



Australian Government

Commonwealth Grants Commission

**ASSESSING ROADS EXPENSES IN THE
2010 REVIEW**

**STAFF DISCUSSION PAPER
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INTRODUCTION

- 1 In the 2005 Update report the Commission raised its concerns about the comparability of road length data. Since that report, the Commission has been investigating alternative ways of measuring road length. Although this work was commenced to provide a better measure for subsequent updates, it also has implications for the 2010 Review. This paper discusses the progress and the likely outcomes of that work.
- 2 In 2005, the Heads of Treasury undertook a review of horizontal fiscal equalisation. A conclusion of that review was that Commission processes could be simplified. The 2010 Review terms of reference ask the Commission to simplify its assessments, provided to do so is consistent with the principle of equalisation.
- 3 In its 2006 report to the Ministerial Council, the Commission said its aim was to implement equalisation using simpler methods. It believes simplification and equalisation can both be achieved and that simplification will improve the reliability and robustness of the processes and the acceptability of the outcomes.
- 4 The Commission considers that simplification can best be achieved through a rigorous application of its assessment guidelines. These guidelines require the 2010 Review assessment methods to:
 - establish a conceptual case for the assessment;
 - support the conceptual case with evidence, which is both comparable and reliable;
 - develop a reliable assessment method; and
 - demonstrate such an assessment would be material.¹
- 5 The Commission's intention is to develop these methods jointly with States. For that reason it has chosen an iterative process. This approach provides States with opportunities to contribute to the development of the final assessments.
- 6 In its Discussion Paper 2006/11 *Initial Views on Assessment Structure and Approaches*, the Commission outlined its views on assessment categories and approaches for the 2010 Review. Those views provide the basis on which the Commission seeks to take the 2010 Review transport assessments forward in consultation with States.
- 7 The Discussion Paper concluded Transport expenses should be dissected into:
 - roads expenses, which is the subject of this paper; and
 - transport services.

¹ The assessment guidelines specify a materiality threshold of \$10 per capita for disabilities. The threshold is applied to the impact of a disability across all expense categories. In this paper we use the \$10 per capita threshold to determine whether a proposed disability is material in this category. If it moves more than \$10 per capita for any State it is considered to be material. There may be cases where a proposed disability fails the threshold in this category, but we believe that it would satisfy the threshold when its impact on other categories is taken into account. If this happens, the disability is retained in this category.

- 8 Most States supported the two category structure.
- 9 The discussion paper set out the Commission's general approach of measuring States' assessed expenses for the roads category based on the length of road, amount of road use and the average cost of service delivery. Commission cost drivers, or disabilities, fall into two broad groups, those which determine:
- the quantity of services provided — they relate to differences in the use of services because of population and economic characteristics; and
 - the average cost of services. These comprise two types of cost drivers:
 - service specific costs — they relate to differences in the unit cost of services because of population and economic characteristics. Examples are the cost of providing roads to service the pattern of population settlement in a State; and
 - general costs — they relate to differences in the unit cost of services because of other influences. Examples are the cost of minimum head office services, the cost of inputs and the effect of service delivery location on the cost of delivering services.
- 10 Experience indicates that capturing the main influences that cause differences between States in the cost of providing the average level of service often requires more than one indicator of use and cost. This is because there are often material differences:
- in the use of services by groups of people within the population or in the cost of providing a unit of service to them; and
 - between the States in the size of those groups as a proportion of the total population.
- 11 Different influences can affect different parts of the cost structure in different ways. For example, location influences affect total costs in a different way from scale influences.
- 12 This paper may include both assessments and placeholders. A placeholder holds no significance other than indicating that staff consider a case has been established for making an assessment, but they are unable to do so at this time.

