ridge country. Some low lying swampy areas and flood plains at the major streams will be encountered. Four bridges 24 ft wide between kerbs are proposed - two over branches of Wildman River, and one each over the West Alligator River and Flying Fox Creek. Major culverts will be constructed at a third branch of Wildman River and at two tributaries of Flying Fox Creek.
41. Included in this section is the construction of a major bridge over the South Alligator River. The proposed bridge is 800 ft long and will be of two lane (24 ft between kerbs) construction. The South Alligator River is situated in the middle of a flood plain over three miles wide and the causeway approaches to the bridge will be specially strengthened and protected to allow for occasional overtopping by flood waters.
42. Access to the Pine Creek road and the Jim Jim area will continue to be provided along the existing track.
43. Design Following normal practice in the Northern Territory, the road will cater for vehicles conforming to the weight and dimensional requirements of the relevant legislation. The standards proposed are based on the current guides and recommendations of the National Association of Australian State Road Authorities. The alignment standards will depend on the terrain and will be not less than 70 m.p.h. in flat and 60 m.p.h. in undulating country. The horizontal alignment will feature large radius curves and the vertical alignment will consist of gentle grades and vertical curves with ample sight distance.

44. The road formation of pavement and shoulders will be 28 ft wide. The gravel pavement will be generally 21 ft wide and from 4 in. to 12 in. thick depending on the strength of the underlying ground. The central 20 ft of gravel pavement will be bitumen sealed and the road centre line will be marked.

45. The road formation will generally be raised above natural ground level by approximately 6 in. but in flood plains, low lying and swampy areas, the formation height will be increased. The road will be generally trafficable at all times except for short periods when the depth of water at floodways makes the road impassable.

46. Permanent drainage structures in the form of bridges, culverts, causeways and inverts will be provided. The decks of new bridges will be above flood plain level but will be designed to be submersible in times of severe flooding. Bridges will be 24 ft wide between kerbs for two lane operation and will be constructed of steel and/or concrete.

47. Special flood protection works will be constructed at drainage structures which are subject to inundation in times of flood. Signposting, general road furniture and rest areas will be provided as required.

48. Materials Generally, local gravels will be used and it is not expected there will be any difficulties in winning suitable gravels on short haulage. Water for construction purposes will be provided from naturally occurring waterholes or by bores, if necessary.

49. Conclusion The Committee recommend the construction of the proposed sealed road between Middlepoint turnoff and Yourmill Waterhole.

ESTIMATE OF COST

50. The estimated cost of the work when referred to the Committee was \$4.4 million made up as follows:

	\$	\$
Widening existing road	150,000	
Widening existing bridges	<u>150,000</u>	0.3 million
New construction		
- Roadworks	2,500,000	
- Minor bridges and widening		
Mary River Bridge	300,000	
- South Alligator River bridge		
and causeway	<u>1,300,000</u>	4.1 million
		<u>4.4 million</u>

PROGRAMME

51. As the road cannot be used until the bridge over the South Alligator River is trafficable, that structure is the critical item in the programme. Subject to Parliamentary approval being given to the work, it is proposed to let a contract for the bridge in April 1972 and for construction of access to the bridge site to commence by May 1972 to allow early deliveries of piles and other construction materials. On this basis, construction of the main project will commence by mid-1972 and be completed by the end of 1974.

52. The Committee were told that detailed design work has already been commenced by the Department of Works to minimise the time between approval and commencement of construction. The timetable outlined is expected to enable the road to be used as early as possible in 1974 and to avoid as far as possible the disruptive effects of the wet season.

OTHER OBSERVATIONS

53. The Committee noted that the Commonwealth is investigating the possibility of extending the road in this reference eastwards of Yourmill Waterhole over the East Alligator River and possibly providing a link in the future with Gove. In general terms, the present road is consistent with such a proposal.

54. In the evidence taken from the representatives of the management and Aboriginals at Oenpelli, concern was expressed that this road when extended over the East Alligator River may be so close to Oenpelli as to have an adverse effect on the amenity of the Mission and its people. Although the route of such a road is outside the scope of the Committee's current enquiry, we draw the attention of the Government to the views of the Mission so that they may be taken into account in the planning of the future road.

RECOMMENDATIONS AND CONCLUSIONS

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

Paragraph

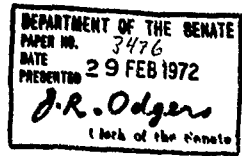
1. THERE IS A NEED FOR THE CONSTRUCTION OF A SEALED ROAD BETWEEN MIDDLEPOINT TURNOFF AND YOURMILL WATERHOLE.

	<u>Paragraph</u>
2. THE ROAD SHOULD BE SEALED TO 20 FT WIDE.	33
3. THE COMMITTEE RECOMMEND CONSTRUCTION OF THE PROPOSED ROAD.	49
4. THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$4.4 MILLION.	50

(C.R. KELLY)
Chairman

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

24 February 1972.



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The Committee have the honour to report as follows:

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2. The work is estimated to cost \$4.4 million.

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5. The East Alligator River, flowing generally north to north-east enters Van Diemen's Gulf some 150 miles east of Darwin. This river and other major rivers in the area, including the Adelaide River, Mary River and South Alligator River flow through a wide tract of sub-coastal plain country. At various times attempts have been made to develop the area but lack of reliable access has been a major deterrent to significant activity. Further to the east lies the Arnhem Land Aboriginal Reserve.

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POTENTIAL OF THE EAST
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- mining of extensive deposits of high grade uranium ore;
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THE PROPOSED ROAD

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35. The proposed terminus at Yourmill Waterhole is some 30 miles short of the East Alligator River and 20 to 24 miles from the main uranium prospecting areas of Ranger and Noranda.

