

1975

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed

SECOND THREE YEAR PROGRAM FOR THE IMPROVEMENT AND MAINTENANCE OF THE STUART AND BARKLY HIGHWAYS

Northern Territory

(EIGHTH REPORT OF 1975)

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Northern Territory Road System

Stuart Highway - Derwin to Katherine - Location of proposed Improvements

Stuart Highway - Katherine to Tennant Creek - Location of proposed Improvements

Stuart Highway - Tennant Creek to Alice Springs - Location of proposed
Improvements

Barkly Highway - Three Ways to N.T. Border - Location of proposed Improvements.

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

SECOND THREE YEAR PROGRAM FOR THE IMPROVEMENT
AND MAINTENANCE OF THE STUART AND BARKLY HIGHWAYS
IN THE NORTHERN TERRITORY

R E P O R T

By resolution on 29 May 1975, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report the proposed second three year program for the improvement and maintenance of the Stuart and Barkly Highways in the Northern Territory.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal referred to the Committee is the second phase of a comprehensive 10 year program recommended by the Department of Housing and Construction following the completion of a survey of Australian roads.

2. The proposed work includes the following:

For the Stuart Highway

- 311 km of resealing;
- 269 km of strengthening and widening;
- 221 km of realignment;
- construction of 12 bridges.

For the Barkly Highway

- 186 km of resealing;
- 53 km of strengthening and widening;
- 15 km of realignment;
- construction of two bridges.

2.

3. Engineering standards will conform with the National Highway Standards recommended by the Bureau of Roads.

THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions and drawings from the Department of Northern Australia and the Department of Housing and Construction and took evidence from their representatives at public hearings in Alice Springs on 5 August 1975, Tennant Creek and Katherine on 6 August and Darwin on 7 August. Prior to the public hearing at Alice Springs, the Committee inspected the Stuart Highway immediately to the north of Alice Springs. The Committee also took evidence from two members of the Northern Territory Legislative Assembly and private citizens at Alice Springs, one member of the Northern Territory Legislative Assembly and a representative of Peko Mines Ltd at Tennant Creek, representatives of the Pine Creek Progress Association at Katherine and the Mayor of the City of Darwin at Darwin. We also carried out aerial inspections of the Stuart Highway between Alice Springs and Darwin.

THE 1971 ENQUIRY

5. On 12 October 1971, the Committee reported to the Parliament on the first Three Year Improvement and Maintenance Program for the Stuart and Barkly Highways, Northern Territory (Thirteenth Report of 1971). The Committee's report underlined the importance of the Stuart and Barkly Highways and recommended that the highways should be upgraded in step with the growth of traffic and maintained in a safe and trafficable condition. There was ample evidence of the increasing volume of traffic using the highways and their inadequacy for such use. The 1971 proposal involved the resealing of 455 miles of existing pavement, strengthening 218 miles, realignment of 55 miles and the construction of 12 bridges and 9 large culverts. The Committee concluded that the upgrading had been shown to be necessary and recommended the construction of the work at an estimated cost of \$16 million.

The Committee were told that a further program would be submitted after a comprehensive review and revaluation of requirements.

HIGHWAY DEVELOPMENT IN THE NORTHERN TERRITORY

6. Initial Construction The Stuart and Barkly Highways were originally constructed between 1940 and 1945 to meet urgent defence requirements. Because of the urgency of their construction and the limited resources available they were built to relatively low standards compared with those normally adopted before the war. They have proved to be inadequate for current levels of traffic. Deficiencies include single lane bridges, numerous causeways and flood prone areas, poor alignment, unsatisfactory drainage and thin and narrow 4.8m (16 ft) pavements.

7. The length of the Stuart Highway from Darwin to Alice Springs is 1535 km and the length of the Barkly Highway within the Northern Territory is 450 km, a total of 1985 km.

8. Maintenance and Improvements 1945-1971 Since the highways were constructed a continuous program of maintenance and strengthening has been carried out within the limited funds available. A five year maintenance program beginning in 1958/59 included the provision of a sealed road of 6.2m (20 ft) in width between Darwin and Adelaide River and 4.8m (16 ft) elsewhere.

