AUSTRALIAN CAPITAL TERRITORY

SUBMISSION TO THE COMMONWEALTH GRANTS COMMISSION'S REVIEW OF THE INTERSTATE DISTRIBUTION OF LOCAL ROADS GRANTS

ISSUES PAPER CGC 2005/2

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Introduction

While the intent of the local road network in the ACT is similar to other jurisdictions, it differs substantially in engineering design.

The classification of the roads network fundamentally relates to the predominant function of the road and the extent to which it serves the two basic purposes of the road network, that is, the movement of traffic and access to property. The roads that provide the movement of traffic are considered State roads, while the prime purpose of local roads is to provide access to properties.

The key differences compared to local government road networks in the States[1] and the Northern Territory include planning and administrative arrangements, urbanisation imposts and physical environment disabilities which drive the ACT's local roads maintenance costs. Other disabilities include service delivery scale, input costs, bridge maintenance, road width and road safety.

Assessment of relative needs between jurisdictions should be based on the adoption of the average standard approach, or, 'what local governments do', using the NAASRA classification. This should facilitate a robust assessment of disabilities unique to each region whilst ensuring that policy neutrality principles are not compromised.

Interpreting 'relative needs'

The suggested approach to assessing relative needs based on a uniform scope of activity, including definition of relevant roads and maintenance is supported. This is consistent with the Terms of Reference (ToR).

Determining the scope of maintenance, preservation tasks, and the uniform standard

The average standard approach, working within the uniform scope is the most appropriate of determining relative needs.

However, the efficacy of this or any other method depends on the collection of consistent and comparable data to measure the size of the maintenance and preservation task. It will be necessary for each jurisdiction to provide definitions of 'local roads', 'maintenance' and 'preservation'.

This process is necessary as the *Local Government (Financial Assistance) Act 1995* is unclear as to what local roads funding can be used for. While the ToR stipulates that only road maintenance and preservation are to be considered (not construction and upgrading), local roads funding is also used for associated ancillary maintenance.

It is understood that different definitions are adopted by councils in different regions, as reported in the National Roads Transport Commission (NRTC) *Vehicle Access Report*:

> *"In general terms, local government is responsible for:*
>
> - *maintenance and construction of local roads*
> - *management of main roads for the State Road Authority (in some cases)*
> - *traffic management including signage/line marking*

[1] Hereinafter States refers to 'States' and 'Territories'

- *parking control*
- *pedestrian facilities including school crossings*
- *bicycle facilities*
- *bus facilities (in some cases)*
- *street and other public area lighting and road furniture.*

These items may vary from place to place but they provide a guide to the range of activities for which local government is the principal provider."[2]

Roads ACT has found it difficult to benchmark its services with other local road authorities, given different accounting methods and definitions of maintenance[3].

In light of the diverse scope of activities being reported as maintenance and preservation, considerable effort will be required to determine a uniform local roads standard.

The average standard approach also has the following benefits. It:

- is similar to the State based assessment approach, which the Commission has considerable expertise with;
- takes into consideration factors which differentially impact on maintenance and preservation costs (disability factors) when compared across regions and States.
- is based on road maintenance and preservation expenditure per capita;
- is simple;
- based on the 'relative needs' of a particular region; and
- is policy neutral.

The asset preservation approach, on the other hand, involves identifying and costing the various tasks that need to be undertaken over the life of a road to maintain and preserve it to a given standard, and then converting the costs to an annual expense. It is based on standard engineering criteria.

This approach is not supported as it involves a high degree of judgment. There is limited information on which to determine how reasonable are such judgments, given only Victoria and WA use this approach.

It is understood that most jurisdictions do not fund local roads programs to the level required under the annual preservation cost approach. This type of prescriptive approach would not reflect what local governments actually do and would require considerable subjective judgment in the assessments.

Similarly, the National Institute of Economic and Industry Research (NIEIR) notional service provision approach identified in the Issues Paper emphasises the use of lane-kilometres per

[2] National Roads Transport Commission , *Vehicle access project: Guidelines for assessing the suitability of heavy vehicles for local* roads, *Final report - July 2002,* Report Prepared by: John Bennett, John Bennett and Associates Pty Ltd and Bob Pearson, Pearson Transport Resource Centre Pty Ltd. See: http://www.alga.asn.au/policy/transport/heavyvehicles/vehicleAccessProject.php/

[3] Some local government authorities include administration and corporate overhead costs and other expenses as part of maintenance, while others include capital work activities

capita (or perhaps road density); relative cost of road works; and road use in terms of tonnage of freight as a possible solution.

While there is merit in using road density (population per kilometre), some further work may be required to establish indicative relationships between road density, costs and use, and population.

However, any approach based solely on lane length (kilometres per capita) would fail to identify the impact of higher traffic volumes on roads in urbanised regions.

Further, road use based on tonnage of freight is not supported as available evidence suggests that local roads maintenance costs attributable to heavy vehicles are minor.

Dealing with differences in responsibilities between States

The Issues Paper highlights a number of differences across States in the allocation of responsibilities between State and local government for local roads.

An actual allocation approach is not supported as it contravenes policy neutrality principles.

The ACT supports adoption of a consistent definition (uniform presentation) of local roads across all States to ensure that no jurisdiction 'double dips' by having roads included in the determination of GST grants and again in determining local roads grants.

A consistent definition based on Public Sector Mapping Agency (PSMA) data or National Association of Australian State Road Authorities (NAASRA) classification as outlined in the paper is supported in principle.