DESCRIPTION OF THE CATEGORY

- 13 The Roads category comprises expenses classified to the ABS Government Finance Statistics (GFS) group 121 Road Transport. The category includes expenses² on the maintenance and rehabilitation of roads, road safety, traffic management and other transport activities. State expenses on national highways are included, because these assets are the owned by States. Expenses on local roads are generally excluded because local roads are usually the responsibility of local governments. However, some States are responsible for local roads in some areas and these expenses are included.

² Consistent with proposed adjusted budget scope, it does not include direct capital costs for road infrastructure.

- 14 Table 1 sets out State expenses per capita for this category in 2004-05. Superannuation and depreciation expenses are included in the category. While a separate assessment of superannuation expenses has not been made for this paper, staff consider that superannuation expenses are likely to be influenced by the same factors that influence labour costs. A separate stream of work is considering the appropriate approach to assessing depreciation expenses and whether this general approach should be applied to road depreciation expenses.

Table 1 Expense per capita, 2004-05

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
Actual expenses	375.65	263.46	274.92	371.79	205.00	303.39	457.95	322.86	314.04

Source: ABS GFS data for 2004-05.

Note: The ACT per capita expense includes subsidies for bus transport services.

- 15 These expense data should be treated with caution. State roads expenses are not always classified comparably. For example, some States classify bus expenses to the Other Transport category while others classify them to Roads. Staff are working with the ABS and States to overcome data quality problems.

PROPOSED ASSESSMENT

- 16 Discussion Paper 2006/11 *Initial Views on Assessment Structure and Approaches* set out the Commission's views on how expense and revenue assessments might be developed. The Commission indicated that the work in this area was still preliminary and it did not express a view about how this category was to be assessed.
- 17 It said its investigations had been focused on finding a policy neutral measure of the size of the task faced by States. In the previous review, this had been measured by road length and road use. However, capturing both of these drivers in a policy neutral way had been problematic. The Commission said its ongoing work was focussed on obtaining better measures of these two drivers. They would form the basis of a simpler road assessment.
- 18 As part of this work, staff have been investigating policy neutral measures of road length using a simplified network based on actual road lengths, and a synthetic network.

STATE RESPONSES

- 19 Table 2 summarises State responses to Discussion Paper 2006/11. These are comments the States provided in March 2007.
- 20 The States generally agreed that road length and road use were the main drivers of roads expenses. They were generally supportive of measuring road length using the simplified road network approach. States generally support an assessment approach that measured road length and road use.

Table 2 Summary of State submissions

State	Comments on assessment
NSW	New South Wales expressed concern about the current work the Commission is undertaking in developing a simplified road network measure, particularly regarding the decline in New South Wales' relative share of arterial road lengths, most notably in urban areas, compared with the road lengths used in the current update.
Vic	Victoria contended that the current assessment methodology places too much emphasis on road length and argued that traffic volume is a more significant driver of road maintenance expenses. Nonetheless, Victoria is supportive of the ongoing work to improve the consistency of road length data across jurisdictions. Victoria also noted some quality issues with fuel consumption data and suggested the Commission access the fuel consumption data sets of the Australian Taxation Office.
Qld	Queensland is supportive of the current work on developing a simplified road network measure, commenting that a simplified road network eliminates policy influences and data quality issues, as well as simplifying assessments and increasing transparency.
WA	Western Australia agreed that the development of a simplified road network should provide a better assessment of road needs. However, it argued that the road maintenance task is better not split into arterial and local road components, which it believes would be an arbitrary split. It suggests that roads needs should be assessed by assuming that all States maintain the same proportion of their total road network or assess total State and local government road spending (treating local road grants by inclusion).
SA	South Australia supports the current work on developing a simplified road network.
Tas	Tasmania supports the development of a simplified road network, however, it is less enthusiastic about the proxy measures such as fuel consumption and population weighted distances.
ACT	The ACT expressed concern that the current work the Commission is undertaking to improve road measurement fails to overcome inconsistencies in road measurement. The ACT suggests that fuel consumption is a preferred measure of road length and use and that measures of urban influences and bridges also need to be included in the roads assessment.
NT	The Northern Territory argued that broad indicators such as population density and freight tonnage have only a tenuous link with road expenses. Instead the Territory contended that road length, and to a lesser extent physical environment and road use, are the key drivers of road maintenance expenses. The Territory supports the development of a simplified road network and argued for the inclusion of a physical environment factor, using a similar approach to that used in the current assessment. The Territory supports a road use factor which reflects the impact of heavy and super heavy vehicles.