9. From 1963/64 the annual maintenance program was increased to \$1.4 million to provide strengthening of weak sections and improvement to alignment and drainage structures.

10. Following major flood damage in 1967/68, an additional \$0.6 million was provided for repairs bringing the total expenditure to \$2 million during that year. Further pavement damage occurred in the 1967/68 wet season and maintenance expenditure rose to \$2.25 million during that year and continued

at that level to 1970/71, the increase being mainly for pavement reconstruction and strengthening.

11. Three Year Program for Improvement and Maintenance 1971/72 to 1974/75 A detailed survey of the Stuart and Barkly Highways was carried out in 1967/68 and recommended a 10-year program of work which was to provide for:

- routine maintenance and periodic resealing;
- progressive strengthening of the road pavements;
- reduction in delays due to flooding;
- pavement widening; and
- improvement to alignments.

12. In September 1970, the Government approved the first three years of the program which led to the Committee's enquiry in 1971.

The improvements completed by that program were those sections which required the most urgent attention. Nevertheless, the two highways still have a high proportion of their length below the standards which have been set following an investigation conducted by the Australian Government during 1973.

13. National Highways System During 1973 a full time study team comprising officers seconded from the Commonwealth Bureau of Roads, Australian Government Departments and the State Road Authorities undertook an investigation of the alternative road systems which could be developed to form a national highways system comprising the more important routes linking the capital cities of each State, Darwin and the A.C.T. The Stuart, Barkly and Victoria Highways within the Northern Territory were included in the National Highway System. The study considered the effect of using existing and higher design standards than those normally adopted for rural roads and concluded that economic advantage could be gained from using higher standards on the national highways system.

14. Standards for the Northern Territory The National Highways Standards were developed by the Commonwealth Bureau of Roads in consultation with the Member Authorities of the National Association of Australian State Road Authorities and are generally in accordance with the guideline standards defined in the National Highways study. The standards for the Northern Territory as advised by the Department of Transport are consistent with the extension of the Barkly, Stuart and Victoria Highways into the adjoining States of Queensland, South Australia and Western Australia. The main differences between the standards adopted in 1971 for the Stuart and Barkly Highways and the National Highway Standards are:

- improved flooding protection to increase road usability;
- improved road safety by increasing radii of curves and improving visibility at crests;
- providing a minimum lane width of 3.7m (12 ft); and
- design provision for traffic growth over a 20-year period after completion of construction (previously 15 years).

15. Details of these standards are provided in paragraphs 36 to 39 of this report.

THE NEED FOR THE HIGHWAYS IMPROVEMENTS

16. The Northern Territory has been developing rapidly in recent years. This is reflected in the high growth rate of the population. This development has been brought about by increased government expenditure and increased investment in mining, pastoral and tourist activities. Most of this development activity is either located in or controlled from the principal centres. Because of this, virtually all the recent population growth and most of the people in the Northern Territory are located in the main towns, i.e. Darwin, Alice Springs, Nhulunbuy, Katherine and Tennant Creek. The increasing population and development has generated

an increased demand for goods and services. None of the major centres is self-sufficient and most items have to be imported.

17. The Stuart and Barkly Highways link all major Northern Territory centres (except Nhulunbuy) and form the major transport system within the Territory. As previously mentioned, they are now also part of the National Highway System linking the Territory with the States.

18. It is the need for an all weather road link between the major centres and also with the States that highlights the need for improvements to the Stuart and Barkly Highways. These improvements will cater specifically for long distance traffic and enhance the usability as well as the safety standards.