The following table summarises advantages and disadvantages of each classification.

NAASRA CLASSIFICATION	PUBLIC SECTOR MAPPING AUSTRALIA (PSMA)
Advantages	**Advantages**
• Based on the road function and usage (i.e. nine principal functions of roads). • Distinguishes between urban and rural road environments (thus allowing analysis of specific characteristics of these roads). • Data collection and updates are easy to undertake in-house. • A majority of the road governing bodies have adopted classification systems similar or broadly similar to NAASRA Classification.	• Based on location and identity (i.e. cadastral mapping). • Classification based on broad assumptions of road function. • Accurate road dimension data information.
Disadvantages	**Disadvantages**
• Issues relating to urban areas, town centres etc, definitions. • Lack of consistency of assumptions used in defining function and usage by jurisdictions. • Potential for roads to be counted twice (i.e. once by councils and once by road authorities) for funding.	• Does not take into consideration road condition and usage. • Possible costs associated with acquiring data. • Risk of data duplication (i.e. alternative technologies being adopted) by governing agencies. • Adoption of this system for funding purposes may require governing bodies to re-classify certain road classes.

The NAASRA Classification is considered a more appropriate method for classifying roads for administrative, maintenance and funding purposes because key parameters such as road use and function which are determinants of maintenance intervention are recognised. In addition, the ACT Integrated Asset Management System (IAMS) currently being developed is designed to store and provide road information based around NAASRA Classification requirements. It is anticipated that once completed, the system will be able to provide up-to-date, detailed road and traffic information.

However, provision of road data in either format is possible as the ACT is a member of the Australia New Zealand Land Information Council (ANZLIC) and is in a position to acquire and/or rearrange information in the PSMA format. While the PSMA format is invaluable for road design and land management requirements, it has limitations when used for road administration, management and funding.

It is understood that most road agencies and governing bodies have classification systems similar to the NAASRA Classification which have evolved commensurate with the development of State road legislation. Converting these systems to NAASRA equivalents should be relatively straightforward. The ACT's road classification definitions are provided at **Attachment A**.

ACT Roads is responsible for the maintenance and management of the entire ACT road network comprising clearly classified State and Local roads.

For some States the delineation is not as clear and problems persist with the PSMA and NAASRA classifications. Regardless of which system is eventually adopted, to minimise the potential for policy neutrality principles to be compromised, the following should occur:

- an independent body should be tasked with assessing the suitability of each State's classifications against the nationally approved classification, such as the NAASRA or PSMA classification;

- jurisdictions should be requested to provide details of their road classification methodology; and

- the above data should be supplemented with a detailed map of the State's road network and classification system.

Should the inventory of local roads be adjusted to reflect effort neutrality considerations?

The ACT sees merit in adjustments to reflect effort neutrality but believes it may be difficult to make any such adjustment. For example, differences between states on policies regarding whether to seal roads or not should not influence the distribution of local road grants.

At what level should the assessment be done?

A whole of State approach is the only practical method to deriving funding requirements in each State. Determining funding requirements as a sum of local government needs would be a detailed and cumbersome task.

What factors affect local road expenditure?

An appropriate assessment of relative needs would include the following factors: urbanisation (as a measure of road use); physical environment; service delivery scale; input costs; bridge maintenance; road width; and road safety.

Urban Influences

A majority of the ACT is an urbanised road environment. For the local government road network, 98.7% of the road length is classified as urban.

The National Office of Local Government (NOLG) clearly highlights the extent to which local roads costs vary between urban and rural roads, and between rural sealed and unsealed roads:

> *"[T]he average spending on maintaining urban roads per kilometre is more than double the average spending on rural sealed roads, that in turn is more than double the average spending on rural unsealed roads"*[4].

There are two key urbanisation cost drivers in the ACT - sealed road costs and traffic use costs. Other urban influences include non-peak work costs.

[4] NOLG Publications 2003-2004 *"Report on the Operation of the Local Government (Financial Assistance) Act 1995, Appendix C – Comparison of Grants Commission Distribution Models, Pg 4*

Urban sealed road costs

Higher maintenance costs for urban sealed roads relative to other road types have been established by various bodies and experts.

The following table contains the results of the ARRB report on Victorian Road Preservation Costs and the typical distribution of maintenance costs for various road types.

AUSTRALIAN ROAD RESEARCH BOARD ANALYSIS OF VICTORIAN ROAD PRESERVATION COSTS (TYPICAL OF ACT COSTS)

Road Type	Road Preservation Costs ($/km)	Weight (Rural natural surface as base)
Rural		
Rural Roads: natural surface	$300	1
Rural Sealed Roads: AADT [5] <100	$2,000	6.7
Rural Sealed Roads: AADT 100-500	$4,000	13.3
Rural Sealed Roads: AADT 500-1000	$4,900	16.3
Rural Sealed Roads: AADT >1000	$5,400	18.0
Urban		
Urban Sealed Roads: AADT<500	$2,700	9.0
Urban Sealed Roads: AADT 500-1000	$4,000	13.3
Urban Sealed Roads: AADT 1000-5000	$5,500	18.3
Urban Sealed Roads: AADT >5000	$9,000	30.0

Source: Review of Asset Preservation Costs: ARRB for the Victoria Grants Commission, April 2003, page 11.