Source: State submissions on Discussion Paper 2006/11.

MEASURING THE SIZE OF THE TASK

- 21 Staff consider that the size of the task should be based on:
- road length — this captures the non-load road costs. That is, the road maintenance and rehabilitation costs that would arise if vehicles did not use roads.
 - road use — this captures the load costs. That is, the additional road maintenance and road rehabilitation costs associated with the wear and tear caused by vehicle use.
- 22 Traffic management costs (for example, the need for street lights, traffic lights, sign posts etc) are also important costs that should be assessed; however, staff are still undecided as to whether these costs relate to load or non-load expenses. In this paper, they have been assessed as a load expense.

Road length

- 23 There is a strong conceptual case for assessing road length because it is a major driver of road costs. Road length is influenced by factors such as settlement patterns and terrain. However, it is also influenced by State policy and is not a policy neutral indicator. States differ in the way they classify and report on road lengths, so we cannot wholly rely on State provided data as our measure of road length. Table 3 sets out State published road length data. The table highlights some issues with the comparability of the published data. For example, the length of rural roads in the Northern Territory appears low when compared to Tasmania.

Table 3 Reported road length data, 2004-05

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
	lne kms	lne kms	lne kms	lne kms	lne kms	lne kms	lne kms	lne kms	lne kms
Urban roads ^(a)	12 258	10 040	6 251	5 320	2 803	681	1 413	496	39 262
Rural roads ^(b)	59 787	37 240	34 767	38 267	17 346	4 822	556	6 717	199 502
Total	72 045	47 280	41 018	43 587	20 149	5 503	1 969	7 213	238 764

(a) Roads in urban centres with more than 40 000 people.

(b) Roads linking localities in rural and remote areas.

Source: State provided data, 2004 Review.

- 24 Staff have investigated alternative measures of road length to overcome the policy neutrality and comparability problems. A simplified road network and a synthetic road network have been investigated as possible measures.

Simplified road network

- 25 This approach develops a measure of urban road lengths and rural road lengths separately. This is to recognise that urban and rural roads perform different tasks. The principal purpose of roads in urban centres is to transport people and goods around the urban centre. The length of these roads will bear some relationship to the number of people living in the centre. The principal purpose of roads in rural areas is to connect rural localities. The length of these roads

will bear some relationship to settlement patterns and terrain, more so than to the number of people in rural localities.

- 26 A rural road is included as part of the simplified road network if it is the fastest constructed route between:
- neighbouring population centres. A population centre is defined as a centre of 4 000 people or more; or
 - a neighbouring population centre and an ‘other important centre’. An other important centre is defined as:
 - a locality in a non-remote area with a population of 400 or more,
 - a locality in a remote area with a population of 200 or more, or
 - a locality in a very remote area with a population of 100 or more.
- 27 Staff considered that these thresholds were a reasonable representation of the size of localities to which States are likely to fund road connections. However, staff are currently investigating alternative methodologies for measuring road length in localities below 400 people to more accurately reflect what States do with regard to the maintenance of roads to small and remote localities that are managed by State, rather than local, governments³.
- 28 Once these roads have been identified, they are mapped. The mapped road length forms the basis of the rural road length figure used in the simplified road network model. Rural road lengths are converted to lane kilometres by multiplying by 2.0 which is the national average number of lanes derived from the Austroads publication *RoadFacts 2005*.
- 29 An urban road is included as part of the simplified road network if it is located in an urban centre of 40 000 people or more and it is classified by the Public Sector Mapping Agency (PSMA) as being a national or State highway, or an arterial or sub-arterial road.⁴
- 30 Once these roads have been identified, they are mapped. The mapped road length forms the basis of the urban road length figure used in the simplified road network model. Urban road lengths are converted to lane kilometres by multiplying by 3.1, also the national average number of lanes for urban areas as derived from Austroads publication *RoadFacts 2005*.
- 31 Table 4 shows the lane kilometres for urban and rural roads produced by the simplified road network model.