19. Disruptions to Road Traffic due to Flooding In the Northern Territory most of the rain falls between October and April, under the influence of the north-west monsoon. The heavy rainfall from cyclonic depressions moving through the area causes rivers and streams in the generally flat catchments to rise and fall rapidly. For about two months in the wet season, it is frequently not possible to drive from Darwin to Alice Springs without being delayed at a stream crossing. Some reduction in these delays will have been achieved as a result of the first three year program with the construction of 12 bridges besides 9 large culverts and other drainage improvements. In the past two wet seasons the causeway at Newcastle Waters on the Stuart Highway was impassable to heavy vehicles for 30 days in 1974 and 20 days in the first quarter of 1975. The Adelaide River Bridge was closed due to flooding for 22 days in 1974. Other sections of the Highways were also subjected to flooding over the past two years. These closures have caused supply difficulties and in 1975 seriously affected the cartage of materials required for the reconstruction of Darwin.

20. Road Pavement Failures With the heavy rain and flooding the ingress of water into the pavements has resulted in pavement deterioration and failure. During wet periods therefore it has been necessary to reduce the allowable load limits and in extreme cases to close sections of the highways to avoid excessive damage to them. These restrictions have a significant effect on economic transport operations in the Territory.

21. Accidents There was some evidence of a concentration of accidents at locations where the road alignment is poor. This was taken into account when priorities for improvement works were being determined.

22. The Mining Industry Mining is the major industry in the Northern Territory. The value of production has increased from \$9.5 million in 1960/61 to \$125.8 million in 1973/74. With the anticipated development of the immense uranium reserves in the Alligator Rivers area, the value of production could increase to the order of \$400 million per annum by the mid-1980s. Development of the region will add considerably to the traffic levels recorded near Darwin as well as further boosting the long distance travel with the south. Mt. Isa Mines is planning to invest over \$6 million during the next five years in the development of the McArthur River copper lead and zinc deposits. While any larger scale development will probably require a new bulk port in the Gulf of Carpentaria, both development work and future mining operations would benefit from the provision of a new all weather road link. Bridges proposed over the James and Ranken Rivers will improve the usability of the existing road system.

23. The Pastoral Industry Beef cattle production is the Territory's major rural industry. It has expanded rapidly over the past 10 years following a considerable increase in investment and the expansion of local and interstate markets. The bulk of the Territory's cattle turnover goes

to interstate markets with the remainder being used for local consumption or being processed at Darwin or Katherine for export. Virtually all cattle movement is by road trains which are capable of carrying 85 head of larger beasts or up to 150 yearlings, using double decker trailers.

24. Tourist Activities Tourism is of major importance to the economy of the Northern Territory. Substantial numbers of tourists visit both the Centre and the Top End during the cooler months. There is an increasing number of overseas and Australian visitors to the Centre during the summer holiday period. Proposals for the development of Alice Springs and Ayers Rock to cater for the increased numbers of visitors expected in the future are currently under examination.

25. There are many tourist attractions in the Top End such as Katherine Gorge, the Ord Scheme and the Alligator Rivers Wildlife Sanctuary. The number of visitors to these areas is expected to increase substantially.

26. A significant proportion of all tourist travel is by road, either in coaches or by car. This travel is a major component of all vehicle traffic recorded on the Stuart and Barkly Highways, particularly during the main tourist season periods. Completion of National Highways and other road links in South Australia, Queensland and Western Australia is expected to provide a major boost to the numbers of interstate tourists in future years.

27. Road Transport Industry This industry has continued to expand rapidly, not only in proportionate response to the mining development of the Northern Territory but also in competition with other modes of transport. The larger vehicles in the Northern Territory permit economies in road freight not available to the States. Road transport to Darwin is competitive with sea freight for certain commodities and is generally cheaper than sea/road

for inland centres. Road transport also has the added advantage of being able to provide a faster and more flexible service, particularly for goods from the east coast. The recent overland transport disruptions caused by flooding created a new interest in shipping but this is not expected to substantially inhibit future growth of road freight transport.

28. Social and Recreational Travel Surveys have indicated that social and recreational traffic represents a significant proportion of all light vehicle usage on the highways. It is expected that this type of usage will tend to increase at a faster rate of growth than population as a direct result of the general increasing affluence of the community. Social and recreational usage is of relatively greater importance to the communities of the Northern Territory due to the absence of alternative activities normally available in larger centres.