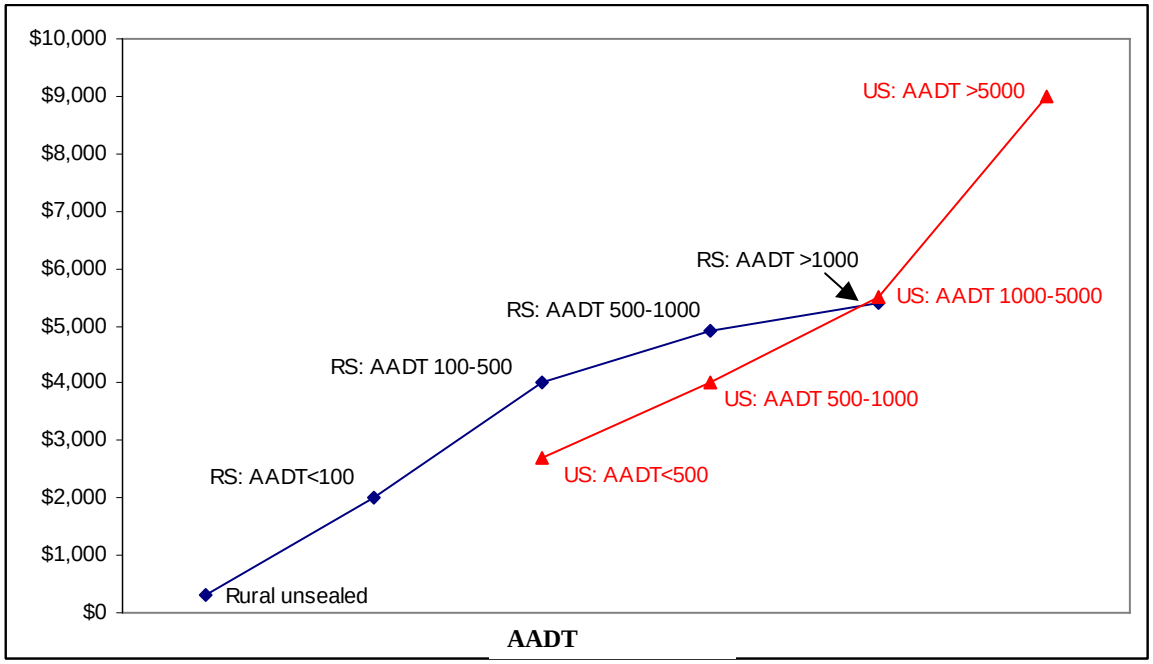
The following figure illustrates the difference in maintenance costs for different road types at different use rates.

It is clear that natural road surface maintenance costs are relatively low, and that for low average annual daily traffic (AADT) levels (up to 5,000 AADT), the maintenance costs for rural and sealed roads are fairly similar.

However, once traffic levels increase above 5,000 AADT, maintenance costs increase dramatically. That is, for urban sealed roads the costs increase substantially when AADT is above 5,000. Maintenance costs are around 67% higher than for urban sealed roads where AADT is less than 5000.

[5] Average Annual Daily Traffic (AADT)

MAINTENANCE COST PER KILOMETRE FOR VARIOUS TRAFFIC VOLUMES (AVERAGE ANNUAL DAILY TRAFFIC), BY ROAD TYPE



RS = rural sealed, US = urban sealed.

This increase in maintenance costs associated with highly used sealed local roads (those greater than 5,000 AADT) should be reflected in the local roads assessment. The ARRB road preservation cost weights as outlined above could be used as the basis of assessing the surface type disability.

The following table and data also support the case for an assessment of urban influences costs for kerbed/more high trafficked roads.

ACT ASSET PRESERVATION COSTS FOR LOCAL ROADS

Local Roads Type	Daily Traffic Volume (AADT)	Road Length Lane-Kilometres	Standard Asset Preservation Cost per Lane-Kilometre [1]	Weight (unkerbed as base weight)	Total Cost ($)
Kerbed	<500	3,626	$ 2,700	**1.4**	$ 9,790,200
	500-1000	10	$ 4,000	**2.0**	$ 40,000
	1000-5000	50	$ 5,500	**2.8**	$ 2,750,000
Unkerbed	<500	20	$ 2,000	**1.0**	$ 40,000
Total		**3,706**			**$12,620,200**

1. Asset Preservation costs based on Victoria Grants Commission costs.

The data show that asset preservation costs for kerbed local roads with less than 500 AADT are 1.4 times that of unkerbed roads with the same traffic volume. Importantly, for the highest trafficked local roads, the local road preservation costs are nearly treble that for

unkerbed roads. The ACT has the highest proportion of kerbed roads of any State, reflective of its urbanised setting.

Traffic Use Costs

The ACT's population and road network lead to higher road use rates than in other States:

- the ACT has 120 persons per kilometre of road, considerably higher than any other State (NSW, with only 37 persons per kilometre of road is the second highest[6]);
- a higher proportion of the ACT's local roads are sealed than in other States;
- the ACT has an average number of vehicles per person, however there are more licensed drivers per vehicle in the ACT than any other State[7], suggesting more intensive use of the vehicle fleet;
- it was demonstrated in the *2004 Review*[8] that due to Commonwealth policy prohibiting parking fees on Commonwealth land less people use public transport and instead drive a personal vehicle[9]; and
- analysis of the 2001 Census shows that 12% of the total persons employed in the ACT (nearly 20,000 NSW residents) lived outside the ACT, leading to higher use of local roads than is suggested by population alone.