³ Roads to small, remote localities are normally managed by local governments. However, in sparsely populated areas the State government may assume responsibility for these roads where the local government does not have the capacity to manage these roads.

⁴ These accord with the PSMA road classifications 301, 302 and 303.

Table 4 Road lengths using the simplified road network

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
	lne kms	lne kms	lne kms	lne kms	lne kms	lne kms	lne kms	lne kms	lne kms
Urban roads ^(a)	9 808	12 755	7 955	4 492	3 386	917	1 239	208	40 760
Rural roads ^(b)	58 410	34 918	54 326	52 822	23 120	5 506	246	21 530	250 878
Total	68 218	47 673	62 281	57 314	26 506	6 423	1 485	21 738	291 638

(a) Roads in urban centres with more than 40 000 people.

(b) Roads linking localities in rural and remote areas.

Source: Commission consultancy.

- 32 The simplified network road lengths are greater than the reported road lengths as the simplified network is based on more up to date data and it includes National highways. National highways are included as States own these road assets, show them on their balance sheets, and expenses for their maintenance and rehabilitation are recorded in their accounts.
- 33 The Australian Government funds this maintenance via the AusLink programme. Staff consider that National highways expenses (and the associated Australian Government funding) should be included in the assessment. This is because: the distinction between funding for National highways and other roads is increasingly blurred; States are considered to have increasing flexibility in their use of AusLink funding (although some States dispute this); and because the Australian Government grants do not fully fund the States' highways maintenance task, but rather partially fund a broader set of roads.
- 34 While the States have been generally supportive of this approach to measuring road lengths, there are some outstanding issues. In particular, the counter-intuitive urban road lengths for New South Wales and Victoria and the adequacy of identifying roads to small localities in remote and very remote areas. Staff will continue to work with the consultant and the States to further refine and improve this measure.

Synthetic road network

- 35 The second measure of road lengths was the synthetic road network. This was similar in concept to the simplified road network. The same criteria were used to identify urban and rural roads. The main difference was that instead of using the fastest constructed route to connect localities, a straight line was drawn between localities and the length of the line became the road length estimate.
- 36 Staff have concluded that this measure of road length is inferior to that produced by the simplified road network approach. The main reason is that the synthetic road network approach does not take terrain into account. That is, it may be physically impossible in some States or regions to construct roads along the routes defined by the straight lines.