29. Traffic Type and Volume The volume of traffic using the highways varies with location and with the time of the year. The highest counts are recorded immediately adjacent to Darwin (in 1974 daily traffic averaged 2800 "double axles") and in the Darwin-Katherine section (in 1974 daily traffic averaged 300 "double axles") as a direct result of the attractions between these two centres. In the Centre and at Avon Downs there are seasonal peaks during May and August holiday periods when larger numbers of vehicles enter the Territory. Higher levels of traffic are again recorded immediately north of Alice Springs due to the attraction of the Centre.

30. There is a considerable degree of uniformity in the proportions of light and heavy vehicles on all sections of the highways except near Daly Waters. Generally light vehicles represent 75% of all vehicles while heavy vehicles account for the remaining 25%.

31. Rail Links When the Tarcola-Alice Springs standard gauge railway is completed, it is expected that there will be a boost to the volume of goods imported overland and also to increase freight traffic on

the Stuart Highway. It is noted that the Government has announced its intention to carry out a feasibility study covering the extension of the standard gauge rail link from Alice Springs to Darwin. The study will be undertaken before the Tercoola to Alice Springs link is completed.

32. Reconstruction of Darwin The decision to rebuild Darwin, following the destruction caused by Cyclone Tracy on 25 December 1974, will place extreme pressure on all existing transport facilities. All modes of transport will be taxed to the limit but the Stuart and Barkly Highways are expected to carry increased tonnage to cope with this project for at least the five year expected life of the Darwin Reconstruction Commission.

33. Committee's Conclusion The continued development of the Northern Territory is dependent on the provision of adequate transport facilities. The Stuart and Barkly Highways provide the main road link within the Northern Territory.

34. The improvement works proposed will reduce the prolonged transport delays now experienced each wet season.

THE PROPOSED WORK

35. The proposal submitted to the Committee involves the resealing of 497 km of existing pavement, strengthening 322 km, realigning 236 km together with the construction of 14 bridges.

36. Improved Design Standards The introduction of the National Highways Design Standards as referred to in paragraph 14 of this report provides for a general design speed of 130 km/hour. Sealed pavement will be 7.4m in width and shoulders 2.4m. Bridge widths will be a minimum of 9.2m and, where bridges are less than 30m in length, the width will

11.

be 12.2m. Slow vehicle climbing lanes will also be provided. Geometric design standards including cross sections, grades and alignment will be in accordance with the N.A.A.S.R.A. (National Association of Australian State Road Authorities) policy. Bituminous surfacing is to consist of prime and single aggregate seal. Road pavements are designed to provide for vehicle weight limits of 16 tonnes on a bogie axle.

37. Bridges will be designed to provide for vehicle loadings of 25% in excess of those recommended in N.A.A.S.R.A. Highway Bridge Design specifications. This will allow for the operation of road trains and provide for traffic for 30 years after completion.

38. The new standards will mean an increase in the width of the sealed pavements on the Barkly Highway and the Stuart Highway south of Tindal from 6.8m (22 ft) to 7.4m (24 ft). There will also be an increase in the width of shoulders from 1.8m (6 ft) to 2.4m (8 ft). In addition, edge lines on the road will be provided to improve driving safety, particularly at night.

39. To eliminate water flowing over the highways in flood prone areas, some bridges will be constructed higher and longer as the drainage provision standards now require that the edge of the pavement will be generally 0.5m or more above the peak flow resulting from storms or rainfall of intensity corresponding to a 50 year frequency.

40. Five existing level crossings will be avoided by road realignment or grade separation.

41. Details of Improvement Projects Major improvement projects for the Stuart Highway include a high level bridge over the Adelaide River,

140m long, adjacent to the existing railway bridge. This will replace a low level single lane structure built during the war. It will also avoid the hazards involved in the use of the railway bridge during flood periods.