Many local roads do not have individual traffic counts (no AADT or AVKT[10]) unless there have been complaints about traffic volumes or speed. As such, there is merit in using a density measure (for example, population per kilometre or lane-kilometre) as a proxy to capture the urbanisation costs associated with high maintenance cost roads, particularly those over 5,000 AADT. Any measure should take into consideration the above influences.

Non-peak works costs

Urbanisation accelerates the deterioration of the road pavement. Most local roads in the ACT do not have dual carriageways or open space that allows alternative sidetracks to be constructed to facilitate the movement of vehicles around the maintenance sites. Any maintenance works need to be conducted during periods outside of traffic peaks.

As also experienced by other urbanised locations around Australia, these urban influences have resulted in increased maintenance costs. As determined in the 2004 Review[11], this cost is in the order of an additional $1,500 per lane-kilometre on urban arterial roads for rehabilitation works including working during non-peak hours, due to the extensive traffic management measures that need to be put in place.

Physical Environment

Aspects of the physical environment (such as rainfall, temperature, soil type etc) can have a detrimental impact on the road pavement. For local roads, which are more lightly trafficked than State arterial roads, this is a more significant driver of maintenance costs.

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[6] *RoadFacts 2005,* p58.
[7] *RoadFacts 2005,* p58.
[8] Commonwealth Grants Commission, *Report on State Revenue Sharing Relativities, 2004 Review,* hereinafter '2004 Review'.
[9] ACT Rejoinder Submission to the 2004 Review of State Revenue Sharing Relativities, p315.
[10] Average Vehicle Kilometres Travelled (AVKT).
[11] *2004 Review*, Working Papers 1998-99 to 2002-03 Vol. 5, 2004, p168.

In the ACT, extremely low temperatures (and significant temperature variation) cause regular brittle failure and cracking of the bituminous surfacing. This requires more frequent waterproofing maintenance intervention compared to roads in a warmer and more humid environment. Specialised resurfacing treatments are also required.

To combat surface cracking, the ACT undertakes annual road resealing programs which incorporate special polymer modified binders (PMB) in the bitumen to provide greater flexibility to resist crack propagation through the new surfacing. The ACT also undertakes individual sealing of the larger cracks prior to such surfacing, and asphalt patching where significant 'crocodile cracking' has occurred.

The extensive use of PMB is driven by engineering criteria and is consistent with *"Austroads Specification Framework for Polymer Modified Binders"* (AP-T04) which provides a selection criterion for the selection of PMB **(Attachment B)**.[12]

These specifications state that PMB should be used when: *"Slow rates of movement cracks are induced by volumetric changes due to diurnal temperature changes, or seasonal changes...."* [13]

The Polymer Groups are coded as follows:

- E for elastometric polymer types including SBS (styrene butadiene styrene), SBR (styrene butadiene rubber) and PBD (polybutadiene). They may be characterised as elastic materials which increase flexibility and toughness in spray seal binders or improve flexibility and deformation resistance in asphalt;

- P for plastometric polymer types: including EVA (ethylene vinyl acetate) and EMA (ethylene methacrylate). They form a tougher more rigid binder compared to elastometric types, and are particularly used in asphalt to improve deformation resistance as well as increased durability in open graded asphalt; and

- R for crumbed rubbers usually from old tyres. Crumb rubber PMB provide properties which are similar to elastometric polymer types.[14]

Crumb rubber/elastometric PMB are used in the ACT given the relatively large differential between the minimum and maximum ambient temperatures reached in the ACT diurnally, as well as due to seasonal changes, resulting in frequent expansion and contraction of road pavements.

Other States have much more consistent temperatures (low variation between minimum and maximum temperatures seasonally) and the variability in temperature between seasons is relatively less compared to the ACT. If other States do have similar conditions to the ACT, it is only for a small portion of their local road network, not the entire local road network as occurs in the Territory.

These temperature and seasonal variations require a more flexible, deformation resistant binder. Crumbed rubber/elastometric polymer type PMB in asphalt possess these properties and have been recommended by various research bodies for use in the ACT as the most cost effective surface rehabilitation treatment.

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[12] A more detailed product evaluation methodology is currently being developed by Austroads as part of the *"Draft Guidelines for the Selection and Use of PMBs"* and will be made available on completion of this project.

[13] *Austroads Specification Framework for Polymer Modified Binders"* (AP-T04), Austroads Pavement Reference Group – Australian Roads Research board, Australian Asphalt Pavement Association and AustRoads, pages 10 and 11, June 2000.

[14] *Pavement Work Tips - Polymer Modified Binders*, Austroads Pavement Research Group (APRG), May 1998.

According to an extract from *Pavement Work Tips - Polymer Modified Binders*, produced by Austroads Pavement Research Group (APRG), PMB are to be used for specific cases (diurnal and seasonal temperature variation):

> *"It should be noted that PMB's should only be used where extra cost is justified by the level of performance improvement."*

PMB resealing treatments are considerably more expensive than standard bitumen (see previous quote from the APRG). On the basis of recent contracts, the cost of PMB is estimated at approximately $1.25 per litre as compared to $0.90 per litre for standard bitumen.

Using PMB costs around $1.00 per square metre more than standard bitumen which is used by most other jurisdictions. This calculation is based on the difference between:

- an average PMB spray rate for local roads of 1.7 litres per square metre, an equivalent cost of $2.15 per square metre (binder cost only); and

- standard binder cost using a spray rate of about 1.3 litres per square metre (the reduction is due to the non-application of PMB) equating to $1.15 per square metre.