36. Interested parties told the Committee that the proposed alignment was generally well located to serve the wide variety of interests along it and to provide adequate access to Darwin. The Committee were told that in accordance with present policy, spur access would be provided to pastoral leases as they were taken up but access roads to the mining areas would be each company's responsibility. The proposed terminus at Yourmill Waterhole is considered to be an appropriate point for possible future extension of the road to the east.

37. Scope of Work The length of the proposed road is some 115 miles and will be constructed mostly on new alignment.

38. Between Middlepoint turnoff and Mt. Bunday, the existing 12 ft seal will be widened to 20 ft. The bridge over the Adelaide River and two bridges over Mt. Bunday Creek will be widened from 14 ft between kerbs to 24 ft.

39. The upgrading of the section from Mt. Bunday to 9 miles east of the Mary River which has already been constructed on a permanent alignment, will involve part gravelling, some culvert reconstruction, sealing to 20 ft width and widening of the Mary River bridge from 14 ft to 24 ft.

40. The section from 9 miles east of the Mary River to Yourmill Waterhole will be on new alignment, the first five miles being constructed in undulating country and the remaining 56 miles in flat to gently undulating gravelly ridge country. Some low lying swampy areas and flood plains at the major streams will be encountered. Four bridges 24 ft wide between kerbs are proposed - two over branches of Wildman River, and one each over the West Alligator River and Flying Fox Creek. Major culverts will be constructed at a third branch of Wildman River and at two tributaries of Flying Fox Creek.
41. Included in this section is the construction of a major bridge over the South Alligator River. The proposed bridge is 800 ft long and will be of two lane (24 ft between kerbs) construction. The South Alligator River is situated in the middle of a flood plain over three miles wide and the causeway approaches to the bridge will be specially strengthened and protected to allow for occasional overtopping by flood waters.
42. Access to the Pine Creek road and the Jim Jim area will continue to be provided along the existing track.
43. Design Following normal practice in the Northern Territory, the road will cater for vehicles conforming to the weight and dimensional requirements of the relevant legislation. The standards proposed are based on the current guides and recommendations of the National Association of Australian State Road Authorities. The alignment standards will depend on the terrain and will be not less than 70 m.p.h. in flat and 60 m.p.h. in undulating country. The horizontal alignment will feature large radius curves and the vertical alignment will consist of gentle grades and vertical curves with ample sight distance.

44. The road formation of pavement and shoulders will be 28 ft wide. The gravel pavement will be generally 21 ft wide and from 4 in. to 12 in. thick depending on the strength of the underlying ground. The central 20 ft of gravel pavement will be bitumen sealed and the road centre line will be marked.

45. The road formation will generally be raised above natural ground level by approximately 6 in. but in flood plains, low lying and swampy areas, the formation height will be increased. The road will be generally trafficable at all times except for short periods when the depth of water at floodways makes the road impassable.

46. Permanent drainage structures in the form of bridges, culverts, causeways and inverts will be provided. The decks of new bridges will be above flood plain level but will be designed to be submersible in times of severe flooding. Bridges will be 24 ft wide between kerbs for two lane operation and will be constructed of steel and/or concrete.

47. Special flood protection works will be constructed at drainage structures which are subject to inundation in times of flood. Signposting, general road furniture and rest areas will be provided as required.

48. Materials Generally, local gravels will be used and it is not expected there will be any difficulties in winning suitable gravels on short haulage. Water for construction purposes will be provided from naturally occurring waterholes or by bores, if necessary.

49. Conclusion The Committee recommend the construction of the proposed sealed road between Middlepoint turnoff and Yourmill Waterhole.

ESTIMATE OF COST

50. The estimated cost of the work when referred to the Committee was \$4.4 million made up as follows:

	\$	\$
Widening existing road	150,000	
Widening existing bridges	<u>150,000</u>	0.3 million
New construction		
- Roadworks	2,500,000	
- Minor bridges and widening		
Mary River Bridge	300,000	
- South Alligator River bridge and causeway	<u>1,300,000</u>	4.1 million
		<u>4.4 million</u>

PROGRAMME

51. As the road cannot be used until the bridge over the South Alligator River is trafficable, that structure is the critical item in the programme. Subject to Parliamentary approval being given to the work, it is proposed to let a contract for the bridge in April 1972 and for construction of access to the bridge site to commence by May 1972 to allow early deliveries of piles and other construction materials. On this basis, construction of the main project will commence by mid-1972 and be completed by the end of 1974.

52. The Committee were told that detailed design work has already been commenced by the Department of Works to minimise the time between approval and commencement of construction. The timetable outlined is expected to enable the road to be used as early as possible in 1974 and to avoid as far as possible the disruptive effects of the wet season.

OTHER OBSERVATIONS

53. The Committee noted that the Commonwealth is investigating the possibility of extending the road in this reference eastwards of Yourmill Waterhole over the East Alligator River and possibly providing a link in the future with Gove. In general terms, the present road is consistent with such a proposal.

54. In the evidence taken from the representatives of the management and Aborigines at Oenpelli, concern was expressed that this road when extended over the East Alligator River may be so close to Oenpelli as to have an adverse effect on the amenity of the Mission and its people. Although the route of such a road is outside the scope of the Committee's current enquiry, we draw the attention of the Government to the views of the Mission so that they may be taken into account in the planning of the future road.

RECOMMENDATIONS AND CONCLUSIONS

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

Paragraph

1. THERE IS A NEED FOR THE CONSTRUCTION OF A SEALED ROAD BETWEEN MIDDLEPOINT TURNOFF AND YOURMILL WATERHOLE.