



COMMONWEALTH GRANTS COMMISSION

DISCUSSION PAPER CGC 2002/34

THE ROADS ASSESSMENT

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BACKGROUND

Description of the Category

1. In the 1999 Review, the Roads category included expenses on the maintenance and rehabilitation of roads and bridges that are the responsibility of the States, road safety, and other transport activities such as driver licensing, motor vehicle registration and transport planning. The standard expense on roads in 2001-02 was \$133.34 per capita, or 2.8 per cent of total standard expenses. Road rehabilitation expenditure was included in this category partly to overcome classification problems (some States treat some tasks as maintenance while others treat them as rehabilitation) and partly because of its influence on the need to provide for depreciation costs. The category excluded expenditure on National Highways (a responsibility of the Commonwealth) and roads that are the responsibility of local authorities.

2. In the 2002 Update the assessment redistributed \$136 million away from Victoria, Queensland, South Australia and the ACT to the other States.

1999 Review Method

3. The assessment for Roads began in the 1993 Review. The assessment was intended to recognise the unavoidable costs States faced in planning and maintaining their road networks and in making them safe. The maintenance of State arterial roads was considered to be the main function and differential costs were assessed. In the 1999 Review, factors for road use were refined and factors for the physical environment were added.

4. As shown in Table 1, the major components of the assessment related to the maintenance of arterial roads, other transport (which included policy, planning and management of the road network), road safety (mainly road safety campaigns) and bridges. Disability factors were assessed using the general method for administrative scale, input costs, dispersion and land rights. Category specific disability factors were assessed for road use, road length, physical environment, urbanisation, bridge maintenance, local road maintenance and socio-demographic composition.

5. There was a separate Roads user charges assessment which is discussed at the end of this paper.

6. For the 1999 Review, data were obtained through two consultants — the Australian Roads Research Board (ARRB)¹ and the National Resource Information Centre (NRIC) in the Commonwealth Bureau of Resource Sciences. The ARRB consultants provided data on road lengths, bridge type and area, road use and maintenance costs². NRIC calculated the physical environment factors using regression analysis to identify major environmental influences on the cost of road maintenance and a computer generated

¹ Now known as ARRB Transport Research or ARRBTR.

² CDATA can provide road lengths, but not road areas. It does not have information on road use or expenses.

mapping program. Data provided by NRIC were used to allocate State roads into four environmental classes based on the combined effects of temperature, average rainfall, soil type and relief on road costs.

Table 1 ROADS ASSESSMENT STRUCTURE, 2002 UPDATE

Expenditure Component	Component Weight	Factors
	%	
Scale-affected expenditure	2.95	Input costs Administrative scale
Arterial roads	62.82	Dispersion Input costs Road use, length and environment Urbanisation
Bridges	6.50	Dispersion Input costs Bridge maintenance Physical environment
Local roads	1.50	Dispersion Input costs Local road maintenance
Other transport	19.00	Dispersion Input costs Urban traffic control
Road safety	7.00	Dispersion Input costs Socio-demographic composition
Land rights	0.02	Land rights
Native title administration	0.02	Native title
Isolation	0.19	Isolation

7. In the 1999 Review, most States accepted that the data collected by the ARRB were broadly comparable among the States, notwithstanding the reservations expressed by it that:

- the road length and traffic data may not have the accuracy desired; and

- the different requests for road network data by Commonwealth bodies (NRTC³ and DOTARS⁴) make the task of extracting data from the State Road Authorities difficult.

Changes in States' Service Provision

8. Since the 1999 Review, major sections of urban arterial roads in the larger States are being operated and maintained privately through Public Private Partnerships (PPPs). CityLink, Victoria's extensive private road network is one such example. This trend may result in some changes to the assessment for this review.

9. Sydney is increasing the use of road tunnels. There are two major tunnels on the recently opened M5 East Freeway and it has a cross city tunnel and a tunnel under Lane Cove planned. Tunnels are similar to bridges both in purpose and in the need for maintenance. Information on the length of tunnels and the cost of maintaining them has been sought from the States.

10. A development making it easier for a State to raise tolls is the introduction of electronic toll collection. Under these systems, drivers may obtain an electronic 'tag' which registers automatically when a toll is required and the toll is then deducted from the driver's bank or credit account.

Data Request

11. A Special Request for Data on Roads maintenance was sent to the States on 10 May 2002. It was sent before the States' submissions were received and asked for information that would allow the Commission to replicate the current assessment.

NEW DEVELOPMENTS — STATE ARGUMENTS AND COMMENTS

12. The arguments advanced by the States in their submissions relate to implementation issues. Overall, they accept the assessment framework, the components and disabilities, but have suggested changes to the methods of measuring them. New factors measuring congestion, road freight and a national capital allowance are suggested.

Contemporaneity of Information

13. South Australia said that road use and maintenance costs data must be updated annually to reflect the decreased State responsibility for maintenance resulting from the trend to PPPs. Victoria agreed that appropriate and up-to-date information reflecting the extent of road use and road length in each State should be used to better measure the cost disabilities associated with road maintenance.

³ National Road Transport Commission.

⁴ Department of Transport and Regional Services.

14. **Comment.** The issue of data currency and the frequency of updating data are addressed in Discussion Paper CGC 2002/2.

Road Maintenance Costs

15. The factor aims to measure States' road maintenance expenditure needs resulting from differences in road use, road length and the physical environment.

16. The main issues raised by States about this factor are how road use should be measured and what type of roads (and their lengths) should be included in the assessment.

17. While we will aim to minimise deficiencies associated with the suggested measures and definitions, we will be aiming to recommend to the Commission the measure that most simply captures the essence of State disabilities. If we need to, and we think it likely, we will accept an unavoidable level of deficiency in a measure. We do not believe that trying to pursue the maximum level of accuracy in the data or the assessment will necessarily result in a better fiscal equalisation outcome.

Road Use

18. **Background.** Road use data are an input to the measurement of roads maintenance expenditure needs. The data indicate the number of vehicles passing any given point of the sealed or unsealed arterial road network on any given day, averaged over a year. In practice, the ARRB supplied data on road use from a sample of about 80 arterial road sections. These were used to estimate the standard cost per weighted Average Annual Daily Traffic (AADT).

19. The data were provided for three types of traffic: light, heavy and super heavy vehicles. Each traffic type was weighted according to its relative impact on road maintenance costs.

20. Prior to the 1999 Review, road use was measured in terms of Average Vehicle Kilometres Travelled (AVKT). AVKT was replaced because the number of kilometres travelled on any particular day in a State was at least partly a function of the length of the road network. Therefore, the factor for road use double counted disabilities for road length. It was thought that AADT would provide a more accurate measure of road use.