NSW, Victoria and Tasmania are also likely to use PMB on some parts of their local road network as they have a number of cold weather areas. However, none of these States would be required to use PMB for their entire local road networks as only parts of their network are subjected to very cold, sub zero temperatures regularly during winter, and/or because a significant proportion of their network is unsealed. In the ACT, the entire local road network is regularly subjected to sub-zero temperatures, and 99.4% of all roads are sealed.[15]

For an average lane width of three metres this additional cost translates to $3,000 per lane kilometre. This is a conservative estimate that excludes other preparatory works (i.e. crack sealing and asphalt patching) necessitated by these defects and the fact that the lifespan of a PMB reseal is normally considerably less than a conventional seal (despite the resilience of the PMB treatments).

On this basis, a conservative estimate of the above standard cost associated with the use of PMB is $11.2m over the life of the ACT local road network. Based on an average life of 12 years (AustRoads engineering standards specify that typical design life of a local road is between 8 and 15 years; an average of 12 years)[16], the above standard cost is $0.950m per annum[17].

Heavy Vehicles

On the evidence provided, any allowance assessed for heavy vehicle related maintenance costs must be small. Such an allowance should also only be assessed if robust traffic data are available to measure heavy vehicle road use.

While a number of State Grants Commissions note that heavy vehicles contribute to the local roads maintenance task, care must be taken to ensure that their impact is not overstated. Any

[15] Derived as follows: total local road length of 3,722 lane-kilometres less unsealed road length of 24 kilometres (4 kms NAASRA class 3 rural unsealed road, 10 kms of NAASRA class 3 urban unsealed road and 10 kms of NAASRA class 8 urban unsealed road) equals 3,698 lane-kilometres, divided by 3,722 lane-kilometres.

[16] AustRoads AAPA, 2003, chapter 7, Economic Comparisons of Alternative Treatments, Pavement Rehabilitation – a Guide to the Design of Rehabilitation Treatments for Road Pavements, AustRoads Pavement Technology Series 2004, Table 7.1 Typical Service Lives of Surfacings.

[17] $3000 per lane-km* 3,722 lane-kms of local road = $11.2m, divided by 12 years pavement life equals an annual cost of approximately $0.950m.

assessment should be restricted to a comparison of local government areas, not local government and State roads.

In terms of the capacity of the local road network to handle heavy vehicles, most local road pavements have not been designed, or built to carry heavy vehicles. Heavy vehicles are confined to suitable roads, for example, roads that comply with the national mass limits legislation. Heavy vehicles are also often unable to use a range of local roads due to height, gross vehicle mass (GVM), turning restrictions and noise restrictions.

Nearly 100% of the ACT's State local network is open to general access heavy vehicles up to 42.5 tonnes, with special permits issued for certain classes of vehicles up to 50 tonnes using road friendly suspensions. However, none of this network is open to heavier vehicles between 42.5 tonnes to 62.5 tonnes (those vehicles that cause the most damage to the pavement - NRTC classes 9 –12).[18] This data reflects the roads available for use by heavy vehicles, not the extent of roads actually used by these vehicles.

In terms of actual use of (and need to use) local access roads, these are primarily used by light passenger vehicles. Only small numbers of heavy vehicles, such as Austroads Class 5 (eg. garbage truck or fire fighting truck - four axle type) and Class 6 vehicles (eg. articulated truck or bus - three axle type) actually use local roads. Heavy vehicles are found mainly on the collector roads (NAASRA Class 7) where pavements have been designed to cope with some heavy vehicle use, although numbers are relatively small.

The minor use of local roads by heavy vehicles is consistent with a range of specialist analysis, for example, the NRTC Report: *Vehicle Access Project Guidelines for assessing the suitability of heavy vehicles for local roads*, highlights that:

> *"It would not be expected that heavy vehicles (other than emergency or service vehicles) would need to use the lowest order local roads such as local residential streets or lanes."* [19]

In the ACT's case, there are only 330 lane-kilometres of NAASRA Class 7 roads (those local roads that carry the bulk of heavy vehicles), equating to just 8.9% of the entire local roads network. At the other extreme, roads that carry negligible amounts of heavy vehicles (access and local streets - NAASRA Class 8 roads) represent 88.7% of the total local roads network.

Work undertaken by the Australian Stabilisation Industry Association highlights that heavy vehicles on local roads represent a very small proportion of AADT and as a result, estimating the use of this type of traffic is difficult:

> *"It is difficult to estimate the traffic on local government roads as the design vehicles, that is commercial vehicles exceeding 3 tonnes, are small in number compared to the average annual daily traffic".* [20]

In terms of the freight task, according to the NRTC, only 1.4% to 2.3% of the travel undertaken by those vehicles across Australia that cause the most damage to the pavement

[18] According to work undertaken in the 2004 Review – DUS to confirm, and provide most recent figures.

[19] NRTC, *Vehicle access project: Guidelines for assessing the suitability of heavy vehicles for local* roads, *Final report - July 2002*, Report Prepared by: John Bennett, John Bennett and Associates Pty Ltd and Bob Pearson, Pearson Transport Resource Centre Pty Ltd.

[20] Performance and Design of Institute Stabilised Local Government Roads, George Vorobieff, Australian Stabilisation Industry Association, Technology Transfer Seminar, Brisbane, 1998.