42. A total realignment of the highway between the Adelaide River and Hayes Creek is planned. The new route will reduce the length of the highway by a distance of some 15 km. It includes construction of bridges over the Burrella and Bridge Creeks and also over the North Australia Railway where the railway line is in a cutting.

43. Improvements between Hayes Creek and Pine Creek are also proposed. The highway will generally follow the existing route and improvements will include realignment to eliminate numerous sharp curves and pavement strengthening where the proposed route coincides with the present highway.

44. The highway will be realigned between Pine Creek and Cullen River to eliminate numerous sharp curves and two railway level crossings.

45. Improvements will be made to two sections between Mataranka and Larrimah as a continuation of the first three year program.

46. The highway will be realigned to eliminate a section with sharp curves and two railway crossings near Warlock Ponds. A bridge over Warlock Ponds will replace the single lane wartime bridge.

47. The existing causeway and approaches at Newcastle Waters Creek will be replaced by three new bridges. This section has been subject to prolonged interruptions to traffic due to inundation.

48. The highway between Newcastle Waters and Renner Springs will be strengthened and widened. This section has suffered considerable pavement failures during the wet seasons and traffic delays due to flooding. Some improvements including a number of improved crossings between Banka Banka and Tennant Creek Telegraph Station are also planned.

49. The existing road between Wauchops and Barrow Creek will be strengthened and widened. New bridges and approaches which will replace flood crossings at Bonney Creek and Wycliffe Creek will be constructed.

50. The highway will be totally realigned in the hills north of Alice Springs. The existing road has many sharp curves and has been the scene of many accidents. This will also avoid previous closures due to the flooding of the Charles River.

51. Along the Barkly Highway, construction of new bridges, 100m and 240m long, over the James and Ranken Rivers will replace the existing bed level crossing and the single lane wartime structure respectively which are subject to flooding during the wet season. In order to avoid a large maintenance commitment, 45 km of the existing road between Soudan Station and the Queensland border, will be strengthened and widened. The Committee were told that the Government will re-examine the proposed Barkly Highway improvements in the light of a corridor study for a more direct route from Camooweal in Queensland and Daly Waters on the Stuart Highway. It is expected that the study will take about 12 months. The proposed improvement works are included in the second and third years of the program and will not proceed until the study is completed.

52. Maintenance Periodic resealing of the existing pavements at 7 to 10 year intervals is needed in addition to the highway improvement works. There is also the basic requirement for routine maintenance items such as pavement patching, repairs and cleaning of table drains, culverts and bridges, shoulder grading, sign and guide post maintenance and line marking.

53. Committee's Conclusion The upgrading in accordance with National Highways standards is justified and increases road safety. The Committee recommend the construction of the work in this reference.

ESTIMATE OF COST

54. The estimated cost of the work when referred to the Committee was \$34.6 million made up as follows:

	\$
Routine maintenance	2,910,000
Purchase of aggregate	72,000
Sealing	1,600,000
Strengthening (including widening)	12,500,000
Realignment and bridges	15,780,000
Miscellaneous works	1,090,000
	<u>34,600,000</u>

55. The estimates are based on preliminary investigations and designs for each of the projects listed. Although there may be some variations as the yearly programs are further investigated and developed through design and construction, the total amount of the three year program is considered sufficient to enable completion of all the works listed to the required standards.

PROGRAM

56. The cost of the work proposed in each year of the program is as follows:

<u>Year</u>	<u>Improvements</u>	<u>Maintenance</u>	<u>Total</u>
	\$m	\$m	\$m
1975/76	8.8	2.5	11.3
1976/77	9.4	2.3	11.7
1977/78	9.3	2.3	11.6
	<u>27.5</u>	<u>7.1</u>	<u>34.6</u>

57. The Committee noted that the estimated total cost of improvements (\$22.5) included a 19% increase due to the implementation of the National Highways Standards. The 19% increase comprised drainage improvements 11%, increase in seal width 2%, increase in shoulder width 3% and provision of edge lines 3%.