21. In the event, the use of AADT has been contentious. The ARRB consultant employed by the Commission in the 1999 Review expressed doubts about the reliability of the measure because:

- (i) some States had only limited vehicle count data due to too few vehicle counting points;
- (ii) the sample had unrepresentative vehicle counts; and
- (iii) some States could not provide a break up of counts by vehicle type.

22. **Submissions.** Queensland, Western Australia and Tasmania stated that the count of AADT on various arterial road segments can be inconsistent, inaccurate, confusing and incomplete — leading to misstatement of road use. They asked the Commission to investigate options for checking or replacing the measure. Western Australia believed the current assessment of needs for heavy vehicles was most deficient because data on AADT were not consistent across States.

23. Tasmania believed that the use of AADT data should be discontinued as they resulted in factors which were inconsistent with expected outcomes. It said that AADT data and urban transit showed lower than average road use in Tasmania, and a higher than average consumption of petrol. Tasmania claimed to have high road use because of tourist traffic and because of its lack of rail infrastructure. It suggested that utilisation data based on survey information from the ABS would provide a more consistent measure of road use based on a uniform and accepted sampling technique.

24. Victoria thought that revised weights should be used in a factor for road use to reflect a more complete range of vehicles as well as the average load carried by those vehicles. It cited, as an example, data collected by the NRTC which included:

- vehicle kilometres of travel;
- tonne kilometres (reflecting mass of freight moved); and
- equivalent standard axles (ESA) reflecting road wear effects of axle loadings for all heavy (over 4.5 tonne) vehicle types, including multi-trailer vehicle combinations.

25. Victoria said the NRTC assessed the relative road wear effect caused by different vehicles, using as a basis for comparison an estimate of the effect relative to an 8.2 tonne mass loaded on a single axle with dual tyres. This loading and axle configuration is deemed to have an ESA of 1.0. The effects of other loadings and axle configurations on a range of heavy vehicles are measured relative to this standard.

26. Western Australia agreed that the weighting currently applied to super heavy vehicles did not correctly reflect the maintenance costs associated with this vehicle type. It also suggested that weights for heavy vehicles could be based on data from the NRTC. Based on vehicle registration charged by NRTC, it suggested the weights shown in Table 2.

27. Further, Western Australia claimed that as many States are unable to identify specific vehicle configuration types, it believed that States' estimates of the vehicle type by AADT were inconsistent. It suggested the use of Australian Bureau of Statistics published data for all States on tonne-kilometres travelled by various vehicle types from its annual Survey of Motor Vehicle Usage.

Table 2 CURRENT AND SUGGESTED VEHICLE WEIGHTS BY TYPE OF VEHICLE

Vehicle Type	Current Weights	Suggested Weights
Car	1	1
Heavy	10	10
Super Heavy	20	70

Source: Western Australian Submission to the 2004 Review, p 102.

28. *Comments.* Because road use affects road maintenance costs, we need a measure of road use in the assessment. But what is an acceptable measure of road use?

29. The AADT data currently used have deficiencies. However it is likely to be the best available measure. The use of accurate data regarding road use, and particularly on freight loadings and the weightings given to heavy and super heavy vehicles, is most important, especially for rural arterial roads.

30. There are two options:

- (i) continue with AADT — new data may prove more satisfactory; or
- (ii) find a new measure of road use.

31. *AADT data.* If the AADT data requested by the Commission are reasonable, they could continue to be used as a measure of road use. A consultant may help make the data more reliable and comparable between States. Since all States are now more familiar with the AADT measure, better data could be expected. The weights applied to the super heavy vehicle class should also be reviewed.

32. *Alternative measures.* As far as Commission staff are aware, apart from the ABS data which includes national and local roads, the only alternative measures available are the ones suggested by Victoria:

- average vehicle kilometres of travel (AVKT), which the Commission used prior to the 1999 Review;
- tonne kilometres (TK) (reflecting mass of freight moved); and
- equivalent standard axle-kilometres (ESA).

33. All these measures combine indicators of road use and road length. The road length element would then double-count with the road length component of the factor. This is not necessarily a problem. The road length component could be removed. The issue is whether it is possible to obtain AVKT and TK measures for arterial roads only.

34. Tonne-kilometres and ESA also include the effect of different types of vehicles. If we were to use these measures, there would be no need to have weights for vehicle types.

35. Commission staff are currently trying to verify whether it is possible to obtain any of the measures suggested by Victoria and Western Australia for arterial roads only, a problem with the current road length assessment. It is our understanding that the ABS' Survey of Motor Vehicle Usage does not distinguish between arterial and local roads. We seek other States' views about the use of any of the three measures suggested by Victoria.

36. In its main submission, Victoria provided data on ESA for 1996. These data are shown in the table below. Factors for the 2004 Review would need to use updated data. However, factors could be based on information similar to that shown in Table 3.

Table 3 ESTIMATED ANNUAL ESA (ESTIMATED STANDARD AXLES) KILOMETRES OF TRAVEL (MILLION)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
State Rural Arterial	3 440	2 440	2 210	1 050	660	190	250		10 240
State Urban Arterial	1 480	1 500	750	610	340	140	70	50	4 950
Total	4 920	3 940	2 960	1 660	1 000	330	320	50	15 190

Source: Victorian Submission to the 2004 Review, p 179.

Road Length

37. **Background.** The road length factor is assessed using surface type data because of the different costs of maintaining sealed and unsealed roads. It is assumed that the length of concrete arterial roads is relatively small in all States and they are therefore grouped with other sealed roads.

38. Lane kilometres are used as a neutral unit of measurement to account for the variations in State road widths. Widths for calculation of lane kilometres are shown in Table 4.

Table 4 WIDTHS OF LANES

Road type	1 lane metres	2 lanes metres	3 lanes metres	4 lanes metres	6 lanes metres
Gravel roads	up to 4.5	over 4.5			
Undivided sealed roads	up to 4.5	4.5 – 9.1	9.1 – 11.6	over 11.6	
Divided sealed roads				up to 9.1	9.1 – 11.6

39. For the 1999 Review, road length data supplied by States were compiled in accordance with National Association of Australian States Road Authorities (NAASRA) definitions for rural arterial roads (classes 2 and 3) and urban arterial roads (classes 6 and 7).

40. For the 2004 Review, States have been asked to supply rural arterial road lengths by sealed and unsealed lengths. There are no unsealed urban arterial roads.

41. **Submissions.** Victoria stated that the method of assessment should better reflect the relationship between road costs and the aggregate distance travelled by vehicles rather than the physical length of road.