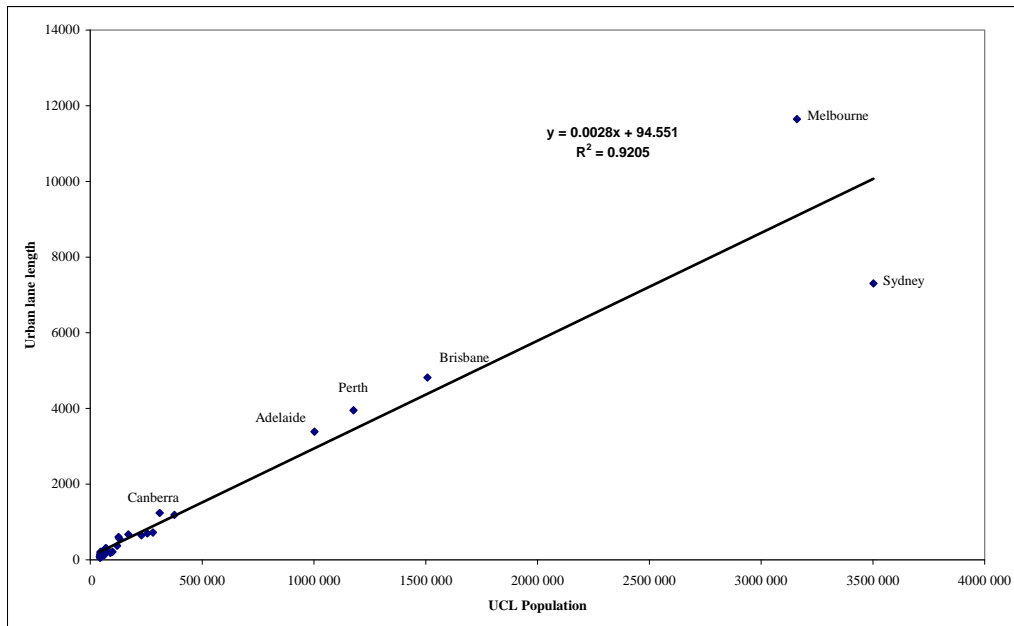
Population

- 37 Staff considered other measures of road lengths, including population, population density and area. To avoid the data comparability problems with reported road lengths, the road lengths

produced by these measures were compared with the road lengths derived from the simplified road model.

- 38 Our investigations suggest that total State populations are a poor predictor of total lane-kilometres (LKM) as measured by the simplified road network. Total State population was a poor predictor for Western Australia in particular. However, State urban populations appear to be a reasonably good predictor of total urban road lengths (lane kilometres). Figure 1 shows the relationship.

Figure 1: Urban road length (lane kilometres) and population



Source: Commission consultancy. Urban Centre/Locality (UCL) population data are 2001 Census data.

- 39 Urban area provides a similarly strong correlation, which is not surprising given that area and population are themselves highly correlated.
- 40 Table 5 provides a comparison of the State urban road shares using a simplified network or the predicted total LKM using urban population.

Table 5 Comparison of urban road lengths derived using urban population and the simplified road network

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
(a) Lane kilometres									
Based on simplified road network	9 808	12 755	7 955	4 492	3 386	917	1 239	208	40 760
Based on population	13 630	10 507	7 727	4 069	3 068	594	949	217	40 760
Difference	3 822	-2 248	- 228	- 423	- 318	- 323	- 290	9	0
(b) State shares of lane kilometres (%)									
Based on simplified road network	24.1	31.3	19.5	11.0	8.3	2.2	3.0	0.5	100.0
Based on population	33.4	25.8	19.0	10.0	7.5	1.5	2.3	0.5	100.0
Difference	9.4	-5.5	-0.6	-1.0	-0.8	-0.8	-0.7	0.0	0.0

Note The road lengths based on population were obtained by distributing the total urban road length derived from the simplified road network among States using their shares of urban populations.

Source: Commission consultancy.

- 41 Table 5 indicates that, for most States, there is a strong relationship between their urban road lengths and the number of people in their urban centres. The relationship breaks down for New South Wales and Victoria. For those two States, the road length figures produced by the population model appear more intuitive.
- 42 Work is still continuing on the development of the simplified network. Staff consider that there will be benefits in pursuing this development. Further work will focus, in particular, on the measurement of urban road lengths.

Calculation of a road length factor

- 43 Staff consider that the following calculation of road length is the most appropriate direction for the 2010 road length assessment, although staff acknowledge that further refinement of the methodology is required. The proposed assessment measures:
- urban road lengths based on population shares (Table 5); and
 - rural road lengths based on the simplified road network model (Table 4).
- 44 Table 6 sets out the calculation of the road length factor. The factor has some intuitive appeal. The more dispersed States (Queensland, Western Australia, South Australia and the Northern Territory) have high factors, the more urban States (Victoria and the ACT) have low factors.