(heavy vehicles falling into the NRTC classes 9 –12) are on local rural roads [21], as shown in the following table:

MASS LIMITS REVIEW ESTIMATES OF TRUCK TRAVEL ON LOCAL RURAL ROADS BY AUSTROADS VEHICLE CLASS

AustRoads vehicle class	Most Common Vehicle in Class	Million VKT (total)	% of National total on local roads
Class 9	6 axle articulated	41	1.4%
Class 10 and 11	B double and double road train	2	1.7%
Class 12	Triple road train	44	2.3%

Source: NRTC, Road Friendly Vehicles and Local Roads, Road user Research Report 98-489-01, page 14.

The low number of heavy vehicles using local rural roads have a correspondingly low impact on these roads. The proportion of damage done by heavy vehicles on local roads is very low compared with the damage caused to State and national roads that carry the bulk of heavy vehicle traffic.

The Report also notes that rural local roads carrying significant truck traffic are likely to be sealed. As such, the major maintenance costs arising from heavy vehicle traffic are mainly pertinent to sealed roads. The fact that urban local roads carry more than twice as much traffic than rural local roads (16.7% of all travel compared to 7.2%) [22], also puts into perspective how minor heavy vehicle maintenance costs are on unsealed (rural) roads. Such a result also clearly ties in with the data available (such as from government and independent roads research bodies), that establishes that maintenance costs for sealed roads are much higher than for non-sealed roads.

Service Delivery Scale

As a small jurisdiction the ACT incurs higher costs per unit of service than larger State capitals due to a limited number of local contractors and limited scope of maintenance works undertaken. These higher costs include mobilisation costs[23].

To partially offset this problem annual road resurfacing works are packaged in one or two large contracts. However, as only two tenders are usually received, competition remains limited. Recently, the single local contractor won the resealing tenders, as it is difficult for interstate companies to compete for these works, as they need to add the additional costs of re-establishing here.

Service delivery scale costs at the State level are normally assessed on the basis of ratios. In the case of roads, this ratio could be thought of as a State's relative unit cost of delivering the service (eg dollars for the contracts entered into) being dependent upon the road length resurfaced.

[21] NRTC, Road Friendly Vehicles and Local Roads, Road user Research Report 98-489-01, PF Sweatman, December 14 2005, page 14.
[22] Austroads, RoadFacts, 2005, Table 2.4, page14.
[23] Mobilisation costs involve the cost of relocating labour from NSW or other States.

Quantifying these costs, however, is difficult. Contract rate schedules include a range of miscellaneous costs built into tender item rates. Further, to identify individual costs would require contractors to provide confidential information.

Given the commercial-in-confidence nature of contracts, a proxy measure such as the ratio of lane-kilometres to State population could be used to assess this factor.

Input Costs

Wages

In the *2004 Review*, NSW, the ACT and the NT were all found to all face above average wage costs in the construction and maintenance of arterial roads, which impacted on the overall cost of roads maintenance[24].

Given that the same contractors who provide ACT state road maintenance also maintain local roads, it follows that the Territory faces above average wage costs for local roads maintenance.

This argument is further validated by the most recent ABS Wage Cost Index publication (August 2005), which illustrates that the ACT continues to have the highest per capita salaries and wages in the country. The following table shows average weekly and annual earnings for all States relative to the Australian average. The ACT's average weekly wage is 19% higher than the Australian average and 10% greater than the second highest State of NSW.

AVERAGE WEEKLY ORDINARY TIME EARNINGS – PRIVATE SECTOR, AUSTRALIA AND THE STATES, AUGUST 2005

	NSW $	Vic $	Qld $	WA $	SA $	Tas $	ACT $	NT $	Aust $
Weekly	1067	977	911	1034	889	854	1105	1001	995
Annual	55,697	50,999	47,554	53,975	46,406	44,579	57,681	52,252	51,939
% Variation to Aust Avg - annual	+7.2%	-1.8%	-8.4%	+3.9%	-10.7%	-14.2%	+11.1%	+0.6%	-

Source: ABS Cat. No. 6302.0 Average Weekly Ordinary Time Earnings, Australia, August 2005.

Furthermore, private sector wage differentials between States are predominantly the result of the influence of market forces, rather than policy actions of the States. This is why the state wages input cost assessment is predominantly based on private sector wages. This suggests that above average wages related to roads maintenance should be recognised in the assessment of relative needs. .

As contractor salaries and wages in the ACT are higher across the board, this evidentially leads to a disability when overall maintenance costs are calculated. Including a wages input cost factor using ABS private sector wages is supported.

[24] CGC, *Report on State Revenue Sharing Relativities 2004 Review*, Working Papers 1998-99 to 2002-03 Vol 5, 2004, p. 176

Accommodation

Accommodation cost differentials between the States also impact upon local roads maintenance costs. The *2004 Review* confirmed there were large differences in rent levels across States. This suggested there was a good conceptual case for continuing to assess disabilities for the differences in costs that the States faced in providing accommodation for their workforce. Data are available to support an assessment.

It is appropriate that the same methodology used to assess accommodation input costs at the State level be used for local roads.

Bridge Maintenance

The ACT generally faces higher costs associated with the preservation of timber bridges. Timber bridge preservation costs are generally in the order of $80 per m^2, while that of concrete bridges is approximately $40 per m^2. This is consistent with the ARRB Review of Preservation Costs RC2750 standards.

Steel bridges are slightly more expensive than concrete bridges to maintain. The costs are fairly equivalent as concrete bridges often incorporate pre-stressed steel.