42. Western Australia reiterated its concerns about the definition of what roads the State is responsible for, first expressed in its submission to the 1999 Review. It said that there was no clear and consistent distinction between State and local roads across Australia due to different road classification policies between States. It believed that the definition of arterial roads used by the Commission (based on NAASRA definitions) was subject to interpretation and uncertainty. For example, NAASRA Class 6 roads are defined as a 'principal avenue of communication for large traffic movements', but there is no guidance as to what level of traffic is deemed to be 'large'. Western Australia asked the Commission to explore alternative approaches to measuring arterial road lengths, such as:

- incorporating the length of all roads within each State (except national highways); or
- incorporating the length of all roads within each State other than national highways and direct access roads to private property .

43. Western Australia recently reviewed its road lengths using the NAASRA definitions for the purposes of the Austroads *Roadfacts* publication, and argued that those data should be used by the Commission. However, the new data include arterial roads that are under local government control but are supported by State funding.

44. In this regard, Main Roads Western Australia advised that it has an ongoing commitment to provide a minimum 25 per cent of State road funds for expenditure on local government roads. In recent years, Main Roads has provided total grants averaging \$150 million to local authorities for road maintenance and improvement. While this funding is not solely for local government arterial road expenditures, it has provided local government with the capacity to fund arterial road expenditures.

45. Queensland believed that, for consistency, the component for arterial roads should be renamed 'roads' and include both arterial roads and local roads serving the purpose of arterial roads. Alternatively, 18 266 lane kilometres of Queensland's local roads should be reclassified as arterial roads.

46. Queensland also claimed that, as it assists Brisbane City Council maintain urban arterial roads, these should be included.

47. South Australia thought that consistent road, bridge, culvert etc lengths should be sought from a consultant. It also said the use of up-to-date data was important because the creation of private roads since the last review meant that road lengths were overstated in some States.

48. **Comment.** There are two issues. One is whether it is standard policy for States to fund local roads. The second is the difficulty of measuring the length of arterial roads on a comparable basis.

49. *Road funding.* In the past, Commonwealth financial support for roads was passed on to the States for use on State arterial roads as defined by NAASRA. The responsibilities for Commonwealth, State and local governments were established through the 1991 Inter-Governmental Road Funding Agreement and were defined by legislation of the Commonwealth and State Governments. Since Commonwealth funds for roads became untied in 1994, the use of the NAASRA definition has declined in some States. New South Wales, Queensland, Western Australia and the Northern Territory all, to some extent, fund or assist with the funding for roads which would normally be the responsibility of local authorities.

50. This blurring of responsibility has been cause of some concern and debate. In 1998, Austroads published a discussion paper on the responsibilities of the jurisdictions for roads⁵. The case of *Brodie v Singleton Shire* in May 2001 made not just the acceptable standards of roads maintenance an issue but highlighted the need to clearly distinguish lines of responsibility⁶.

51. By definition, this category includes all expenditure on maintenance of roads, tunnels and bridges (whether a State, Commonwealth or local Government responsibility) undertaken by the State. Therefore, where States are funding local road maintenance, these road lengths should be included if this type of funding is a standard policy.

52. We ask the States for information on whether funding for maintenance of local roads, or some subset of local roads, is State policy. Where it is, we will include the relevant length of local roads within the scope of the assessment.

53. *Road length.* The main problem is to obtain measures of road length that are comparable between States. More specifically, it can be difficult to decide whether a road is arterial or local. This has a material impact on the assessment.

54. It seems likely that, as long as we try to differentiate between local roads and arterial roads, there will be definitional problems.

55. The use of all local roads, as suggested by Western Australia, is problematic. There are two main issues.

- (i) How will included local roads be defined? For example, should tourist roads such as beach access roads, developmental roads such as mine exploration roads, four wheel drive tracks, and community access roads be included.
- (ii) How will associated disabilities be assessed? In a Technical Report, the National Road Transport Commission notes that the greater proportion of local road expenditure is not directly related to road use, being attributable to the social cost of access and related amenity

⁵ Austroads: Responsibilities for Local Roads. 1998

⁶ See also Department of Infrastructure (Victoria). Road Standards and the Legal Duties of Road Authorities: A Discussion Paper. 2002

services⁷. It also says that many local roads are constructed to a considerably higher standard (residential streets built with kerbs and gutters) than necessary for the traffic use. This suggests that the cost of maintaining local roads may be driven mainly by needs based on social expectations.

56. On the subject of road standards, Victoria thought that the relative cost burdens of maintaining roads constructed from different materials should be incorporated in the assessment. The choice of road surface adopted by road agencies, and the standard to which the surfaces are maintained, is not an arbitrary policy decision but a reflection of different levels of service and safety requirements associated with the functions served by the roads.

57. *Proposal.* The options are as follows.

- (i) If funding of local roads by State governments is standard policy, these road lengths, weighted to reflect funding arrangements, could be incorporated into the assessment. The associated State expenditure is already included in the financial standard.
- (ii) If funding of local roads by State governments is not standard policy, we would not include local road lengths into the assessment for two reasons:
 - the inclusion of local roads lengths could bias the factors; and
 - there are likely to be as many definitional problems in trying to identify local roads as there are in identifying arterial roads.

58. If the first option is viable, the length of local roads maintained by the State could be included in the remote local roads component currently assessed, with factors for dispersion, input costs and road length.

59. Problems of definition have, in the past, proved to be intractable. The way forward is to either accept some level of deficiencies with the data, or exclude road length from the assessment of roads expenditure. We think that fiscal equalisation would be better served by the former option.

60. Queensland noted that some of its local roads are serving the purpose of arterial roads and should be included in the assessment. Would these roads be included in the standard definition of arterial roads? Or is the State funding local roads as discussed above? This is a matter of including comparable roads in each State. We will need to investigate this further in an attempt to get comparable data.

61. Victoria maintained that the standard of road is not a policy matter but is dictated by traffic density, travel time and road safety considerations. We have asked for rural arterial roads to be dissected into sealed and unsealed. These data will be used if they are of sufficient quality. Past experience showed that not all States could make further

⁷ National Road Transport Commission, Updating Heavy Vehicle Charges: Technical Report, September 1998, p 15.

dissections. The choice of formed or unformed roads may be the province of policy, but there are unlikely to be many unformed arterial roads.

Physical Environment

62. **Background.** The assessment of differential physical environment impacts on road maintenance costs involved:

- (i) dividing Australia into regions according to the expected effect of the physical environment on maintenance costs;
- (ii) estimating the average maintenance costs attributable to the environment in each region;
- (iii) estimating the length of roads in each region in each State; and
- (iv) applying the estimated average cost for each region to the length of roads in that region for each State.

63. The NRIC provided information which subdivided Australia into five road maintenance cost regions based on the differential effects of average rainfall, temperature, soil type and relief.

64. In our research for the 1999 Review, we found the average experience was that 38 per cent of road maintenance costs were attributable to road use, and 62 per cent were due to environmental impact. However, for many highly trafficked urban roads, the use and environment split could be around 80/20. For remote rural roads, the use split would more likely be 15/85, reversing that of highly trafficked urban roads.