Table 6 Calculation of road length factor

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Urban roads (lane kms)	13 630	10 507	7 727	4 069	3 068	594	949	217	40 760
Rural roads (lane kms)	58 410	34 918	54 326	52 822	23 120	5 506	246	21 530	250 878
A. Total roads (lane kms)	72 040	45 425	62 053	56 891	26 188	6 100	1 195	21 747	291 638
B. Mean resident pop'n	6.745	4.995	3.932	1.995	1.537	0.484	0.325	0.201	20.214
C. Ratio (A / B)	10.68	9.09	15.78	28.52	17.03	12.60	3.68	107.93	14.43
Factor (C/C _{AUST})	0.74026	0.63036	1.09391	1.97698	1.18064	0.87337	0.25506	7.48064	1.00000

Source: 2001 Census and Commission consultancy.

Issues for State comment

The proposed assessment uses road lengths derived from the simplified road network model for rural roads. However, the State shares of the urban road lengths are not used because the New South Wales-Victoria split does not appear reasonable. The total urban road lengths have been apportioned using States' shares of urban populations (as described in Table 5).

The questions on which staff seek State comment are:

- how should the Commission proceed if further work using the mapping approach to define a simplified road network for urban areas does not improve the New South Wales-Victoria split for urban road lengths? and
- an adjustment was made under the simplified road network model for the number of lanes. Are other adjustments required and are they likely to be material? For example, should an adjustment be made for sealed versus unsealed roads?

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Road use

45 There is a strong conceptual case for assessing road use disabilities. In the 2004 Review, the Australian Road Research Board (ARRB) undertook some research for the Commission and found that up to 65 per cent of road wear and tear was caused by heavy vehicle use. This suggests that some of the difference in States' road maintenance costs might be due to differences in their heavy vehicle use. A disability might be warranted if there were differences between States in the proportion of their road use undertaken by heavy vehicles.

46 Staff have considered two measures of road use: fuel consumption and tonne-kilometres.

Fuel consumption

47 Staff investigations into this measure suggest that it would be a poor measure due to:

- data collection problems — the collection regions for fuel consumption data do not marry well with State boundaries;
- data quality problems — the data contain off-road fuel consumption (such as fuel used for agricultural purposes). There are high errors with some data, which may mean the data are unreliable for some States; and
- relevance — fuel consumption data does not distinguish the differential impact of heavy vehicles on roads.

48 While some of these problems could be overcome, staff have set aside their work on this measure for the time being.

Tonne-kilometres

49 The second measure of road use is tonne-kilometres. This measure is supported by some States.

50 Research by the ARRB and the Bureau of Transport and Regional Economics (BTRE) suggest that heavy vehicle use is a significant driver of road maintenance costs. The ARRB found that heavy vehicle use accounted for up to 65 per cent of road wear and tear. The BTRE found that pavement wear increased exponentially at either the third or fourth power of axle weight. Tonne-kilometres can be disaggregated by vehicle type. A measure of road use could be obtained by applying weights to different types of vehicles.

51 The tonne-kilometres data can be obtained from the Australian Bureau of Statistic's Survey of Motor Vehicle Use. There are high errors associated with some of the data in the survey. These errors mainly affect the ACT and Northern Territory. The staff have investigated and found that these errors are not material to a road use calculation. If the upper bound of the confidence interval was used (rather than the point estimate), it would not materially affect the assessment.

52 Some States have argued that using tonne-kilometres in combination with road length double counts the impact of road length. However, it can also be argued that road length and road use measure different costs. Road length could be considered to be the measure of the costs incurred in maintaining a road regardless of use — a road that is used infrequently still requires maintenance. Road use measures the costs associated with wear and tear caused by vehicles (particularly heavy vehicles) travelling over the road.