58. After an approval to proceed is given, the improvement work is planned to be commenced in late 1975 and to be completed over a five year period.

LEVEL CROSSINGS

59. Prior to the commencement of the 10 year program, there were 15 level crossings on the Stuart Highway outside the Darwin area. Six of these level crossings were eliminated in the first three years and a further five will be avoided by road realignment or grade separation in the current proposal. Of the remaining four level crossings, one is fitted with flashing lights and the remainder will be similarly fitted in the future program.

ENVIRONMENTAL ASPECTS

60. The proposed road works do not interfere with any known unique species of flora or fauna. Appropriate measures will be taken if there is any possibility that construction procedures will result in the introduction of exotic flora or fauna diseases.

61. The proposal has been cleared with appropriate authorities including the Museum and Art Gallery Board acting on behalf of the Institute of Aboriginal Studies. The Department of the Environment has no objection.

62. Committee's Conclusion The proposed improvements will provide major economic and social benefits to the Northern Territory community and are considered to far outweigh any possible adverse environmental effects.

OTHER OBSERVATIONS

63. The Committee agrees with the Department of Northern Australia that there is a need for a multi-modal study of transport in the Northern Territory including air, road, rail and sea. The Committee note that the Department of Northern Australia has a study under way with the Bureau of Transport Economics on the development of the Port of Darwin for sea transport.

64. With regard to the proposed improvements to the Stuart Highway adjacent to Pine Creek, the Committee noted the views expressed by the Pine Creek Progress Association that the surveyed line and junctions be realigned closer to the township. However, the Committee who were informed that this would cost an extra \$50,000, could see no good reason to change the original surveyed line which is preferable from an engineering design point of view.

RECOMMENDATIONS AND CONCLUSIONS

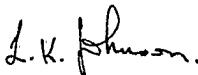
65. The summary of recommendations and conclusions of the Committee is set out below. Alongside each is shown the paragraph in the report to which it refers.

Paragraph

- | | | |
|----|---|----|
| 1. | THE CONTINUED DEVELOPMENT OF THE NORTHERN TERRITORY IS DEPENDENT ON THE PROVISION OF ADEQUATE TRANSPORT FACILITIES. | 33 |
| 2. | THE STUART AND BARKLY HIGHWAYS PROVIDE THE MAIN ROAD LINK WITHIN THE NORTHERN TERRITORY. | 33 |

Paragraph

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|----|--|----|
| 3. | THE IMPROVEMENT WORKS PROPOSED WILL REDUCE THE PROLONGED TRANSPORT DELAYS NOW EXPERIENCED IN EACH WET SEASON. | 34 |
| 4. | THE UPGRADING IN ACCORDANCE WITH NATIONAL HIGHWAYS STANDARDS IS JUSTIFIED AND INCREASES ROAD SAFETY. | 53 |
| 5. | THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE. | 53 |
| 6. | THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$34.6 MILLION. | 54 |
| 7. | THE PROPOSED IMPROVEMENTS WILL PROVIDE MAJOR ECONOMIC AND SOCIAL BENEFITS TO THE NORTHERN TERRITORY COMMUNITY AND ARE CONSIDERED TO FAR OUTWEIGH ANY POSSIBLE ADVERSE ENVIRONMENTAL EFFECTS. | 62 |