65. **Submissions.** Victoria said recent research suggested that the impact of the physical environment on road maintenance costs was overestimated. Austroads has funded substantial work undertaken by ARRBTR to better estimate the effect of climate on road maintenance costs in Australia. This has found that the environment influence was substantially less than that estimated in our model. For the range of climates experienced in Australia, the maintenance cost difference for sealed pavements on arterial roads was found to be in a range +/- 20 per cent. This difference was found to be independent of the volume of traffic using the road.

66. Victoria concluded that the physical environment factor should therefore be reduced by 50 per cent.

67. Western Australia wanted the physical environment factor to be recalculated to recognise specific disabilities. In areas experiencing high seasonal rainfall (such as the North-west) difficulties are created due to increased use of all-weather roads. For example, roads are still used even if they are flooded, which causes additional damage.

68. An emerging problem is rising water tables and salinity in low-lying areas. In the south west of Western Australia, rising water tables cause similar, and in some instances worse, damage to the road system than flooding. Damage occurs because of deformation of roads due to prolonged wet and because salt damages concrete structures.

69. Western Australia claimed that with additional maintenance costs of approximately \$10 000 per kilometre per annum, a large proportion of its roads would be located in a *High Cost* environment region under the Commission's physical environment methodology. However, according to the NRIC research, most of the regions in which salinity exists were deemed to be low to medium cost.

70. The ACT requested the removal of the physical environment factor from the assessment of the bridge and major culvert component as the physical environment should already be accounted for in the design and construction of bridges. Therefore, extending the use of the roads physical environment factor to the bridges assessment was inappropriate.

71. **Comment.** For the 1999 Review, the physical environment factor was calculated by the NRIC as a Commission consultant. The Commission's starting position for the 2004 Review was that, on the basis that the environment would not have changed and the lengths of arterial roads would not change much, it would not be necessary to make major changes to the 1999 Review assessment.

72. The claim by Victoria that the effect of the environment has been overstated will be investigated. The ARRB TR research cited by Victoria will be investigated with a view to revising or modifying the current factors if appropriate.

73. The impact of high water tables and salinity has been a concern for Western Australia for some time. In a report sponsored by Main Roads Western Australia⁸, 230 kilometres of road in South east Western Australia or about 3 per cent of the regional road network was found to be affected by salinity. The current factor may be revised to give an allowance for this environmental impact, but data will be requested for other States.

74. Staff are not persuaded by the ACT argument that bridges are unaffected by the environment. Even if all bridges built since 1995 (when new design guidelines commenced) were designed to resist environmental damage, bridges built prior to this were not.

Discussion of Options

75. The three important road specific factors are road use, road length and the physical environment. As discussed above, measures of road use and road length can be interchangeable, depending on the measure chosen.

76. From submissions to the 2004 Review and on workplace visits, we have been asked to look more closely at measures of urbanisation and congestion. Two options for a roads expenditure assessment are suggested for consideration.

77. Option 1 is almost the same as the current assessment framework. The component weights would be reassessed but the components would remain the same. New data from the States would be used to reassess the factors.

⁸ McRobert and Foley, *The Impacts of Waterlogging and Salinity on Road Assets: a Western Australian Case Study*, ARRB Transport Research, Special Report 57, November 1999.

78. Option 2, shown in Table 7 (at the end of this paper) relies on the assumption that the major factors affecting arterial road maintenance costs differ for urban roads and rural roads. This model would remove dispersion from the urban road assessment and, assuming that road length and the physical environment are much more relevant to rural roads, adopt a simple assessment of road use. A factor for urbanisation, possibly based on a measure of congestion, would also be applied to the urban arterial component.

79. The rural roads assessment would include dispersion and the road use, length and environment factor, but not urbanisation.

80. This Option was anticipated by New South Wales in the context of the 1999 Review. It considered that the model used by the Commission to estimate relative influences of road use and physical environment would not capture the fact that the impact of physical environment was only important at low traffic levels on rural arterials. At high traffic levels (urban arterials), the impact of physical environment tended to outweigh use.

81. If the proportion of funds devoted to urban and rural arterials differ significantly, this method has the capacity to improve equalisation.

Urbanisation

82. ***Background.*** For the 1999 Review, the Commission was persuaded that urbanisation effects, other than the volume of traffic, increased the annual maintenance costs by about \$700 per lane-kilometre for highly trafficked urban arterial roads. The factors currently in use are meant to recognise labour costs not fully captured by the input costs factor. For example, in large cities, maintenance work is often done at night to avoid traffic disruption, and road repair materials are more expensive.

83. To calculate the urbanisation factor, the estimated extra maintenance costs per lane-kilometre were applied to the length of urban arterial roads with traffic levels in excess of 40 000 AADT. The ratios of State notional road maintenance costs to the Australian average, inclusive of the urbanisation influenced costs, were then compared with the corresponding ratios excluding that influence.

84. ***Submissions.*** Victoria stated that substantial additional costs were incurred in the maintenance and operation of roads in urban areas compared to rural areas. These additional costs were related to traffic use and were evident at even relatively low urban volumes. They were not restricted to high freeway volumes over 40 000 AADT. Also:

- additional pavement maintenance costs were incurred in urban areas because of the need for greater use of asphalt rather than granular chip sealed pavements to provide additional strength required to cater for the volume of traffic carried;
- additional traffic control costs were incurred in urban areas because of the need to maintain and operate traffic signals, provide statutory signing and maintain line marking; and
- additional costs were incurred in the provision of urban street lighting provided for road safety reasons.

Victoria suggested that the urbanisation factor should be increased by at least 60 per cent to take account of extra costs of maintaining roads in urban areas, regardless of traffic flow.

85. New South Wales believed that urbanisation could be measured using the number of traffic control devices per lane kilometre.

86. *Comment.* In the 1999 Review, the assessment aimed at capturing the effects of urbanisation, other than the volume of traffic, or annual maintenance costs. The urbanisation factors currently allow for this and are also meant to recognise costs not fully captured by the input costs factor.

87. Victoria asked that the cost of more expensive pavement, and greater urban traffic control and street lighting be included. We think these should be taken into account in the road use assessment which includes associated roadside expenses.

88. The idea that urbanisation effects, other than the volume of traffic, increase the annual maintenance costs appears, prima facie, to be reasonable. However, at this stage, the examples supporting urbanisation related disabilities are limited to:

- (i) higher costs associated with doing maintenance work at night or during weekends; and
- (ii) the higher cost of transporting raw materials from sources of supply.

89. These suggest that the overall urbanisation disability may be small.

90. In addition, it is not clear that these costs are necessarily associated with urbanisation and/or highly trafficked area (as assumed in the current assessment). Particularly the second of these problems could affect arterial road maintenance costs anywhere in a State.