53 Another problem is that it is possible that there may be a mismatch between the tonne-kilometres data and the road length data from the simplified network. Conceptually, the road use data should only include use on roads included in the simplified network. It is possible there is a mismatch between the two measures. However, staff consider that a mismatch is likely to be immaterial because the simplified network is designed to capture the roads on which the bulk of the traffic would flow.

54 Despite these difficulties, staff propose to use tonne-kilometres as the basis of a road use factor. It is the best measure that is currently available.

Calculation of a road use factor

- 55 The road use factor is calculated by:
- obtaining tonne-kilometre data by vehicle type; and
 - weighting the tonne-kilometre data to account for heavier wear and tear by heavier vehicles.
- 56 The ABS Survey of Motor Vehicle Use does not report tonne-kilometres for passenger vehicles. Staff converted passenger vehicle kilometres to tonne-kilometres by multiplying by 1.5⁵. Future work in this area will include consideration of the appropriateness of this weight.
- 57 The ARRB and BTRE found that heavier vehicles contribute more to road wear and tear. Staff have applied weights to the tonne-kilometre data to reflect the greater impact of heavier vehicles. They are placeholders which were calculated for the 2004 Review and staff have not yet updated them.
- 58 Although the ARRB concluded that vehicles weighing less than four tonnes caused negligible wear on road surfaces, staff have included a weight of 1.0 for passenger and light commercial vehicles. This is a way of taking account of traffic management expenses (for example, the need for street lights, traffic lights, sign posts etc), which are assumed to be largely a function of the number of vehicles travelling on roads.
- 59 Table 7 sets out the weights used in the road use calculation.

Table 7 Weights applied to vehicle types

Vehicle type	Weight
Passenger vehicles	1.00
Light commercial vehicles	1.00
Rigid trucks	1.86
Articulated trucks	2.16

Source: ARRB Group for the rigid trucks and articulated trucks, which are used in the current roads assessment. Weights for passenger and light commercial vehicles based on staff judgement.

- 60 Table 8 sets out the calculation of the road use factor.

⁵ Staff estimate of the average weight of a passenger vehicle.

Table 8 Calculation of road use factor

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Weighted tonne kilometres (million)									
Passenger vehicles	75 789	58 658	48 638	24 251	16 112	5 567	3 573	2 160	234 746
Light commercials	2 517	1 448	1 834	661	568	174	51	55	7 308
Rigid trucks	16 491	15 708	13 496	4 663	3 272	1 408	528	534	56 099
Articulated trucks	90 050	61 696	51 954	34 186	27 067	4 659	194	4 350	274 156
A. Total	184 847	137 509	115 922	63 761	47 018	11 808	4 346	7 099	572 309
B. Mean resident pop'n	6.745	4.995	3.932	1.995	1.537	0.484	0.325	0.201	20.214
C. Ratio (A / B)	27 405	27 531	29 484	31 968	30 584	24 391	13 384	35 230	28 313
Factor (C/C _{AUST})	0.96792	0.97239	1.04135	1.12909	1.08020	0.86148	0.47270	1.24432	1.00000

61 Source: ABS Survey of Motor Vehicle Use 2005

62 Further work is required on the road use factor. The ABS has data that could be used to better group vehicles according to the impact they have on road wear and tear. The data would enable a split of the articulated truck group and allow staff to apply different weights to other vehicle types (for example, road trains as opposed a tandem axle trailers). It would allow staff to determine whether splitting the articulated trucks group is material to the assessment. Staff also propose further work on the calculation of equivalent standard axles to better weight the tonne-kilometres data.

63 There are two use-related issues which staff have yet to consider:

- whether traffic volume impacts on road wear and tear; and
- how the road length and road use assessments should be combined.

64 It is possible that traffic volume impacts on road wear and tear. That is, it is possible that 100 vehicles each weighing one tonne travelling over the same kilometre of road will do more damage than a single one tonne vehicle travelling over 100 kilometres of road, but tonne-kilometre data do not make that distinction. Further research will be required to determine whether traffic volume is a material driver of road expenses and, if it is, how it can be incorporated into the use assessment.