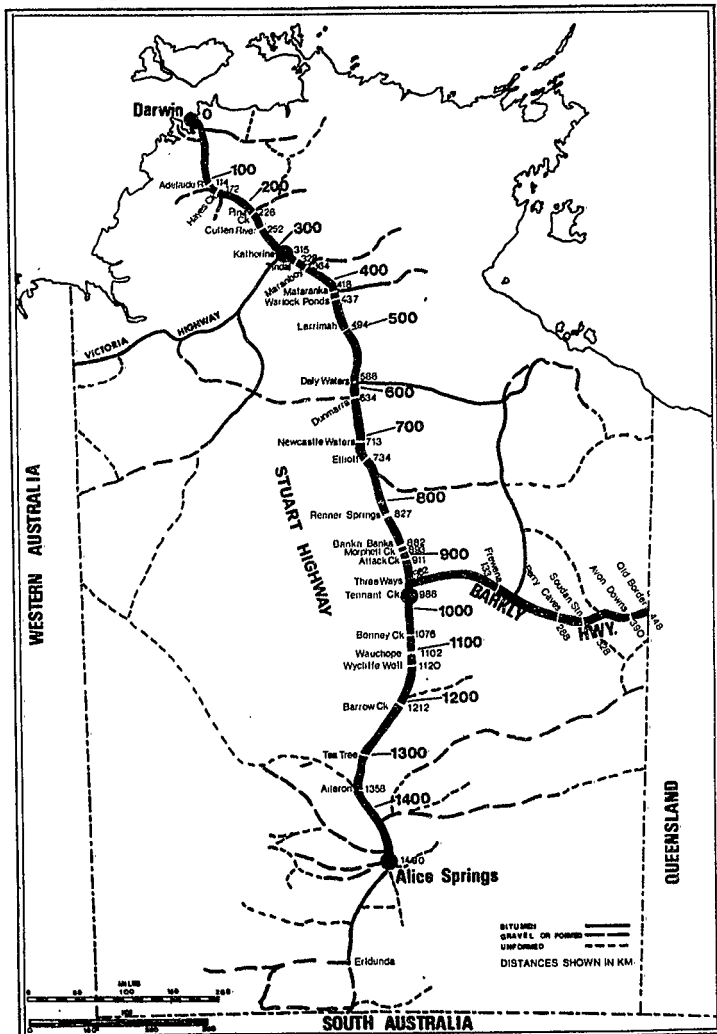


(L.K. JOHNSON)
Chairman

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

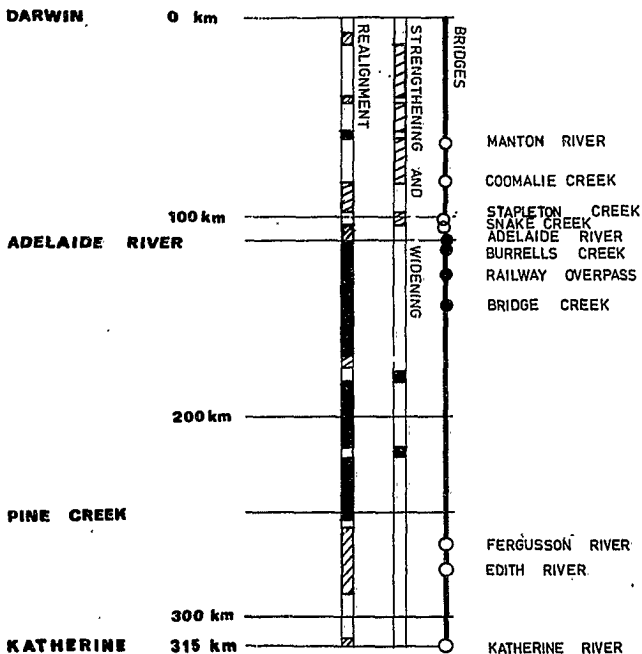
28 August 1975.