91. Neither is it clear what level of road use is required before decisions are taken to carry out repairs at night or on the weekend. The 1999 Review assessment assumed 40 000 AADT. It is possible that the availability of alternative routes would also have an impact on decisions.

92. Also, it is not clear why there would be higher transportation cost to carry material to work sites in urban areas. There is no reason to believe that all sources of supply are distant from urban areas. Many rural roads are distant from sources of supply and high costs are incurred in transporting road repair materials. If the higher costs are due to time wasted transporting materials on highly trafficked roads, it would not appear to be a very convincing argument in terms of materiality.

93. *Assessment options.* If an assessment were to be continued, its measurement is difficult. The suggestion that urbanisation can be measured by the number of traffic control devices has problems. The number of traffic lights in a city is dependant on terrain, the age of the city, city planning and government policies on encouraging or discouraging vehicle use.

94. It may be possible to use congestion data as an indicator of urbanisation. For example, there would be a positive correlation between the level of congestion and the need

to carry out maintenance at night and on the weekend. Austroads' National Performance Indicators publishes data on urban travel congestion, derived from differences between the nominal travel times, based on the posted speed limits, and the actual travel times which are influenced by traffic conditions and measures minutes delay per kilometre.

95. The total economic cost of traffic congestion in the major cities is now estimated to be \$13 billion per annum⁹. We have no estimate of the costs of congestion to States' budgets. A comparison of traffic congestion levels in the major cities using a measure of actual and nominal times (based on posted speed limits) shows:

- the largest cities have the greatest congestion;
- with some minor exceptions, congestion is increasing in all cities; and
- the smaller capitals are showing the highest percentage change.

96. However, any factor using congestion as an indicator of increased costs would be policy influenced and would only recognise one cause of States' relative needs for additional expenditure on night maintenance.

97. As an alternative, we could retain the current assessment which assumes an additional \$700 per km for maintenance of roads with AADT over 40 000.

98. **Proposal.** Commission staff do not believe that, at this stage, there is enough evidence to support the retention of the urbanisation factor, or that its measurement would be robust. Unless clear evidence can be presented to the contrary, Commission staff are inclined to recommend that the factor be discontinued for the 2004 Review.

Congestion as a Separate Disability

99. **Background.** At present, there is no allowance made for the additional costs of congestion.

100. **Submissions.** New South Wales argues that a factor for congestion should be developed because there are diseconomies of large scale for providing services for larger populations. Services reach a saturation point, beyond which marginal cost of repairs and maintenance is higher than average cost. Congestion imposes costs over and above costs directly associated with road length and use, such as the 'stop-start' status of vehicles on the road network. It suggested that congestion could be measured in many different ways, such as per person trip rate, effect of traffic volume on travel time/speed, and level and distribution of delay on the urban road network.

101. **Comment.** 'Stop start' traffic movements may add to maintenance costs by accelerating surface deterioration, however, it is not clear how important this factor is in relation to others. A comparison of trip rates in capital cities will not cast light on the differing costs imposed by differences, and there is a possibility of double counting this disability with urbanisation and traffic use factors. There may also be conflicting issues

⁹ Austroads, Roadfacts 2000, p65.

with the factor for urban traffic control (a more efficient traffic control system would yield lower congestion).

102. **Proposal.** Commission staff do not propose to pursue this issue further.

Urban Traffic Control

103. **Background.** In the 1999 Review, an urban traffic control factor was assessed to allow for the extra costs incurred in Sydney and Melbourne because of the need to provide and maintain complex traffic control systems. On the information available at the time, a 2 per cent allowance was made for New South Wales and Victoria.

104. **Submissions.** New South Wales, Queensland and Western Australia argued that traffic control systems were increasingly more complex and expensive to operate.

105. A new Traffic Management Centre was opened in Sydney in 1999. Designed to handle the peak traffic during the Olympics, it operates twenty-four hours a day and costs about \$200 million per year to run. It has 250 cameras and can advise commuters of their optimum speed to minimise delays at traffic lights.

106. The VicRoads Traffic Control and Communications Centre (TCCC) is operated 24 hours a day, has a network of 140 traffic surveillance cameras and has access to 200 CityLink cameras. Apart from CityLink, the TCCC has links to Victoria Police and the RACV. It handles approximately 250 000 telephone calls each year.

107. Queensland's Main Roads Department runs three traffic control centres in south east Queensland. In addition, Brisbane City Council operated another and the Department of Transport operated one for dedicated bus lanes. Thus, the costs incurred in providing and maintaining Queensland's complex network of traffic (and busway) management centres needed to be considered in a similar manner to those of Sydney and Melbourne. Queensland argued that the 2 per cent urbanisation disability afforded to New South Wales and Victoria was also appropriate for Queensland.

108. Western Australia submitted that it also incurs extra costs in Perth as a result of its new Traffic Operations Centre (approximately \$1.7 million per annum). The Traffic Operations Centre was set up to co-ordinate and control increasing urban traffic volumes and congestion in Perth and was built as part of the City Northern Bypass project.

109. South Australia also operates a Traffic Control Centre. The Adelaide's Coordinated Traffic System is an advanced computer system responsible for the smooth flow of traffic through more than 560 sets of coordinated traffic lights throughout the metropolitan region. It also operates twenty-four hours a day and is responsible for smoothly reversing the traffic flow on the Southern Freeway.

110. **Comment.** Two main issues arise. The first is whether the 2 per cent of roads expenditure allowance made for New South Wales and Victoria reflects the size of the entire task in those States, and the second concerns whether some allowance should also be made for the medium sized capitals.

111. Staff seek information on how much States are spending on Traffic Control Centres. Once such information is received, the current assessment will be reviewed.

Socio-demographic Composition

112. ***Background.*** The socio-demographic composition factor was assessed to recognise that governments (among other initiatives like safe road design) make efforts to target particular ‘at risk’ groups of road users. In particular, road accident statistics showed that the Indigenous population suffered three times the fatality rate of non-Indigenous road users and States demonstrated the special efforts they made to educate this group. Census data were used to calculate a socio-demographic composition factor with a service weight of 3 applied to the Indigenous populations.

113. ***Submissions.*** New South Wales considered that the socio-demographic composition factor should be expanded to include the numbers of male drivers aged 17-25. The New South Wales Government is operating programs such as Youth Road Safety Programs, the New Graduated Licensing Scheme, the Hazard Perception Test and the Driver Qualification Test. It also believed that persons from non-English speaking backgrounds should also be included. The high proportion of persons from low English fluency backgrounds has influenced New South Wales’ need for road safety expenditure and is reflected in measures including ethnic media advertising, an Occupational Restraint Study involving low English fluency backgrounds populations, and the Local Government Road Safety Program (NESB Road Safety Projects).