65 The second issue is about combining the road length and road use assessments, which was also an issue in the 2004 Review. In that inquiry, the Commission concluded the two factors affected different road expenses and gave road use a weight of 40 per cent and road length a weight of 60 per cent. There was considerable debate about the reasonableness of those weights; some States thought the weight for use should be higher.

66 Staff have not yet formed a view on whether use and length affect different road expenses or whether they interact together on the same expenses. If they affect the same expenses, there may be a case for multiplying the factors. This issue will require further research.

67 If it was concluded that the two factors affect different expenses, the issue of how to weight them would become important. Their weights should reflect the portion of roads expenses affected by each factor. Staff have not yet formed a view on whether road length or road use is the bigger driver of road expenses. This issue will require further research.

Issues for State comment

The road use assessment is based on weights being applied to tonne-kilometre data. Placeholders have been used to convert passenger vehicle kilometres data into tonne-kilometre data and to weight the tonne-kilometre data to account for the impact of heavier vehicles on road wear and tear.

Staff have questions on roads data and more conceptual questions. The questions relating to conceptual issues include:

- Do States agree that the proposed assessment is the direction the Commission should be taking with the roads assessment?
- How should the road length and use factors be combined? Specifically, do road length and road use factors affect the same road expenses or different road expenses? What is the relative contribution of road length and road use to road expenses and what data is available to support this?
- Is it appropriate to include a weight for traffic management expenses in the use assessment, as we have done in the proposed assessment, or is it more appropriate to adjust road length to account for these expenses?
- Are there other measures of road use that might be worth investigating?
- Does using tonne-kilometres in combination with road length double count the impact of road length? If so, what can be done to eliminate the double count?
- Is traffic volume a driver of road maintenance expenses? Do States have data which shows the impact of traffic volume on road maintenance expenses?

The questions relating to data on which staff seek State comment are:

- Do States have data showing the extent to which road expenses are affected by road use?
- Do States have data showing the extent to which road expenses are affected by road length?
- Can States provide data on the extent of traffic management expenses and what is influencing these?

OTHER COST INFLUENCES

68 For Roads, the influences which affect the assessed cost of services are differences in:

- the cost of diseconomies of small scale in central administrations (administrative scale); and
- the cost of providing services because of location (location).

Administrative scale

- 69 States need to establish a structure to provide core head office functions for road policy, planning and management. Hence, there is a conceptual case for including a disability for administrative scale, which reflects these minimum head office costs.
- 70 As part of the 2010 Review, the Commission is investigating the size of scale affected expenses. The Schools Education Discussion Paper shows how an assessment for scale disabilities could be made.

Location

- 71 There is a conceptual case for adjusting the broad indicator for differences in the cost of providing services in different locations. Costs could vary because of:
- diseconomies of scale in service delivery;
 - costs of purchasing inputs;
 - costs of moving people or goods around the State because of the dispersion of the population; and
 - cost of moving people or goods to the State from the centre of supply.
- 72 The Commission has commenced research aimed at identifying a global measure of location disabilities. This research is presented in a separate discussion paper. The Schools Education Discussion Paper shows how an assessment of location disabilities could be made. Alternately, it may be possible to apply a location cost weight directly to road lengths. Staff are continuing to consider whether a separate location adjustment is material and, if so, how it should be done.

WHAT HAVE WE DONE TO SIMPLIFY THE ASSESSMENT

- 73 The proposed assessment represents a significant simplification of the 2004 Review approach (the 'current' approach):
- fewer components. The current assessment contains 13 components and 28 factors, many of which do not produce material redistributions;
 - less data intensive. Many of the current factors involve complex calculations;
 - more reliable data. Some of the current factors are based on data that may not pass the Commission's reliability criteria. The proposed approach bases the assessment on the fundamental drivers of roads expenses — road length and road use.