NORTHERN TERRITORY ROAD SYSTEM



STUART HIGHWAY DARWIN TO KATHERINE LOCATION OF PROPOSED IMPROVEMENTS

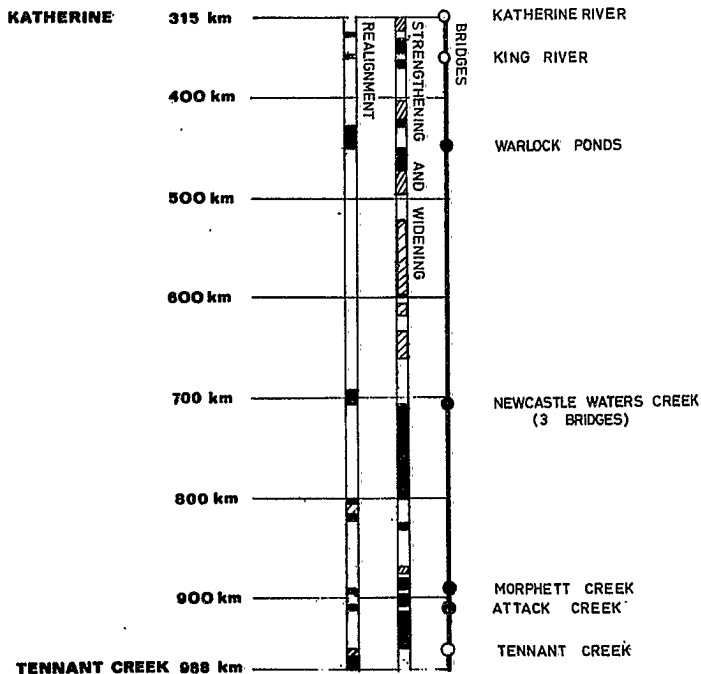
NOTE: ALL CHAINAGES SHOWN ARE TRUE CHAINAGES
AFTER ALLOWANCES HAVE BEEN MADE FOR
ALL REALIGNMENTS PROPOSED IN THE STUART
AND BARKLY HIGHWAY IMPROVEMENTS PROGRAMME.



LEGEND

- BRIDGES IN FIRST THREE YEAR PROGRAMME
- BRIDGES IN SECOND THREE YEAR PROGRAMME
- ▨ FIRST THREE YEAR PROGRAMME
- SECOND THREE YEAR PROGRAMME

STUART HIGHWAY KATHERINE TO TENNANT CREEK LOCATION OF PROPOSED IMPROVEMENTS



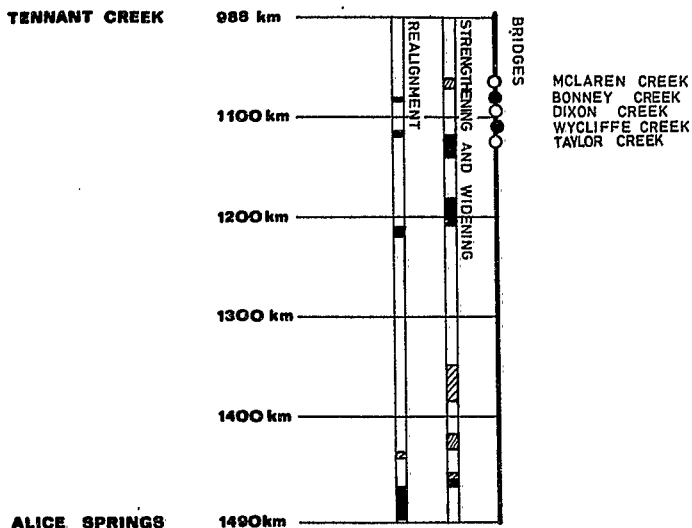
LEGEND

- BRIDGES IN FIRST THREE PROGRAMME
- BRIDGES IN SECOND THREE YEAR PROGRAMME
- ▨ FIRST THREE YEAR PROGRAMME
- SECOND THREE YEAR PROGRAMME

STUART HIGHWAY

TENNANT CREEK TO ALICE SPRINGS

LOCATION OF PROPOSED IMPROVEMENTS



LEGEND

- BRIDGES IN FIRST THREE YEAR PROGRAMME
- BRIDGES IN SECOND THREE YEAR PROGRAMME
- ▨ FIRST THREE YEAR PROGRAMME
- SECOND THREE YEAR PROGRAMME

BARKLY HIGHWAY THREE WAYS TO N.T. BORDER LOCATION OF PROPOSED IMPROVEMENTS

LEGEND

- BRIDGES FIRST THREE YEAR PROGRAMME
- BRIDGES SECOND THREE YEAR PROGRAMME
- ▨ FIRST THREE YEAR PROGRAMME
- SECOND THREE YEAR PROGRAMME

THREE WAYS