114. Victoria thought that the road safety component assessment should be revised to reflect the 50 per cent higher exposure to and costs of fatal and other casualty road accidents on urban roads.

115. ***Comment.*** New South Wales has made a case that socio-demographic minorities are targeted in Government campaigns. The Victorian data did show that fatality and accident rates were higher in metropolitan areas, but did not relate this fact to road safety expenditure or to socio-demographic composition of the population (it may be an urbanisation impact).

116. This factor was introduced to recognise the effort that Governments make in targeting minority groups in road safety campaigns. However, road safety campaigns tend to target whole of State populations rather than particular population groups — campaigns on driver fatigue, wearing seat belts, and drink driving target whole of State populations.

117. Accepting the high rate of Indigenous fatalities, the high number of fatalities and accidents in metropolitan areas and that States target specific populations as well as the total driving population, the question is how significant are the relative amounts spent for particular road safety campaigns that appear to target specific population groups?

118. On consideration, this factor may not be well founded. We think that the introduction of further population groups in a revised socio-demographic composition factor is likely to further cloud the issue and increase complexity without improving the equalisation outcome.

119. **Proposal.** Staff propose to recommend that the Commission not assess a socio-demographic composition factor covering the impact of Indigeneity or any other specific group for road safety in the 2004 Review.

Input Costs

120. **Submissions.** Tasmania argued that factors for input costs were no longer relevant and should be removed from the assessment.

121. The ACT submitted that the input cost factor should continue to be assessed.

122. **Comment.** It is not clear to Commission staff that input costs disabilities have ceased to exist in regard to people employed for road repairs and maintenance.

123. Unless State can provide evidence that input costs relating to roads expenditure are no longer relevant, an input costs assessment will be made for the 2004 Review.

Road Use by Freight Carriers

124. **Submissions.** New South Wales argued that, because of its location, it experienced high levels of freight traffic travelling from one State to another. It thought a freight disability factor should be assessed based on 'origin and destination' of freight loads. It claimed that AADT counts did not accurately allocate the proportions of the different types of vehicles and would prefer a measure based on net tonne kilometres (NTKM).

125. **Comment.** Using NTKM would be more complex than the current method. If the AADT and vehicle type data requested by the Commission are accurate, they should be a good proxy for freight weights. In any case, most of the through-State transport would travel on National roads maintained by Commonwealth funds.

126. **Proposal.** An appropriate and accurate measure of road use, as discussed above, should include the effects of through traffic. Staff are not convinced that interstate freight carriers use State arterial roads more in New South Wales than elsewhere as most of their travel would be on National Highways.

Administrative Scale

127. **Submissions.** The ACT submitted that the diseconomies of small scale it experiences should continue to be assessed.

128. **Proposal.** The administrative scale assessment will be retained.

National Capital

129. **Submission.** The ACT requested a National Capital allowance of \$4.7m per annum comprising:

- (i) \$3.8m for the shorter lifespan, hence earlier rehabilitation and maintenance of a significant portion of the road network, resulting from the Commonwealth's:
 - sub-standard design and poor supervision of road construction; and
 - poor heavy vehicle controls with respect to dimensions and mass, resulting in the overloading of heavy commercial vehicles; and
- (ii) \$0.9m for excessively wide roads built by the Commonwealth.

130. In 2001, the ARRBTR conducted a sample survey of ACT roads for roughness, rutting and deflection. It claimed that almost a third of the ACT's roads were in a poor to unsatisfactory or very poor condition. The ARRBTR also found that some roads required maintenance earlier than would be expected and attributed this to Commonwealth policies.

131. *Comment.* The ACT noted that many problems experienced with their roads were reported to the National Capital Development Commission in a 1981 report¹⁰ but no subsequent action was taken by the Commonwealth to repair them prior to self government.

132. Without disregarding this aspect of Commonwealth policy, staff note that several aspects of the road system inherited by the ACT may ameliorate higher costs. For example:

- (i) the road infrastructure is relatively new when compared with other States;
- (ii) the decentralised nature of the town plan reduces intensive road use and lowers the accident rate; and
- (iii) the relative lack of manufacturing industry leads to low use by heavy vehicles.

133. Although a result of policy, it is interesting to note that the ACT's per capita expenditure on road maintenance is the lowest of any State and is about one half of the Australian standard. The ACT spends about one half of its standardised expenditure in this category.

134. With regard to road surfaces, Austroads published data on the roughness of urban arterials in the States using the 'NAASRA Roughness Meter'(NRM). On this scale an NRM count of 40 would be considered very comfortable while a count of 140 would be considered uncomfortable by most drivers. Table 5 shows that urban arterials in the ACT are not as rough as most other States (although data for the ACT was lagged one year behind the others).

¹⁰ Martin, Teo and Ryan, 1981, Investigations into existing Road Pavements and Subgrades in the ACT, ARRB, Canberra.

Table 5 ROAD PAVEMENT SURFACE CONDITION – URBAN ARTERIALS, 1998-99

State	Roughness less than 110 NRM	Roughness less than 140 NRM
	%	%
New South Wales	83	93
Victoria	89	96
Queensland	91	97
Western Australia	99	100
South Australia	85	95
Tasmania	na	na
ACT	95*	100*
Northern Territory	97	99

Note: na means not available.

* 1997-98 figures.

Source: Roadfacts 2000, Austroads Table 2.11 p30

135. The ACT's claim for an allowance for wider than average road lane deserves consideration. Although the Commission does not specify an 'average' road width, the ACT has used the ARRB's report to the Commission in the 1999 Review to calculate an average of 3.0 metres based on the consultant's sample. The ACT has determined its average arterial road lane width as 3.96 metres. Using the maintenance cost per lane kilometre adopted in the 1999 review, an estimate of additional cost of \$0.9 million was made.

136. Given that 90 per cent of the ACT's arterial roads were inherited from the Commonwealth, it seems realistic that extra costs are incurred to maintain these roads at similar standards.

137. Staff note that Tasmania advanced a claim (with similar logic) on its workplace visit. That is, that it experienced higher road maintenance costs because it had to maintain edges and verges on its narrow roads more frequently. It claimed that the narrowness of its roads were due to its mountainous terrain rather than policy. In this context we note that all governments inherit structures from the past, the only difference with the ACT is lack of planning control in the past.

138. **Proposal.** Staff do not propose to make an allowance for deteriorating roads due to poor design or lack of load controls on heavy vehicles because we are not convinced that the roads in the ACT are in demonstrably worse condition than in other States. Staff also feel that although there may be some damage due to overloading, this damage is relatively small. An allowance of \$0.9 million to assist the ACT to maintain roads of more than average width inherited from the Commonwealth will be proposed.