Concrete culvert and floodway preservation costs are significantly lower than bridge costs.

The following table provides an outline of the preservation costs and suggested weights.

BRIDGE ASSET PRESERVATION COSTS FOR ACT LOCAL ROADS

Structure	Material	Base Cost $	Preservation Cost Weight (Concrete as base)
Bridges ($ per m^2)	Timber	80	2.0
	Concrete	40	1.0
	Other (eg. steel)	45	1.1
Culverts ($ each) [1]	Major	300	Minimal
	Minor	50	Minimal
Floodways ($ per m) [1]	All types	2.5	Minimal

1. Adapted from Queensland Local Government Grants Commission Road Assessment.

Please note that the above costs do not include the current bridge strengthening program being undertaken in the ACT to allow higher mass limit heavy vehicles in the Territory.

Given the different preservation costs associated with types of bridges, the inclusion of a bridges factor assessed similarly to that at the State level is supported.

Road width

The *2004 Review* established that the ACT incurred above standard roads maintenance costs due to the greater width of a number of State roads. A disability should also be recognised for local roads.

Prior to self-government the National Capital Development Commission *Guidelines to Engineering and Environmental Practice* (GEEP) specified ACT road widths. The following table compares these widths to the AustRoads urban design guidelines. The data shows that collector bus routes are 22% wider than the AustRoads standard.

ACT LOCAL ROAD WIDTHS

Type of Local Road	GEEP* width metres	Austroads Urban Design Guidelines metres	Variation %
Local access residential roads	5.0	5.0	0%
Collector roads (no buses) two lane two way road	7.5	7.4	1.4%
Collector roads with bus route	9.0	7.4	22%

* National Capital Development Commission – Guidelines on Engineering and Environmental Practice, November 1998.

Recent contract rates indicate that the average cost for resealing works is approximately $5.30 per square metre (**Attachment C**) – **please note that this data are commercial-in-confidence and are for the Commission's internal use only.** **Attachment C** includes an overarching spreadsheet detailing how the $5.30 cost was derived from the tender schedule of rates.

On this basis, the additional maintenance cost for an extra 1.6 metre width for collector roads with bus routes is approximately $8,480 per lane-kilometre. With a collector bus route length of 355 lane-kilometres (see following table) this equates to an additional cost of approximately $3m to seal these routes. Based on AustRoads specifications, which indicate that approximately 7% of a State's local road network is maintained annually, the annual cost is approximately $300,000.

ACT LOCAL URBAN SEALED COLLECTOR ROADS WITH BUS ROUTES

NAASRA Road Class	Lane-Kilometres
NAASRA Class 3 (urban sealed)	15
NAASRA Class 6 (urban sealed)	10
NAASRA Class 7 (urban sealed)	330
TOTAL	355

At the local level these additional costs should be recognised as a permanent disability. The ToR limit the scope of the review to maintenance and preservation, not construction and upgrading. Further, the task required to replace existing roads with standard width roads would be extensive and cost prohibitive, involving:

- ripping up existing roads;
- rebuilding new roads;
- relocating or rebuilding kerbs and gutters;
- reconstructing storm water infrastructure around new road width;
- extending adjacent garden areas; and
- relocating some footpaths.

Road Safety

The ABS *Survey of Motor Vehicle Use for Australia* in 2003 shows that only 32% of vehicle kilometres travelled is undertaken in rural areas. In addition, more than 76% of pedestrian, motorcyclist and cyclist fatalities occur in urban areas, and overall approximately 52% of accidents occur in urban areas[25].

The ACT, in contrast to average Australian fatalities of 8.2 per 100,000 population had only 3.4 fatalities per 100,000 population in 2003. The lowest fatality rate of any State.

This low number is largely due to the comprehensive road safety measures implemented across the Territory. Considering the ACT has the highest number of people per kilometre of road (120.3), maintenance costs are relatively high by local government standards. Evidence suggests that road marking, traffic calming, signals, pedestrian crossings and safety audits are in greater demand, and are more sophisticated in urban areas compared to rural areas.

There are nearly 150 separate footbridges in the ACT designed for the safe crossing of pedestrians and cyclists with maintenance costs totalling $21m per annum.

A road safety assessment similar to that undertaken for State roads is supported.

Local roads in unincorporated areas

The ToR require the exclusion of local roads in unincorporated areas.

However, the Issues Paper suggests that an assessment may include any access roads and other internal community roads maintained by Indigenous communities within unincorporated areas that are treated as local governing bodies for the purposes of the *Local Government (Financial Assistance) Act 1995*, as this appears to be consistent with the existing scope of the grants and the approach of Local Government Grants Commissions.

If local Indigenous community roads are maintained by Indigenous communities within unincorporated areas then they should be excluded if they are Commonwealth funded through the States, or State funded directly to remove any possibility of 'double dipping' of funding.

What data are available on local roads ?

Attachment D provides a range of ACT road infrastructure data.

Updating the interstate distribution of local road grants in future years

The interstate distribution of local road grants should be updated every five years to ensure that it reflects the relative and contemporary needs of the States. While an annual update of data underpinning the assessed cost and demand drivers is preferred, the most appropriate timing for any update could be left to the discretion of the Australian Government.

[25] *RoadFacts 2005.*

ATTACHMENT A

ACT ROADS DEFINITIONS

Summary of local roads definitions

The ACT defines local roads as roads:

- whose prime purpose is to provide access to properties; and
- acting to provide for traffic movement (connects roads providing access to properties to higher level roads) or to distribute traffic to local street system.