OTHER ISSUES RAISED

Insurance Costs

139. **Submission.** New South Wales asked the Commission to consider including an administrative component for insurance payments (workers compensation, motor vehicle, property and liability) as the insurance costs of the Roads and Traffic Authority (RTA)¹¹ in 2000-01 constitute around 11 per cent of corporate overhead expenditure. In support, it offered the data in Table 5.

140. **Comment.** Insurance costs would vary between States due to the size of the network that is serviced and the safety records and history of claims. It is not clear why New South Wales would have higher insurance costs per capita than other States.

141. An assessment for the size of the network would be partially captured by the road use and road length factors. Input costs factors allow for differences in salary costs and therefore in workers compensation costs. Other aspects such as the history of claims are at least partly policy related.

Table 5 INSURANCE COSTS, NEW SOUTH WALES, ROADS AND TRAFFIC AUTHORITY

	2000-01	2001-02
	\$m	\$m
Workers Compensation Insurance	9.13	9.32
Motor Vehicle Insurance	0.99	0.52
Property Insurance	1.31	1.64
Liability Insurance	14.13	14.77
Total	25.56	26.25

Source: New South Wales Submission, May 2002. p 312

142. **Proposal.** Commission staff have not seen merit in this argument and are not inclined to recommend to the Commission that needs should be assessed in relation to insurance costs unless New South Wales can provide evidence that it needs to spend more per capita than other States for reasons outside its control.

Road Safety

143. **Background.** The road safety component includes the salary costs of operating a road safety unit and any costs associated with public awareness campaigns and road safety standards and policy. The component was assessed with factors for dispersion,

¹¹ The RTA is the New South Wales agency responsible for promoting road safety and traffic management, driver licensing, vehicle registration, and maintenance and development of the National Highway and State Road network.

input costs, and accepting of an argument from the Northern Territory that the size of minority populations are reflected in the road safety budget, a factor for socio-demographic composition.

144. **Submission.** Western Australia thought that the Commission should recognise that road safety maintenance costs are a function of road length. The same levels of safety infrastructure are necessary on a road that carries 300 vehicles a day as one that carries 3 000 vehicles a day. The costs associated with maintaining road safety initiatives on the road network (such as road marking, verge clearing and signage) increase as road length increases.

145. **Comment.** The servicing and operating expenses defined by the NRTC include maintenance and repairs to street lighting, traffic signals, roadside and median maintenance, maintenance of signs and repainting of pavement markings. These expenses are included as expenses on arterial roads and, as such, road length is taken into account.

146. **Proposal.** Staff do not propose to pursue this issue further.

147. **Submission.** At the Victorian workplace discussions, an urbanisation factor was discussed as an additional assessment for the Road Safety component. This was to be based on either accident data by locality or on annually published estimates of road-based travel in each State.

148. **Comment.** The greatest occurrences of road accidents occur in areas with the largest concentrations of population. Also, road safety campaigns are targeted at areas where accidents occur. However, we have reservations about assessing an urbanisation factor for road safety because:

- both measures suggested have difficulties of data contamination as accidents and travel also occur on national and local roads and these data would be difficult to separate; and
- more importantly, we think that road safety campaigns are more likely to be targeted at the cause of the accident rather than the site of the accident. We understand that where accident ‘black spots’ are identified remedial action is often taken, but this should be accounted for with the assessment for arterial roads maintenance costs.

149. As with the socio-demographic composition factor, we do not see a direct link between accident rates or travel and the amount spent on road safety.

150. **Proposal.** Staff do not propose to recommend an assessment for urbanisation in road safety. However, States views are sought.

Treatment of Roads Depreciation Expenses

151. **Background.** In the 1999 Review, the Commission used Category D Roads expenditure as a proxy for roads depreciation expenses. No additional roads depreciation expenses were included in the standard budget.

152. The Commission viewed the decision as a 'phasing-in' of the depreciation assessment and said that it would be reconsidered in the next Review with the aim of obtaining a more accurate estimate of roads depreciation.

153. **State Views.** Only Western Australia commented on this issue. It wanted the Commission to consider a depreciation assessment for roads. It considered that the Commission's assessment of road rehabilitation expenses did not replace an assessment of depreciation, as rehabilitation expenses fall substantially short of depreciation expenses.

154. **Comments.** Roads are depreciable assets. As such, depreciation expenses on roads should be included in the equalisation budget. Including them (in the Roads category) would ensure that the cost of providing road services is fully measured, and that the treatment of roads is consistent with the treatment of other general government assets.

155. The quality of the ABS GFS data on depreciation has improved since the 1999 Review. ABS GFS data on depreciation expenses will be used for the Depreciation category, and there is no reason to believe that the GFS data on roads depreciation could not also be used. For illustrative purposes, Table 6 shows GFS roads depreciation data for 2000-01. Commission staff will investigate the high depreciation values of Queensland, Tasmania and the ACT.

Table 6 GFS ROADS DEPRECIATION, 2000-01

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
(\$'000)	312 653	222 597	608 192	127 438	97 238	66 716	30 094	28 537	1 493 465
Per lane kilometre of all arterial roads (\$'000)	4.37	4.74	15.46	3.66	4.84	11.49	17.58	3.64	6.55

Source: ABS, GFS, 2001-02.

156. **Some issues.** Expenditure on road rehabilitation (NRTC category D roads expenditure) are said to be equivalent in their intent to roads depreciation expenses. Alternatively, it has been argued that this type of expenditure is capital in nature. Regardless of the nature of the expenditure, we believe it should be excluded from the standard budget as it would double-count depreciation expenses.

157. **Proposal.** Staff propose to include depreciation expenses on roads within the equalisation budget and locate this expense in the Roads category as a separate expenditure component. Disability assessments specifically developed for this component would be applied.

158. To avoid double-counting, it is proposed that expenditure on road rehabilitation (NRTC category D) expenditure be removed from the standard budget.

Road User Charges

159. **Background.** Roads User Charges were assessed using a road transport charges component of 40 per cent and a road toll component of 60 per cent. The road

transport charges component was assessed equal per capita. The imposition of road tolls was considered to be standard policy and New South Wales and Victoria were considered to have twice the revenue raising capacity of Queensland, Western Australia and South Australia. Tasmania, the ACT and the Northern Territory were considered to have none.

160. *Submissions.* New South Wales argued that a revenue capacity factor for this assessment should be based on a measure of relevance to State capacities, such as the number of cars per capita or income per capita. New South Wales did not believe that the current factor was justified and argued that the assessment should be equal per capita.

161. New South Wales also thought that the Road Revenue model should use a 60 per cent charge — 40 per cent toll split (as opposed to the current 40/60 split).

162. Western Australia said its capacity to raise tolls was about one third that of New South Wales and half that of Victoria and Queensland. It considered the Commission's current assessment about right for the Victoria/Western Australia comparison, but too low for New South Wales and Queensland.

163. South Australia supported the factors currently used.

164. *Comment.* The capacity to raise revenue from tolls has probably more to do with congestion, the population size of cities and population density than per capita number of cars or per capita income.

165. *Proposal.* Staff will review the split between toll and other revenue with the aid of budget data. We are inclined to use judgement to review toll raising capacity and think that a measure based on congestion may aid our judgement. We think that there is likely to be a threshold number of vehicles or licensed drivers before a toll can be cost effective. We think that Tasmania, the ACT and the Northern Territory continue to have little capacity to raise tolls.

166. The question of how privately owned toll road revenues and expenses fit into the financial standards and the assessment of disabilities would be considered as part of the wider issue of the treatment of States' use of Privately Owned Capital.

TREATMENT OF COMMONWEALTH PAYMENTS

167. The Commonwealth Government directly funds the construction and maintenance of Highways of high economic and social importance, known as National Highways. This enables it to make decisions concerning the standard of design and construction. Expenditure on these roads does not appear in State budgets and the lengths of national roads are excluded from the road lengths used in the assessment of States' needs.

168. Under the Roads of National Importance Program, the Commonwealth provides funding to State Governments, on a cost sharing basis, for construction projects (not on-going maintenance) on roads that satisfy criteria demonstrating their national importance. The criteria are that these roads should improve access to major centres of

economic activity, or improve links to the National Highway system or major transport facilities, or allow people, goods and services to move more freely within major urban and regional centres.

169. Under the Black Spot Program, the Commonwealth also provides funding to State and Territory Governments, on a cost sharing basis, for construction projects on road lengths or sites that have a history of accidents. Community groups, motorists organisations, industry organisations, councils and others are invited to nominate Black Spot sites around Australia to be considered for treatment.

170. Because the Roads of National Importance and the Black Spot Program are mainly concerned with capital, both are presently out of scope for the Commission's assessments but are likely to be included under new proposals for capital grants.

171. From 1 January 2001, the Commonwealth began a program to improve local roads under Roads to Recovery, it plans to spend \$1.2 billion in four years, in addition to the untied Local Roads Grants and the local authorities' own spending on roads. The distribution of the Roads to Recovery funds between States and Territories is based on historical precedents, length of local roads and population. Allocations between councils within each State are in accordance with formulae adopted by State Grants Commissions for the untied local roads funding. The allocations to councils are fixed for the life of the Program.

172. Under this Program, the final responsibility for carrying out the local roadworks rests with local authorities, so these expenditures are out of scope for the Commission's purposes (and quarantined under the Terms of Reference for the 2003 Update).

173. The Commonwealth has indicated that the current road and rail funding may, in the future, be combined in an effort to deliver a more integrated and strategic transport development. It has said that the Auslink Program will not involve a reduction in the Commonwealth's expenditure and will not affect any projects currently funded by the Commonwealth. A comprehensive discussion paper, a Green Paper, will be issued in August 2002 and, following consultation, a White Paper will be issued by March 2003. The Commonwealth will then seek to develop a new Inter-Governmental Agreement. The Commission will need to examine this agreement for any implications it may have for the assessments.

SUMMARY

174. In summary, this paper proposes that for the Roads assessment in the 2004 Review:

- all component weights will be reviewed;
- factor for road use: weights applied to heavy vehicles will be reviewed;

alternative measures for road use (kilometres travelled, estimated standard axles, freight kilometres) will be sought;

- urbanisation: alternative measures of congestion will be sought States are asked for their views on how to proceed with this assessment;
- local roads maintained by the State: may be included in local roads assessment if a standard funding policy and comparable road lengths can be identified;
- urban traffic control: will be reviewed using new expenditure data;
- physical environment: will be reviewed using ARRB TR data if available;
- freight: will investigate the suitability of data on net tonne kilometres travelled;
- depreciation: expenses will be included, NRTC Category D expenses will be removed;
- National Capital a small allowance will be proposed for the width of roads in the ACT; and
- socio-demographic composition, congestion, insurance costs: no assessment.

175. Revenue raising capacity will be re-examined, possibly with a factor measuring congestion (with possible discounting) applied to capacity to raise tolls.

176. All other factors will be updated with new data but the methods will not change.

177. The National Highway network has expanded since the last review. We will reappraise the National Highway lane kilometres for each State and check that they are not included in the reported road lengths by the States.

SUMMARY OF SUPPLEMENTARY DATA SOUGHT FROM THE STATES

178. As a result of this paper, we are seeking additional information to assist with Commission decisions:

- What are States' policies on funding local roads? Are the payments capital or recurrent? What are the sharing arrangements if any?

- What is an appropriate weighting to compensate for the road use of superheavy vehicles?
- What is spent on Traffic Control Centres in your State (some States have included this information in their submissions)?

SUGGESTED OPTIONS

179. Two options for a roads expenditure assessment were discussed earlier. Option 2 is shown in Table 7 below.

Table 7 ROADS — ASSESSMENT STRUCTURE, 2004 REVIEW (OPTION 2)

Expenditure Component	Component weight	Factors	Basis of calculation
	%		
Scale-affected expenditure	XX	Input costs	General method with weights of 80% for wages, 2% for accommodation and 1% for electricity.
		Administrative scale	General method.
Urban arterial roads	XX	Input Costs	General method with weights of 60% for wages, 2% for accommodation and 1% for electricity
		Road use	Based on the effects of road use on maintenance costs per kilometre
		Urbanisation	Based on measures of road congestion
Rural arterial roads	XX	Dispersion	General method
		Input Costs	General method with weights of 60% for wages, 2% for accommodation and 1% for electricity
		Road use, length, environment	Based on the effects of road use and the environment on maintenance costs per kilometre
Bridges and Tunnels	XX	Dispersion	General method.
		Input costs	General method with weights of 60% for wages, 2% for accommodation and 1% for electricity.
		Bridge maintenance	Based on deck area of bridges and standard cost per square metre.
		Tunnel maintenance	Based on length of tunnel and standard cost per kilometre.
		Physical environment	NRIC method possibly discounted.
Remote and Local roads	XX	Dispersion	General method.
		Input costs	General method with weights of 60% for wages, 2% for accommodation and 1% for electricity.
		Local road maintenance	Based on the standardised length of non-arterial roads.
Other transport	XX	Dispersion	General method.
		Input costs	General method with weights of 60% for wages, 2% for accommodation and 1% for electricity.
		Urban traffic control	By judgement.
Road safety	XX	Dispersion	General method.
		Input costs	General method with weights of 60% for wages, 2% for accommodation and 1% for electricity.
National Capital	XX	National Capital	An allowance of \$0.9 million for above average width roads inherited from the Commonwealth
Land rights	XX	Land rights	General method.
Native title administration	XX	Native title	General method.
Isolation	XX	Isolation	General method.