The ACT uses the NAASRA Classification for determining its roads hierarchy. Thus local urban and rural roads in the ACT would essentially consist of:

- NAASRA Class 3 (Major Collectors);
- NAASRA Class 6 and 7 (Minor Collectors); and
- NAASRA Class 8 (Local Streets and cul de sac roads).

ACT NAASRA based classification system

As part of the hierarchical road network, roads in the ACT are classified according to functionality using the NAASRA classification system.

Rural Areas

Class 1

Those roads which form the principal avenue for communications between major regions of Australia, including direct connections between capital cities. Barton and Federal Highway which form the National Highway.

Class 2

Those roads, not being Class 1, whose main function is to form the principal avenue of communication for movements:

- Between capital city and adjoining States and their capital cities; or
- Between a capital city and key towns; or
- Between key towns.

Class 3

Those roads, not being Class 1 or 2, whose main function is to form an avenue of communication for movements:

- Between important centres and the Class 1 and Class 2 roads and/or key towns; or
- Between important centres; or

- Of an arterial nature within a town in a rural area.

Class 4

Those roads, not being of Class 1, 2 or 3, whose main function is to provide access to abutting property (including property within a town in a rural area).

Class 5

Those roads which provide almost exclusively for one activity or function which cannot be assigned to Classes 1, 2, 3 or 4.

Urban Areas

Class 6

Those roads whose main function is to perform the principal avenue of communication for massive traffic movements.

Class 7

Those roads, not being Class 6, whose main function is to supplement the Class 6 roads in providing for traffic movements or which distribute traffic to local street systems.

Class 8

Those roads not being Class 6 or 7, whose main function is to provide access to abutting property.

Class 9

Those roads which provide almost exclusively for one activity or function and which cannot be assigned to Class 6, 7 or 8.

Road hierarchy

A hierarchical road network is essential to maximise road safety, amenity and legibility and to provide for all road users. Each class of road in the network serves a distinct set of functions and is designed accordingly. The design should convey to motorists the predominant function of the road. Essentially there is a broad division between arterial and non arterial (or local) roads.

Arterial roads

Servicing the individual residential areas (suburbs) are the major roads that are Class 6 and in some cases Class 7 roads. These are important transport routes that provide for the major traffic streams in terms of both volume and speed.

In the urban areas of the ACT, there are three distinct types of major road:

- Sub-Arterial.
- Arterial.
- Parkway.

Non arterial roads

There are four distinct street types within residential areas:

- Access Places – Class 8.
- Access Streets – Class 8.
- Collector Street (Minor) – Class 7.
- Collector street (Major) – Class 7.

The lowest order of road (Access Place) having as its primary function, residential space / amenity features which facilitate pedestrian and cycling movements and where vehicular traffic is subservient in terms of speed and volume to those elements of space, amenity, pedestrians and cyclists.

The next level of road (Access Street) should provide a balance between the status of that street in terms of its access and residential amenity function. Residential amenity and safety are dominant but to a lesser degree than Access Places.

All collector Streets have a residential function but also carry higher volumes of traffic than the lower order streets. A reasonable level of residential amenity and safety is maintained by restricting traffic volumes and speeds, however amenity and safety do not have the same priority as Access Streets and Access Places.

Major Collector Streets provide the principal link between the residential street network and the arterial road system. These streets often require frontage access restrictions due to traffic volume and speed considerations.

Other non arterial roads include Town Centre and industrial roads.

Details of Functional Class 1 Roads

The ACT does not provide any State or Local Government funding for any Functional Class 1 roads maintenance. Funding for this activity is received from the Commonwealth for the National Highway maintenance on the Barton and Federal Highways.

ATTACHMENT D

ROAD, BRIDGE AND OTHER ASSET DATA FOR LOCAL ROADS (2003)

Asset Type	Total Asset Lane-Kilometres	Total Area (m^2)
Roads Data		
RURAL LOCAL ROADS		
NAASRA Class 3 (Sealed)	38	101,678
NAASRA Class 3 (Unsealed)	4	10,180
NAASRA Class 8	5	13,440
Sub-total	***47***	***125,298***
URBAN LOCAL ROADS		
NAASRA Class 3 (Sealed)	15	46,052
NAASRA Class 3 (Unsealed)	10	20,900
NAASRA Class 6	10	40,325
NAASRA Class 7	330	1,459,983
NAASRA Class 8 (Sealed)	3,300	11,231,813
NAASRA Class 8 (Unsealed)	10	29,630
SUB-TOTAL	***3,675***	***12,828,703***
TOTAL ROAD LENGTH	**3,722**	**12,954,001**
Bridge Data		
Total (Number)	**437**	-
Equivalent Deck Area (m^2):		
Prestressed Concrete (m^2)		16,358.56
Reinforced Concrete (m^2)	-	31,920.50
Timber (m^2)	-	2,093.93
Steel (m^2)	-	2,081.09
TOTAL BRIDGE LENGTH (m^2)		**52,454.08**
Streetlights (Number) [1]	41,000	-
Stormwater [2]	-	-
Lines [1]	3,780	-
Signs (Number) [1]	70,000	-

1. Local roads constitute approximately 63% of the total road network in the ACT. Maintenance tasks have been apportioned on this basis.
2. The determination of these assets depend upon the definitions used, so are excluded at this point in time.